SBTi Finance Tool

Tech Deep Dive

14th October 2020

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Donald Linderyd, Nate Aden, Chendan Yan,
Eoin White & Joris Cramwinckel

PARTNER ORGANIZATIONS

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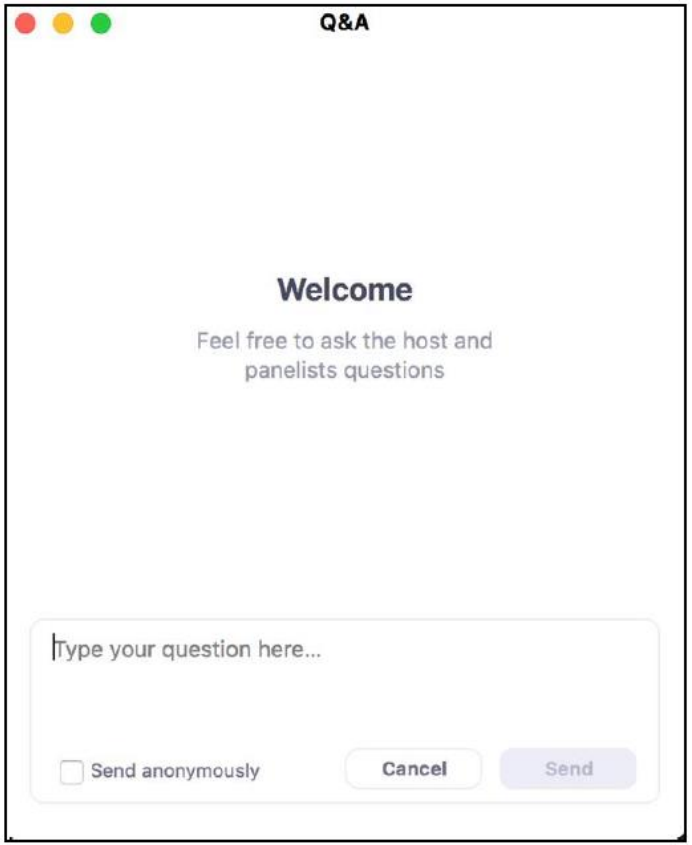
WE MEAN BUSINESS

House keeping

- Ask questions using Q&A box
- Webinar is being recorded - Link to recording emailed tomorrow
- Slides emailed tomorrow



SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Agenda

- Introduction (5 min)
- SBTi Finance Framework (5 min)
- SBTi Finance Tool overview (10 min)
- A Technical Tour (20 min)
- Data connectors, Contribution & Terms of Use (5 min)
- Next steps (2 min)
- Q&A (13 min)

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

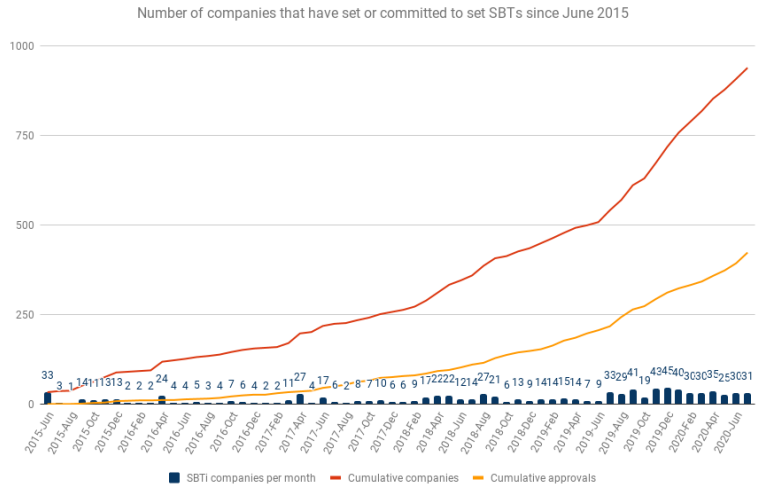
Science Based Target initiative (SBTi)

All Companies

1,009
Committed

~36
join per month

486
Approved



Financial Institutions

60
Committed

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

*as of 2020-10-13

SCIENCE-BASED TARGETS FOR FINANCIAL INSTITUTIONS

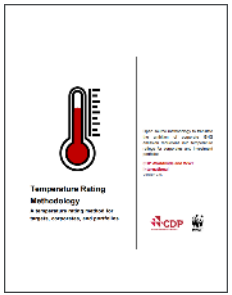
In 2018, the SBTi launched a project to help financial institutions align their lending and investment portfolios with the ambition of the Paris Agreement.

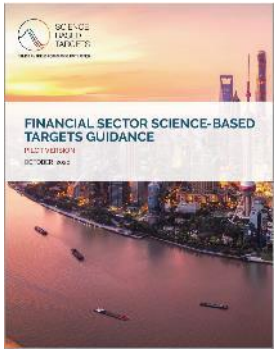
The primary audience includes commercial banks, asset managers, asset owners, and mortgage real estate investment trusts (REITs).

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

SBTi Finance Framework | Framework Components





SBTi Finance Framework | 3 Methods for Finance Sector Targets

For the first phase of this project, the SBTi supports three methods for financial institutions. The SBTi developed criteria specific to these three methods.

SBTi Finance Framework | Method & Asset Class Coverage Links

Asset Class	Method	Description
Real Estate	Sector Decarbonization Approach (SDA)	Emissions-based physical intensity targets are set for non-residential buildings' intensity and total GHG emissions.
Mortgages	SDA	Emissions-based physical intensity targets are set for residential buildings' intensity and total GHG emissions.
Electricity Generation Project Finance	SDA	Emissions-based physical intensity targets are set for electricity generation projects' intensity and total GHG emissions.
Corporate Instruments (equity, bonds, loans)	SDA	Emissions-based physical intensity targets are set at sector level within the portfolio for sector where sectoral decarbonization approaches are available.
	SBT Portfolio Coverage	Financial institutions engage a portion of their investees to have their own science-based targets such that they will reach 100% coverage by 2040.
	Temperature Rating	This approach enables financial institutions 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 (e.g., 2.6°C in 2019 and 1.7°C in 2025).

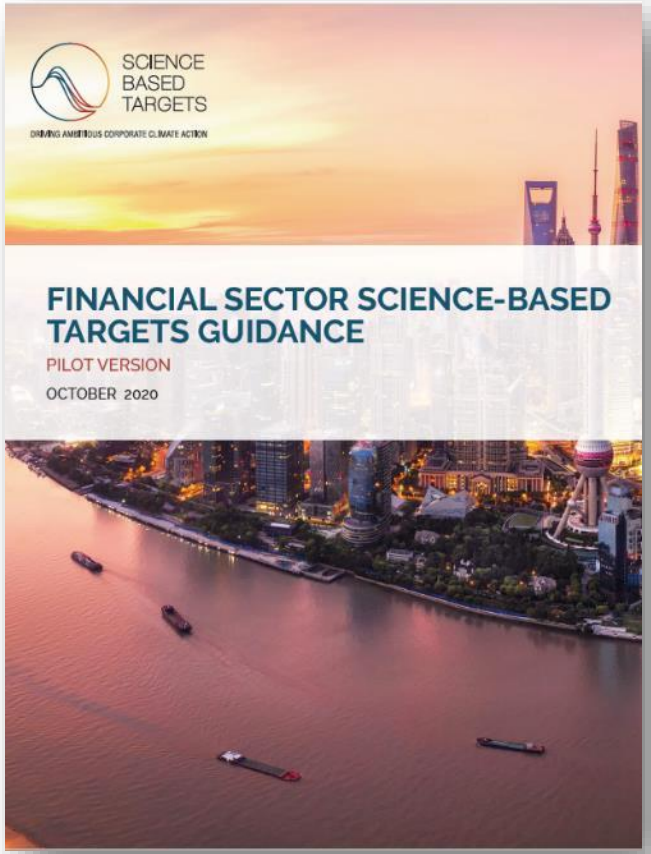
SBTi Finance Framework | Criteria

A financial institution's submission to SBTi will consist of **scope 1 and 2 targets and scope 3 portfolio targets** that meet SBTi criteria. Recommendations on best practices are also provided.

1. GHG Emissions Inventory and Target Boundary
2. Scope 1 and 2 Target Time Frame
3. Scope 1 and 2 Target Ambition
4. Scope 2
5. **Scope 3 – Portfolio Target Setting Requirements**
6. **Reporting**
7. Recalculation and Target Validity

Sections 5 and 6 of the criteria are designed specifically for financial institutions' target setting, progress-tracking, and action reporting practices for their investment and lending activities.

SBTi Finance Framework | Guidance



8 Case Studies

Institution	Method
Amundi	Temperature Rating Method
Bank J. Safra Sarasin	SDA for Real Estate
Storebrand	SDA for Real Estate
Eurazeo	SBT Portfolio Coverage
La Banque Postale	SBT Portfolio Coverage & SDA
Mizuho Financial Group	SDA for Electricity Generation Project Finance
De Volksbank	SDA for Mortgages
Wells Fargo & Company	PCAF

Launching the pilot target validation phase for financial institutions

1. 
COMMIT

2. 
DEVELOP

3. 
SUBMIT

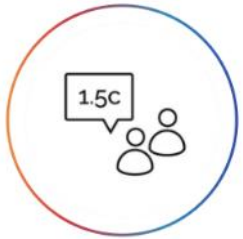
Submissions from the **first 20 financial institutions** will be assessed **free of charge**.

Materials are distributed via the project website: https://sciencebasedtargets.org/financial-institutions/

Contact targets@sciencebasedtargets.org to express your interest!

Starting from October 1st 2020, FIs have up to **2 years** to have their targets approved and announced by SBTi once they commit.

Previously-committed FIs will have **24 months from October 1st 2020** to submit targets.

4. 

COMMUNICATE

5. 
DISCLOSE

SCIENCE BASED TARGETS

SBTi Finance Tool

SBTi Finance Tool | Objectives

Methodologies: Temperature Rating & Portfolio Coverage

- Open Source – continued development
- Widely Distributed – greater impact
- Transparent – from corporate ambition through to portfolio temperature score
- Data Agnostic – any data provider & own data lake
- Any User Interface – service provider & homegrown portfolio management solutions
- Workflow Tool for:
  - Portfolio managers & CIO
  - ESG & Financial analysts
  - Risk management & Compliance

SBTi Finance Tool | Development Team

- Science Based Target initiative (SBTi)
  - WWF (project manager)
  - CDP
  - World Resources Institute
- Developers
  - Ortec Finance
  - OS-Climate
- Data & Service Providers
  - Bloomberg
  - CDP
  - ISS ESG
  - MSCI
  - Trucost
  - Urgentem
- Users
  - Net-Zero Asset Owner Alliance

Bloomberg

ISS ESG

MSCI

WWF

CDP
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OS-C

Trucost ESG Analysis

S&P Global

ORTEC FINANCE

URGENTEM

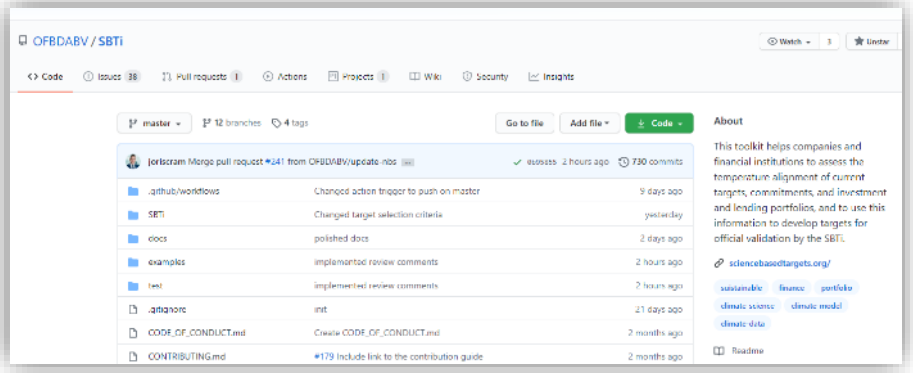
SBTi Finance Tool

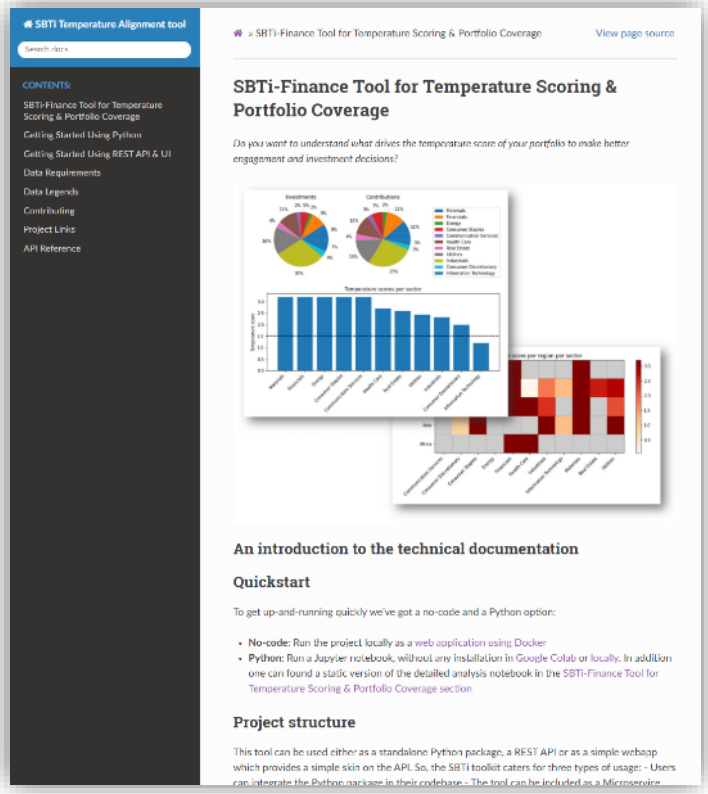
Objective – Integrate into:

- Commercial platforms
- Asset managers' in-house solutions
- Via Python or API

Learn & Test the Tool

- Interactive Jupyter Notebook – Analysis Workflow Example
- Tool website: https://sciencebasedtargets.org/finance-tool/
- Technical Documentation - http://getting-started.sbti-tool.org/
- GitHub Repository for Code - http://www.sbti-tool.org/





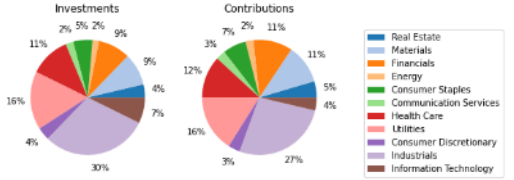
SBTi Finance Tool | What Can We Use It For?

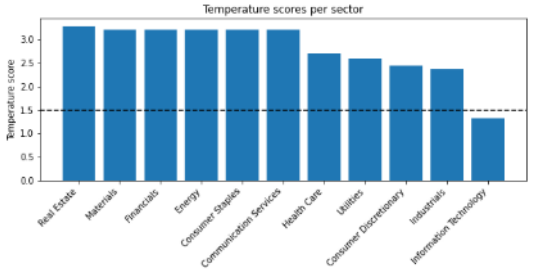
Portfolio manager / analyst analyzing:

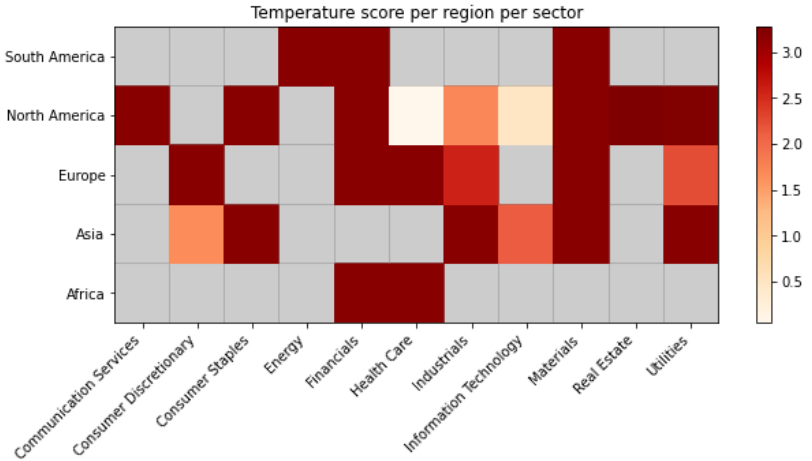
- companies, sectors, countries, investment strategies and portfolios to
- understand how they contribute to climate change.

You can for example:

- Measure a portfolio's temperature score
- Identify biggest contributors – e.g. company, country and sector basis
- Strategic allocation and securities selection
- Analyze effects of changes in a portfolio
- Model impact of engagement on temperature score
- Plan engagement strategies based on your modelling
- Help you create an action plan for reaching your emission reduction target







SBTi Finance Tool | Analysis Example

Company Temp Score

	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

Portfolio Temp Score (50 company portfolio with randomized data)

```
temperature_score.aggregation_method = PortfolioAggregationMethod.WATS
aggregated_portfolio = temperature_score.aggregate_scores(amended_portfolio)
print_aggregations(aggregated_portfolio)
```

```
Timeframe  Scope      Temp score
mid        S1S2       2.63
mid        S1S2S3     2.88
```

Portfolio Coverage

```
portfolio_coverage_tvp = PortfolioCoverageTVP()
coverage = portfolio_coverage_tvp.get_portfolio_coverage(amended_portfolio.copy(), temperature_score.aggregation_method)
print("Part of portfolio with climate targets is {c:.2f}%".format(c=coverage))
```

```
Part of portfolio with climate targets is 35.45%
```

Which companies should I engage with?

Analyze temperature score contribution & ownership % of companies in my portfolio

```
company_contributions[['company_name', 'company_id', 'contribution', 'temperature_score', 'ownership_percentage',
```

	company_name	company_id	contribution	temperature_score	ownership_percentage	portfolio_percentage
0	Company N	FR0000000014	9.52	3.20	0.19	7.82
1	Company AG	US0079031078	3.29	1.36	0.33	6.36
2	Company Q	CA0000000017	2.66	3.20	4.81	2.18
3	Company AO	TW0002308004	2.65	3.83	0.01	1.82
4	Company AM	FR0000120644	2.34	3.38	12.25	1.82
5	Company U	US0000000021	2.32	3.36	0.54	1.82
6	Company AH	US00724F1012	2.29	3.31	5.87	1.82
30	Company C	IT0000000003	2.21	3.20	0.34	1.82
25	Company AF	ID0000000032	2.21	3.20	0.97	1.82
26	Company G	CN0000000007	2.21	3.20	0.05	1.82

Put Company Q & Company AM into our engagement scenario 4a: “Engage to encourage companies to set 2C targets”.

What is the impact on my portfolio TS?

Modelling 2 companies in a 50-company portfolio

```
[20] scenario_portfolio = portfolio.copy()
     scenario_portfolio.loc[scenario_portfolio['company_id'] == 'CA0000000017', 'engagement_target'] = True
     scenario_portfolio.loc[scenario_portfolio['company_id'] == 'FR0000120644', 'engagement_target'] = True
```

```
scenario_companies = [SBTi.interfaces.PortfolioCompany.parse_obj(company) for company in scenario_portfolio.to_dict(orient="records")]
scenario_data = SBTi.utils.get_data([provider], scenario_companies)

temperature_score.scenario = scenario
scenario_companies = SBTi.utils.dataframe_to_portfolio(scenario_portfolio)
scenario_scores = temperature_score.calculate(data_providers=[provider], portfolio=scenario_companies)
scenario_aggregated = temperature_score.aggregate_scores(scenario_scores)
print_scenario_gain(aggregated_portfolio, scenario_aggregated)
```

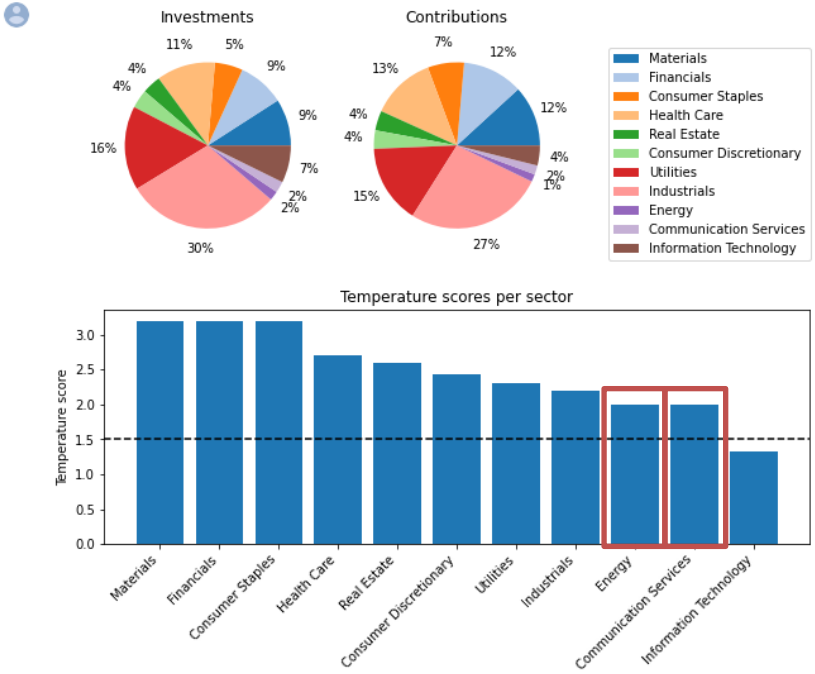
```
Actual portfolio temperature score
Timeframe  Scope      Temp score
mid        S1S2       2.63

Scenario portfolio temperature score
Timeframe  Scope      Temp score
mid        S1S2       2.46
```

What is the impact on a sector level?

What is the likelihood that I can reach a certain target with my engagement strategy?

```
[23] scenario_contributions = collect_company_contributions(scenario_aggregated, scenario_scores, analysis_parameters)
     plot_grouped_statistics(scenario_aggregated, scenario_contributions, analysis_parameters)
```



Results:
I need a more ambitious engagement strategy to reach a 1.5°C target

Solution:
Model other scenarios with different companies and/or focus on a sector or region …

SBTi Finance Tool | Reporting

Reporting to SBTi

- Example notebook for reporting and submitting targets to SBTi (5_reporting.ipynb)
- Anonymized data-export – no need to disclose holdings

Calculation settings:

Aggregation method:	WATS
Default score:	3.20

Portfolio coverage is 35.45%

Portfolio Temperature scores:

Timeframe	Scope	Temp score
mid	S1S2	2.63
mid	S1S2S3	2.88

Percentage of score based on default:

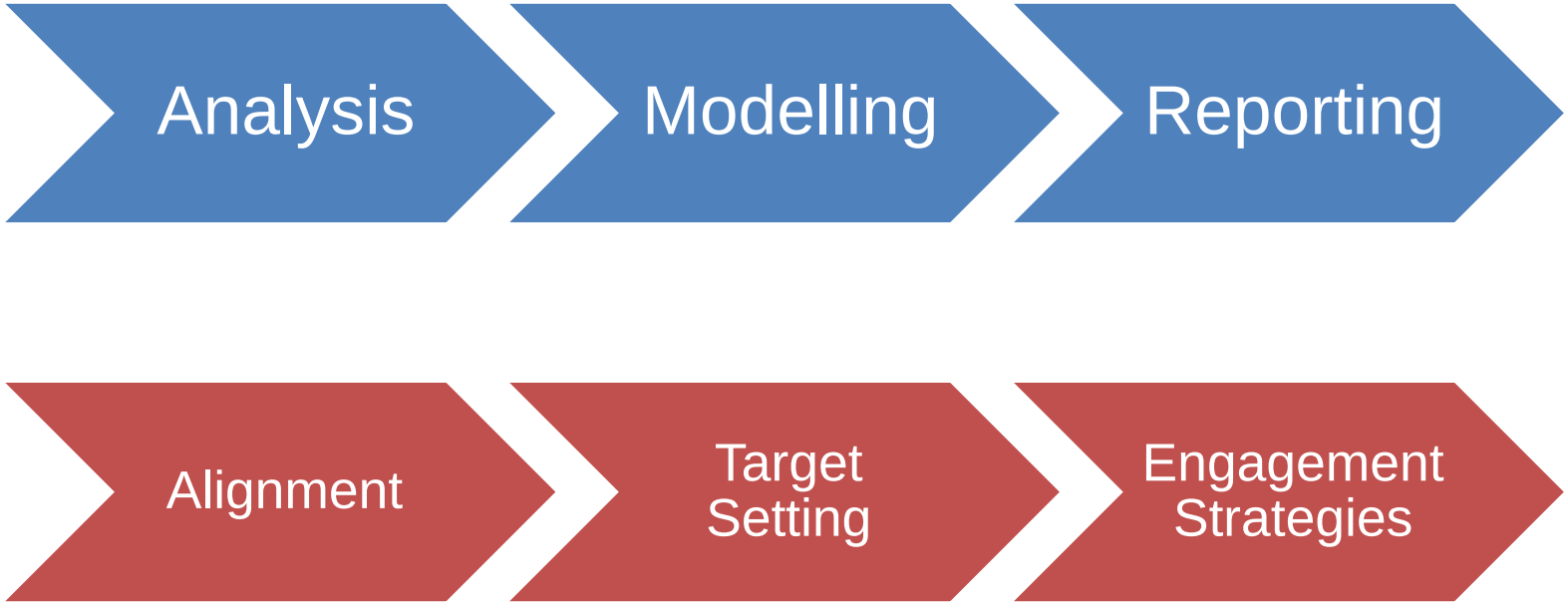
Timeframe	Scope	% Default score
mid	S1S2	66.36
mid	S1S2S3	78.02

Temperature scores per sector:

mid - S1S2	Temp score
Communication Services	3.20
Consumer Discretionary	2.44
Consumer Staples	3.20
Energy	3.20
Financials	3.20
Health Care	2.70
Industrials	2.36
Information Technology	1.32
Materials	3.20
Real Estate	3.28
Utilities	2.58

mid - S1S2S3	Temp score
Communication Services	3.20
Consumer Discretionary	3.08
Consumer Staples	3.20
Energy	3.20
Financials	3.11
Health Care	3.05
Industrials	2.72
Information Technology	2.15
Materials	3.20
Real Estate	3.21
Utilities	2.73

SBTi Finance Tool | Solution



SCIENCE BASED TARGETS

A Technical Tour

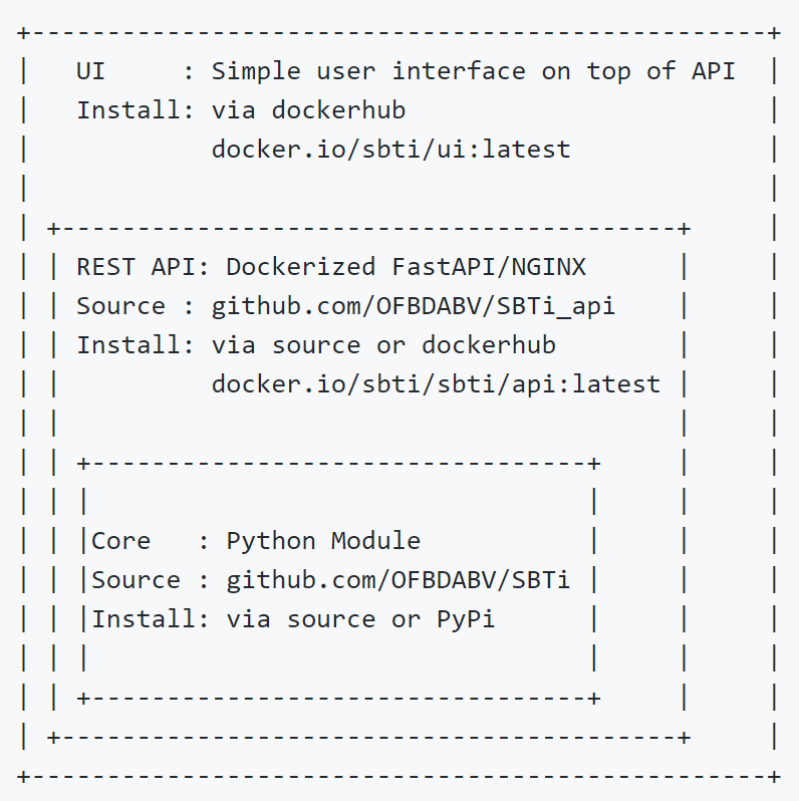
SBTi-Finance Tool – Three ways to use

Key philosophies:

- Open-source
- Bring the model to the data
- Data provider agnostic

Key Ingredients:

- Docker
- Python3



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When to use what? – Python Core

The sbti Python Package is a well documented packages for the SBTi methodology.

Available at PyPi

- Integration in your own Python codebase
- Perform Analytics with Jupyter notebooks

Project links

- PyPi Homepage
- Download
- Source Code
- Documentation
- Bug Tracker

```
+---------------------------------+
|                                 |
|Core   : Python Module           |
|Source : github.com/OFBDABV/SBTi |
|Install: via source or PyPi      |
|                                 |
+---------------------------------+
```

Intermezzo – Type hinting and Pydantic

As of Python 3.6 the language supports **type hinting**

- Editor support
- Type checks.

...on top of type hinting we deployed **Pydantic**

Data validation and settings management using Python type hinting.

- Fast and extensible, *pydantic* plays nicely with your linters/IDE/brain. Define how data should be in pure, canonical Python 3.6+; validate it with *pydantic*.

```
from datetime import datetime
from pydantic import BaseModel


class User(BaseModel):
    id: int
    name = 'John Doe'
    signup_ts: datetime = None


User(i)
```

When to use what? – REST API

Temperature Microservice (REST API)

Exposes sbti Python Package in production quality API

- Supports Integration in workspace:
  - Platforms
  - Web applications
  - Data providers
  - Portfolio Mgt systems

Project links

- Source Code
- Documentation / Swagger Docs
- Bug Tracker
- Docker Hub


```
+---------------------------------------+
| REST API: Dockerized FastAPI/NGINX    |
| Source : github.com/OFBDABV/SBTi_api  |
| Install: via source or dockerhub      |
|          docker.io/sbti/sbti/api:latest |
|                                       |
| +-----------------------------------+ |
| |                                   | |
| |Core   : Python Module             | |
| |Source : github.com/OFBDABV/SBTi   | |
| |Install: via source or PyPi        | |
| |                                   | |
| +-----------------------------------+ |
+---------------------------------------+
```

Intermezzo II – Type hinting, pydantic and FastAPI

...and FastAPI uses the same declarations to:

- Define requirements: from request path parameters, query parameters, headers, bodies, dependencies, etc.
- Convert data: from the request to the required type.
- Validate data: coming from each request:

  Generating automatic errors returned to the client when the data is invalid.
- Document the API using OpenAPI:

  which is then used by the automatic interactive documentation user interfaces.

High performance, easy to learn,
fast to code, ready for production

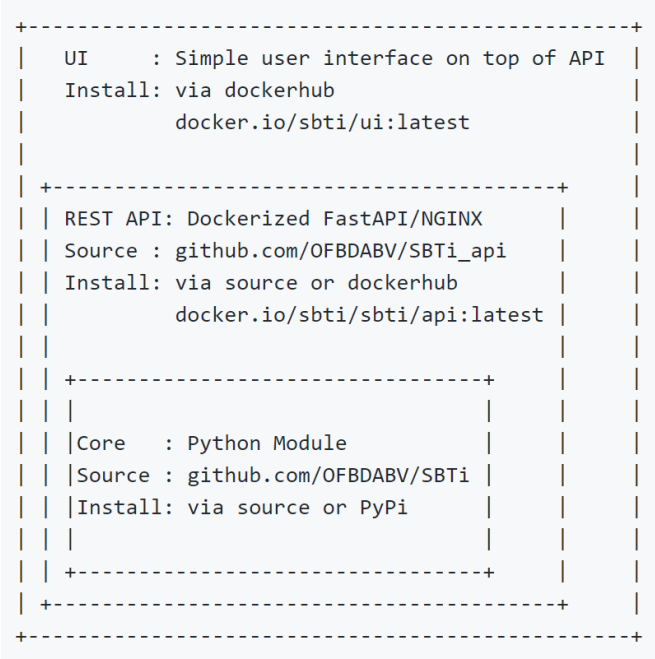
When to use what? – UI

Simple UI skin on API functionality

- Eases Testing and Demos
- Support Excel uploads for both Portfolio and Target data
- Multi container deployment (frontend/backend)

Project links

- Documentation
- Docker Hub



SCIENCE BASED TARGETS

Data Connectors Contribution & Terms of Use

Data Connectors| How to build your own

Data Connectors| How to build your own

master SBTi / SBTi / data / data_provider.py / Jump to Go to file

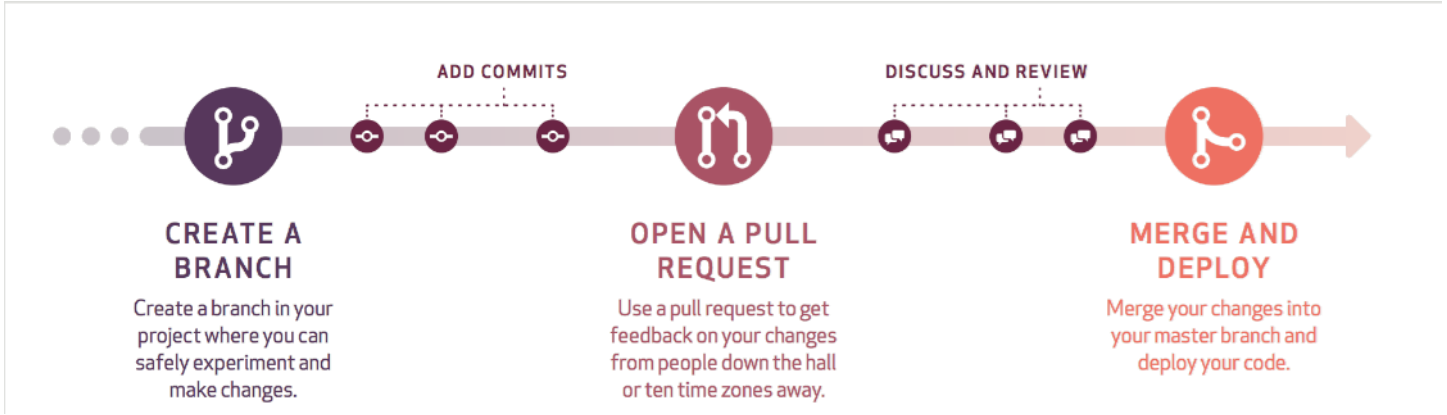
ofjpostema Improve docstrings ✓ Latest commit d1de18f on 27 Aug History

2 contributors

59 lines (46 sloc) 1.85 KB Raw Blame

```python
from abc import ABC, abstractmethod
from typing import List

from SBTi.interfaces import IDataProviderCompany, IDataProviderTarget


class DataProvider(ABC):
    """
    General data provider super class.
    """

    def __init__(self, **kwargs):
        """
        Create a new data provider instance.

        :param config: A dictionary containing the configuration parameters for this data provider.
        """
        pass

    @abstractmethod
    def get_targets(self, company_ids: List[str]) -> List[IDataProviderTarget]:
        """
        Get all relevant targets for a list of company ids (ISIN). This method should return a list of
        IDataProviderTarget instances.

        :param company_ids: A list of company IDs (ISINs)
        :return: A list containing the targets
        """
        raise NotImplementedError

    @abstractmethod
    def get_company_data(self, company_ids: List[str]) -> List[IDataProviderCompany]:
        """
```

Contributing



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- Private use

Conditions

- License and copyright notice

Limitations

- Liability
- Warranty

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Next Step

SBTi Finance Tool | Where do we start?

Company	Solution(s)
CDP	Provides cleaned input data collected via its annual disclosure system, centered on GHG emissions & target data. CDP can also provide completed temperature ratings for all disclosing companies.
Bloomberg	Has developed a temperature rating/alignment tool with the ability to call in a portfolio directly and link input data seamlessly for calculation of temperature scores at company and portfolio level.
ISS ESG	Provides data needed to run the open source tool. The SBTi temperature analysis can be used to complement ISS ESG's scenario alignment, fully automatic on portfolio level & integrated into the ISS ESG climate impact reports. Further tool integration into existing products is being explored.
MSCI	MSCI collects and provides data to institutional investors that could be used as input data for the SBTi's new methodology and tool. MSCI is testing the tool to understand similarities & differences between MSCI's Warming Potential metric and SBTi's new temperature scoring.
Ortec Finance, OS-Climate & Linux Fnd	Ortec provides temperature scoring analysis of portfolios & companies as a service for asset managers. OS-Climate Platform-building with Allianz, Amazon, Microsoft, Ortec Finance, and S&P to enhance the tool via open source development w input from SBTi, SASB, & Ceres.
Trucost part of S&P Global	Data from Trucost and S&P Global can be used by the SBTi-Finance tool. Deeper integration is being explored.
Urgentem	Urgentem will incorporate the python code (branched) as an API on one of its servers and will develop a module within its current platform (Element6) that will have company level temperature scores and portfolio and sector aggregations.
SBTi Finance	Google Colab Interactive analysis workflow example with method summary

SBTi Finance – Q&A

Website: https://sciencebasedtargets.org/finance-tool/
Code: http://www.sbti-tool.org/
Documentation: http://getting-started.sbti-tool.org/

finance@sciencebasedtargets.org

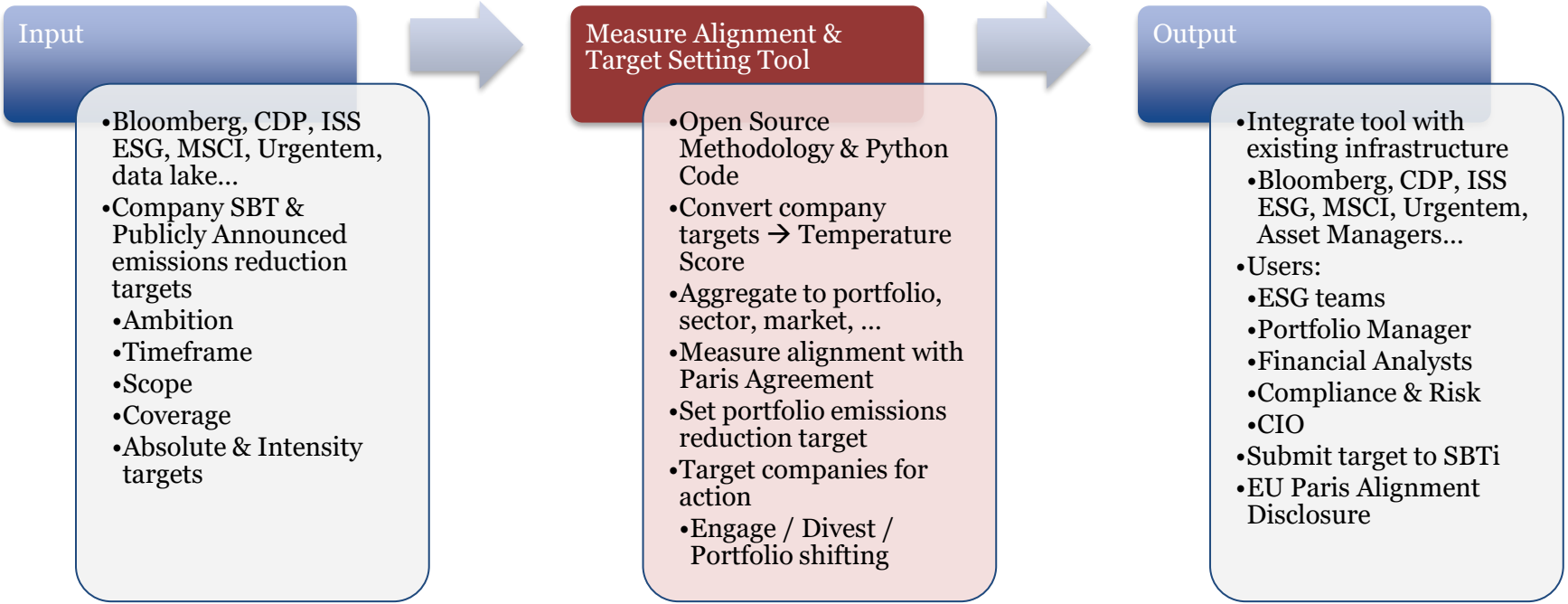
SCIENCE BASED TARGETS

Appendix

SCIENCE BASED TARGETS

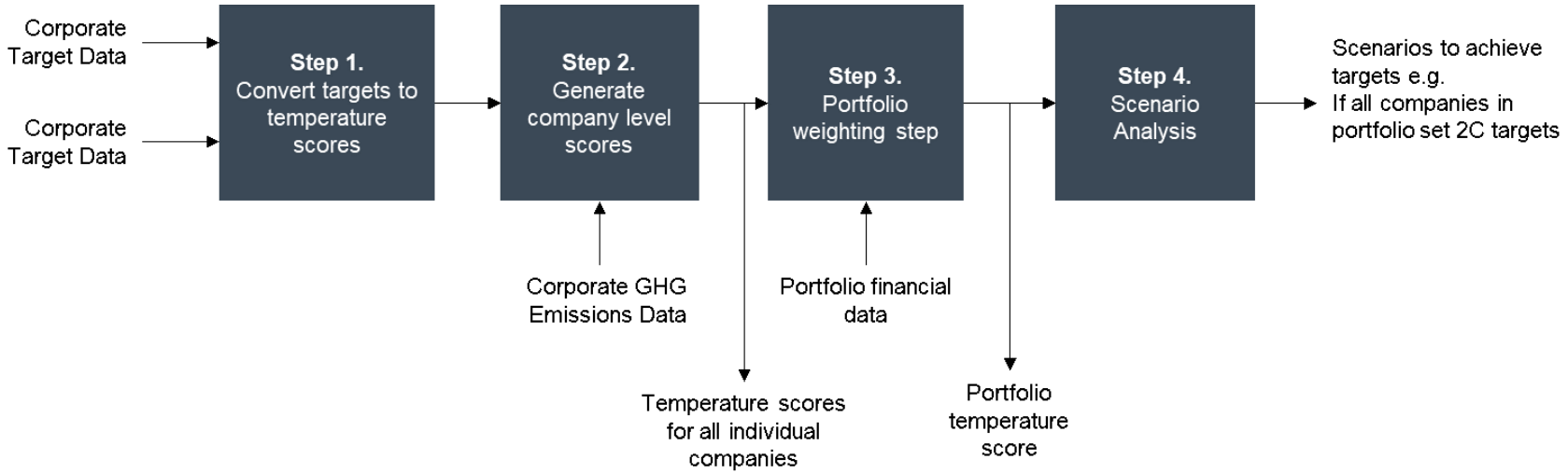
SBTi Finance Tool - Additional slides

SBTi Finance Tool | Structure



SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

SBTi Finance Tool | Analysis Process



SBTi Finance Tool | Temperature Score Calculation

1) Convert individual targets → Target Temperature Scores
- Target validation protocol – minimum quality criteria
- Regression models of estimated warming in 2100 from IPCC scenarios

2) Aggregate targets to company level scores
- Default score for no valid targets
- Weighted based on reported emissions
- → Company Temperature Scores

	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

3) Aggregate to portfolio, sector, market level Temperature Scores
- 7 aggregation methods: Weighted average TS, Total emissions weighted TS, market owned emissions weighted TS, total assets emissions weighted TS…
- Portfolio TS per scope & per time frame
- Portfolio coverage: companies that have SBTi-approved targets

4) What-if analysis
- 6 engagement scenarios – model effect on TS of companies setting targets
- → Design engagement strategy

SBTi Finance Tool | What data do we need?

- Portfolio
- Financials + Emissions
- Emissions Reduction Targets
- +4,000 publicly disclosed targets
- +470 SBTi approved target

	A	B	C	D	E	F
1	company_name	company_id	company_isin	weights	investment_value	engagement_target
2	Advanced Micro Devices	US0079031078	US0079031078	6.36%	35000000	true
3	Adobe Systems Inc.	US00724F1012	US00724F1012	1.82%	10000000	
4	Capgemini Group	FR0000125338	FR0000125338	1.82%	10000000	
5	Cisco Systems	US17275R1023	US17275R1023	1.82%	10000000	
6	Coca-Cola HBC AG	CH0198251305	CH0198251305	1.82%	10000000	
7	CVS Health	US1266501006	US1266501006	1.82%	10000000	
8	Danone	FR0000120644	FR0000120644	1.82%	10000000	
9	Dell Technologies	US24703L1035	US24703L1035	1.82%	10000000	

	A	I	J	K	L	M	N	O	P	Q
1	company_name	industry_level_4	sector	ghg_s1s2	ghg_s3	company_	company_m	company_enterprise_value	company_total_assets	company_cash_ec
2	Advanced Micro Devices, Inc		Industrials	24965246,13	66591747,47	20248547997	10464805624	20370723453	814618,2057	4528467715
3	Adobe Systems Inc.		Utilities	1288468,92	1739806,666	276185899,6	170431377	348843699,9	27314,64803	69006941
4	Capgemini Group		Consumer Discretionary	230191,469	1285703,571	10283015132	3087133686	4800604057	343642,4737	1163119848
5	Cisco Systems, Inc.		Industrials	178705,0618	476673,9446	1860376238	1395966781	1849921444	159262,6094	117630751,5
6	Coca-Cola HBC AG		Industrials	97771,83581	260794,4407	31781332590	20377644508	34890123636	43112605,78	28933197273
7	CVS Health		Health Care	466041,1002	1094183,453	22080444056	89487875452	1,42816E+11	12916972,79	51876930016

	A	C	D	E	F	G	H	I	J	K	L	M	N
1	company_name	target_type	intensity_metric	scope	coverage_s1	coverage_s2	coverage_s3	reduction_ambition	base_year	end_year	start_year	base_year_ghg_s1	base_year_ghg_s2
2	Advanced Micro De	Absolute		S1+S2	1	1		0,3	2018	2025	2020	11000	1200
3	Adobe Systems Inc	Intensity	Revenue	S2		1		0,4	2015	2030	2019	1558	13333
4	Capgemini Group	Intensity	Revenue	S3			0,6	0,15	2018	2050	2018	1209218,586	2110267,414
5	Cisco Systems, Inc.	Intensity	Revenue	S1+S2+S3	0,95	0,95	0,5	0,91	2018	2035	2020	184098,8183	80204,18168
6	Coca-Cola HBC AG	Intensity	Revenue	S1+S2+S3	1	1	0,7	0,93	2015	2025	2016	27727,46028	236575,5397
7	CVS Health	Intensity	Revenue	S1+S2	1	1		0,76	2015	2025	2015	0	0
8	Danone	Absolute		S3			0,8	0,21	2015	2030	2015	545004,528	1094846,472
9	Dell Technologies	Intensity	Revenue	S1+S2	1	1		0,6	2015	2020	2015	814592,7738	825258,2262
10	Delta Electronics	Intensity	Revenue	S1+S2	1	1		0,47	2015	2020	2015	37200,15376	10506,84624

SBTi Finance Tool | What-if Scenarios

1: Engage companies to set **2°C targets**. This means that the score of all companies that didn't yet set a target will be set to 2°C.

2: Engage companies to set **well below 2°C targets**. The maximum score for all companies that have set targets will be capped at 1.75°C.

3a: Engage the **top 10** contributors to set **2 °C targets**.

3b: Engage the **top 10** contributors to have set **well below 2°C targets**. This means that the maximum score for all the targets of these companies will be capped at 1.75°C.

4a: Engage the **selected** companies to set **2°C targets**.

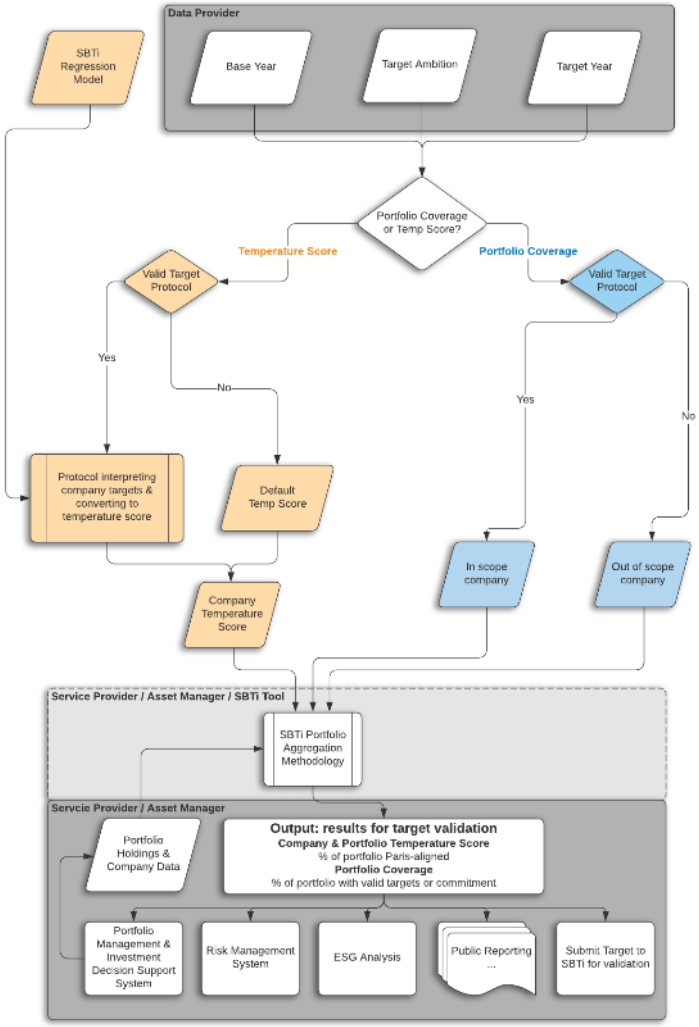
4b: Engage the **selected** companies to set **well below 2°C targets**. This means that the maximum score for all the targets of these companies will be capped at 1.75°C.

Put Company Q & Company AM into our engagement scenario 4a: “Engage to encourage companies to set 2°C targets”.

SBTi Finance Tool | Portfolio Aggregation Options

Aggregation Method	Description	Scope 1+2 temperature rating	Scope 1+2+3 temperature rating
Weighted Average Temperature Score (WATS) – Portfolio weights	The respective weighting is **the invested value** in a company divided by the total **value of the portfolio**.	2,39	2,66
Total Emissions Weighted Temperature Score (TETS)	The respective weighting is the **company's GHG emissions** divided by all investee companies' **GHG emissions**.	2,60	2,98
Market Owned emissions weighted temperature score (MOTS)	The respective weighting reflects **how much the portfolio owns of the company's GHG emissions** divided by **all GHG emissions owned by the portfolio**. The company emissions ownership is calculated as (invested value / **market cap)** * GHG emissions	2,73	2,84
Enterprise Owned emissions weighted temperature score (EOTS)	The respective weighting reflects how much the portfolio owns of the company's GHG emissions divided by all GHG emissions owned by the portfolio. The company emissions ownership is calculated as (invested value / **enterprise value**) * GHG emissions	2,71	2,85
Enterprise Value + Cash emissions weighted temperature score (ECOTS)	The respective weighting reflects how much the portfolio owns of the company's GHG emissions divided by all GHG emissions owned by the portfolio. The company emissions ownership is calculated as (invested value / **enterprise value + cash**) * GHG emissions	2,76	2,87
Total Assets emissions weighted temperature score (AOTS)	The respective weighting reflects how much the portfolio owns of the company's GHG emissions divided by all GHG emissions owned by the portfolio. The company emissions ownership is calculated as (invested value / **total assets**) * GHG emissions	2,93	2,84
Revenue owned emissions weighted temperature score (ROTS)	The respective weighting reflects how much the portfolio owns of the company's GHG emissions divided by all GHG emissions owned by the portfolio. The company emissions ownership is calculated as (invested value / **revenue**) * GHG emissions	2,81	2,86

SBTi Finance Tool | Architecture

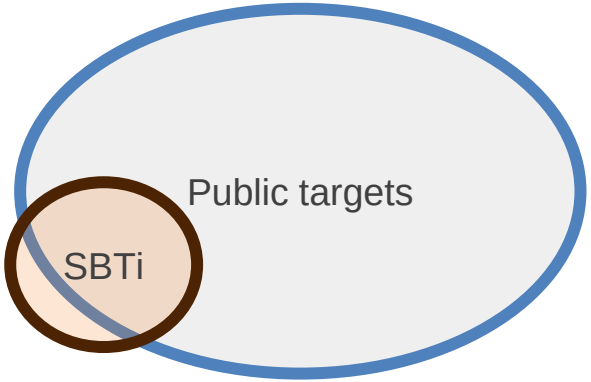


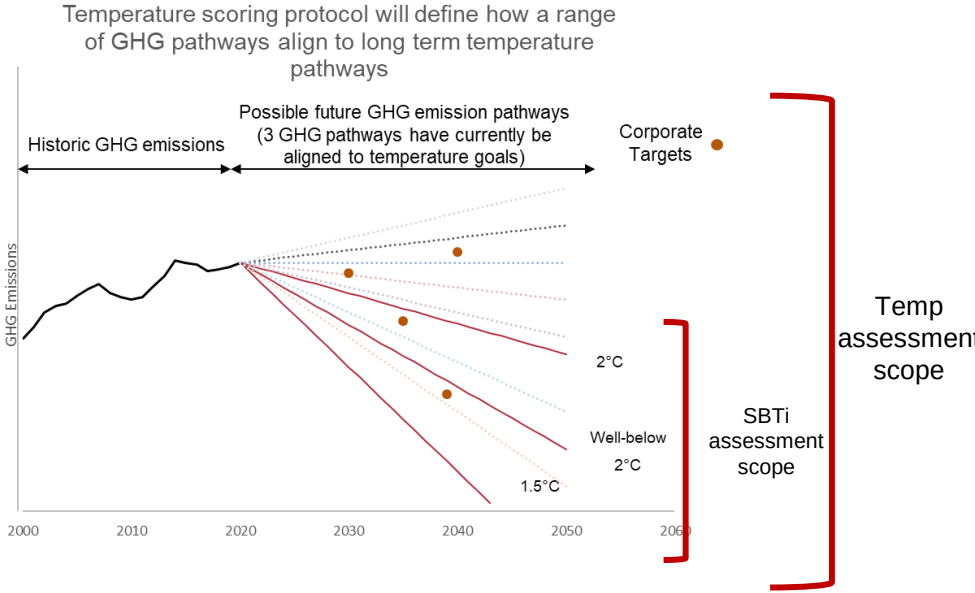
SCIENCE BASED TARGETS

Overview of Temperature Scoring Methodology

Methodology| Objectives

- The SBTi have determined the GHG pathways that are aligned to three specific temperature pathways: 2°C, well-below 2°C, 1.5°C;
- Temperature scoring will assess and rate corporate ambition against a wider range of temperature outcomes (1.5–4°C) . e.g. Company A's GHG emission reduction target of X% reduction in absolute emissions by 2025 implies their ambition is aligned to a Y°C world.





Methodology| Objectives

- Assessing the ambition of corporate targets is complex: expressed with different units, over multiple timeframes covering various types of scopes
  - Scope Coverage: scope 1, scope 2, scope 1+2, scope 3, scope 1+2+3
  - Absolute/Intensity targets: many types of activity indicators e.g. per MWh, per revenue, per tonne of product
  - Timeframes: targets can be set anywhere from 2020-2050

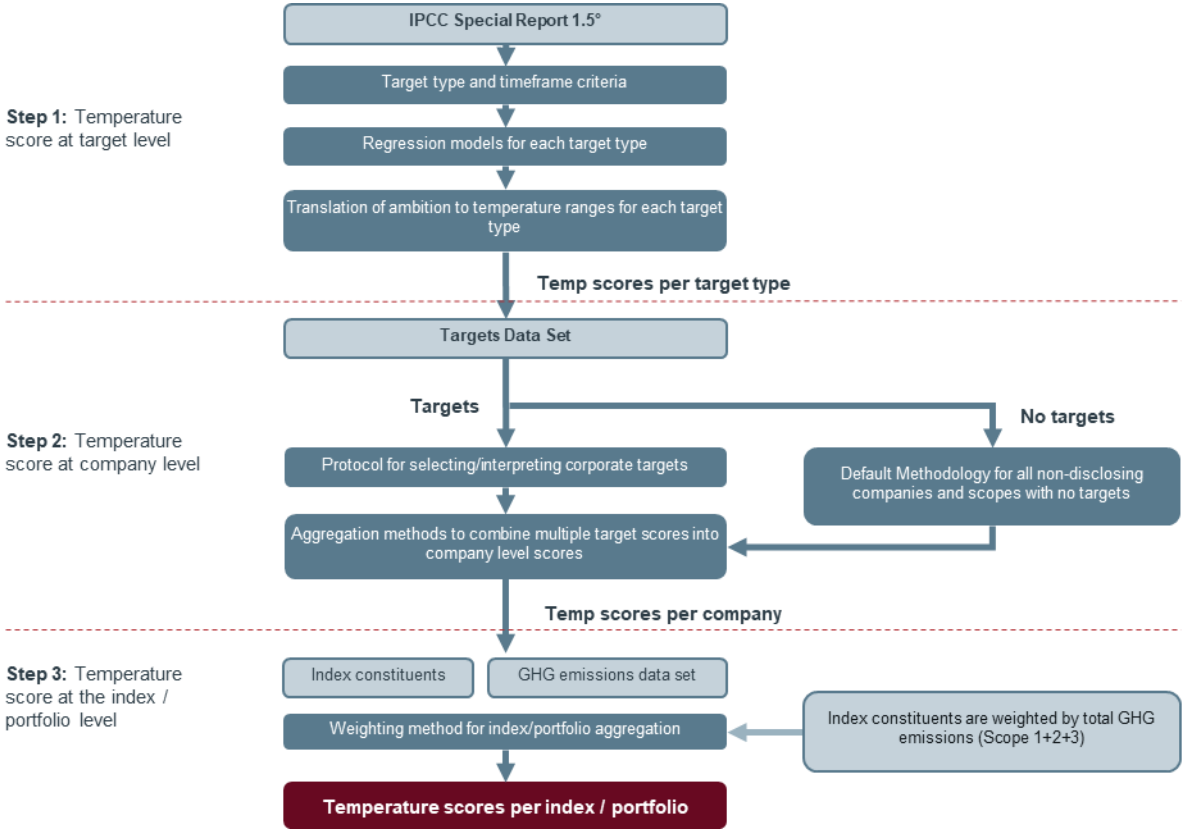
- **Translate:** the goal of a temperature rating is to translate targets into a single common and intuitive metric that is linked to the long-term temperature outcomes associated with the ambition of the target.

Example targets	Translated temperature scores
30% absolute reduction by 2025	1.8°C
4% year-on-year reduction by 2030	1.9°C
50% reduction per unit of revenue by 2030	2.1°C
25% reduction per MWh by 2025	3.1°C

Methodology I Three Step Process

Temperature scoring process

1. The protocol for interpreting corporate targets is applied to the cleaned target data.
2. Target scores are aggregated to produce company level scores for scopes and timeframes
3. Company scores are weighted and aggregated to produce portfolio level scores



Methodology I Step 1 Target Protocol

Method tests a hypothesis of a linear relationship between the change (slope) in common scenario metrics (e.g., absolute emissions; emissions/GDP) over specific timeframes relevant to corporate target setting horizons (e.g., 2020-2035) and the resulting global warming in 2100
-> Builds on previous work by IPCC and SBTi members

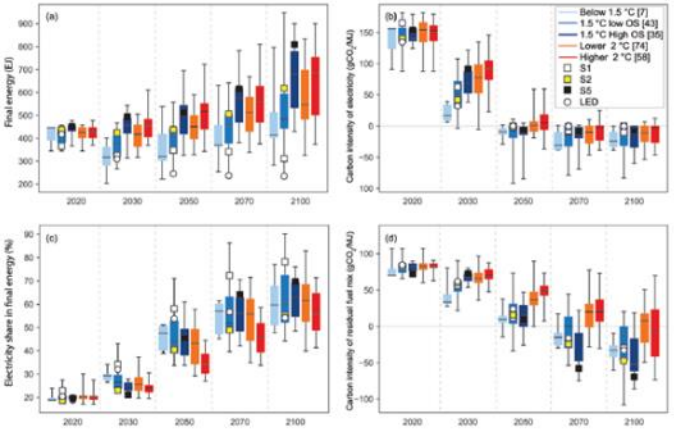


Figure: Scenario variables in different timeframes by temperature outcome.
Source: IPCC SR1.5, Chapter 2

Regression models were developed for each unique combination of:

- key scenario variables/benchmarks; 6
- unique scenario subset (filtering by peak year, max CDR); 56
- key time horizons relevant to corporate targets, (5 to 30 years); 6

=> 56 x 6 x 6 unique regression models

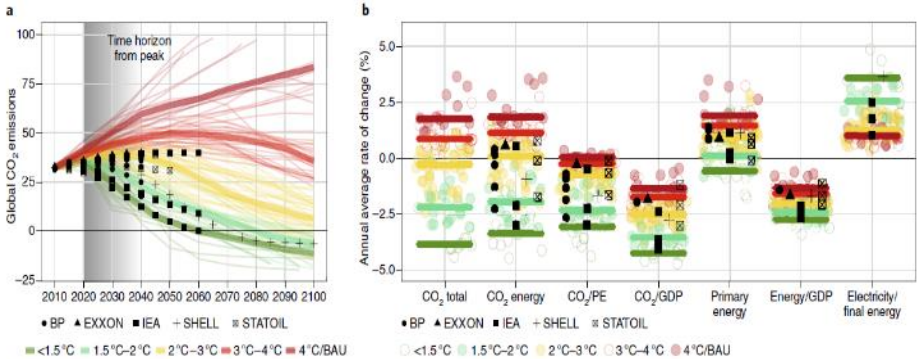


Figure: Range of slopes for common scenario variables/benchmarks.
Source: Weber et al. (2018) ***Nature Climate Change***.

#sciencebasedtargets

Methodology I Step 1 Target Protocol

Final scenario set and time horizon chosen by combination of:

- goodness of fit (adj R^2)
- alignment to SBTi's precautionary view of overshoot/CDR (max 10 Gt/yr)

Results:

- total 133 scenarios from SR1.5 ensemble
- Adj. R2 ranges from
  - 0.71-0.85 over 15 years
  - 0.84-0.93 over 30 years

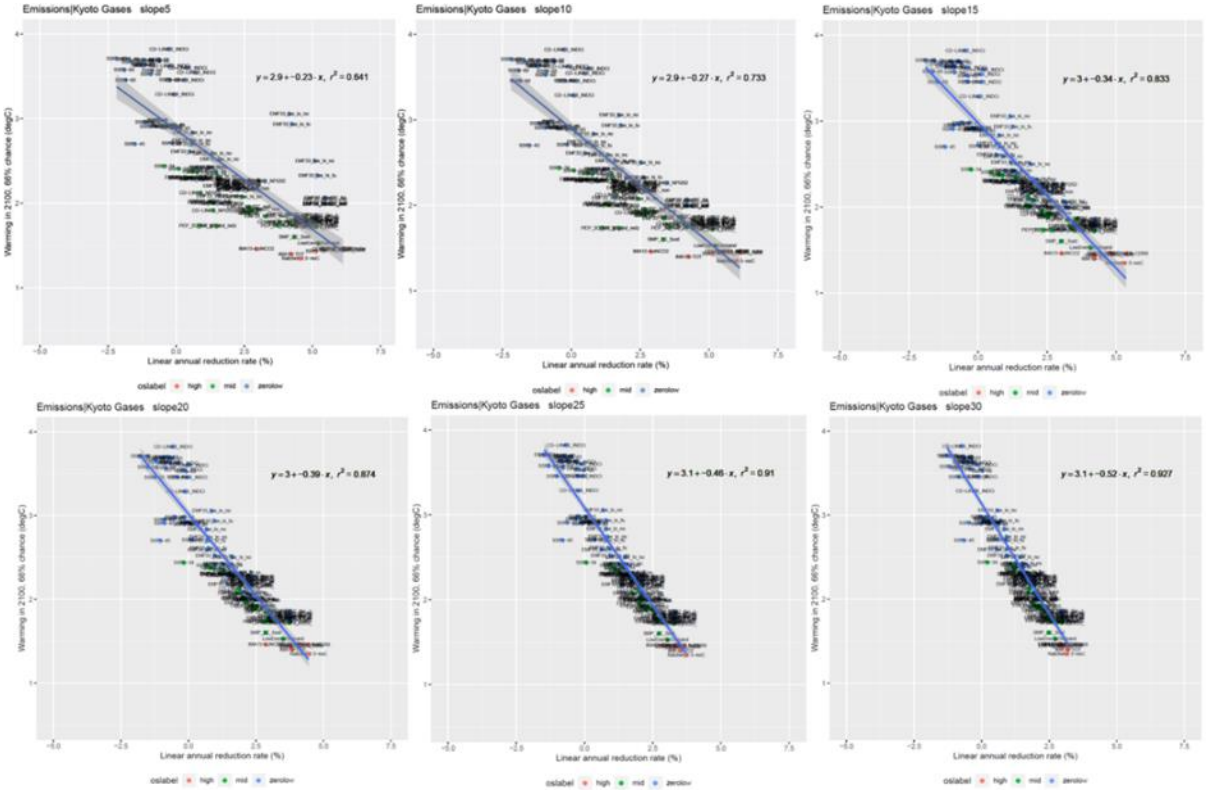
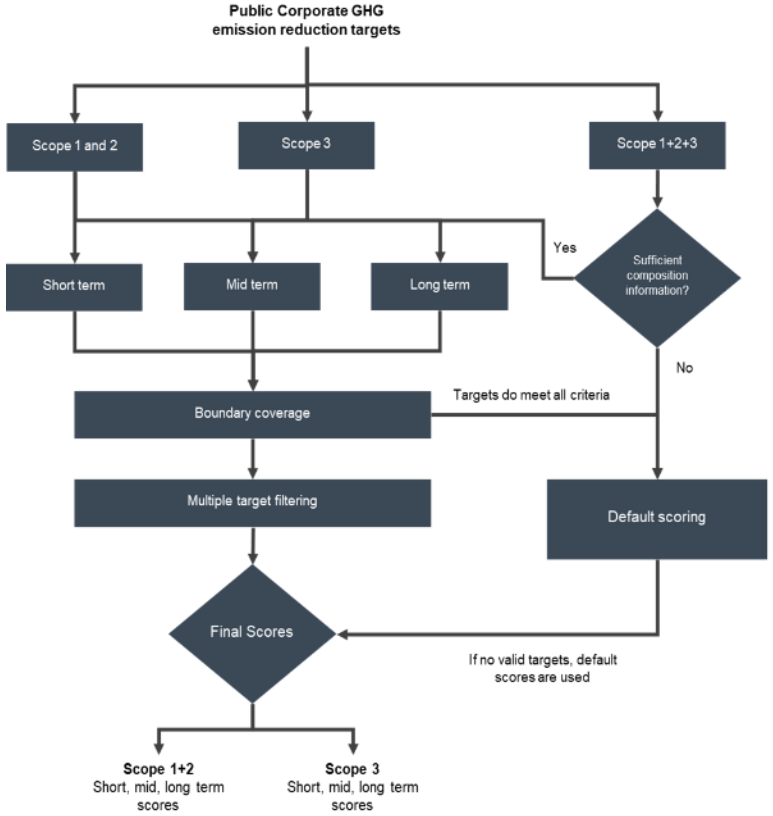


Figure: Regression results for chosen scenario set, 5-30 years, for global GHGs

Methodology I Step 2 Company Protocol

Step by Step guide

- Identify valid target types
- Classify companies by scope
- Classify companies by timeframe
- Apply boundary coverage criteria
- Multiple target filtering
  - Select target with highest boundary coverage
  - Select later target years
  - Absolute targets prioritised



Methodology I Step 2 Company Protocol

Outputs at a company level: produce one temperature score for each scope and applicable timeframe.

	Short-term 2021-2024	Mid-term 2025-2035	Long-term 2035-2050
Scope 1+2 GHG: 450,000t	No target/ default score: **3.2°C**	Yes **1.8°C**	Yes **1.9°C**
Scope 3 GHG: 2,100,000t	No target/ default score: **3.2°C**	No target/ default score: **3.2°C**	No target/ default score: **3.2°C**
Scope 1+2+3 GHG: 2,550,000t	No target/ default score: **3.2°C**	GHG weighting applied to produce a composite score: (450,000∗1.8°C)+(2,100,000∗3.2°C)450,000+2,100,000= **2.95°C**	GHG weighting applied to produce a composite score: (450,000∗1.9°C)+(2,100,000∗3.2°C)450,000+2,100,000= **2.97°C**

1. Definition of three weighting objectives & six principles, including

Support GHG disclosure by companies, allow portfolio alignment, standardisation of metrics, comparability, applicability, clarity etc.

2. Assessment of four weighting approaches against objectives & principles:

Option 1	Weighted average temperature score (WATS)
Option 2	Total emissions weighted temperature score (TETS)
Option 3	Market Owned emissions weighted temperature score (MOTS)
Option 4	Enterprise Owned emissions weighted temperature score (EOTS)
	Enterprise Value + Cash Owned emissions weighted temperature score (ECOTS)
	Total Assets emissions weighted temperature score (AOTS)