

DRAFT RECOMMENDATIONS FOR THE

Development of the Net-Zero Data Public Utility

CLIMATE DATA STEERING COMMITTEE

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How to participate in the consultation

The release of this draft report is accompanied by a four-week public consultation, running until October 20, 2022. To provide feedback, please respond to the survey [available here](#).

Thank you for taking the time to review this draft report and respond to the survey. The Climate Data Steering Committee will take the responses into consideration when releasing its final recommendations and guidance in a final report scheduled for publication ahead of COP27.

Executive Summary

This report introduces the Climate Data Steering Committee (the Committee or CDSC)'s proposed recommendations for the development of an open data utility for climate transition-related data: the Net-Zero Data Public Utility (the Utility or NZDPU). The Utility is designed to be built as part of ongoing enhancements to the United Nations Framework Convention on Climate Change (UNFCCC)'s Global Climate Action Portal and will therefore also support increased integration of private sector commitments and actions within the UNFCCC stocktaking and recognition processes.

The NZDPU is a continuation of wider critical efforts by other existing initiatives to support the transition of global economy to net zero, in line with the goals of the Paris Agreement, collaboration under the Marrakech Partnership for Global Climate Action, and commitments made under the UNFCCC High-Level Champions' Race to Zero.

Data availability and quality remain major challenges for organizations seeking to understand their current greenhouse gas (GHG) emissions, set science-based emissions reduction targets, and develop and implement net-zero transition plans to translate their commitments into action. These challenges are especially pronounced for financial institutions, whose climate commitments require them to understand the emissions profiles and climate strategies of many clients and portfolio companies. Similarly, these challenges also limit the ability of external stakeholders (e.g., regulators) to monitor the progress of private-sector actors. A global open data utility would bring transparency

to financial markets and consumers, helping direct capital to low- or zero-carbon investments, increase confidence in target setting, and hold actors accountable to their climate commitments.

With this report, the Committee provides recommendations on the content and functionality of an open data utility that would be free and accessible to all. To develop its recommendations, the Committee reviewed existing literature and, through its Technical Working Group, conducted a targeted open survey to better understand the most pressing climate data needs of a wide range of market participants.

While multiple jurisdictions have seen considerable progress relating to disclosure of climate-related information, internationally consistent mandatory disclosure rules and standards have not been implemented globally. This results in challenges with limited consistency, comparability, and quality across currently available climate data.

Open data is that can be freely used and redistributed by any user — subject only, at most, to the requirement of attribution.¹

Data providers have played a role in bridging the gap associated with incomplete reporting (e.g., through the collection of data from varied and multiple reporting locations), by developing standardized data methodologies, normalization methodologies, and estimate models to deal with large reporting gaps. However, variations in data estimates across providers for a single company can hamper net-zero ambitions.

¹ <https://opendatahandbook.org/guide/en/what-is-open-data>

Respondents to the Technical Working Group’s survey “Climate Transition-related Data Challenges and Materiality” consistently noted that limited disclosure of corporate GHG emissions poses the greatest challenge to the development and evaluation of transition plans. Financial institution respondents stated that without a consistent and comparable understanding of their clients’ and portfolio companies’ emissions, they cannot confidently develop a current emissions baseline from which to set reduction targets and develop supporting plans. Survey respondents also expressed a desire for better data on corporate emissions targets and financial institutions’ capital allocation.

Several providers have emerged through various collaborative initiatives in the open climate data space in response to the increasingly clear need for improved transparency, consistency, and accessibility. However, emerging providers generally occupy a specific vertical within the space (data generation, data aggregation, data mapping, data cataloging) and have not yet provided a single source of consistent, core climate data that all providers, actors, and users can build on. The utility concept the Committee recommends would aim to provide a centralized repository for all stakeholders to easily access and interpret a core set of corporate and financial institution climate transition-related data. The recommended utility would complement existing and potential upcoming mandatory disclosure initiatives from the public sector, build on the crucial work of existing providers, and would be used across both commercial and noncommercial providers to ensure a consistency in data, analytics, and derived content.

Based on a literature review and survey feedback, the Committee recommends that a pilot version of the NZDPU be developed with the following goals:

- The NZDPU aims to become a trusted central source of verifiable data. The NZDPU will initially focus on standardized direct (Scope 1) and indirect (Scope 2 and 3) gross and net entity-level GHG emissions data. This will include target and carbon credit data.
- The NZDPU’s flexible data model will be designed to augment transparency and, through coordination with policy-oriented bodies, will seek to harmonize the data it offers with existing and future regulatory requirements, where possible.
- Data and statistical classifications will be open and available to the public, for all use cases, at no charge. The NZDPU will be operated for the sole purpose of providing the data and transparency needed to facilitate the transition to net zero.
- The NZDPU will be designed to be part of the UNFCCC’s Global Climate Action Portal.

The Committee anticipates that the NZDPU will include many areas for future review and its development will be an ongoing and iterative process, integrating additional data and feedback from industry leaders and data users over time.

Introduction

The Paris Agreement commits 196 countries to reduce GHG emissions in line with achieving a global balance of GHG emissions and removals (“net-zero emissions” or “net zero”) by mid-century as part of efforts to limit the extent of global warming.² The IPCC has assessed that global net zero must be achieved by 2050 to have a greater than 50% chance of limiting warming to 1.5 degrees C.³ In 2021, nearly 200 country signatories to the Paris Agreement resolved in Glasgow to “pursue efforts to limit the temperature increase to [1.5 degrees C].”⁴ In line with these agreements, individual governments, both national and subnational, and private-sector firms around the world have committed to achieving net-zero with the goal of limiting global warming to 1.5 degrees C. At the time of writing, 128 countries, representing 90% of global GDP, have made net-zero commitments⁵ and over 10,000 companies, organizations, or subnational governments have joined the United Nations Race to Zero, committing to achieve net-zero carbon emissions by 2050, at the latest.⁶

These efforts are driven by the growing understanding of the impacts of climate change. The latest assessment report from the IPCC highlights that, to date, climate change “has caused widespread adverse impacts and related losses and damages to nature and people,” and that projected “mid- and long-term impacts are up to multiple times higher than currently observed.”⁷ This includes substantial risks to human health,

cities, infrastructure, ecosystems, food production, and water availability, and is projected to cause significant increases in displacement and premature deaths, in addition to significant economic damages. The IPCC report states that “near-term actions that limit global warming to close to 1.5 degrees C would substantially reduce projected losses and damages related to climate change in human systems and ecosystems, compared to higher warming levels.”⁸

Limiting warming to 1.5 degrees C requires substantial near-term action to reduce global emissions by approximately 50% by 2030 and reach global net zero by 2050.⁹ This requires real-economy companies to rapidly decarbonize their operations in line with science-based pathways, as many have committed to doing through the Race to Zero campaign. To finance and enable this decarbonization, over 500 financial institutions have committed to achieving net zero through sector-specific net-zero alliances in the Race to Zero, brought together under the umbrella of the Glasgow Financial Alliance for Net Zero (GFANZ).

In this paper, [climate transition-related data](#) refers to data that can be used to inform or provide transparency on the transition to a net-zero economy, or more broadly, climate change mitigation. It is inclusive of, but not limited to, data on entity-level emissions, net-zero transition strategies, transition-related investment, and climate-related risks and opportunities.

² UNFCCC. [The Paris Agreement](#), 2015.

³ IPCC. [Climate Change 2022: Mitigation of Climate Change Summary for Policymakers](#), 2022

⁴ UNFCCC. [Glasgow Climate Pact 2021](#), 2021, p.3

⁵ [Net Zero Tracker](#).

⁶ CCAC: [Global Green Freight Action Plan](#).

⁷ IPCC. [Climate Change 2022: Impacts, Adaptation, and Vulnerability: Summary for Policymakers, March 2022](#), pp.16-17.

⁸ *Ibid.*, p.15.

⁹ IPCC. [Special Report: Global Warming of 1.5°C: Summary for Policymakers, 2018](#).

To translate these commitments into credible and transparent action, both real-economy companies and financial institutions should develop net-zero transition plans that detail the steps they are taking to decarbonize and against which their progress can be measured. For financial institutions, transparency into the actions real-economy companies are taking, as well as data on their progress in reducing emissions, provides necessary insight to help finance the transition to net zero. For other stakeholders, ensuring the financial sector can be held accountable for net-zero commitments requires similar transparency into the progress of financial institutions in financing and enabling emissions reductions. This can only be achieved with the help of high-quality, widely accessible climate transition-related data. Data challenges and limitations have been identified as major impediments to action by the financial sector, despite great improvements in climate-related disclosures and data collection in recent years.

There are many challenges impeding increased transparency and accessibility of climate transition-related data, including multiple approaches to calculation and differing disclosure guidance for many types of data. This leads to limited and inconsistent disclosure, which, in turn, hampers collection and provision of climate transition-related data. These data challenges run the risk of impeding the effective development of net-zero strategies, particularly for financial institutions whose emissions may include those of thousands of different entities, and the ability to effectively gauge global progress toward achieving a net-zero economy. This further reinforces the need for a robust climate information architecture, as disclosures, data, and climate finance alignment approaches—including taxonomies—are closely interrelated and generate positive feedback effects.¹⁰

In response to these challenges, on June 3,

2022, Michael Bloomberg and French President Emmanuel Macron announced the establishment of a Climate Data Steering Committee to bring together global regulators, policymakers, financial service providers, and civil society organizations to advise on the key data needed to support and accelerate the transition to a net-zero economy.

This report describes the Committee's assessment of climate transition-related data challenges and offers a response for how the proposed public utility would address priority issues, beginning with data on emissions and emissions reduction targets. The NZDPU roadmap will be evolving and iterative, integrating additional data and feedback from industry leaders, international organizations, and civil society. The CDSC recommends that the NZDPU be developed to operate as a tool within the UNFCCC process and as such will integrate with the UNFCCC's Global Climate Action Portal.

¹⁰ International Monetary Fund (IMF). [Strengthening the Climate Information Architecture](#), September 8, 2021.

Industry Research and Analysis

The Committee views the work of standard setters and jurisdictional authorities as fundamental to the improved disclosure of climate transition-related data. Building on the work of global standard setters as a baseline from which to expand efforts, and drawing on other existing developing regional regulatory standards including in the EU, Asia, and United States,¹¹ the Committee hopes to address remaining data gaps and challenges to solidify the disclosure and accessibility of key datasets.

As awareness and disclosure of climate transition-related data has grown, an understanding of challenges around climate transition-related data has also surfaced as an obstacle to firms' efforts to develop rigorous net-zero transition plans. Based on the insights from several publications alongside the Technical Working Group's survey on key data challenges and dataset materiality, the Committee has identified some of the most pressing gaps that impede actors, especially financial institutions, and regulators when using climate transition-related data, including:

- lack of consistently available and comparable entity-level emissions data;
- lack of consistent forward-looking metrics for setting targets and developing transition plans;
- lack of clear indication of what estimation methodologies are used, where emissions data is based on estimates (either company-derived or supplied by data providers) rather than disclosed data; and
- accessibility of decision-useful climate transition-related data.

Several publications have discussed pervasive data issues and how they inhibit end users from incorporating climate transition-related data into

their workflows. For example:

- **Consistent and standardized entity-level emissions data** is essential for building accurate baselines and measuring progress toward targets and goals, but not yet widely available.
 - In its *Final Report on Bridging Data Gaps*, the Network for Greening the Financial System (NGFS) mapped over 1,200 raw data items to data sources based on the needs of various stakeholders. Granular, decision-useful data on emissions was identified among the most significant and pressing gaps, substantially impacting use cases related to financial institution's investment lending decisions and risk management.¹²
 - In its *High-Level Recommendations for Credible Net-Zero Commitments from Financial Institutions* report, the United Nations Environment Programme Finance Initiative (UNEP FI) found that emissions-related data gaps can substantially undermine the credibility of net-zero commitments.¹³
- **A consistent set of forward-looking metrics based on sound data** is essential for setting targets and creating credible transition plans but difficult to create due to underlying data and methodology challenges.
 - In its paper, *The Availability of Data with Which to Monitor and Assess Climate-related Risks to Financial Stability*, the Financial Stability Board (FSB) noted that the current lack of a standardized set of decision-useful metrics and underlying data prevents users of climate transition-related data from understanding exposure to [climate-related risks](#) across the financial system.¹⁴ Paired with the lack of forward-looking

¹¹ For further detail, please refer to [Appendix 3](#).

¹² NGFS. [Final Report on Bridging Data Gaps](#), July 2022.

¹³ UNEP FI. [High-Level Recommendations for Credible Net-Zero Commitments from Financial Institutions](#), October 2021.

¹⁴ FSB. [The Availability of Data with Which to Monitor and Assess Climate-Related Risks to Financial Stability](#), July 2022.

metrics, these climate risks can accumulate and be exacerbated over time as targets and plans are based on incomplete data, particularly throughout the interdependent financial system.

- In its report *ESG ratings and Climate Transition: An assessment of the alignment of E pillar scores and metrics*, the OECD assesses underlying data and metrics developed by ESG rating providers and their alignment with lower-carbon emissions as well as with climate frameworks and net-zero initiatives.¹⁵ The OECD's *Policy Guidance on Market Practices to Strengthen ESG Investing and Finance a Climate Transition* provides a recommendation that relevant authorities should support the development of transition plans by financial intermediaries that include overall net-zero and interim targets supported by up-to-date and sound scientific methodologies consistent with the goals of the Paris Agreement.¹⁶ Moreover, it recommends that financial authorities, along with other relevant bodies, should support the development and use of forward-looking metrics and methodologies on climate-related risks for financial institutions and the financial system as a whole.
- In its report, *High-Level Recommendations for Credible Net-Zero Commitments from Financial Institutions*, the UNEP FI references the lack of sound underlying forward-looking metrics (and transparency of these metrics and methodologies) as a barrier to credible transition plans and target setting.
- **The lack of clear delineation between [estimated/modeled](#) versus reported emissions data and variance in emissions estimation methodologies** further complicates the climate transition-related data landscape. Emissions estimation methodologies that currently attempt to address these gaps are imperfect and may introduce inaccuracies.
 - NGFS found that 50% of the emissions-related data in its *Data Directory* was based on estimated/modeled rather than reported data¹⁷ and that it was not immediately apparent if data items were based on estimated or reported data.
 - In its *Environmental, Social and Governance (ESG) Ratings and Data Products Providers Final Report*, the International Organization of Securities Commissions (IOSCO) strongly recommends that a clear and standard distinction be made between estimated versus reported data.¹⁸
- **Data accessibility** is another major challenge. Data is scattered throughout the public and private domains, with varying levels of access.
 - In the *Data Directory* created by NGFS, nearly 25% of data points mapped in the Directory were either unavailable, unknown, or had accessibility issues. Counterparty and location-level Scope 3 emissions data were found to be particularly sparse, available from select private vendors, at a cost.
 - The OECD's *ESG Investing: Practices, Progress and Challenges* paper suggests that every effort be made to ensure that a global emissions baseline be developed that is standardized, accessible across all jurisdictions and industries, and is set using core metrics.¹⁹ The OECD's *Policy Guidance on Market Practices to Strengthen ESG Investing and Finance a Climate Transition* recommends “[...] policymakers, financial authorities and central banks should support the consistent and transparent use of climate-related metrics [...] in order to foster greater quality and comparability across jurisdictions and industries.”²⁰

15 OECD. [ESG Ratings and Climate Transition: An assessment of the alignment of E pillar scores and metrics](#), 2022.

16 OECD. *Policy Guidance for Market Practices to Strengthen ESG Investing and Finance a Climate Transition*, forthcoming.

17 NGFS. [Final Report on Bridging Data Gaps](#), July 2022, p. 33.

18 IOSCO. [Environmental, Social and Governance \(ESG\) Ratings and Data Products Providers: Final Report](#), November 2021.

19 OECD. [ESG Investing: Practices, Progress and Challenges](#), 2020.

20 OECD. *Policy Guidance for Market Practices to Strengthen ESG Investing and Finance a Climate Transition*, forthcoming.

Data User Feedback and Survey Results

To augment existing analysis, the Climate Data Steering Committee Technical Working Group conducted an initial Key Data Challenges and Dataset Materiality survey of private-sector and civil-society entities. The survey was open to interested actors and assessed the severity of various data challenges and the materiality of certain datasets as they related to respondents' net-zero transition planning. The survey received 36 responses. Survey respondents spanned a variety of institution types:

- 51% financial institutions;
- 14% corporates;
- 11% nonprofit organizations; and
- 21% other — the “other” category of respondents included credit rating agencies, index firms, technology companies and academic institutions, among others.²¹

DATA CHALLENGES

The most significant data challenges identified centered around Scope 3 emissions disclosures and data availability. Ninety-two percent of participants identified limited Scope 3 GHG emissions in corporate disclosures as one of their top data challenges overall. (See Figure 1 for a breakdown of data challenges impacting net-zero transition planning).²²

Figure 1: Top data challenges as percentage of respondents who identified each challenge as top three most challenging overall²³

DATA CHALLENGE	% OF RESPONDENTS
Limited GHG emissions corporate disclosures (Scope 3)	92%
Inconsistent reporting of emissions reduction targets (corporates)	83%
Inconsistent financed emissions disclosures	78%
Inconsistent reporting of emissions reduction targets (financial institutions)	78%
Limited financed emissions disclosures (Scope 3)	72%
Scope 3 materiality across the 15 GHG protocol categories	72%
Emissions estimations methodologies	69%
Reporting on less established target types (climate solutions, managed phase out projects)	69%
Limited private company GHG emissions disclosures	69%

21 Although credit ratings agencies are considered financial institutions, their disclosure requirements are more akin to those of corporates and, therefore, have been separated into another category.

22 For further details on survey results, please see [Appendix 1](#).

23 In this section, participants were given a list of data challenges and marked them on a scale of 1 to 5 (5 = Very Challenging and 1 = Not Challenging at All). Once participants finished this question, they were then prompted with a list of all the challenges that they rated a 4 or 5 and asked, “Among these, which are the top three challenges overall?”

DATASET MATERIALITY

Eighty-six percent of respondents identified Corporate Emissions Reduction Targets and Financial Institution (FI) Capital Allocation to Clean Energy/Fossil Fuels as the most material datasets for net-zero transition planning work, followed by Financial Institution Financed Emissions, Financial Institution Fossil Fuel Policies, and Corporate Emissions Data. See Figure 2 for the breakdown.²⁴

Figure 2: Dataset materiality as a percentage of respondents who identified each dataset as top three most material overall from top ten most selected datasets²⁵

DATASET	% OF RESPONDENTS
Corporate Emission Reduction Targets	86%
Financial Institution Capital Allocation to Clean Energy/Fossil Fuels	86%
Financial Institution Financed Emissions	83%
Financial Institution Coal Policies	83%
Financial Institution Oil & Gas Policies	83%
Corporate Operational Emissions	83%
Corporate Transition pathways used to develop targets	81%
Corporate CAPEX Plans for transition	81%

²⁴ For further details on survey results, please see [Appendix 1](#).

²⁵ In this section, participants were given a list of datasets and asked to rate them on a scale of 1 to 5 (5 = Very Material and 1 = Not Material at All). Once participants finished this question, they were then prompted with a list of all the datasets that they rated a 4 or 5 and asked, “Among these, which are the three most material datasets overall?”

Product Vision for NZDPU Pilot

The Committee has brought together a sample of players across preparers, providers, and users of climate transition-related data. The development of a robust, consistent, and foundational dataset that allows actors to develop and monitor transition plans at sufficient scale will require meaningful collaboration. Stakeholders will need to work together to align on a standardized data model and ensure the model is fully integrated with global disclosure requirements to allow for scalability.

In response to the challenges and prioritizations identified by the Committee, the product vision for the NZDPU is as follows:

- The NZDPU aims to become a trusted central source of verifiable data. The NZDPU will initially focus on standardized direct (Scope 1) and indirect (Scope 2 and 3) gross and net entity-level GHG emissions data. This will include target and carbon credit data.
- The NZDPU's flexible data model will be designed to augment transparency and, through coordination with policy-oriented bodies, will seek to harmonize the data it offers with regulatory requirements, where possible.
- Data and statistical classifications will be open and available to the public, for all use cases, at no charge. The NZDPU will be operated for the sole purpose of providing the data and transparency needed to facilitate the transition to net zero.
- The NZDPU will be designed to be part of the UNFCCC's Global Climate Action Portal.

Beginning with a core subset of priority data and principles will enable the Committee to focus on offering guidance for the NZDPU to build a high-quality, consistent foundation that enables the more efficient development of transition plans, policies, and analytics, and can be augmented and improved over time.



The CDSC recommends that the NZDPU form a core part of the upgrade of the UNFCCC's Global Climate Action Portal and help ensure there will be accountability behind the fulfillment of pledges of non-Party²⁶ stakeholders. The CDSC recommends that the pilot NZDPU be developed in a way that supports increasing integration with the Global Climate Action Portal as the roadmap is implemented and the Global Climate Action Portal evolves.

²⁶ UNFCCC. [What are non-Party stakeholders.](#)

IMPLEMENTATION ROADMAP

The Committee recommends the NZDPU should be developed in phases. In the pilot product and initial phases, disclosure of certain fields and topics should be made optional. The manner in which fields are disclosed should also be flexible, with an option for structured disclosure through specific quantitative, drop-down fields, or unstructured disclosure if the reporting entity has not yet sufficiently defined the area of disclosure to report in a structured manner. The collection of unstructured data entries in this phase should encourage widespread disclosure, enable a better understanding of limitations of the initial data model, and support the eventual development of consistent data models with structured collection fields for key disclosure areas. Agile product development methods should be applied in the technical build of the NZDPU. A phased and iterative approach to the product roadmap would allow for ongoing enhancements to the data model based on user needs.

Figure 3: Proposed data roadmap for initial phases of build

	Phase 1	Phase 2	Phase 3
Goal of phase 	Develop pilot utility featuring voluntary disclosure to utility across standardized emissions metrics for corporates, and select financial institutions, and alongside unstructured target data for corporates.	Expand coverage universe for existing fields. Collect corporate target data in a consistent and comparable manner and develop beta data model for financed emission reduction targets.	Expand coverage universe for existing fields. Collect financed emissions reduction targets data in a consistent comparable manner. Consider beta integration of additional transition plan metrics.
Data features 	<ul style="list-style-type: none"> • Corporate Emissions Data • Corporate Carbon Credits Data • Corporate Emission Reduction Targets (Beta) • Financial Institution Emissions Data (Operational) • Financial Institution Emissions Data (Financed) (Beta) • Financial Institution Carbon Credits Data 	<ul style="list-style-type: none"> • Corporate Emission Reduction Targets • Financial Institution Emissions Data (Financed) • Financial Institution Emissions Reduction Targets (Beta) 	<ul style="list-style-type: none"> • Financial Institution Emissions Reduction Targets • Additional Transition Plan Metrics (TBD)

Data Challenges and Recommendations

In this section, the Committee highlights the challenges faced by users of climate transition-related data, and lays out recommendations to address key user needs and pain points.

These recommendations constitute a starting point for the development of a solution to sit within a larger product roadmap that should evolve over time to capture a dynamic data landscape.

The Committee is not a standard-setting body and

therefore has based recommendations on globally established existing standards. It is recognized that there are boundaries to disclosing specific climate transition-related metrics, and further development is needed to address remaining methodological and data challenges.

Figure 4 is a high-level summary of the data challenges discussed in this section, as well as the Committee’s proposed recommendations to address these challenges.

Figure 4: Data challenges and recommendations summary table

DATA CHALLENGE	RECOMMENDATION
EMISSIONS ACCOUNTING	
<p>Emissions Reporting Low levels of disclosure</p>	<p>The NZDPU should contain current and historical emissions data consisting of all three scopes of emissions: Scope 1, Scope 2 (location-based and market-based), and the 15 Scope 3 categories (prescribed by the GHG Protocol). Emissions should be reported in units of CO₂ equivalent (CO₂e) and are also encouraged to be broken out by the seven GHGs prescribed in the Kyoto Protocol and integrated within the GHG Protocol. Whereby a firm only reports in CO₂ or does not provide the breakdown by the seven gases, this should be flagged. Details of omissions within reporting boundaries, methodology used, and any verification by a third party should also be collected. A flag indicating any data quality issues should also be applied.</p>
<p>Financed Emissions Lack of data on financed emissions</p>	<p>For Scope 3, Category 15 (Financed Emissions), the NZDPU should collect financed emissions disclosure at the asset class and sector level for a given entity. Firms will be encouraged to report gross absolute financed emissions. Gross emissions intensity of financed emissions should be reported supplementarily. Absolute financed emissions should be reported in units of CO₂ equivalent (CO₂e). Where a firm only reports in CO₂, this will be flagged. The NZDPU will encourage consistent and transparent disclosures, including the following:</p> <ul style="list-style-type: none"> • Explicit description of coverage: <ul style="list-style-type: none"> – For banks, this includes the gross exposure in local currency (and percentage of total gross exposure) included in the financed emissions calculation. – For asset managers, this includes the assets under management (AUM) in local currency (and percentage out of total AUM) included in the financed emissions calculation. – For real-economy corporates, this includes the percentage of ownership.

DATA CHALLENGE	RECOMMENDATION
	<ul style="list-style-type: none"> If financed emissions are not calculated for the entire portfolio, a field will be used to collect rationale for the exclusion and coverage percentage specified. <p>In addition to the criteria listed in the Emissions Reporting Recommendation, the Committee recommends the disclosure of PCAF data quality scores and the percentage of data that is reported. Once insured and facilitated emissions methodologies are finalized, the Committee recommends that the NZDPU add fields to collect this data. The Committee will encourage this data to be disclosed separately from financed emissions.</p>
<p>Emissions Estimates</p> <p>High use of estimates rather than reported data; lack of clarity with regard to estimated versus reported data</p>	<p>The Committee recommends that the NZDPU focus on coverage of reported data, rather than estimated or modeled data, where available. If a firm has chosen to estimate all or a percentage of their own emissions, the percentage should be disclosed, and a flag should be applied. Similarly, for financed emissions, financial institutions will be encouraged to provide the percentage of disclosed data from their portfolio firms, as well as a data quality score. Ultimately, more accurate and consistent emissions data will allow for the development of increasingly robust emissions estimate model outputs.</p>
<p>Carbon Credits Disclosure</p> <p>Lack of granularity in carbon credit disclosures</p>	<p>The NZDPU should collect granular carbon credit data at the entity level, inclusive of fields for quantity, credit type, market type (e.g., compliance or voluntary markets), and location. If a firm is disclosing credits from voluntary markets, the NZDPU should also encourage the disclosure of data points related to quality. A flag indicating the quality of the carbon credit should be applied. In the case that a firm does not disclose carbon credits at this level of granularity, a field should be created to flag insufficient disclosure. A field should be created to capture third-party verification of carbon credits, if applicable.</p>
TRANSITION PLAN METRICS AND TARGETS	
<p>Emissions Reduction Targets</p> <p>Inconsistent target-setting and tracking methodologies</p>	<p>The NZDPU should aim to contain a centralized repository and methodology for standardizing targets. The standardization of targets will be approached in a phased manner. The standardization of targets would allow users to filter and compare organizations’ targets based on sector, scope, and ambition. If firms report an intensity target, they should be encouraged to also disclose an absolute target or absolute emissions reduction estimated if an intensity target were to be achieved. If firms report an intensity target, they should also disclose an absolute target</p> <p>Where an intensity target is used, the denominator intensity metric data should also be collected. The disclosure of targets should be as complete and transparent as possible in all aspects and should work to include target coverage (including scope, category, sector, region, and percentage of scope and category covered by target, where applicable); target units (including tCO₂e and intensity metric data where applicable); target year and target goal (including absolute emissions or emissions intensity to be achieved by target year and percentage decrease from base year); base year and baseline emissions or emissions intensity; and progress against the target in each reporting year (including reporting year absolute emissions or emissions intensity and percentage decrease from base year). The Committee encourages firms to report near-term and long-term targets (greater than ten years).</p>
<p>Financed Emissions Reduction Targets</p> <p>Inconsistent target-setting and tracking methodologies</p>	<p>The NZDPU should collect the asset class, type, and amount of capital covered by financed emissions included within the target boundary, in local currency and as a percentage of total capital financing (in addition to the criteria listed in the Emissions Reduction Targets Recommendation). Targets should be encouraged to be reported alongside transition pathways, carbon credits, and financial flows data.</p>

DATA CHALLENGE	RECOMMENDATION
KEY METADATA CONSIDERATIONS	
<p><u>Legal Entity Identifier (LEI)</u> Lack of clear entity identification</p>	<p>LEI should be used as the identifier for financial institutions and companies.</p>
<p><u>Sectoral Classification</u> Lack of convergence on sectoral classification; difficulty for aggregation</p>	<p>The Committee recommends the NZDPU develop and deploy a fully open sectoral classification system that contains mappings to key sectoral classification systems (e.g., GICS, BICS, ICB, TRBC, NAICS, NACE, SICCS).</p>
<p><u>Organizational Boundaries</u> Inconsistent approaches used</p>	<p>The NZDPU should encourage entities who report under a control approach to also calculate and submit GHG emissions under the equity-share approach.</p>
<p><u>Parent-Subsidiary Mapping</u> Reporting gaps for firms with complex organizational structures; lack of clarity around consolidation approaches and exclusions</p>	<p>The NZDPU should collect parent-subsidiary mapping metadata where possible. In line with the recommendations of the GHG Protocol, the Committee recommends the NZDPU include fields to capture the emissions data consolidation approach used, as well as the option to list a firm’s subsidiaries, their identifiers, and the geographic location of the parent company and subsidiaries.</p>
<p><u>Entity Descriptive Metrics</u> Necessary datapoints to screen and filter data</p>	<p>Descriptive metrics for individual entities, including those focused on location and size, should be determined as the data models for the NZDPU are developed to ensure best fit.</p>

EMISSIONS ACCOUNTING

EMISSIONS REPORTING

While a variety of GHG emissions calculation methodologies and reporting frameworks exist, the [GHG Protocol](#) is the most widely known and internationally used standard for calculating GHG emissions. The GHG Protocol defines the three scopes of emissions and provides guidance for calculating emissions.²⁷ Scope 1 covers direct emissions (directly generated by owned or controlled assets). Scope 2 includes indirect emissions (associated with purchased energy). Scope 3 emissions are generated from the indirect upstream and downstream activities in an entity's value chain.²⁸ Scope 1, 2 and 3 emissions can be mapped directly to the ISO 14064 standard direct and indirect emission categories.

Despite reasonably well-established guidance on calculating and disclosing emissions, the percentage of companies that report their emissions remains relatively low. In FY 2020, only about 30% of publicly traded companies disclosed Scope 1 and 2 emissions.²⁹ Of the approximate 4,000 large- and mid-cap-size constituents in the FTSE All World index, just over half (58%) disclose both Scope 1 and 2 carbon emissions.³⁰

The GHG Protocol defines two methods for calculating Scope 2 emissions: the location-based method and the market-based method. The market-based method allows for companies to show contractual instruments purchased to reduce Scope

2 emissions (e.g., [Power Purchase Agreements](#) or [Renewable Energy Credits](#)). The GHG Protocol states that entities who disclose a market-based figure must also disclose the corresponding location-based figure. Companies should disclose the method (location-based or market-based) they use to calculate Scope 2 emissions.

However, many firms often do not disclose the method used when publishing Scope 2 emissions. This results in a lack of comparability between firms and their progress toward emissions reduction targets. For example, two firms may have both purchased contractual instruments; however, if they choose to report their targets using different methodologies, the impact on emissions levels would look very different in their reporting.

The GHG Protocol breaks Scope 3 emissions into 15 categories. Given the intricacies surrounding data collection across an organization's value chain, Scope 3 emissions are the most complex to calculate. Scope 3 data at the entity level is especially hard to collect, leading to sparse public data. In FY 2020, only 1,253 of 11,816 listed companies (10.6%) covered by Bloomberg ESG data³¹ reported two or more of the 15 GHG Protocol Scope 3 categories. These percentages are likely far lower for private companies. As of February 2022, in the MSCI ACWI Investable Market Index (IMI) universe, fewer than 25% of constituents

27 WRI and WBCSD. [The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard](#), March 2004.

28 The GHG protocol's three scopes of emissions are generally compatible with other emissions reporting methodologies, such as the ISO's direct (Scope 1) and indirect (Scope 2 and 3) emissions.

29 Bloomberg BESGPRO Index.

30 https://content.ftserussell.com/sites/default/files/mind_the_gaps_-_clarifying_corporate_carbon_final_0.pdf

31 Bloomberg BESGPRO Index, which comprised 11,816 companies in FY 2020.

disclosed at least one of the 15 Scope 3 emissions categories in their annual or sustainability report.³²

Ultimately, emissions disclosure and data remain limited across all firm types and sectors. In developed economies, larger firms are more likely than smaller firms to report Scope 1 and 2 emissions,³³ but most firms regardless of size do not report Scope 3 emissions. An even lower percentage of small- and mid-size enterprises (SMEs) and companies in emerging markets and developing economies (EM&DEs) report emissions data, due to a combination of limited regulation and high costs associated with developing the internal infrastructure necessary to measure emissions.³⁴ The Corporate Sustainability Reporting Directive (CSRD), recently agreed by the European co-legislators, proposes that non-listed SMEs may use simplified and separate sustainability reporting standards from larger entities and do not have to start reporting until January 1, 2026 with a further possibility of voluntary opt-out until 2028.³⁵

Even where disclosed, there are challenges in using emissions data. For example, emissions reporting may not cover 100% of an organization's operations. For organizations with complex corporate structures, reporting gaps can arise when consolidated emissions data is provided only for select subsidiaries, rather than for the entire organization. Moreover, organizations can disclose their emissions using different organizational boundary-setting approaches.

Once reported, inconsistencies within organizations' reported emissions persist. For example, Bloomberg found that the sum of reported emissions breakdowns did not add up to total reported footprints for 30% of companies.³⁶

Additionally, MSCI found approximately 22% of constituents of the MSCI ACWI IMI that disclosed emissions data both to CDP and in their annual/sustainability report had a reporting mismatch, meaning that the two datasets were inconsistent.³⁷

Some organizations disclose in units of carbon dioxide equivalent (CO₂e), which is based on a [Global Warming Potential \(GWP\)](#) for various greenhouse gases with higher warming potential than CO₂. Organizations may use GWPs from different IPCC Assessment Reports to calculate their CO₂e, resulting in a lack of clear comparability between organizations. The NZDPU will encourage the breakdown of emissions by the seven greenhouse gases prescribed in the Kyoto Protocol and integrated GHG Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆), and nitrogen trifluoride (NF₃), in line with the GHG Protocol.

Organizations also often have varying timelines for reporting sustainability metrics, resulting in significant data reporting lags. From a data aggregation standpoint, the lack of consistent and comparable figures year-over-year can pose significant challenges to conducting a portfolio carbon footprint analysis.

As part of efforts to enhance GHG accounting and disclosure, organizations may use different methodologies year-over-year as they enhance data collection efforts. If historical emissions data is not restated using the most recent methodology, historical comparisons will quickly become obsolete. This impedes forward-looking target setting, which relies on consistent historical data.

32 MSCI. "[Reported Emission Footprints: The Challenge Is Real.](#)" March 9, 2022; MSCI ACWI IMI, which comprises over 9,000 listed large, mid, and small cap companies across 23 developed market and 24 emerging market countries.

33 TCFD. 2020 Status Report, October 2020, p. 15. From a sample of 1,701 large companies from 69 countries in eight industries.

34 The Bloomberg BESGPRO universe covers 80% of market cap of globally listed companies.

35 [Directive of the European Parliament and the Council in regard to the corporate sustainability reporting directive](#), p. 143.

36 Kishan, Saijel. "[Corporate Greenhouse Gas Data Doesn't Always Add Up.](#)" January 12, 2022.

37 MSCI. "[Reported Emission Footprints: The Challenge Is Real.](#)" March 9, 2022.

Financial institutions and other stakeholders would benefit from greater availability of standardized data on real-economy emissions. Clear standards should be outlined on what constitutes sufficient reporting of corporate emissions data to create consistency and comparability. Solutions have been

and continue to be developed to better enable private entities and SMEs to calculate and disclose their emissions. As more companies calculate and understand their emissions, the Committee encourages that data be made publicly available whenever possible.

Recommendation

The NZDPU should contain current and historical emissions data consisting of all three scopes of emissions: Scope 1, Scope 2 (location-based and market-based), and the 15 Scope 3 categories (prescribed by the GHG Protocol). Emissions should be reported in units of CO₂ equivalent (CO₂e) and are also encouraged to be broken out by the seven GHGs prescribed in the Kyoto Protocol and integrated within the GHG Protocol. Where a firm only reports in CO₂ or does not provide the breakdown by the seven gases, this should be flagged. Details of omissions within reporting boundaries, methodology used, and any verification by a third party should also be collected. A flag indicating any data quality issues should also be applied.

FINANCED EMISSIONS DISCLOSURE

For financial institutions, their own Scope 1 and 2 emissions comprise a very small proportion of total emissions. [Scope 3 financed emissions](#) (Category 15) typically constitute about 97% of financial institutions' total emissions.³⁸ Scope 3 financed emissions are the GHG emissions associated with a firm's loans, investments, and other financial activities.³⁹ When developing their own targets and transition plans, financial institutions consolidate their Scope 3 financed emissions.

In the instances where a financial institution is lending to or investing in a subsidiary of a larger entity, the Global GHG Accounting and Reporting Standard for the Financial Industry by PCAF (hereafter [PCAF Standard](#)) recommends emissions be attributed at the subsidiary level according to the "follow the money" principle, provided the

financial institution has balance sheet information on the subsidiary.⁴⁰ If the subsidiary's balance sheet is unavailable, the financial institution should calculate the attribution factor based on the total balance sheet of the entity to whom the financial institution has recourse for repayment of the loan. This results in inherent inconsistency in attribution based on data availability, which can become problematic at the portfolio level.

Overall, reporting of financed emissions remains low. In FY 2020, 172 out of 1,605 companies in the financial sector within the Bloomberg ESG database reported GHG Scope 3 Category 15 emissions. Similarly, of the 332 financial institutions who disclosed to CDP in 2020 only 25% reported Scope 3 financed emissions, with over half accounting for less than 50% of their portfolios

³⁸ New Climate Institute. [Unpacking the Financial Sector's Climate-related Investment Commitments](#), September 22, 2020.

³⁹ PCAF. [The Global GHG Accounting & Reporting Standard for the Financial Industry](#), November 18, 2020.

⁴⁰ Ibid.

in their disclosures.⁴¹ Disclosure requirements for Scope 3 financed emissions remain vague and at times inconsistent across disclosure and transition plan frameworks. In some cases, such as capital markets financing and underwriting, guidance is not yet clear, resulting in disparate calculation methodologies between firms.

Despite significant limitations, financial institutions have made great strides in calculating and reporting their financed emissions. These strides have been facilitated by various initiatives such as PCAF, an industry-led initiative created to help financial institutions quantify and disclose their current financed emissions. However, a current data challenge that remains within financed emissions accounting is how to account for assets not currently covered by the PCAF Standard.⁴² The NZDPU should encourage firms to still report all Scope 3 emissions, even if they do not have an outlined PCAF methodology, such as facilitated emissions attributed to capital markets, financial advisory services, and underwriting. The NZDPU will encourage reporting of facilitated emissions independently from financed emissions. PCAF has not formally published guidance for the reporting of facilitated emissions but has released a discussion paper for capital market instruments.⁴³

A further data challenge is the current lack of transparency in reporting the gross exposure or assets under management included within the financed emissions calculation. It is important that firms quantify the coverage of their investments or loans that they are accounting for so that an accurate assessment of progress can be conducted. This aligns with the IFRS's current draft proposals of industry-based disclosure requirements for financials.⁴⁴

Financial institutions often struggle to obtain granular emissions data at the borrower or portfolio level, and thus rely heavily on estimation methodologies or industry averages to compute their Scope 3 financed emissions. Estimation models provide inconsistent levels of granularity and raise valid questions about the accuracy of the firm's resulting calculations.⁴⁵ The PCAF Standard defines a data quality score from 1 (highest quality) to 5 (lowest quality). Lower quality scores indicate that any gaps in the data are estimated based on an entity's revenue, production, or, if this data is not available, a sector average. As shown in Figure 7, even Scope 1 and 2 disclosures are centered around scores of 2. Scope 3 disclosures have notably lower quality scores.

41 <https://www.cdp.net/en/articles/media/finance-sectors-funded-emissions-over-700-times-greater-than-its-own>

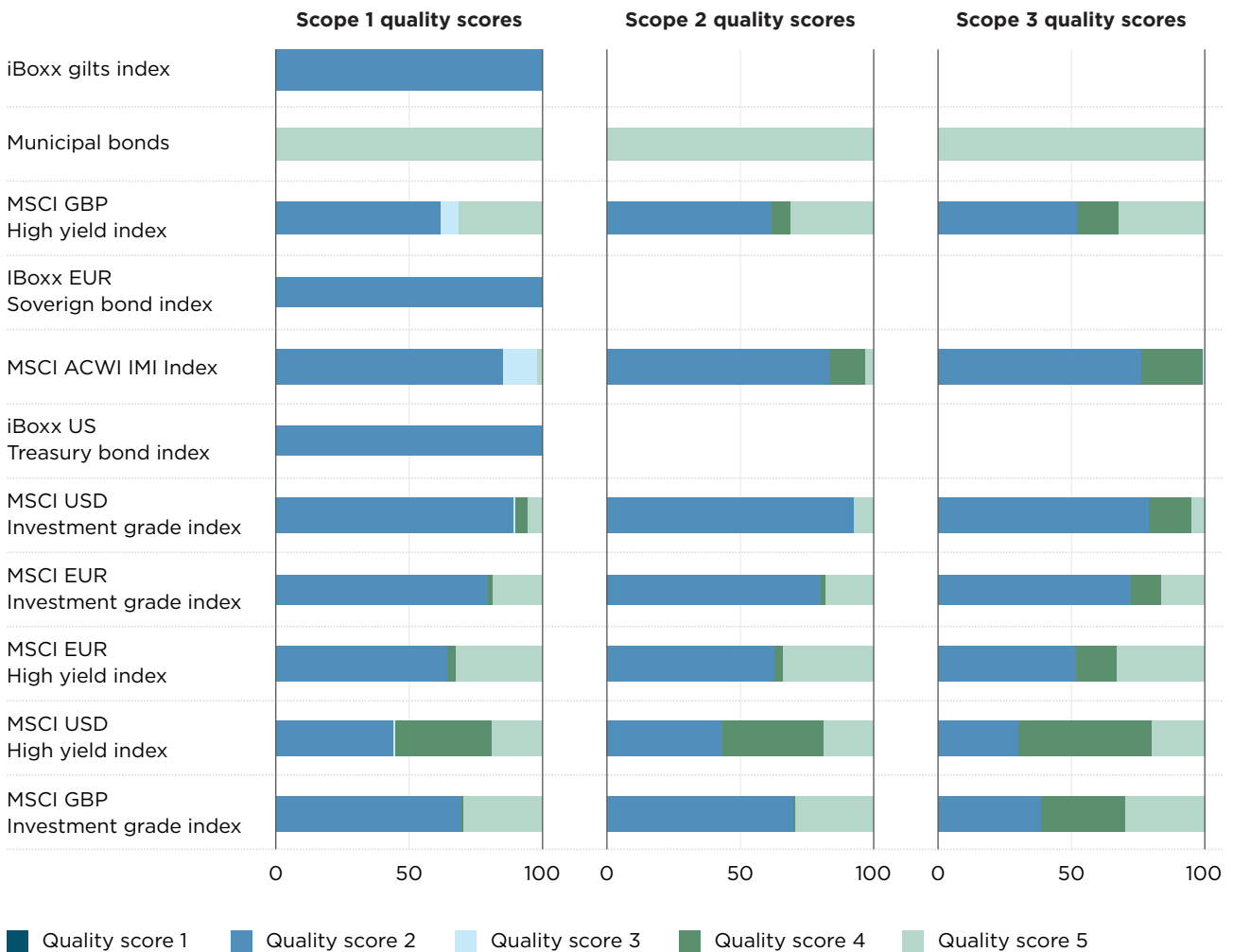
42 The six asset classes currently covered by the methodology include Listed equity and corporate bonds; Business loans and unlisted equity; Project finance; Commercial real estate; Mortgages; and Motor vehicle loans.

43 PCAF. [Capital Market Instruments: Discussion Paper 2021](#), 2021.

44 <https://www.ifrs.org/projects/work-plan/climate-related-disclosures/appendix-b-industry-based-disclosure-requirements>

45 TCFD. [Guidance on Metrics, Targets, and Transition Plans](#), October 2021.

Figure 5: Data quality of underlying financed emissions data⁴⁶



PCAF quality score of Scope 1, 2, and 3 financed emissions of portfolio constituents weighted by outstanding amount in USD. Generally, larger-market-cap issuers report emission data, which explains the larger than 40% market-cap weight of quality-score-2 data. As of June 15, 2022, sorted by total Scope 1, 2, and 3 emissions.

Effective disclosure of Scope 3 financed emissions requires adequate climate disclosure from the entities or clients being financed or invested in by financial institutions. The gradual phase-in of Scope 3 emissions reporting requirements under major regulatory bodies may lead to latency in wider disclosure. For example, energy and mining sectors are currently required by the EU Climate Transition Benchmarks to report Scope 3 data. However,

transportation, construction, buildings, materials and industrial, and all other sectors are not yet mandated to report Scope 3.⁴⁷

Relevant Scope 3 categories within portfolio firms' emissions inventory are encouraged to be reported, even where this may lead to double counting. For example, a financial institution that finances both the upstream fossil fuel sector and the power

⁴⁶ MSCI.

⁴⁷ Financial Conduct Authority. Article 5: ["Phase-in of Scope 3 GHG emissions data in the benchmark methodology."](#) January 1, 2021.

sector should report the full inventory of emissions of their portfolio firms, including Scope 3. Double counting occurs between scopes when a financial institution provides financing to different firms in the same value chain.⁴⁸ For example, the Scope 1 fuel- and energy-related activities emissions of a power firm would be the Scope 3 emissions of a fossil fuel firm. This type of double counting cannot be avoided, especially in a diverse portfolio, but is accepted because the purpose of emissions

baselining is not to build a balance sheet but to holistically understand all emissions a firm is exposed to. Portfolio firms' Scope 3 emissions are encouraged to be fully reported and segmented from Scope 1 and 2 emissions disclosures, allowing for full transparency and understanding of emissions exposure. To build credible net-zero transition plans, organizations need a holistic view of emissions across scopes.

Recommendation

For Scope 3, Category 15 (Financed Emissions), the NZDPU should collect financed emissions disclosure at the asset class and sector level for a given entity. Firms will be encouraged to report gross absolute financed emissions. Gross emissions intensity of financed emissions should be reported supplementarily. Absolute financed emissions should be reported in units of CO₂ equivalent (CO₂e). Whereby a firm only reports in CO₂, this will be flagged. The NZDPU will encourage consistent and transparent disclosures, including the following:

- Explicit description of coverage:
 - For banks, this includes the gross exposure in local currency (and percentage of total gross exposure) included in the financed emissions calculation.
 - For asset managers, this includes the assets under management (AUM) in local currency (and percentage out of total AUM) included in the financed emissions calculation.
 - For real-economy corporates, this includes the percentage of ownership.
- If financed emissions are not calculated for the entire portfolio, a field will be used to collect rationale for the exclusion and coverage percentage specified.

In addition to the criteria listed in the Emissions Reporting Recommendation, the Committee recommends the disclosure of PCAF data quality scores and the percentage of data that is reported. Once insured and facilitated emissions methodologies are finalized, the Committee recommends that the NZDPU add fields to collect this data. The Committee will encourage this data to be disclosed separately from financed emissions.

48 PCAF. [The Global GHG Accounting & Reporting Standard for the Financial Industry](#), November 18, 2020, p. 38.

EMISSIONS ESTIMATES

Low disclosure rates and inconsistent emissions data often require end users to rely on estimation methodologies to bridge these gaps. In fact, as of February 2022, less than 40% of the approximate 9,000 constituents in the MSCI ACWI IMI disclosed Scope 1 and 2 emissions.⁴⁹

Emissions estimation methodologies are imperfect and may introduce inaccuracies. For example, estimation methodologies leveraging an intensity factor based on publicly reported data can be skewed toward geographies with higher levels of disclosure. Bottom-up estimation methodologies can be more accurate, as they leverage a given company's primary data, especially in sectors such as oil and gas and power generation. However, when required inputs aren't consistently reported (e.g., square footage of property collateral in a real estate portfolio or barrels of oil produced for upstream oil companies), confidence in bottom-up estimates is understandably reduced. Statistical models rely heavily on sector-wide average emissions intensities, potentially leading to similar emissions estimates for companies with very different business models.

For financial institutions specifically, error can also be introduced at a portfolio level because financial institutions may rely on multiple data providers to access emissions data—including emissions estimates where needed—across various portfolio constituents. Data providers use different assumptions to estimate non-public, non-disclosed emissions data, resulting in inconsistency across estimates and inputs.

- NGFS found that 50% of the emissions-related data in its *Data Directory* were based on modeled estimates, rather than reported data.⁵⁰ It was also not apparent at first glance which data items were derived from estimated/ modeled versus reported data. This presents a risk, as the public may not be aware of this distinction or the uncertainties that accompany estimated versus reported data.
- One of IOSCO's key recommendations in its most recent report, *ESG Ratings and Data Products Providers Final Report*, is that a distinction be made between estimated versus reported data as well as the data sources (e.g., sourced from publicly disclosed information or other sources).⁵¹

Recommendation

The Committee recommends that the NZDPU focus on coverage of reported data, rather than estimated or modeled data, where available. If a firm has chosen to estimate all or a percentage of their own emissions, the percentage should be disclosed, and a flag should be applied. Similarly, for financed emissions, financial institutions will be encouraged to provide the percentage of disclosed data from their portfolio firms, as well as a data quality score. Ultimately, more accurate and consistent emissions data will allow for the development of increasingly robust emissions estimate model outputs.

49 MSCI. [Reported Emission Footprints: The Challenge Is Real](#), March 9, 2022.

50 NGFS. [Final Report on Bridging Data Gaps](#), July 2022, p. 33.

51 IOSCO. [Environmental, Social and Governance \(ESG\) Ratings and Data Products Providers: Final Report](#), November 2021.

CARBON CREDITS

[Carbon credits](#) are purchased and sold in two types of carbon markets: compliance markets and voluntary markets. Compliance markets are created by regulatory jurisdictions for the exchange of credits between regulated entities that are legally required to account for their emissions. Voluntary markets exist independently of regulators and allow for the free exchange of carbon credits on a voluntary basis.

Carbon credits generally fall into two categories: [removal](#) and [avoidance](#). There are numerous organizations that issue and verify carbon credits with varying levels of stringency. The lack of established minimum standards for carbon credits further obscures insight into their quality. Additionally, information on private-sector firms' purchase and use of carbon credits can be insufficient. Organizations typically disclose their use of carbon credits in aggregate, if at all, revealing little about the types or quality of carbon credits used.

To support the transparency of transition-related data, companies should be encouraged to report, at a minimum, the quantity and type of carbon

credits they use in terms that are aligned with the IFRS Exposure Draft of IFRS S2, *Climate-related Disclosures*.⁵² The Exposure Draft proposes that entities should disclose reliance on carbon credits to meet transition plan targets.

The NZDPU should encourage distinction between removal versus avoidance credits in line with the Oxford Principles for Net-Zero Aligned Carbon Offsetting.⁵³ Furthermore, the Exposure Draft and Race to Zero⁵⁴ criteria propose entities should disclose the credibility (i.e., whether the credits undergo third-party verification or certification, making them “certified carbon credits”) and type of the credit (i.e., whether the credit is nature-based or technology-based).⁵⁵ In addition, the Committee recommends the disclosure of geographic location of credits; both where they are generated and where they are utilized. If a firm is disclosing credits from voluntary markets, the Committee also encourages the disclosure of data points related to quality. Last, the Committee recognizes that carbon markets are in the process of development. Additional metrics providing greater insight on individual carbon credits should be considered for incorporation in the NZDPU in the future.

Recommendation

The NZDPU should collect granular carbon credit data at the entity level, inclusive of fields for quantity, credit type, market type (e.g., compliance or voluntary markets), and location. If a firm is disclosing credits from voluntary markets, the NZDPU should also encourage the disclosure of data points related to quality. A flag indicating the quality of the carbon credit should be applied. In the case that a firm does not disclose carbon credits at this level of granularity, a field should be created to flag insufficient disclosure. A field should be created to capture third-party verification of carbon credits, if applicable.

52 <https://www.ifrs.org/content/dam/ifrs/project/climate-related-disclosures/issb-exposure-draft-2022-2-climate-related-disclosures.pdf>

53 [The Oxford Principles for Net Zero Aligned Carbon Offsetting](#), September 2020.

54 <https://unfccc.int/sites/default/files/resource/Minimum-criteria-for-participation-in-RTZ.pdf>

55 p. 36. <https://www.ifrs.org/content/dam/ifrs/project/climate-related-disclosures/issb-exposure-draft-2022-2-climate-related-disclosures.pdf>

TRANSITION PLAN METRICS AND TARGETS

Setting ambitious, specific targets is an essential component of a net-zero transition plan. However, inconsistent disclosures and calculation methodologies can impede the ability to measure progress toward plan targets. These limitations also prevent clear comparison of progress and ambition across entities.

TARGETS: EMISSIONS REDUCTION TARGETS

There are two types of emissions reduction targets: absolute emissions reduction targets, which are goals to reduce [absolute emissions](#) over time, and [emissions intensity](#) reduction targets, which aim to reduce the ratio of emissions relative to a business metric over time (e.g., revenue or production).

Firms typically use absolute emissions reduction targets for operational emissions, where they have more control over their operations. Real-economy companies tend to focus on setting emissions reductions targets for Scope 1 and Scope 2, as they are typically more able to directly influence operational activities.

The SBTi requires companies to set Scope 3 targets in the near-term (i.e., target years of 2025 to 2030) if Scope 3 emissions are more than 40% of the total emissions. However, without fully calculating Scope 3 emissions, this determination can be difficult to make.

The SBTi Net-Zero Standard requires companies to set long-term targets (i.e., target year of 2050 or before) to reduce total value chain emissions (i.e., Scope 1 and 2 and relevant categories of Scope 3 emissions) to zero or residual levels.⁵⁶ Additionally, if a firm's business model involves the sale or

distribution of fossil fuels, SBTi requires the firm to disclose Scope 3 emissions targets for the use of sold products, irrespective of the estimated share of Scope 3 emissions to total emissions.⁵⁷ Uptake of Scope 3 reporting in fossil fuel sectors has so far been limited, and at times underestimated. Nevertheless, it is a key lever of action to engage climate dialogue with suppliers and customers so that net-zero actors can drive changes in their value chain.

The primary challenge for target setting is data coverage. A firm cannot set a target without knowing the underlying emissions of their operations and/or value chain. Inadequate data coverage can hinder a firm's target ambitions, as they may have to limit the scope of the target or rely on estimation models to fill gaps, reducing the accuracy of both the underlying data and the target. The next challenge is deciding what scopes will be included within the target. While most firms include their operational emissions in targets, there is limited target setting for Scope 3 emissions, due to either immateriality or data availability. General guidance on target setting has been released by SBTi and other organizations, but SBTi has not yet finalized sector-specific guidance for high emissions intensity sectors.

⁵⁶ SBTi. [SBTi Corporate Net-Zero Standard](#), version 1.0, October 2021; Also see MSCI. Road to science-based corporate net-zero target setting, May 2022.

⁵⁷ SBTi. [SBTi Criteria and Recommendations](#), version 5.0, October 2021, p. 5.

Firms also must decide what greenhouse gases to include within their target, and whether they will set interim targets to measure these individually or in aggregate. This is particularly important in sectors with large amounts of non-CO₂ emissions such as methane, nitrous oxide, and fluorinated gases. For example, many firms across the oil and gas sector have targeted “net-zero” emissions by 2050 with interim methane targets, but other firms instead propose “[carbon-neutral](#)” targets that only cover CO₂ emissions.

Depending on the sector a firm operates in, this may be excluding a significant environmental impact. For example, methane accounts for about 20% of global GHG emissions and is more than 25 times as potent as CO₂ at trapping heat in the atmosphere. Therefore, targets are encouraged to cover all seven GHGs in the Kyoto Protocol and the Paris Agreement.⁵⁸

An additional challenge for target setting and comparison is the lack of a fixed structure. Unlike emissions data, which is typically reported in a largely consistent manner, there are many fields within a target that can be reported in various ways. For example, a target year emissions reduction goal could be reported as an absolute emissions value to achieve by the target year, or as a percentage reduction from base year emissions. Similarly, reporting year progress could be reported as the current absolute emissions value, or as the current percentage reduction from base year emissions or as a percentage of target completion. While these fields can often be normalized if the base year data is available, it makes it very difficult to compare firms’ targets with inconsistent field types. This is further complicated when comparing different target types. Without access to underlying business metric data, emissions intensity targets are incomparable to absolute emissions reductions targets.

Carbon credits further complicate the target comparison. SBTi states that carbon credits should only be considered as an additional measure to support emissions reductions beyond a firms’ science-based target.⁵⁹ However, in practice, many firms still include carbon credits within the scope of their net zero targets, without always explicitly stating so. Based on current disclosure trends, an emissions reduction target might include actual emissions reductions or emissions reductions claimed through the purchase of carbon credits. This prevents accurate net-zero target progress tracking, and performance comparison between firms. The NZDPU should encourage use of carbon credits and expected future reliance on carbon credits to be reported separately from a firm’s target and progress measurement to allow for users of the data to better understand firm performance.

The OECD’s *Guidance on Transition Finance* notes that given current arguments on the use of carbon credits in transition plans, entities should consider the risk that carbon credits could undermine the credibility of their target or transition plan. It further states that “A credible transition plan will not consider [carbon credits] as an alternative to cutting a company’s emissions today or as a reason for delayed mitigation action, but rather as part of the portfolio of solutions to accelerate the pathway to net zero.”⁶⁰

[Transition pathways](#) are also an important component of target. Pathways can utilize top-down or bottom-up approaches and therefore aggregating targets across a portfolio presents a challenge to developing a topline view of the portfolio’s net-zero performance. Bottom-up pathways often will not contain sufficient cross-sector nuance to accommodate firms with complicated sectoral mappings or reliably link to the global carbon budget, while top-down pathways will lack inclusion of industry specificity or feasibility.

58 UNFCCC. “[Kyoto Protocol — Targets for the first commitment period.](#)”

59 sciencebasedtargets.org/resources/files/SBTi-How-To-Guide.pdf

60 OECD. *Guidance on Transition Finance*, forthcoming.

The wide range of assumptions leveraged across pathways introduces risk if a given assumption changes or proves to be inaccurate. Firms rarely disclose the pathways used to develop their targets, and so conducting diligence on the downstream impacts of various transition pathways is not currently feasible. The NZDPU should encourage the disclosure of transition pathways used by firms to produce targets as well as details of the pathway including source.

The NZDPU should encourage disclosure of any use of high-quality carbon credits and expected future reliance on carbon credits to be reported separately from a firm’s target and progress measurement to allow for users of the data to better understand firm performance.

Recommendation

The NZDPU should aim to contain a centralized repository and methodology for standardizing targets. The standardization of targets will be approached in a phased manner. The standardization of targets would allow users to filter and compare organizations’ targets based on sector, scope, and ambition. If firms report an intensity target, they should be encouraged to also disclose an absolute target or absolute emissions reduction estimated if an intensity target were to be achieved. If firms report an intensity target, they should also disclose an absolute target. Where an intensity target is used, the denominator intensity metric data should also be collected. The disclosure of targets should be as complete and transparent as possible in all aspects and should work to include target coverage (including scope, category, sector, region, and percentage of scope and category covered by target, where applicable); target units (including tCO₂e and intensity metric data where applicable); target year and target goal (including absolute emissions or emissions intensity to be achieved by target year and percentage decrease from base year); base year and baseline emissions or emissions intensity; and progress against the target in each reporting year (including reporting year absolute emissions or emissions intensity and percentage decrease from base year). The Committee encourages firms to report near-term and long-term targets (greater than ten years).

TARGETS: FINANCED EMISSIONS REDUCTION TARGETS

Many financial institutions report emissions reduction targets for operational emissions, although these typically make up a fraction of the organization's total emissions. Many financial institutions which are members of the UNFCCC's Race to Zero campaign have committed to setting financed emissions targets consistent with net zero by 2050.

The SBTi recently published sector-specific guidance for setting financial sector science-based targets. The guidance identifies three target setting approaches that financial sector actors can use to set targets for various corporate instruments: a Sectoral Decarbonization Approach (SDA) target,⁶¹ a SBT portfolio coverage target,⁶² or a portfolio temperature rating target.⁶³ Guidance is not yet available for all corporate instruments. Prior to the release of the SBTi guidance, specific guidance was not available for reporting financed emissions targets. As such, financed emissions methodologies underpinning financed emissions net-zero targets vary significantly.

Financed emissions reduction targets pose their own unique set of challenges. First, financed emissions targets are typically based on emissions intensity to allow firms to account for business

growth over time. Emissions per unit of physical output or economic output are typically used. Since there is no standardization of units used to report intensity metrics, comparison of targets is not always straightforward. Currently there is no consensus on the standard reporting metric for economic intensity.

To report on economic intensity, firms may choose between emissions per unit of revenue or emissions per unit of capital invested/lent. They may also choose to report physical intensity (e.g., emissions per kWh of electricity for a utilities portfolio). Without a standard methodology or disclosure requirement, comparison of emissions reductions targets between firms remains a substantial challenge. The Committee proposes that where an intensity target is used, the denominator intensity metric data (i.e., projected future emissions per kWh) should also be reported, as transparency is critical when reporting emissions reduction targets. The NZDPU should collect all targets (short and long term). Financed emissions reduction targets should be encouraged to be reported alongside transition-pathways, carbon credits, and financial flows data.

Recommendation

The NZDPU should collect the asset class, type, and amount of capital covered by financed emissions included within the target boundary, in local currency and as a percentage of total capital financing (in addition to the criteria listed in the Emissions Reduction Targets Recommendation). Targets should be encouraged to be reported alongside transition pathways, carbon credits, and financial flows data.

61 Financial institutions' targets using the sectoral decarbonization approach (SDA) developed by SBTi, [Financial Sector Science-Based Targets Guidance](#), version 1.1 August 2022, p.31.

62 Financial institutions' targets to drive the adoption of science-based emissions reduction targets by their borrowers and/or investees (Ibid., p. 32).

63 Financial institutions' targets to align the temperature rating of their corporate debt and equity portfolios with ambition of the Paris Agreement (Ibid., p. 33).

KEY METADATA CONSIDERATIONS

LEGAL ENTITY IDENTIFIER MAPPING

One of the key data challenges cited across literature on climate transition-related data challenges is the need for entity identification. When aggregating and compiling metadata, these inconsistencies prevent accurate comparisons and analysis. This is a common pain point in the climate transition-related data space. NGFS found that data users expressed a strong preference for the use of identification codes to facilitate entity identification.⁶⁴ Suggested codes included [Legal Entity Identifier](#).

The LEI is a 20-character, alpha-numeric code based on the ISO 17442 standard developed by

the International Organization for Standardization (ISO). It connects to key reference information that enables clear and unique identification of legal entities participating in financial transactions. Each LEI contains information about an entity's ownership structure and thus answers the questions of "who is who" and "who owns whom." A subsidiary cannot use the same LEI as the parent company. The publicly available LEI data pool can be regarded as a global directory, which greatly enhances transparency in the global marketplace. The publicly available LEI data pool is a unique key to standardized information on legal entities globally.⁶⁵

Recommendation

Legal Entity Identifier (LEI) should be used as the identifier for financial institutions and corporates.

SECTORAL CLASSIFICATION

Firms leverage different sectoral classification systems to categorize entities across varying levels of granularity. The goal of a sectoral classification system is to map company activities to a relevant industry category. Climate data varies significantly across industries, and therefore the classification of a firm can be revealing of their performance and is often used as screening criteria to access relevant subsets of data. However, firms may use different sectoral classification systems to report their data, whereby nomenclature may not be

consistent. For example, "Oil and Gas" can consist of numerous components of the value chain, which may not be comparable across two firms. Sectoral classifications also act as the basis for the development of emissions estimation models based on industry intensity factors. When users seek to aggregate climate datasets across data providers, however, discrepancies in sectoral classifications can cause challenges to effective aggregation not only for disclosed data, but especially for estimated data, which takes on very

64 NGFS. Final Report on Bridging Data Gaps. [Network for Greening the Financial System Technical Document](#). July 2022. (38)

65 Global Legal Entity Identifier Foundation (GLEIF). "[Introducing the Legal Entity Identifier \(LEI\)](#)."

different modeled characteristics contingent on the classification in question. As an additional barrier to use, many sectoral classification systems are

either proprietary, or jurisdiction specific, creating the need for an open offering that provides connectivity between existing classifications.

Recommendation

The Committee recommends the NZDPU develop and deploy a fully open sectoral classification system that contains mappings to key sectoral classification systems (e.g., GICS, BICS, ICB, TRBC, NAICS, NACE, SICs).

ORGANIZATIONAL BOUNDARIES

Another key data challenge embedded within GHG emissions accounting is the approach used for organizational boundary setting. There are two distinct methods of reporting: the equity-share approach and the control approach. Under equity share, a firm accounts for emissions in proportion to its share of equity in operations, whereas under the control approach the firm accounts for 100% of the emissions from any operations it has control over. This is either financial control, where the firm has control over financial and operational policies as well as bearing the majority financial risk and benefits, or operational control, where the firm has authority to implement operating policies.⁶⁶

The major thematic difference between the approaches is accountability. The equity-share approach assumes a firm is accountable for GHG emissions generated by activities they have economic interest in, whereas the control approach assumes accountability only for GHG emissions a firm controls and, thus, the GHG emissions a firm can directly influence. This also has an impact on

how financed emissions are calculated. Under the equity-share approach, the emissions generated from investments in equity or debt are part of the organizational boundary, thus in Scopes 1 and 2, whereas under the control approach they are reported under Scope 3 Category 15, financed emissions (unless they have financial or operational control).

There is no consensus over preferred boundary, with firms typically choosing the boundary setting that is suited to their business. As a result, GHG emissions are incomparable across firms reporting under different organizational boundaries. For financial institutions, PCAF requires reporting under the control approach with the reasoning that “financial institutions investments in equity or debt are typically not intended to hold a controlling interest.”⁶⁷ The GHG Protocol Corporate Standard does not recommend one approach over the other but “encourages companies to account for their emissions applying the equity share and a control approach separately.”^{68,69}

Recommendation

The NZDPU should encourage entities who report under a control approach to also calculate and submit GHG emissions under the equity-share approach.

66 WRI and WBCSD. [The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard](#), March 2004, p. 19.

67 PCAF (2020). [The Global GHG Accounting and Reporting](#), p. 37, Standard for the Financial Industry.

68 The Greenhouse Gas Protocol, [A Corporate Accounting and Reporting Standard](#), p. 19.

69 Other standards take different approaches, for example ISO 14064-1 recommends that companies use the same consolidation approach that the one used for financial reporting.

PARENT-SUBSIDIARY MAPPING

Large companies and financial institutions often have complex corporate structures. Reporting gaps arise when consolidated emissions data is provided only for select subsidiaries, rather than for the entire conglomerate.

For [parent-subsidiary organizational structures](#), the IFRS defines a parent simply as “an entity that has one or more subsidiaries.” Subsidiaries are defined as entities (including unincorporated entities) that are “controlled by another entity.”⁷⁰ The parent company can direct the financial and operating policies of the subsidiary company with a view to gaining economic benefits from its activities.

This generally also includes incorporated and unincorporated joint ventures and partnerships over which the parent company has financial control. Group companies/subsidiaries are fully consolidated, which implies that 100% of the subsidiary’s income, expenses, assets, and liabilities are taken into the parent company’s profit and loss account and balance sheet, respectively. The mapping is not applicable to other financial accounting categories, such as associated/affiliated companies, as well as non-incorporated joint ventures, partnerships, or operations where partners have joint financial control.

Recommendation

The NZDPU should collect parent-subsidiary mapping metadata where possible. In line with the recommendations of the GHG Protocol, the Committee recommends the NZDPU include fields to capture the emissions data consolidation approach used, as well as the option to list a firm’s subsidiaries, their identifiers, and the geographic location of the parent company and subsidiaries.

ENTITY DESCRIPTIVE METRICS

To allow for the screening and filtering of entities, additional descriptive metrics should be included for optional disclosure in the NZDPU, including metrics addressing details such as location of firm and firm size. We recommend that these metrics

be determined as the data models for the NZDPU are developed to ensure best fit. Firm size metrics specifically could be disclosed in terms of exact values or ranges contingent on user preference.

Recommendation

Descriptive metrics for individual entities, including those focused on location and size, should be determined as the data models for the NZDPU are developed to ensure best fit.

⁷⁰ International Accounting Standards Board. [IFRS 10 Consolidated Financial Statements](#).

Product Functionality Recommendations

In addition to the data requirements for the NZDPU, product functionality decisions will be critical to ensure accessibility across use cases. The Committee proposes the user interface of the NZDPU be developed in accordance with the following principles:

- The user interface should be:
 - open and available to the public, for all use cases, at no charge;
 - designed to display accurate, verifiable data as reported without judgment or analysis; and
 - user-friendly, incorporating a simple design, clear labeling, easy access to definitions, and with the intention to cater for all users.
- The data upload component of the Utility should contain:

- strict controls on data inputs and data preparer credentials (e.g., entity identifiers and multistep authentication);
- safeguards on data integrity and traceability (e.g., data linked to verifiable public sources);
- structured forms with mandatory and voluntary fields to encourage consistency;
- formatting prompts, completeness checks, and abnormality alerts to support accuracy; and
- a right to refuse or remove submissions that do not comply with or meet reporting requirements.

The Utility should be designed with three broad use cases in mind to facilitate the input and output of accurate, verifiable data.

Figure 6: Use cases

USER TYPE	USER EXAMPLES	KEY WORKFLOWS
Input users (data preparers)	Public and private corporates, financial institutions, and governments	<ul style="list-style-type: none"> • Access a secure login and create credentials per preparer entity. • Upload data using structured editable data upload templates that provides clear guidance on fields, format and use of data, as well as flexibility to add desired content and provide source data.
Output users (data users): Non-technical	Civil society	<ul style="list-style-type: none"> • Quick and easy access to an intuitive search tool to find and compare entities. • The ability to create alerts and to filter, save and track entities.
Output users (data users): Technical	Business, academia, and financial institutions	<ul style="list-style-type: none"> • Download current and historical datasets or customize screens. • Set-up feeds. • Access an API to ingest the data into systems.

The NZDPU could include, but would not be limited to, the following features:

Home Page and Basic Search

Landing page that provides information on the NZDPU, how to use the utility, and a snapshot summarizing the status of reporting entities and their gross and net emissions. It should also feature a search tool with quick access filters to review and compare entities and their reported data.

Coverage Pages

Coverage lists of entities and links to their profiles should be provided for each entity type allowing for users to sort and identify entities of interest.

Entity Profiles

Entity profiles should provide a view into an individual actor's current and historical data.

List Management

Output users should be able to upload a list of entities that can be used for bulk download of data and integrated into screening functionality. Lists can be saved. Watch lists can be created for single or multiple entities.

Screening/Bulk Search

Users should be able to search for data across multiple entities through list selection or universe filtering based on geography, sector, industry, and sub-industry to be displayed in tabular form. Users will be offered key screening capabilities (i.e., ability to screen for firms that have net-zero targets, or to screen based on a GHG emissions threshold).

Data Upload Portal

The data upload portal should allow input users, including financial institutions and corporates (public and private), to upload their emissions, commitment, and transition plan data in a standardized template. The template will provide guidance and input checks to encourage consistent and accurate reporting.

User Profile and Login

Input users should be able to access a secure login to input structured data and provide source material to support data verification. Users will also be able to select certain preferences.

Communications Settings

Input and output user should be able to adjust communication preferences. Users should be provided with the option to set alerts on data updates (i.e., for tracked entities). Users should have access to quick links to report errors.

Help Section

Users should have access to FAQ for guidance and support on using the utility, and a contact us/support email for help or feedback.

Language

The NZDPU should allow users to change the language setting to their preferred language. While the pilot may be initially produced in English; in time, the Utility should be available in all six official languages of the UN: Arabic, Chinese, English, French, Russian, and Spanish.

Accessibility

Users should be able to access key accessibility features including mobile responsiveness, large text, and audio options.⁷¹

71 <https://www.un.org/en/webaccessibility/index.shtml>

Areas of Future Review

The Committee recognizes that there are many additional topics that fall within the definition of climate transition-related data outside of what has been currently included in the proposed product scope. The areas discussed in this section represent key nascent data topics in the climate transition-related data space that should be monitored and ultimately incorporated into solutions developed by players in the collaborative climate initiative space.

ADDITIONAL TARGETS

In addition to emissions reduction targets, financial institutions and corporates will need to set other types of targets to reflect multifaceted net-zero strategies and reduce overreliance on financed emissions targets that could result in capital flight from high-emitting sectors that need financial support to transition. These include climate solutions and managed phaseout projects.

Climate solutions represent investment, financing, or development of technologies directly contributing to the elimination of real-economy GHG emissions, and services supporting the expansion of these technologies. These solutions include scaling up zero-carbon alternatives to high-emitting activities—a prerequisite to phasing out high-emitting assets. Examples of climate solutions are energy efficiency technologies across sectors, the development of renewable power, and the growth of natural sinks through nature-based solutions and reforestation projects.

Managed phaseout is a net zero-aligned strategy for the early retirement of high-emitting assets. Asset managers and banks are expected to clarify

to owners and operators of high-emitting assets that finance can be provided on the condition that there is a plan to cease operation, decarbonize, or otherwise transition those assets to an operating model consistent with the net-zero transition. In this way it recognizes that some high-emitting assets can continue to be operated (indeed many need to be while no/low-carbon infrastructure is developed) within a 1.5 degrees C-aligned retirement date. Given this approach is sufficiently different to those based on decarbonizing operations, the managed phaseout approach will need its own metrics and targets to determine ambition and assess progress. GFANZ is currently working with partners to help develop such metrics and targets.

Several ongoing initiatives are in the process of developing taxonomies defining “climate solutions” or “transition assets,” but there is currently no standard or framework for firms to report against. This makes it difficult for institutions to develop strategies and targets to track progress. GFANZ’s *Recommendations and Guidance*, provide a starting point for the definition of these additional target types. Further guidance should be developed to facilitate improved disclosure.⁷²

⁷² GFANZ. [Recommendations and Guidance](#), 2022.

FINANCIAL INSTITUTION CAPITAL ALLOCATION AND RELATED SERVICES TO CLIMATE SOLUTIONS AND FOSSIL FUEL EXPOSURE

Tracking financial institutions' exposure in the fossil fuel space is crucial for net-zero progress tracking. To achieve net zero across the economy, carbon-intensive companies will require ongoing financing to help them decarbonize and transition. Relevant financing flows include, but are not limited to, the following:

- Green finance raised and facilitated;
- Total green investments/bonds;
- Green exposure (percentage of green investments/bonds);
- Exposure to high-emitting sectors;
- Climate solution targets to increase exposure and capital in green finance; and
- Project-specific financing: renewable energy asset financing.

This information is not often disclosed publicly today. Where it is disclosed, there is persistent asymmetry in taxonomies and methodology when defining green versus brown investments or exposure.

CORPORATE CAPEX PLANS

Like capital allocation disclosure, certain corporates have begun to disclose their plans to phase out their high-emitting assets through capital expenditure plans. The required capital expenditure to reach 1.5 degrees C alignment across the more than 190 countries committed under the 2015 Paris Agreement is estimated to be between \$4–\$7 trillion until 2030 based on reports from the IEA and the OECD (together with the UN and the World Bank).⁷³

The OECD's *Guidance on Transition Finance* notes that "A credible transition plan will not be prepared separate from and without reference to the corporate business plan. Rather, a credible transition plan will be integrated into the corporate business plan. It will make direct reference to the company's financial plan and be done concurrently with financial reporting. Doing so can explicitly address any needs and commitments for capital expenditure, operating expenditure, merger and acquisition activities and research and development expenditures necessary for the delivery of the transition plan and related targets."⁷⁴

The GFANZ Workstream on Real-economy Transition Plans has taken steps to identify potential metrics for disclosure of CapEx plans, including a company's plan for low-carbon CapEx, CapEx covered by the carbon price, and CapEx in net-zero assets. Broadly speaking, a company's financial plans, budgets, and related financial targets that support the company's transition plan objectives and the actions identified in business planning and operations component would be relevant for such disclosures. OpEx may also be of interest, particularly for financial institutions. To date, however, this area of data is primarily conceptual rather than implemented in firm disclosure.

CLIMATE-RELATED PHYSICAL RISK AND TRANSITION RISK

Climate-related [physical risk](#) and [transition risk](#) data fall within the definition of climate transition-related data and are key areas of discussion as it relates to how entities choose to develop net-zero strategies. A given entity's exposure to physical climate risks varies depending on its operations, geographic location, and, in the case of financial institutions, portfolio composition.

⁷³ <https://www.nordea.com/en/news/esg-a-potential-game-changer-for-capex>

⁷⁴ OECD. *Guidance on Transition Finance*, forthcoming.

Much of the data needed to assess physical risk is not readily available. Availability issues include 1) incomplete asset-level location data, 2) a lack of geographical data, and 3) a lack of data on companies' adaptive capacity.⁷⁵ At present, reporting remains inconsistent and of variable quality.⁷⁶ The use of physical risk data and associated tools by investors and lenders also remains very limited.⁷⁷ For example, 32% of financial institutions surveyed by the FSB reported that they lack data on firms' and households' assets.⁷⁸ In addition, location-based data is usually only supplied for firm headquarters, rather than throughout the supply chain or value chain. UNEP FI has issued a statement calling for more robust, TCFD-aligned physical risk disclosure. It also calls on policymakers, regulators, and central banks to drive for standardized reporting and scenario sets, as well as build internal technical capacities and develop strategies and roadmaps for such efforts.⁷⁹

[Transition risk](#) incorporates predominantly economic data inputs. These data inputs are critical but are also subject to different challenges than sustainability-focused data given differing levels of establishment and methods of collection of information. Several elements are involved in the assessment of transition risk, including policy and legal risk, technology risk, market risk, and reputational risk. Methodologies to quantify these risks are a work in progress.⁸⁰ TCFD lists that the following elements are necessary to assess transition risk: scenario analysis, integration of climate risk into risk management processes, and development of forward-looking financial sector metrics.⁸¹ These will both require and generate

new climate-related datasets. All else equal, firms with higher emissions or less stringent emissions targets are said to face higher transition risk. In this case, a main barrier to the effective assessment of transition risk is the incomplete disclosure of Scope 1 and 2 emissions, especially for smaller firms, as well as limited availability and quality of Scope 3 emissions data.⁸² Emissions accounting is an area that the NZDPU will immediately address in the pilot. Other elements of transition risk, including economic data, are widely available and therefore not in scope for the NZDPU.

BIODIVERSITY AND DEFORESTATION

[Biodiversity](#) data, like physical risk data, is determined based on a company's asset and supply chain impacts on specific geographies. Deforestation data falls within this same classification. Firms are beginning to incorporate biodiversity into policies, but data collection and disclosure in this area remains nascent. The Committee expects reporting of this information to become increasingly normalized, with regulation such as the EU's Sustainable Finance Disclosure Regulation (SFDR), the Corporate Sustainability Reporting Directive, and initiatives such as the Taskforce on Nature-related Financial Disclosures (TNFD).

The SFDR will require the disclosure of facilities located in protected areas. SFDR is progressive in nature (and closely linked with EU Taxonomy regulation); it is therefore expected that additional biodiversity metric disclosures will be phased in

75 NGFS. Progress report on bridging data gaps, p. 25.

76 TCFD. [2020 Status Report](#), October 2020.

77 Cambridge Institute for Sustainability Leadership. [Physical risk framework: Understanding the impacts of climate change on real estate lending and investment portfolios](#), February 2019, p. 13.

78 <https://www.fsb.org/wp-content/uploads/P070721-3.pdf>

79 UNEP FI. [The Physical Risk and Resilience Statement for the Climate Adaptation Summit](#), January 25, 2021.

80 TCFD. [Recommendations of the Task Force on Climate-related Financial Disclosures](#), June 2017, p. 5.

81 TCFD. [2020 Status Report](#), October 2020, p. 5.

82 From a sample of 1,701 large companies from 69 countries in eight industries (Ibid., p. 15).

over time. The Corporate Sustainability Reporting Directive requires detailed European standards to be developed covering biodiversity. The TNFD aims to shift capital flows away from “nature-negative” activities to “nature-positive” outcomes.⁸³ Currently in beta form, the TNFD follows in the footsteps of the TCFD and expects to launch its final disclosure recommendations in September 2023.

ADAPTATION AND RESILIENCE

[Adaptation](#) and [resilience](#)-related data are areas that are still emerging and evolving. Adaptation refers to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts.⁸⁴ Although there is currently no consensus around how to assess progress on adaptation planning, climate change adaptation should remain a key priority for businesses and policymakers.⁸⁵

While information on climate risks and adaptation planning processes is generally available, information on adaptation remains scattered across funding and implementing entities, and information on results is scarce and not easily comparable or aggregable.⁸⁶

The IFRS Exposure Draft defines climate resilience as the capacity of an entity to adjust to uncertainty related to climate change. This involves the capacity to manage climate-related risks and benefits from climate-related opportunities, including the ability to respond and adapt to transition risks.⁸⁷ The IFRS Exposure Draft S2

Climate-related disclosures stipulates that “entities shall disclose information that enables users of general-purpose financial reporting to understand the resilience of the entity’s strategy (including its business model) to climate-related changes, developments, or uncertainties.”⁸⁸

Global assessments of adaptation require a coherent data source with global coverage. However, finding reliable data with global coverage has been a bottleneck to assessments of adaptation progress. As part of ongoing efforts to capture data on capital expenditure plans and transition strategies, the work plan by the New Data Gaps Initiative (DGI) has a recommendation focused on mitigation, adaptation, and resilience building. This links to other initiatives to develop a standardized model for tracking spending on adaptation and resilience in government budgets.⁸⁹ The Inter-American Development Bank (IDB), in late 2019, developed a common climate resilience metrics framework, in which they proposed a two-level metric system that considers the quality of project design and project results.⁹⁰

Much of the data needed for assessing resilience are related to physical risk but are broader in scope, as it includes data on human and economic systems’ interaction/reaction with physical hazards to assess resilience. Therefore, resilience-related data challenges are currently difficult to address.

83 <https://framework.tnfd.global/executive-summary/v02-beta-release>

84 UNFCCC. “[What do adaptation to climate change and climate resilience mean?](#)”

85 IPCC. [Climate Change 2022: Impacts, Adaptation, and Vulnerability: Summary for Policymakers](#), March 2022.

86 United Nations Environment Programme. [Adaptation Gap Report 2020, 2021](#). p. 3.

87 ISSB. [IFRS S2 Climate-related Disclosures, March 2022](#), p. 44.

88 ISSB. [IFRS S2 Climate-related Disclosures, March 2022](#), p. 44.

89 NGFS. [Final Report on Bridging Data Gaps](#), July 2022.

90 IDB. A [Framework and Principles for Climate Resilience Metrics in Financing Operations, December 2019](#), p. 21.

Appendix

1. TECHNICAL WORKING GROUP DATA CHALLENGES AND DATASET MATERIALITY SURVEY

Figure 7: Data challenges heatmap

DATA CHALLENGE	VERY CHALLENGING	CHALLENGING	NEUTRAL	SOMEWHAT CHALLENGING	NOT CHALLENGING AT ALL
Limited GHG emissions corporate disclosures (Scope 3)	47%	44%	6%	0%	3%
Inconsistent boundary setting approaches for GHG emission disclosure	44%	22%	25%	8%	0%
Inconsistent financed emissions disclosures	42%	36%	17%	6%	0%
Limited private company GHG emissions disclosures	39%	31%	19%	11%	0%
Inconsistent reporting of emissions reduction targets (corporates)	36%	47%	14%	3%	0%
Inconsistent reporting of emissions reduction targets (financial institutions)	36%	42%	17%	6%	0%
Scope 3 materiality across the 15 GHG protocol categories	36%	36%	22%	6%	0%
Emissions estimations methodologies	31%	39%	17%	11%	3%
Limited financed emissions disclosures (Scope 3)	31%	42%	17%	6%	6%
Tracking of financing flows towards green/brown investments at the financial institution entity level	31%	36%	19%	11%	3%

DATA CHALLENGE	VERY CHALLENGING	CHALLENGING	NEUTRAL	SOMEWHAT CHALLENGING	NOT CHALLENGING AT ALL
Limited SME (Small and Medium Enterprise) GHG emissions disclosures	31%	28%	28%	8%	6%
Reporting on less established target types (climate solutions, managed phase out projects)	28%	42%	19%	11%	0%
Non-detailed disclosure of carbon credits	28%	31%	17%	17%	8%
Emissions data restatement/ methodological changes	25%	39%	25%	11%	0%
Selecting climate transition pathways to use for target setting	25%	28%	28%	14%	6%
Screening for companies that align with the conditional net zero investment/financing policies I have set	25%	31%	31%	11%	3%
Non-disclosure of whether data presented in a given corporate report is reported vs. estimated data	22%	31%	28%	8%	11%
Limited GHG emissions corporate disclosures (Scope 1 and 2)	17%	44%	19%	8%	0%
Different reporting timelines for corporate climate data	17%	33%	33%	6%	11%
Limited financed emissions disclosures (scope 1 and 2)	17%	31%	42%	8%	3%
Asymmetrical operational coverage	14%	33%	39%	14%	0%
Discrepancies in reporting of Scope 2 (market -based vs. location-based method)	11%	31%	39%	17%	3%

Figure 8: Dataset materiality heatmap

DATASET	VERY IMPORTANT	IMPORTANT	NEUTRAL	SOMEWHAT IMPORTANT	NOT IMPORTANT AT ALL
Financial institution financed emissions	64%	19%	11%	6%	0%
Corporate CapEx plans for transition	61%	19%	17%	3%	0%
Corporate operational emissions	58%	25%	14%	3%	0%
Corporate emissions reduction targets	56%	31%	11%	0%	3%
Government decarbonization policies	53%	22%	22%	3%	0%
Financial institution coal policies	50%	31%	17%	3%	0%
Corporate transition pathways used to develop targets	50%	33%	14%	3%	0%
Financial institution oil and gas policies	44%	25%	28%	0%	3%
Corporate climate relevant policies	44%	31%	25%	0%	0%
Nationally determined contributions	44%	33%	14%	8%	0%
Corporate energy production and power generation	44%	28%	25%	3%	0%
Corporate industry specific data	44%	31%	22%	0%	3%
Government net-zero targets	44%	39%	14%	3%	0%
Financial institution capital allocation to clean energy/ fossil fuels	42%	33%	19%	6%	0%
Financial institution managed phaseout plans	42%	44%	11%	3%	0%
Financial institution emissions reduction targets	39%	33%	19%	8%	0%

DATASET	VERY IMPORTANT	IMPORTANT	NEUTRAL	SOMEWHAT IMPORTANT	NOT IMPORTANT AT ALL
Financial institution commitments to key climate initiatives (e.g., GFANZ)	33%	36%	22%	6%	3%
Corporate commitments to key climate initiatives (e.g., GFANZ)	28%	33%	31%	8%	0%
Financial institution deforestation/ agriculture policies	28%	31%	33%	8%	0%
Government energy production and power generation	28%	31%	33%	6%	3%
Corporate carbon credits data	28%	28%	22%	14%	8%
Financial institution transition pathways used to develop targets	25%	22%	31%	11%	11%
Corporate adaptation/ resilience focused initiatives and activities	25%	53%	19%	3%	0%
Financial institution carbon credits data	25%	33%	25%	14%	3%
Government locality level emissions	19%	31%	36%	6%	8%
Financial institution climate solutions targets	17%	53%	22%	6%	3%
Financial institution adaptation/resilience focused initiatives and activities	17%	31%	33%	17%	3%
Corporate biodiversity impacts	17%	39%	25%	17%	3%
Government percentage of GDP attributed to GHG emissions intensive sectors	14%	19%	33%	22%	11%
Corporate biodiversity policies	14%	36%	39%	11%	0%
Financial institution operational emissions	14%	31%	36%	17%	3%
Financial institution biodiversity policies	8%	33%	31%	22%	6%

2. COLLABORATIVE CLIMATE DATA LANDSCAPE

As it stands today, a majority of climate and environmental data is only available at scale through third-party data providers. This has led to differentiated collection of reported data, which poses a challenge in the aggregation and accessibility of key climate data. In response to the need for transparent, consistent, accurate, and complete data, several interconnected collaborative climate data initiatives have been developed.

Players in the collaborative climate data space generally occupy the following verticals:

1. **Data Generation:** the provision of net new data from corporate/entity/issuer disclosure to the market in a broadly open manner;
2. **Data Aggregation:** the aggregation of data from external data generators in a single, open location;
3. **Data Mapping:** the mapping of data from multiple providers or direct upload to sustainability/climate-related frameworks to allow for facilitated disclosure; and
4. **Data Cataloging:** the development of centralized catalogs for relevant climate metrics and their sources to allow users facilitated access to the data they need from external sources.

Several key players have emerged in the collaborative climate data space.

Below is a non-exhaustive snapshot:

Figure 9: Collaborative climate data landscape

DATA SOURCE	PARTICIPANT TYPE	FEATURES AND FUNCTIONALITIES	AREAS OF FOCUS	CATEGORY
Banking on Climate Chaos** ⁹¹	NGO	Banking on Climate Chaos adds up financing (lending and underwriting of debt and equity issuances) from the world’s 60 biggest banks for the fossil fuel sector as a whole, as well as for top expanders of the fossil fuel industry and top companies in specific sectors.**	<ul style="list-style-type: none"> • Standardization of fossil fuel financing and expansion data 	<ul style="list-style-type: none"> • Data Aggregation
CDP	NGO	<p>CDP is a disclosure system that houses and evaluates self-reported data from over 13,000 companies and 1,100 cities, states, and regions across three dimensions (climate, forests, water).</p> <p>CDP provides open access to datasets on cities via its portal. For corporate data, users can view up to five complete company responses before a data subscription is required. CDP’s questionnaire is aligned with the TCFD. CDP is working to streamline the requirements of multiple emerging standards and regulations (ISSB, SEC, EU EFRAG) by aligning with its questionnaire.</p>	<ul style="list-style-type: none"> • CDP’s upload functionality allows entities to submit data via the web portal 	<ul style="list-style-type: none"> • Data Generation • Data Mapping
CPI, Net Zero Finance Tracker** ⁹²	NGO	The Climate Policy Initiative (CPI)’s Net Zero Finance Tracker is an interactive dashboard which draws on nearly 200 publicly available and private datasets, with transparent methodologies. Currently in beta form, the dashboard has interactive views distinguished by Institutions and Real Economy.	<ul style="list-style-type: none"> • Assessment the substantive quality (integrity) of net zero targets across a broad range of entities 	<ul style="list-style-type: none"> • Data Aggregation
ECIU, Net Zero Tracker ⁹³	Consortium	The Energy & Climate Intelligence Unit’s Net Zero Tracker collects information on targets for net zero emissions (and similar aims) pledged by countries, cities, states/ regions/ provinces, and companies. it includes all countries, territories, every region in the 25 largest emitting countries, all cities with over 500,000 residents and 2,000 of the world’s largest publicly companies.	<ul style="list-style-type: none"> • Detailed target and target component data 	<ul style="list-style-type: none"> • Data Generation • Data Aggregation

91 <https://www.bankingonclimatechaos.org/#data-panel>

92 <https://www.climatepolicyinitiative.org/netzerofinancetracker/?page=about>

93 <https://zerotracker.net>

DATA SOURCE	PARTICIPANT TYPE	FEATURES AND FUNCTIONALITIES	AREAS OF FOCUS	CATEGORY
European Single Access Point (ESAP) ^{*94}	Government-led	<p>ESAP is a proposed EU legislation which will offer a single access point at the EU level for sustainability-related and financial information on EU companies and investment products, based on the information made public under existing EU legislation in the area of financial services and capital markets. The project is estimated to include sustainability and financial data for over 150,000 companies including public firms, insurance, investment funds, banks, ratings agencies, and private companies</p> <p>The ESAP proposal is undergoing the EU legislative process. As such, the final details on the accessibility and openness of ESAP data have not yet been confirmed, but ESAP is intended to be fully open data oriented with potential fees for users requiring additional services such as large volumes of data or frequently updated information.</p>	<ul style="list-style-type: none"> • Upload functionality* • Data Accessibility through centralized digital access to sustainability related information 	<ul style="list-style-type: none"> • Data Generation • Data Mapping
Hong Kong Stock Exchange, GSF Data Repository ^{*95}	Government-led	<p>The GSF Data Repository provides a catalog containing centralized links to climate data that is publicly available (i.e., emissions data from WRI and CDP).</p>	<ul style="list-style-type: none"> • Accessibility of climate data through catalog functionality 	<ul style="list-style-type: none"> • Data Mapping
Icebreaker One ⁹⁶	NGO	<p>Icebreaker One is developing a Trust Framework for Net Zero Data as a public/private good for net zero data governance.</p> <p>It is focused on processes that can enable data to flow, enhancing data discoverability, access and usage through a robust framework that supports both voluntary and mandatory schemes.</p>	<ul style="list-style-type: none"> • Discoverability, interoperability, and market cohesion (common rules, legal frameworks, data standards, processes) 	<ul style="list-style-type: none"> • Data Cataloguing

94 <https://www.europarl.europa.eu/legislative-train/theme-an-economy-that-works-for-people/file-european-single-access-point>

95 <https://www.hkma.gov.hk/eng/key-functions/international-financial-centre/green-and-sustainable-finance/gsf-data-source-repository>

96 <https://icebreakerone.org/ib1-trust-framework-for-data-sharing>

DATA SOURCE	PARTICIPANT TYPE	FEATURES AND FUNCTIONALITIES	AREAS OF FOCUS	CATEGORY
IMF, Climate Change Indicators Dashboard ⁹⁷	International Organization	IMF’s Climate Change Indicators Dashboard publishes emissions, environmental policy, sustainable finance, and climate risk data aggregated at the country level.	<ul style="list-style-type: none"> • Standardization and accessibility of country level environmental data combined with economic data 	<ul style="list-style-type: none"> • Data Generation
InfluenceMap, FinanceMap ^{*98}	NGO	<p>FinanceMap’s Asset Managers project applies the market- leading Paris Agreement Capital Transition Assessment (PACTA) methodology to a universe of around 30,000 equity funds to assess the alignment of portfolios with the Paris Agreement. This analysis in turn produces Paris Alignment scores for 1,400 asset managers globally, by creating an aggregate of the funds managed by each.</p> <p>The platform also provides metrics on investor engagement with companies on climate and gathers metrics on the filing and voting behavior of asset managers on climate-relevant shareholder resolutions.</p>	<ul style="list-style-type: none"> • Standardized PACTA aligned scores • Investor engagement metrics 	<ul style="list-style-type: none"> • Data Aggregation
Linux Foundation OS-Climate ^{*99}	NGO	OS-Climate’s Data Commons includes a wide range of public data sources (federated and locally ingested); manages data and metadata sources as code; has functionality for GLEIF/ entity matching, units/currency conversion; automation of data management supports wide range of data governance models as well as data quality management; automation of data transformations supports wide range of data usage, from reporting to analytics to modeling, with full lineage post-transformation. Metadata not only power data discoverability, accessibility, and interoperability of data, but also data governance, access management, and audit and reporting on usage. OS-C is undertaking a proof of concept of functionality for mapping to ISSB, TCFD, CDSB, GRI, CDP, etc.	<ul style="list-style-type: none"> • Transparency regarding analytical methodologies • Open availability of analytical tools • Accessibility of climate data 	<ul style="list-style-type: none"> • Data Aggregation • Data Mapping • Data Cataloguing

97 <https://climatedata.imf.org>

98 <https://www.bankingonclimatechaos.org/#data-panel>

99 <https://os-climate.org/solutions>

DATA SOURCE	PARTICIPANT TYPE	FEATURES AND FUNCTIONALITIES	AREAS OF FOCUS	CATEGORY
The Monetary Authority of Singapore (MAS), Project Greenprint ¹⁰⁰	Government-led	The Monetary Authority of Singapore (MAS) is working to build a common data portal, Greenprint* , to simplify the ESG disclosure process by converting data inputs into different reporting frameworks as required under different jurisdictions and purposes. The MAS also plans to develop a mechanism that aggregates sustainability data from multiple data sources and will provide central access to these data sources as well as data analytics. In September 2022, MAS and the Singapore Exchange Group launched a joint initiative, ESGenome , to develop a common disclosure utility to facilitate sustainability reporting for SGX-listed companies. ¹⁰¹	<ul style="list-style-type: none"> • Improved disclosure and workflow simplification through the facilitated alignment of data to various reporting and disclosure frameworks • Accessibility of climate data through data aggregation 	<ul style="list-style-type: none"> • Data Aggregation • Data Mapping
NGFS ¹⁰²	International Organization	NGFS's Data Directory identified over 12,000 raw data items and mapped raw data. It serves as a living catalog of climate-related data sources for the financial sector.	<ul style="list-style-type: none"> • Accessibility of climate data through catalog functionality 	<ul style="list-style-type: none"> • Data Cataloguing
OECD, Climate Change Indicators Dashboard ¹⁰³	International Organization	The OECD generates and aggregates data and provides them publicly through the Climate Change Indicators Dashboard from the International Program for Action on Climate (IPAC) . It publishes emissions, climate policy, climate hazard, and exposure at the country level.	<ul style="list-style-type: none"> • Standardization and accessibility of country-level environmental data combined with economic data • Validated by countries 	<ul style="list-style-type: none"> • Data Generation • Data Aggregation
Open Earth Foundation, Open Climate ¹⁰⁴	NGO	Open Earth Foundations' Open Climate network is being designed as an open-source digital infrastructure for integrated climate accounting, including the nesting of data from Non-State Actors (NSA) into National accounts via geospatial protocols and interoperable data models.	<ul style="list-style-type: none"> • Interoperable data models • Open-source infrastructure • Usage of geospatial data 	<ul style="list-style-type: none"> • Data Generation

100 https://www.mas.gov.sg/-/media/MAS/News/Media-Releases/2021/Infographic_MAS-Project-Greenprint.pdf

101 <https://www.mas.gov.sg/news/media-releases/2022/mas-and-sgx-group-launch-esgenome-disclosure-portal-to-streamline-sustainability-reporting-and-enhance-investor-access-to-esg-data>

102 <https://ngfs.dev.masdkp.io>

103 <https://www.oecd.org/climate-action/ipac/dashboard?country=ARG>

104 <https://www.openearth.org/projects/openclimate>

DATA SOURCE	PARTICIPANT TYPE	FEATURES AND FUNCTIONALITIES	AREAS OF FOCUS	CATEGORY
Transition Pathway Initiative** ¹⁰⁵	Consortium	The Transition Pathway Initiative (TPI) is a global initiative led by asset owners and supported by asset managers. It provides independent, open-access data showing how the world's largest emitting companies are adapting strategies to align with international climate goals.	<ul style="list-style-type: none"> • Data on publicly listed equities, corporate bonds issuers, banks, and sovereign bonds issuers 	<ul style="list-style-type: none"> • Data Aggregation
UN, Global Climate Action Portal (GCAP) ¹⁰⁶	International Organization	<p>UN's GCAP is used by over 10,000 entities and to report on a variety of climate actions through a network of data providers (including CDP).</p> <p>The Actor Tracking function measures Ambition (commitments), Robustness (emissions inventory, risk assessment, initiative participation, climate action plan) and Implementation & Progress (actions undertaken, impact). Data is also available NDCs per country.</p>	<ul style="list-style-type: none"> • Standardization and accessibility of climate initiative commitments across entity types 	<ul style="list-style-type: none"> • Data Aggregation

*Capability/capacity build in progress

** Data sourced from private sector data providers

The collaborative climate data space has made significant advancements in recent years to address pressing data challenges. The NZDPU will build on this work, leveraging key partnerships in the public and private sectors.

¹⁰⁵ <https://www.transitionpathwayinitiative.org>

¹⁰⁶ <https://climateaction.unfccc.int>

3. GLOBAL DISCLOSURE INITIATIVES AND REGULATIONS

DISCLOSURE INITIATIVE/ JURISDICTION	INITIATIVES AND POLICIES
DISCLOSURE INITIATIVES	
GHG Protocol	The GHG Protocol builds on a 20-year partnership between the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD), has published the most widely used greenhouse gas accounting standards in the world. ¹⁰⁷ The GHG Protocol provides accounting and reporting standards, sector guidance, calculation tools, and trainings for businesses and local and national governments. It has created a comprehensive, global, standardized framework for measuring and managing emissions from private- and public-sector operations, value chains, products, cities, and policies to enable greenhouse gas reductions across the board.
ISO	ISO 14064 is a three-part international standard that includes minimum requirements for GHG inventories which provide a basic structure against which credible and consistent independent auditing can be performed. ¹⁰⁸
ISSB	Building on the work of the TCFD, in November 2021, the International Financial Reporting Standards (IFRS) Foundation announced the creation of a new standard-setting board—the International Sustainability Standards Board (ISSB). ¹⁰⁹ The ISSB was formed to develop global sustainability-related disclosure standards to provide users with consistent sustainability-related data and better inform decision-making. The ISSB’s Exposure Draft on IFRS S1, <i>General Requirements for Disclosure of Sustainability-related Financial Information</i> , sets out proposed requirements for entities to disclose information about significant sustainability-related risks and opportunities to provide the market with a complete set of sustainability-related financial disclosures. ¹¹⁰ The ISSB’s Exposure Draft on IFRS S2, <i>Climate-related Disclosures</i> , sets out proposed requirements for measuring and disclosing climate-related risks and opportunities. ¹¹¹ It incorporates industry-based requirements derived from the SASB Standard.
PCAF	In November 2020, the GHG Protocol reviewed and endorsed the Global GHG Accounting and Reporting Standard for the Financial Industry by Partnership for Carbon Accounting Financials (PCAF). PCAF is a global partnership of financial institutions that work together to develop and implement a harmonized approach to assess and disclose the greenhouse gas (GHG) emissions associated with their loans and investments.
TCFD	The G20’s Financial Stability Board (FSB) created the private sector Task Force on Climate-related Financial Disclosures (TCFD) in 2015 to provide recommendations for effective disclosure on climate-related risks and opportunities. ¹¹² The Task Force’s recommendations outline information that investors, lenders, and insurance underwriters need to make more informed capital allocation and other financial decisions. Following the release of the TCFD Recommendations in 2017, disclosure and use of climate-related data has grown significantly. Governments and regulators have since drawn from the TCFD framework in their efforts to mandate disclosure of climate-related information, including Brazil, Canada, Egypt, the European Union (EU), New Zealand, Singapore, Switzerland, the United Kingdom, and the United States. In addition, Australia, Hong Kong, India, several EU member states, Japan, Malaysia, Mexico, Norway, Russia, South Korea, and others have referenced the TCFD framework in guidance or other announcements encouraging companies to implement climate-related disclosures. ¹¹³

107 GHG Protocol. [About Us](#).

108 EPA. ISO 14064, [International standard For GHG Emissions Inventories and Verification](#).

109 This report focuses on global standards, but the CDSC recognizes the work being done to develop mandatory jurisdictional regulatory requirements and will work to maximize interoperability of efforts, where possible.

110 IFRS. [IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information](#), March 31, 2022.

111 IFRS. [IFRS S2 Climate-related Disclosures](#), March 31, 2022.

112 [TCFD](#).

113 <https://www.lexology.com/library/detail.aspx?g=8ce2790d-77ca-486c-9e94-cc7460b7580a>

**DISCLOSURE INITIATIVE/
JURISDICTION****INITIATIVES AND POLICIES****REGULATIONS**

Brazil	In September 2021, the Banco Central do Brazil (BCB) set forth a regulatory proposal to enforce more robust social, environment and climate-related risk management disclosure by institutions of the National Financial System (SFN). ¹¹⁴ The proposal adopts and expands on TCFD recommendations and would be implemented in two phases. The first phase focuses on the disclosure of clear, consistent, and comparable information about governance, strategy, and social, environmental and climate-related risk management. The second phase sets mandatory disclosure of quantitative information, specifically related to metrics and targets.
Egypt	In July 2021, the Financial Regulatory Authority (FRA) issued Resolution Nos. 107 and 108 outlining sustainability disclosure requirements for companies on the EGX and non-bank financial institutions from FY2022 onwards. ¹¹⁵ Companies in scope must also provide the FRA with quarterly reports that describe what plans and activities are in place to meet disclosure requirements.
European Union	<p>The European Union has introduced regulatory initiatives such as the EU taxonomy, the Sustainable Finance Disclosure Regulation (SFDR), and the Corporate Sustainability Reporting Directive (CSRD). The CSRD directs the European Financial Reporting Advisory Group (EFRAG) to develop detailed European Sustainability Standards, which should be adopted by June 2023 and enhanced over time. The Taxonomy Regulation includes reporting obligations for corporates under the scope of the CSRD, requiring them to disclose the alignment of their turnover, capital expenditure, and operating expenditure with the taxonomy criteria.</p> <p>The CSRD extends the scope of companies subject to disclosure requirements to include all large companies and listed SMEs (representing around 50,000 European corporates), requires audit/assurance of reported information, and mandates that disclosure of transition plans aligned with the Paris Agreement.</p>
France	<p>France first introduced reporting regulatory requirements for institutional investors through Article 173-VI of the Law of 17 August 2015. These provisions were strengthened in 2019 with Article 29 of the Energy-Climate Law. Article 29 refers directly to the European regulation (SFDR) and complements it with reporting requirements on: the alignment of investment strategies with the objectives of the Paris agreement (including quantitative targets for greenhouse gas emissions every five years until 2050); the alignment of outstanding amounts (or their balance sheet) with the EU taxonomy; biodiversity-related risks and impacts (including the publication of a strategy to align with international biodiversity preservation objectives, with quantified targets); the portion of their investments exposed to fossil fuels; the full integration of ESG factors in the risk management, governance and transition support systems (notably shareholder engagement) of market participants.</p> <p>Reporting requirements for corporates were first introduced in France through a Law of 2001 before being incrementally strengthened over time, until a Law of 2017 going beyond European regulation by specifying further the categories of reporting, by extending the scope to both listed and non-listed corporates, and by requiring a mandatory audit/assurance of the sustainability reporting.</p>
Hong Kong	In November 2021, the Mandatory Provident Fund Schemes Authority issued a circular with high-level principles for mandatory provident fund trustees on integrating ESG factors into their investment and risk management processes. One of the principles focuses on disclosing metrics and targets and references the TCFD recommendations. In December 2021, the Hong Kong Monetary Authority issued a supervisory policy manual for banks, restricted license banks, and deposit-taking companies (authorized institutions) on key elements of managing climate-related risk. The manual indicates authorized institutions should “take actions to prepare climate-related disclosures in accordance with TCFD recommendations as soon as practicable and make their first disclosures no later than mid-2023.” ¹¹⁶

114 https://www.bcb.gov.br/content/about/legislation_norms_docs/BCB_Disclosure-GRSAC-Report.pdf115 https://gca.org/wp-content/uploads/2022/06/climate_risk_regulation_in_africas_financial_sector_and_related_private_sector_initiatives_report.pdf

116 TCFD 2022 Progress report, forthcoming.

DISCLOSURE INITIATIVE/ JURISDICTION	INITIATIVES AND POLICIES
India	<p>In July 2022, the Reserve Bank of India (RBI) released a Discussion Paper on Climate Risk and Sustainable Finance to seek feedback on several topics, including climate-related financial disclosure. In the discussion paper, the RBI highlights the TCFD recommendations “as a desirable framework [for regulated entities] to rely upon, at least at the initial stage.”¹¹⁷</p>
Japan	<p>In June 2021, the Corporate Governance Code was revised. The revised Code requires companies listed on the Prime Market¹¹⁸ to enhance the quality and quantity of disclosure based on the TCFD recommendations, an internationally well-established disclosure framework, or an equivalent framework on Comply or Explain basis in and after FY 2022.</p> <p>Japan adopts an entity-based approach with a view to promote transitions for hard-to-abate sectors and published the following tools as a reference for companies, investors and external reviewers:</p> <ul style="list-style-type: none"> • The <i>Basic Guidelines on Climate Transition Finance</i>¹¹⁹ provides examples and interpretations of expected disclosure elements that serve as references for fundraisers and investors to consider concrete actions on transition finance, in line with the ICMA Climate Transition Finance Handbook. • Sector-specific technical roadmaps show the technologies that are expected to be necessary in order to make each hard-to-abate sector carbon neutral by 2050 with a scientific basis. <p>The value of entity-based approach at this point is threefold: Dynamic, Flexible, and Interactive.¹²⁰ In July 2022, the Financial Services Agency (FSA) released a draft code of conduct¹²¹ covering transparency, objectivity, governance for ESG evaluation and data providers and “Supervisory Guidance on Climate-related Risk Management and Client Engagement,”¹²² which positions proactively helping clients deal with climate change as central to financial institutions’ response to climate change.</p>
Kenya	<p>The Central Bank of Kenya, which supervises and regulated the financial sector in Kenya, released Guidance of Climate-Related Risk Management for financial banks in October 2021.¹²³ It includes guidance on disclosure of climate-related information, which is aligned to TCFD recommendations. Banks were required to submit an implementation plan for the requirements of the Guidance in June 2022 and will need to submit quarterly updates on progress to the CBK.</p>
Malaysia	<p>In June 2022, the Joint Committee on Climate Change published a guide to support implementation of climate-related disclosures aligned with TCFD recommendations. The guide is aimed at financial institutions regulated by the Bank Negara Malaysia and the Securities Commission Malaysia and includes commercial banks, investment banks, insurance and reinsurance companies, and fund management companies.¹²⁴</p>

117 TCFD 2022 Progress report, forthcoming.

118 Prime Market is the market oriented to companies which center their business on constructive dialogue with global investors.

119 https://www.meti.go.jp/english/press/2021/0507_001.html

120 https://www.fsa.go.jp/en/announce/state/20220526_EN_02.pdf

121 <https://www.fsa.go.jp/en/news/2022/20220712-2.html>

122 <https://www.fsa.go.jp/en/news/2022/20220715/20220715.html>

123 https://gca.org/wp-content/uploads/2022/06/climate_risk_regulation_in_africas_financial_sector_and_related_private_sector_initiatives_report.pdf

124 TCFD 2022 Progress report, forthcoming.

**DISCLOSURE INITIATIVE/
JURISDICTION****INITIATIVES AND POLICIES**

Nigeria	In 2012, the Central Bank of Nigeria (CBN) approved the adoption of the Nigeria Sustainable Banking Principles (NSBP). The binding principles are mandatory and adopted by all banks to guide financing and investment activities. As part of the NSBP's requirements, banks are required to submit reports every six months on their progress on ESG-related goals, and an annual sustainability report must be published. ¹²⁵
Singapore	<p>In December 2021, Singapore Exchange (SGX) announced that all issuers must provide climate reporting on a 'comply or explain basis.' Climate reporting will be mandatory for issuers in the financial, agriculture, food, forests products and energy industries from FY2023, with the materials and buildings and transportation industry from FY2024. SGX's climate reporting requirements are based on the TCFD recommendations.¹²⁶</p> <p>The MAS-convened Green Finance Industry Taskforce (GFIT) issued a detailed implementation guide for climate-related disclosures by financial institutions. The Taskforce also published a whitepaper that outlines recommendations and lays out a roadmap for scaling green finance in the real estate, infrastructure, fund management, and transition sectors. Guidance includes a green securitization platform to scale sustainable infrastructure investments in the region and recommendations for the use of transition bonds and loans in certain sectors.¹²⁷</p>
Switzerland	In March 2022, the Swiss Federal Council launched a consultation on mandatory climate-related financial disclosures for large Swiss companies in line with the TCFD recommendations. The ordinance is expected to officially launch in early 2023.
Thailand	In February 2022, the Bank of Thailand issued a consultation paper on the financial landscape that describes policies to support three objectives for the financial sector. One of the objectives relates to the financial sector helping businesses and households transition to a digital economy and effectively manage environmental risks. The consultation paper describes several potential policies to support this objective, one of which is to set disclosure standards for financial institutions that are consistent with international frameworks such as the TCFD. ¹²⁸
United Kingdom	The UK Transition Plan Taskforce (TPT) was launched by HM Treasury to develop a gold standard for climate transition plans. The TPT's work will help to drive decarbonization by ensuring that financial institutions and companies prepare rigorous plans to achieve net zero and support efforts to tackle greenwashing. The TPT has a two-year mandate, and the Financial Conduct Authority (FCA) will be actively involved and draw on its findings to strengthen disclosure rules. It will bring together leaders from industry, academia and regulators, and will coordinate with international efforts. ¹²⁹
United States	The United States the Securities and Exchange Commission (SEC) has published a proposed a new rule that, if adopted, would require public companies to provide detailed reporting of their climate-related risks, emissions, and net-zero transition plans.

125 https://gca.org/wp-content/uploads/2022/06/climate_risk_regulation_in_africas_financial_sector_and_related_private_sector_initiatives_report.pdf

126 <https://www.sgx.com/regulation/sustainability-reporting>

127 Moody's. [MAS Taskforce Issues Guide for Climate-Related Disclosures](#), 2021.

128 TCFD 2022 Progress Report, forthcoming.

129 <https://transitiontaskforce.net>

Glossary

Absolute emissionsⁱ	The total aggregate absolute quantity of greenhouse gas (GHGs) emissions released to the atmosphere, usually in unit of metric tonne.
Adaptationⁱⁱ	Adaptation refers to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts
Avoidance carbon creditⁱⁱⁱ	Credits from actions that avoid GHG emissions outside of an organization's value chain (e.g. a renewable power project).
Biodiversity^{iv}	Biodiversity or biological diversity is the variety and variability of life on Earth.
Carbon credit^v	Payment to receive credit for a certified unit of emission reduction or removal carried out by another actor (Oxford Offsetting Principles). These instruments are also known as carbon offsets or verified emissions reductions (VERs).
Carbon dioxide equivalent (CO₂e)^{vi}	The number of metric tonnes of CO ₂ emissions with the same global warming potential as one metric tonne of another greenhouse gas; in other words, the amount of carbon dioxide emissions that would have an equivalent warming effect over a specified time horizon. CO ₂ e is calculated by multiplying different greenhouse gases by a Global Warming Potential (GWP).
Carbon neutrality^{vii}	Carbon neutrality means having a balance between emitting carbon and absorbing carbon from the atmosphere in carbon sinks.
Climate Transition-Related Data	Data that can be used to inform on the transition to a net zero economy, or more broadly climate change mitigation. It is inclusive of, but not limited to, data on entity emissions, targets, transition strategies, transition related investment, and climate-related risks and opportunities.
Climate-related risk^{viii}	Climate-related risks encompass both physical and transition risk. Physical risks emanating from climate change can be event-driven (acute), such as increased severity of extreme weather events (e.g., cyclones, droughts, floods and fires). They can also relate to longer-term shifts (chronic) in precipitation and temperature, and increased variability in weather patterns (e.g., sea level rise). Transition risk relates to risks associated with the transition to a lower-carbon global economy, the most common of which relates to policy and legal actions, technology changes, market responses and reputational considerations.
Control Approach^{ix}	Control can be defined in either financial or operational terms. When using the control approach to consolidate GHG emissions, companies shall choose between either the operational control or financial control criteria.
Emissions intensity^x	Emissions per a relative unit of measure (i.e., CO ₂ e/revenue)
Estimated/ modeled emissions	Emissions that are modeled or extrapolated based on industry or sector averages, usually by a third party, as opposed to emissions that are calculated based on activity data (i.e., kWh of electricity consumed) reported by a firm.
Equity share approach^{xi}	The equity share reflects economic interest, which is the extent of rights a company has to the risks and rewards flowing from an operation. Typically, the share of economic risks and rewards in an operation is aligned with the company's percentage ownership of that operation, and equity share will normally be the same as the ownership percentage. Where this is not the case, the economic substance of the relationship the company has with the operation always overrides the legal ownership form to ensure that equity share reflects the percentage of economic interest.

Facilitated emissions^{xi}	Facilitated emissions differ from financed emissions in two respects: they are off-balance sheet (representing services rather than financing) and they can take the form of a flow activity (temporary association with transactions) rather than a stock activity (held on book). PCAF views facilitation as a separate and significant metric when it comes to climate risk management decisions, and one that wields material impact on the direction of capital towards economic activities that will enable the transition to net zero to no later than 2050.
Financed emissions^{xiii}	Otherwise referred to as Scope 3 Category 15, financed emissions are emissions occurring from an entity's investments.
Financial control^{xiv}	The company has financial control over the operation if the former has the ability to direct the financial and operating policies of the latter with a view to gaining economic benefits from its activities.
Greenhouse gas (GHG)^{xv}	Gases that trap heat in the atmosphere are called greenhouse gases (GHGs). The seven direct greenhouse gases as per the Kyoto protocol include: Carbon dioxide (CO ₂), Methane (CH ₄) Nitrous oxide (N ₂ O) Hydrofluorocarbons (HFCs) Perfluorocarbons (PFCs) Sulphur hexafluoride (SF ₆) Nitrogen trifluoride (NF ₃)
Greenhouse Gas Protocol (GHGP)^{xvi}	The Greenhouse Gas Protocol (GHGP) provides accounting and reporting standards, sector guidance, calculation tools and trainings for businesses and local and national governments. It has created a comprehensive, global, standardized framework for measuring and managing emissions from private and public sector operations, value chains, products, cities and policies to enable greenhouse gas reductions across the board.
Global warming potential (GWP)^{xvii}	The GWP was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of one tonne of a gas will absorb over a given period of time, relative to the emissions of one tonne of carbon dioxide (CO ₂). The larger the GWP, the more that a given gas warms the earth compared to CO ₂ over that time period. The time period usually used for GWPs is 100 years. GWPs provide a common unit of measure, which allows analysts to add up emissions estimates of different gases (e.g., to compile a national GHG inventory), and allows policymakers to compare emissions reduction opportunities across sectors and gases.
Gross GHG Emissions	A firm's total GHG emissions, not inclusive of emissions abated through carbon credits
Legal Entity Identifier (LEI)^{xviii}	LEI is a 20-character, alpha-numeric code based on the ISO 17442 standard developed by the International Organization for Standardization (ISO). It connects to key reference information that enables clear and unique identification of legal entities participating in financial transactions.
Managed Phaseout^{xviii}	Targeted efforts to reduce GHG emissions associated with high-emitting or carbon-intensive assets, activities, or sectors. Financial institutions can develop strategies to credibly support or enable retirement, redevelopment, or retrofitting of high-emitting assets within a defined time horizon, thereby limiting the likelihood that these assets will be stranded in a low-carbon future. These projects require appropriate scrutiny and governance to ensure that emissions reductions occur as planned.
Net GHG Emissions	A firm's total GHG emissions minus their emissions abated through carbon credits.
Net zero^{xix}	Net zero means cutting greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere, by oceans and forests for instance.
Open data^{xx}	Open data is data that can be freely used and redistributed by any user - subject only, at most, to the requirement to attribution.
Operational control approach^{xxi}	A company has operational control over an operation if the former or one of its subsidiaries has the full authority to introduce and implement its operating policies at the operation.

Parent-subsidiary organizational structure^{xxii}	Parent is defined as an entity that has one or more subsidiaries; Subsidiaries are defined as entities (including unincorporated entities) that are “controlled by another entity”. The parent company has the ability to direct the financial and operating policies of the subsidiary company with a view to gaining economic benefits from its activities. Normally, this also includes incorporated and unincorporated joint ventures and partnerships over which the parent company has financial control.
PCAF Standard^{xxiii}	The Global GHG Accounting and Reporting Standard for the Financial Industry by the Partnership for Carbon Accounting Financials
Physical risk^{xxiv}	Physical risks emanating from climate change can be event-driven (acute), such as increased severity of extreme weather events (e.g., cyclones, droughts, floods and fires). They can also relate to longer-term shifts (chronic) in precipitation and temperature, and increased variability in weather patterns (e.g., sea level rise).
Power Purchase Agreement (PPA)^{xxv}	A Power Purchase Agreement (PPA) is an arrangement in which a third-party developer installs, owns, and operates an energy system on a customer’s property. The customer then purchases the system’s electric output for a predetermined period. A PPA allows the customer to receive stable and often low-cost electricity with no upfront cost, while also enabling the owner of the system to take advantage of tax credits and receive income from the sale of electricity.
Real economy^{xxvi}	The real economy refers to all non-financial elements of the economy.
Removal carbon credit^{xxvii}	Credits from actions that directly remove GHG emissions from the atmosphere and store them for a period of time long enough to fully neutralize their impacts (e.g., direct air capture technology, afforestation)
Renewable Energy Credit (REC)^{xxviii}	A market-based instrument that represents the property rights to the environmental, social, and other non-power attributes of renewable electricity generation. RECs are issued when one megawatt-hour (MWh) of electricity is generated and delivered to the electricity grid from a renewable energy resource.
Resilience^{xxix}	The ability of systems to cope with or recover from a hazardous event, trend or disturbance while maintaining their essential functions, identities, and structures. Increasing resilience to acute and chronic climate impacts requires adaptation measures.
Scope 1^{xxx}	Scope 1 emissions are direct emissions from company-owned and controlled resources.
Scope 2^{xxx}	Scope 2 emissions are indirect emissions from the generation of purchased energy.
Scope 2 location-based method^{xxx}	A method to quantify Scope 2 GHG emissions based on average energy generation emission factors for defined geographic locations, including local, subnational, or national boundaries
Scope 2 market-based method^{xxx}	Method to quantify the Scope 2 GHG emissions of a reporting entity based on GHG emissions emitted by the generators from which the reporter contractually purchases electricity bundled with contractual instruments, or contractual instruments on their own.
Scope 3^{xxxi}	Scope 3 emissions are 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 categories^{xxxii}	There are 15 distinct Scope 3 categories, covering upstream, downstream (including financed) emissions for a company’s value chain.
Scope 3 Category 1 — Purchased goods and services^{xxvi}	Extraction, production, and transportation of goods and services purchased or acquired by the reporting company in the reporting year, not otherwise included in Categories 2 - 8
Scope 3 Category 10 — Processing of sold products^{xxvi}	Processing of intermediate products sold in the reporting year by downstream companies (e.g., manufacturers)
Scope 3 Category 11 — Use of sold products^{xxvi}	End use of goods and services sold by the reporting company in the reporting year

Scope 3 Category 12 — End-of-life treatment of sold products^{xxvi}	Waste disposal and treatment of products sold by the reporting company (in the reporting year) at the end of their life.
Scope 3 Category 13 — Downstream leased assets^{xxvi}	Operation of assets owned by the reporting company (lessor) and leased to other entities in the reporting year, not included in Scope 1 and Scope 2 - reported by lessor.
Scope 3 Category 14 — Franchises^{xxvi}	Operation of franchises in the reporting year, not included in Scope 1 and Scope 2 - reported by franchisor
Scope 3 Category 15 — Investments^{xxvi}	Operation of investments (including equity and debt investments and project finance) in the reporting year, not included in Scope 1 or Scope 2.
Scope 3 Category 2 — Capital goods^{xxvi}	Extraction, production, and transportation of capital goods purchased or acquired by the reporting company in the reporting year.
Scope 3 Category 3 — Fuel- and energy related activities (not included in scope 1 or scope 2)^{xxvi}	Extraction, production, and transportation of fuels and energy purchased or acquired by the reporting company in the reporting year, not already accounted for in Scope 1 or Scope 2.
Scope 3 Category 4 — Upstream transportation and distribution^{xxvi}	Transportation and distribution of products purchased by the reporting company in the reporting year between a company's tier 1 suppliers and its own operations (in vehicles and facilities not owned or controlled by the reporting company); Transportation and distribution services purchased by the reporting company in the reporting year, including inbound logistics, outbound logistics (e.g., of sold products), and transportation and distribution between a company's own facilities (in vehicles and facilities not owned or controlled by the reporting company).
Scope 3 Category 5 — Waste generated in operations^{xxvi}	Disposal and treatment of waste generated in the reporting company's operations in the reporting year (in facilities not owned or controlled by the reporting company)
Scope 3 Category 6 — Business travel^{xxvi}	Transportation of employees for business-related activities during the reporting year (in vehicles not owned or operated by the reporting company)
Scope 3 Category 7 — Employee commuting^{xxvi}	Transportation of employees between their homes and their worksites during the reporting year (in vehicles not owned or operated by the reporting company)
Scope 3 Category 8 — Upstream leased assets^{xxvi}	Operation of assets leased by the reporting company (lessee) in the reporting year and not included in Scope 1 and Scope 2 - reported by lessee
Scope 3 Category 9 — Downstream transportation and distribution^{xxvi}	Transportation and distribution of products sold by the reporting company in the reporting year between the reporting company's operations and the end consumer (if not paid for by the reporting company), including retail and storage (in vehicles and facilities not owned or controlled by the reporting company)
Sectoral pathway^{xxxiii}	Sectoral pathways provide the link between the science of the remaining carbon budget and the detailed steps that a specific sector could take to reduce GHG emissions to a particular level in a specified timeframe.
Transition pathway^{xxxiv}	Transition pathways outline one or more "paths" that an economy, industry, or region can take to get from 'Point A' (the current states of things) to 'Point B' (a desired future state)
Transition risk^{xxxv}	Risks that are associated with the transition to a lower-carbon global economy, the most common of which relates to policy and legal actions, technology changes, market responses and reputational considerations.

GLOSSARY ENDNOTES

- i WRI and WBCSD. [The GHG Protocol: A Corporate Accounting and Reporting Standard](#), March 2004, p. 65.
- ii UNFCCC. “[What do adaptation to climate change and climate resilience mean?](#)”
- iii GFANZ. [Recommendations and Guidance on Financial Institution Net-zero Transition Plans](#), June 2022.
- iv World Wildlife Fund. “[What is biodiversity?](#)”
- v [The Oxford Principles for Net Zero Aligned Carbon Offsetting](#), September 2020.
- vi <https://www3.epa.gov/carbon-footprint-calculator/tool/definitions/co2e.html>
- vii UNFCCC. “[A Beginner’s Guide to Climate Neutrality](#)”.
- viii TCFD. [Recommendations of the Task Force on Climate-related Financial Disclosures](#), June 2017.
- ix GHG Protocol. [Technical Guidance for Calculating Scope 3 Emissions, Appendix C: Calculating emissions intensity metrics](#).
- x WRI and WBCSD. [The GHG Protocol Standard. Chapter 3: Setting Organizational Boundaries](#), March 2004.
- xi PCAF. [Capital Market Instruments Discussion Paper 2021](#), 2021.
- xii PCAF. [The Global GHG Accounting and Reporting Standard for the Financial Industry](#), November 18, 2020.
- xiii United States Environmental Protection Agency (EPA). “[Overview of Greenhouse Gases](#).”
- xiv WRI. [Greenhouse Gas Protocol](#).
- xv <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>
- xvi GLEIF. “[Introducing the Legal Entity Identifier \(LEI\)](#).”
- xvii GFANZ. [The Managed Phaseout of High-emitting Assets](#), June 2022.
- xviii United Nations. “[What is net zero?](#)”
- xix <https://opendatahandbook.org/guide/en/what-is-open-data>
- xx IASB. [IFRS 10 Consolidated Financial Statements](#).
- xxi The World Bank. “[Power Purchase Agreements \(PPAs\) and Energy Purchase Agreements \(EPAs\)](#).”
- xxii Corporate Finance Institute. “[What is the Real Economy?](#)”
- xxiii EPA. [Renewable Energy Certificates \(RECs\)](#).
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- xxv WRI and WBCSD. [Greenhouse Gas Protocol: FAQ](#).
- xxvi WRI. [GHG Protocol Scope 2 Guidance: An Amendment to the GHG Protocol Corporate Standard](#), September 2015.
- xxvii WRI and WBCSD. [Technical Guidance for Calculating Scope 3 Emissions: Supplement to the Corporate Value Chain \(Scope 3\) Accounting & Reporting Standard](#), 2013.
- xxviii GFANZ. [Guidance on use of Sectoral Pathways for Financial Institutions](#), June 2022.
- xxix Energy Futures Lab. “[What is a Pathway? A conceptual overview of transition pathways](#).” January 29, 2021.

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