

This technical supplement describes the methodology used for the Climate Brief n°61 “**Very few companies make good use of scenarios to anticipate their climate-constrained future**”, which gives an overview of the degree of implementation of climate-related scenario analysis to evaluate risks and opportunities, based on the answers of a sample of 2,003 companies to CDP 2017 Climate Change questionnaire.

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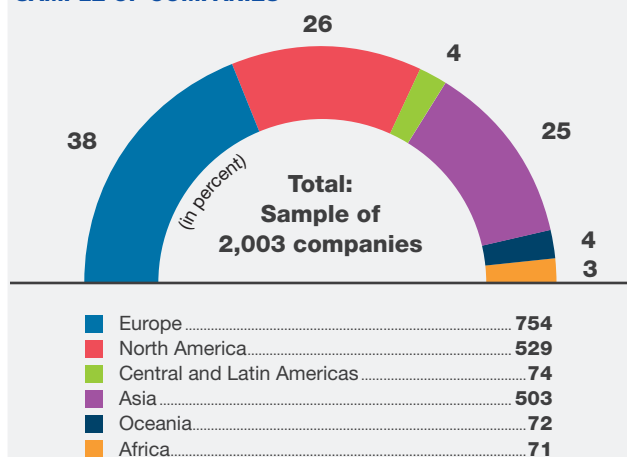
This research is part of the Reimagining Disclosure Project, led by CDP, and supported by Climate-KIC.

Methodology

Data sources

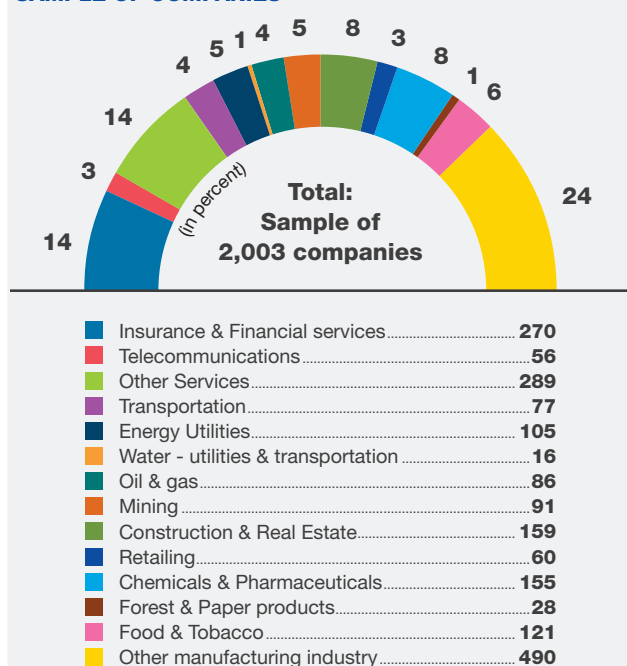
The analysis is based on the answers of a sample of 2,003 companies to 2017 CDP Climate Change questionnaire. **Figure 1** and **Figure 2** show respectively the geographical and sectorial distributions of these companies.

FIGURE 1. GEOGRAPHICAL DISTRIBUTION OF THE TOTAL SAMPLE OF COMPANIES



Source: I4CE, 2018, based on data provided by CDP

FIGURE 2. SECTORIAL DISTRIBUTION OF THE TOTAL SAMPLE OF COMPANIES



Source: I4CE, 2018, based on data provided by CDP

The analysis draws on the answers of all companies to the question related to the integration of climate change into the business strategy of companies – which includes a sub-question on the use of climate-related forward-looking scenario analysis (see Box 1 for the wording of this question in 2017 CDP questionnaire) – as well as on the answers to other questions that include the word “scenario”.

BOX 1. WORDING OF THE MAIN QUESTION FROM THE 2017 CDP QUESTIONNAIRE WHOSE ANSWERS WERE ANALYZED

CC2.2a. Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process

Please respond to this question in the text box provided, using no more than 7,000 characters. Please note that when copying from another document into the ORS, the formatting is not retained.

This question asks about the process by which your strategy was influenced, and the outcomes of that process. If you wish, you may provide a description of your business strategy for information (oil & gas, electric utility and auto/auto component sector companies should see the information requests specific to their sectors below).

This question is intended to focus on the group business strategy, meaning the full corporate body on which you are reporting. However, if it is more appropriate, you may wish to comment on divisional (business unit) strategies. If you are responding to the request from a supply chain member, please also include information specific to your requesting member, i.e. relevant business units.

Your response to CC2.2a should cover the following points:

- i. A description of how the business strategy has been influenced (i.e. the internal process for collecting and reporting information to influence the strategy);*
- ii. At least one example given of how the business strategy has been influenced;*
- iii. What aspects of climate change have influenced the strategy (e.g. need for adaptation, regulatory changes, or opportunities to develop green business);*
- iv. How the short-term strategy has been influenced by climate change (or if none, this is stated) – ‘Short term’ can mean ‘current’;*
- v. How the long-term strategy has been influenced by climate change (or if none, this is stated);*
- vi. How the Paris Agreement has influenced the business strategy (e.g. the process of transition planning alongside the ratcheting of Intended Nationally Determined Contributions (INDCs));*
- vii. How this is gaining a strategic advantage over your competitors; and*
- viii. Do you use forward-looking scenario analyses, including a 2°C scenario, to inform your organization’s businesses, strategy, and/or financial planning?*

Analysis of answers to CDP 2017 questionnaire

A first **automatic scan** was carried out on these answers to identify companies mentioning some specific words (“scenario”, “model”, “quantitative”, “SBT”, “science-based”, “science based”, “forward”, “IEA”). The answers of companies thus selected (about 900) were thoroughly analyzed to identify companies which actually referred to climate-related scenario analysis (see Box 2 for the definition).

BOX 2. DEFINITION OF CLIMATE-RELATED SCENARIO ANALYSIS*

Scenarios are hypothetical constructs meant to highlight central elements of a possible future and to draw attention to the key factors that will drive future developments. Climate-related scenarios include scenarios presenting pathways to a low-carbon economy and scenarios presenting the impact of climate change on nature and society. A scenario analysis of climate-related risks and opportunities consists in using climate-related scenarios to develop an understanding of how the transition to a low-carbon economy and/or the physical impacts of climate change might impact a business over time.

* This definition is derived from the Technical Supplement of the TCFD on the Use of Scenario Analysis in Disclosure of Climate-Related Risks and Opportunities.

A second step consisted in **identifying the objective of scenario analysis described by companies**. Indeed, some companies indicate using climate-related scenarios in view of aligning their strategy to a given climate objective, which is a different process from carrying out a scenario-based analysis of risks and opportunities. The focus of this report is the use of scenarios to evaluate risks, as it aims at evaluating how companies are implementing the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)¹. Companies using scenarios to align their strategy to climate objectives were therefore not taken into account in this report. More details on companies using climate-related scenarios to align their strategy to a given climate objective can be found in Box 3.

The term “climate-related scenario analysis” means very different things for companies. Among companies that refer to analyses to evaluate their risks and opportunities, some describe practices that do not fall into the definition of climate-related scenario analysis (see Box 2).

A third step consisted in **making the distinction between on the one hand companies giving information indicating that they carry out a scenario-based analysis and on the other hand companies saying that they do so**, without giving evidence suggesting that they strictly speaking carry out a scenario-based analysis, or on the contrary describing a practice which differs from climate-related scenario analysis.

In the second category were also included companies describing the same practices without explicitly saying that they consider them as climate-related scenario analyses, as it was not always clear from the companies’ answers. Consequently, the number of companies of the second category is only indicative: on the one hand, it may be overestimated compared to the number of

1 More information on the TCFD recommendations are available on the TCFD website <https://www.fsb-tcfid.org/>

BOX 3. INFORMATION GIVEN BY COMPANIES ON THEIR USE OF CLIMATE-RELATED SCENARIOS TO ALIGN THEIR STRATEGY TO A GIVEN CLIMATE OBJECTIVE

About 10% of the sample of companies (208) mention using climate-related scenario analyses in **view of aligning their strategy to a climate objective (2°C or lower)**. Among them, the great majority (more than 60%) specify that they are part of the Science Based Target (SBT) initiative, at different stages of their commitment. Two companies mention that their target is in line with a 1.5°C scenario, while the rest – when information is given – say that their target is in line with a 2°C scenario. An additional sixty companies report that they have used scenario analyses to align their strategy to a 2°C scenario, and seventeen of them give information on the scenario which was used – i.e. IEA 2DS, IEA 450, IPCC RCP 2.6, and national or sectorial decarbonisation roadmaps. Finally, nineteen other companies mention that they have a “science-based target”, but are outside of the initiative, and do not give information on the target path considered.

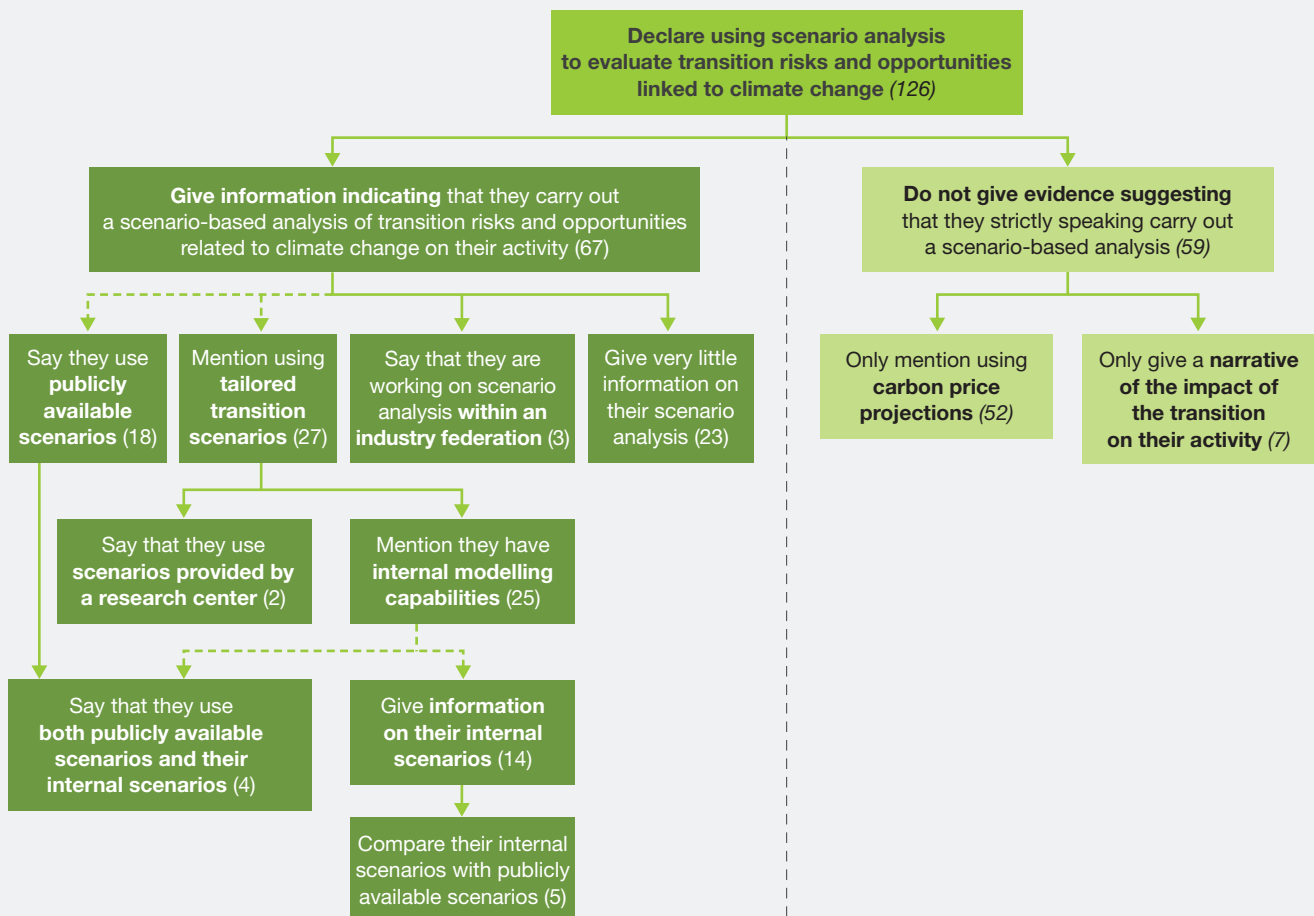
companies which consider that they carry-out a climate-related scenario analysis, and on the other, it may be underestimated compared to the total number of companies describing a given practice, as some of them may not have mentioned any of the words used for the first automatic scan. On the contrary, the number of companies that give information indicating that they carry out a climate-related scenario-based analysis, on which has been based the analysis presented in the Climate Brief, can reasonably be assumed as comprehensive.

Information given by companies on what they consider a scenario analysis of their transition risks is presented in Figure 3. Information on the left side of the graph was considered as corresponding to climate-related scenario analysis.

Among companies considered as not giving information indicating that they carry out a scenario-based analysis of their transition risks, the majority (52²) only mention that they use carbon price projections, usually short-term forecasts of carbon prices in existing schemes, or mid-term

² Please note that this value, as well as all the other numbers in italic in this section, are only indicative, given the methodology. Please refer to the paragraph above for more details.

FIGURE 3. MAPPING THE INFORMATION GIVEN BY COMPANIES ON THEIR USE OF SCENARIO ANALYSES TO EVALUATE THEIR TRANSITION RISKS AND OPPORTUNITIES



Source: I4CE, 2018, based on data from CDP

Interpretation of the figure: The number within brackets corresponds to the number of companies of the sample analyzed that give the information described in the frame. The arrows link the frames to possible subcategories of the practice described. The dotted arrows link a given frame to subcategories which are not mutually exclusive.

Note: Numbers in italic are only indicative, given the methodology.

anticipations. In most cases, they explicitly mention that carbon prices are used to anticipate operational costs over the short-term and/or inform investment decisions. Companies describing carbon prices as a driver of their scenario-analysis of transition risks were not included in this category. *Seven* additional companies only give a narrative of the impact of the transition on their activity based on a specific study, report or scenario, and no evidence is given to suggest that this narrative draws from a more comprehensive scenario analysis. Most of them (5) refer to reports or scenarios by the International Energy Agency (IEA), and the other *two* cite sectorial decarbonisation scenarios.

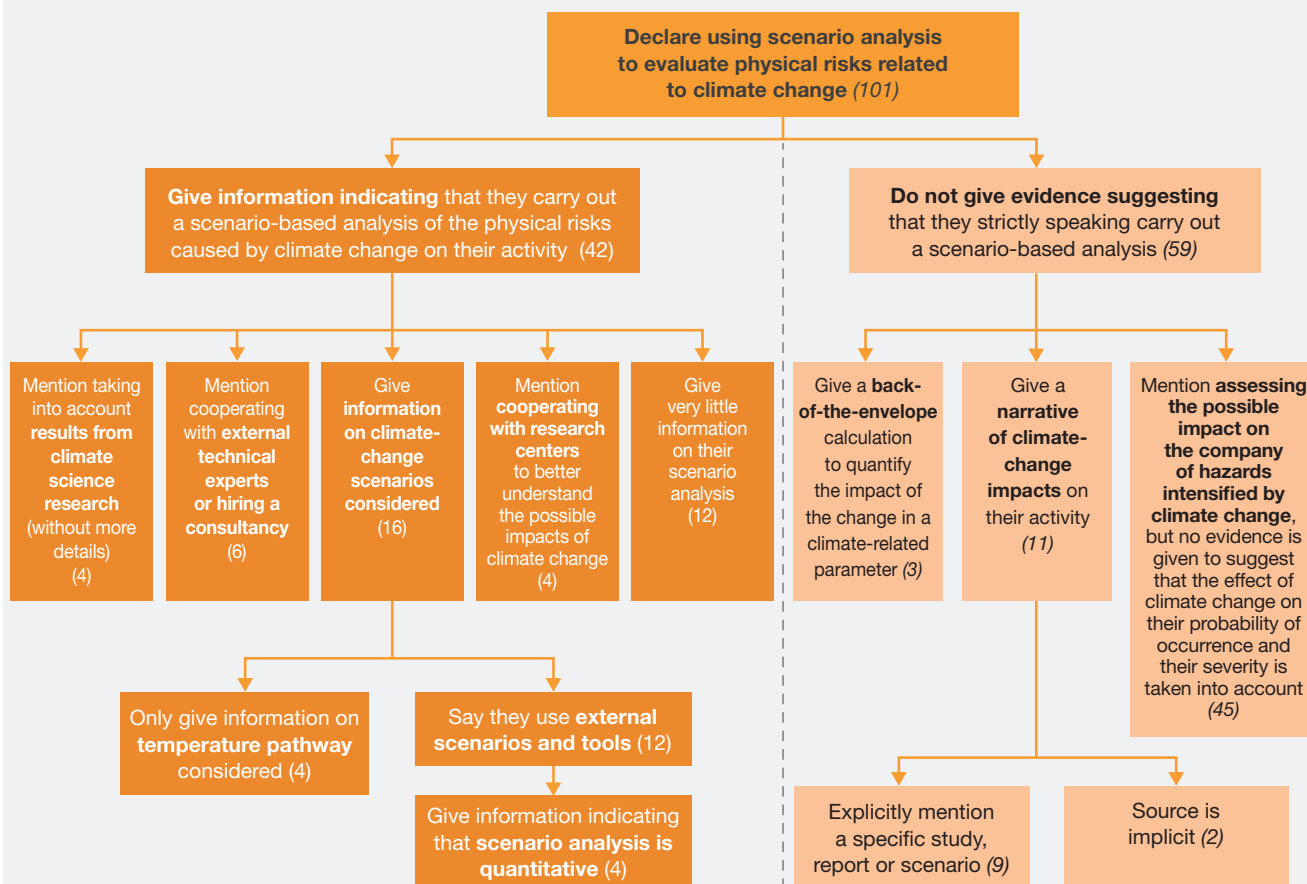
Information given by companies on what they consider a scenario analysis of their physical risks is presented in Figure 4. Information in the left side of the graph was considered as corresponding to climate-related scenario analysis.

Among companies considered as not giving information indicating that they carry out a scenario-based analysis of their physical risks, the majority (45) correspond to companies that mention having identified hazards intensified by climate change and having assessed their possible impact on the company, but that do not give evidence to suggest that the effect of climate change on their probability of occurrence and their severity is

taken into account. For example, many insurance companies mention that they use natural catastrophes models to evaluate the risks caused by extreme weather events on their activity. However, either companies say explicitly that their assessment is based on historical data series, or they do not mention taking into account the effects of climate change. Furthermore, *eleven* companies only give a short description of the possible impacts of climate change on their activity, and no evidence is given to suggest that this narrative draws from a more comprehensive scenario analysis. For example, a company highlights the fact that some of its assets would be at risk in case of an increase in the frequency and severity of floods, which would also affect its suppliers. *Nine* of these companies explicitly base their narrative on research from a given organization or on a specific study – in most cases the Fifth Assessment report of the IPCC (AR5). Two of them refer to research by the UK government – the UK Climate Change Risk Assessment of 2017 and the UK Climate Projections (UKCP09³). Finally, *three* companies give a back-of-the-envelope calculation of the possible impact of

3 UK climate projections is a climate analysis tool that provides climate change projections out to 2100 in the UK and globally. A new version of UK climate projections was made public in November 2018 (UKCP18), available online: <https://www.metoffice.gov.uk/research/collaboration/ukcp>.

FIGURE 4. MAPPING THE INFORMATION GIVEN BY COMPANIES ON THEIR USE OF SCENARIO ANALYSES TO EVALUATE PHYSICAL RISKS RELATED TO CLIMATE CHANGE



Source: I4CE, 2018, based on data from CDP

Interpretation of the figure: The number within brackets corresponds to the number of companies of the sample analyzed that give the information described in the frame. The arrows link the frames to possible subcategories of the practice described.

Note: Numbers in italic are only indicative given the methodology.

the change in a climate-related parameter on their activity. The three of them refer to an external study to give a rough estimate of the impact of climate change on electricity demand and thus on their activity.

Some companies (21) say that they use scenario analyses to evaluate their climate-related risks but the information given is not sufficient to infer whether the objective is to assess transition or physical risks. A third of these companies (7) specify the temperature pathway of the scenario considered: all of them declare using a 2°C scenario, one of them reports using two additional scenarios (a 1.5 °C and a 3-4 °C scenarios). These seven companies are considered as giving enough information to suggest that they carry out a scenario analysis of their climate-related risks and opportunities, but not the fourteen others.

Limits

The analysis is limited to the information given by companies in answer to CDP questionnaire. Furthermore, not all answers are completely clear, and their interpretation inevitably involves some subjectivity. In particular, it was manifest that the term “climate-related scenario analysis” meant very different things for companies.

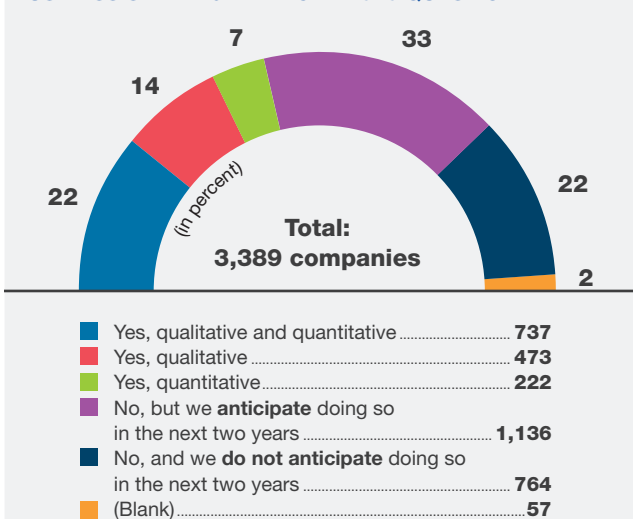
Another limit comes from the fact that the analysis was carried out on 2017 answers to CDP questionnaire, as 2018 answers were not available at the time when the analysis was conducted. The situation may have evolved since then for some companies⁴. A preliminary scan of 2018 answers to the questionnaire was conducted, but it does not entail a thorough reading of answers as for 2017 data.

Preliminary scan of answers to CDP 2018 questionnaire

CDP questionnaire changed between 2017 and 2018, and 2018 questionnaire includes a specific question on the use of climate-related scenario analysis: “C3.1a_Does your organization use climate-related scenario analysis to inform your business strategy?”

Among the 3,389 companies that were asked the question, more than 40% answered that they did use climate-related scenario analysis to inform their business strategy (see Figure 5).

FIGURE 5. DISTRIBUTION OF THE DIFFERENT ANSWERS TO THE QUESTION “DOES YOUR ORGANIZATION USE CLIMATE-RELATED SCENARIO ANALYSIS TO INFORM YOUR BUSINESS STRATEGY?” IN CDP 2018 QUESTIONNAIRE



Source: I4CE, 2018, based on data provided by CDP

However, this figure cannot be compared with the results of the analysis of 2017 data. Indeed, the sample of companies for which 2017 and 2018 answers to the questionnaire were analyzed do not match, and their size is significantly different. Most importantly, the thorough reading and analysis of 2017 answers to CDP questionnaire made very clear that the term “climate-related scenario analysis” means fundamentally different things for companies. Companies declaring in answer to 2018 CDP questionnaire that they use climate-related scenario analysis probably encompass companies looking to align their strategy to a climate objective, and companies that want to evaluate their climate-related risks and opportunities. Among the latter, a significant proportion may actually conduct analyses which cannot strictly speaking be considered as “climate-related scenario analysis”, as in the 2017 sample. The proportion of companies declaring that they use climate-related scenario analysis in answer to 2018 CDP questionnaire cannot even be compared with the proportion of companies that were identified in 2017 answers as saying they use scenario analyses, as the latter value is only indicative.

⁴ It is worth noting that the IPCC Special Report on 1.5°C of October 2018 had not been published at the time.

List of acronyms

AR5: Fifth Assessment report of the IPCC

GHG: Greenhouse gases

IEA: International Energy Agency

IPCC: Intergovernmental Panel on Climate Change

NDC: Nationally Determined Contribution

RCP: Representative concentration pathway

SBT: Science-based target

WRI: World Resources Institute

Glossary

2DS: The 2DS is a scenario presented in the publication Energy Technology Perspectives of the IEA that lays out an energy system pathway and a CO₂ emissions trajectory consistent with at least a 50% chance of limiting the average global temperature increase to 2°C by 2100.

450: The 450 scenario is a scenario that was presented in precedent editions of the WEO publication by the IEA. It describes a pathway for the energy sector that is consistent with having a 50% chance of limiting the global temperature increase to less than 2°C. Since 2017, it has been replaced by the Sustainable Development Scenario (SDS).

NPS: The New Policies Scenario (NPS) is a scenario presented in the WEO publication of the IEA. It describes the evolution of the energy system in case the only climate and energy policies implemented would be those already implemented or announced today.

RCP: The Representative Concentration Pathways (RCPs) are scenarios that include time series of emissions and concentrations of greenhouse gases (GHGs), aerosols and chemically active gases, as well as land use/land cover. Each RCP provides only one of many possible scenarios that would lead to the specific radiative forcing characteristics. Four RCPs, which represent more or less drastic efforts to reduce global GHG emissions, are used in the fifth Assessment Report of the IPCC: RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5, and projected changes in the climate system are described for the different RCPs. Following the Paris Agreement, an additional RCP was introduced - RCP 1.9 - to represent pathways compatible with the 1.5°C warming limit.

SBT: The Science Based Target Initiative is a collaboration between CDP, the United Nations Global Compact (UNGC), the World Resources Institute (WRI), the World Wide Fund for Nature (WWF) and one of the We Mean Business Coalition commitments. Its aim is to enable companies to set GHG reduction targets in line with the level of decarbonization required to keep global temperature increase below 2°C compared to pre-industrial temperatures.

SDS: The Sustainable Development Scenario (SDS) is a scenario introduced in the 2017 edition of the WEO publication. It presents a strategy to achieve simultaneously internationally agreed objectives on climate change, air quality and universal access to modern energy.

TCFD: The Task Force on Climate-related Financial Disclosure (TCFD) was set up by the Financial Stability Board with the aim of developing voluntary, consistent climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers, and other stakeholders.

UKCP09: UKCP09 is the 2009 version of a climate analysis tool that provides climate change projections out to 2100 in the UK and globally. A new version of UK climate projections was made public in November 2018 (UKCP18).

WEO: The World Energy Outlook (WEO) is an annual publication of the IEA, which presents several scenarios to explore different paths of development of the global energy system shaped in particular by policy choices.

WRI Aqueduct: The Aqueduct is a risk-mapping tool that helps understand potential water risks, taking into account the impact of climate change developed by the WRI.

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