INITIATIVE FOR
Climate Action
Transparency

NewClimate Institute, World Resources Institute, CDP, The Climate Group

Non-State and Subnational Action Guidance

Guidance for integrating the impact of non-state and subnational mitigation actions into national greenhouse gas projections, targets and planning

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Developing climate action datasets

APPENDIX C: DEVELOPING CLIMATE ACTION DATASETS

This appendix[1] discusses possibilities and challenges of creating country-specific climate action datasets (CAD) of non-state and subnational actions. It also proposes solutions for future development and application of datasets. It is based on the experience of creating two country-specific datasets (for Morocco and the United States) during the first phase of the development of the guidance. An attempt was made to demonstrate the potential value of such datasets for a range of national policymakers. Thus, two contrasting examples of Morocco and the United States were selected. As a developing economy with limited non-state and subnational climate action data, the challenge in Morocco was to look beyond what was readily available and develop alternative means to quantify the non-state climate action underway within its borders. It also provided an interesting case study given its recent role in international climate affairs, as host of COP22, and its future ambitions. By contrast, the developed economy of the United States presented a wealth of non-state and subnational climate action data, which was challenging to sort and review. It gave an opportunity to develop procedures for processing and evaluating climate action data *en masse*.

In both cases, the datasets were aligned with the guidance and focused exclusively on non-state and subnational mitigation actions. Future development of country-specific climate action datasets could also include relevant climate finance and adaptation action.

C.1 Benefits of country-specific datasets

The construction of country-specific climate action datasets can effectively supplement the guidance by streamlining the process for policymakers, ensuring consistency and accuracy of data, and removing tedious analyses by performing data standardisation in advance. A climate action dataset can:

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[1] This appendix was prepared by CDP with contribution from World Resources Institute, NewClimate Institute, and The Climate Group.

- **Gather and format climate action data** from a wide variety of sources. This task may prove quite difficult for national policymakers with limited time and/or resources, as the construction of a complete dataset requires the careful consolidation of disparate data from multiple sources. By gathering and formatting data in advance, the dataset would collectively save a substantial amount of time.
- **Ensure data are accurate and up-to-date.** A country-specific dataset can be regularly updated, and year-on-year comparisons of climate action data can spot inconsistencies and improve the overall accuracy of the dataset.
- **Provide essential and contextualising information.** While many publicly available data sources provide basic information on climate actions, it is not always easy to find the essential and contextualising information (e.g., base year emissions, scope of emissions reductions, grid emission factors, industry classification, population, etc.) required to derive meaningful insights. By providing all necessary information, a country-specific dataset could save policymakers additional time, allowing them to focus resources on achieving the objectives of the assessment and interpreting the results.
- **Simplify the most challenging aspects of the guidance.** It is possible to integrate some aspects of the guidance directly into a country-specific dataset, which can significantly streamline assessments. These aspects include evaluations of suitability for inclusion, likelihood of completion, and overlap of reductions. This allows policymakers to focus more on the analysis of the impact of climate actions, as opposed to their categorisation, while still giving them the final say on what is included in the assessment. Consistent evaluation of these aspects would also help to standardise the application of the guidance by different policymakers.
- **Project and aggregate likely impact of climate actions** to target year and interim milestone years. With adequate data, it is possible to make informed projections of what the impact of completed climate actions will be in their target year. It is also possible to estimate the impact in key milestone years (e.g., 2030, 2050), while offering insight into various scenarios on the level of ambition. These projections can then be aggregated in accordance with the objectives of the assessment. By including some of these basic calculations in a country-specific dataset, the time spent in quantifying the impact of individual actions is greatly reduced.
- **Directly inform global datasets**. A robust process for developing and maintaining country-specific datasets would benefit a number of additional stakeholders at a time when climate actions and progress tracking are of crucial importance to the global response represented by the Paris Agreement. Maintenance of these datasets could directly inform the UNFCCC's NAZCA platform, streamlining the process of data collection from multiple sources, ensuring prompt upload of new and updated information, improving the accuracy of the climate action data, and increasing the overall functionality of the platform. Rich country-specific datasets could even be made available to other interested audiences, including investors, researchers, and academics, providing relevant insight into the transition to a green and sustainable economy. With adequate maintenance and continued development, country-specific datasets could serve as *the* foundation for understanding how to track, measure, and rate the impacts of non-state and subnational action in the coming years.

C.2 Challenges in building country specific datasets and potential solutions

Several challenges were identified through the exercise of developing country datasets that will need to be addressed in future country-specific datasets. These relate to the collection of data, maintenance of the dataset, and its eventual use by national policymakers.

C.2.1 Gathering climate action data

While there are many available resources that aggregate non-state and subnational climate actions (see Overview of existing global datasets), these come with limitations in terms of their geographical coverage, and the availability and comparability of disparate data. Where there are significant gaps in the available climate action data, it may be necessary to use advanced modelling and supplementary data to provide insight to policymakers.

Sourcing relevant data

A wealth of information is already publicly available; however, identifying where to look and unlocking the data from often non-machine-readable formats (e.g., PDF files) are key barriers to categorising and including these data in the country-specific datasets. At the same time, there are methods that currently exist that can support in this effort. Primarily on the corporate side, there exist databases of corporate sustainability (CSR) reports (e.g., GRI, Corporate Register) from companies that have traditionally fallen outside of the scope of analysis due to their size (e.g., SMEs) or ownership type (e.g., privately held). Applying technologies and a lexicon to crawl these reports and pin-point pertinent disclosures can assist in scraping the data to extend coverage of the database. Additionally, as more organisations become active in this space, a growing number of aggregate databases containing potentially important details can be expected. By identifying and targeting these sources through machine-run web crawls, new developments and data sources can be sourced for data expansion.

Another future development is in the form of machine-readable reporting, e.g. following the eXtensible Business Reporting Language (XBRL) standard. While fully integrated into financial reporting, little headway has been made in the adoption of these reporting formats for non-financial data. However, as uptake increases, this will solve many of the current difficulties of data scraping.

Collecting relevant information about cooperative initiatives and campaigns is also challenging due to their heterogeneous characteristics and the lack of quantitative data made publicly available. Full integration of cooperative climate actions into country-specific datasets would likely require case by case consultations with each initiative or campaign to better understand any available data and to make arrangements for data sharing.

Ensuring comparability of data

It is important to ensure during the collection process that adequate information is collected or available elsewhere to compare data from various sources. For action types that are already well established (e.g., cities emission reduction targets), there are likely to be different sources collecting comparable data. However, for less common action types, additional work will be required to make it easier to compare. This will be especially challenging for cooperative actions, as well as corporate actions that are not clearly defined or easily localised within a national border. In these cases, it may be necessary to convert data to common terms for integration into country-specific datasets; while in cases where sufficient quantitative data is not available, understanding the impact of the actions by other means may be needed.

Covering data gaps

In instances where sufficient quantitative details are not available to fully describe a cooperative or corporate action, it may be necessary to model the corresponding emissions or to rely on supplemental data.

Use of modelling techniques can help estimate emissions to fill in gaps in the existing dataset. These estimates can help to establish base year emission values, when undisclosed, or current level of emissions to better assess trajectories. CDP has a transparent methodology for estimating corporate emissions using key business data, such as annual revenue.[2] It is also exploring modelling for cities to be able to provide reasonable estimates for non-reporting cities; these methods can likely be extended to states and regions using macro-level population, economic and other related variables. It can potentially minimise some of the data gap implications by offering a more complete dataset. Data users will always have visibility into which values have been estimated and how, to determine for themselves whether to include these in their analyses.

For countries where there is not a significant amount of commitment data available, it would still be possible to provide national governments with key insights through additional analysis of asset-level data from key industries. One of the principal characteristics of an asset-level database is its universal coverage. Two primary applications can be envisaged for the utilisation of these data: techno-economic improvement potential and locked-in emissions forecasting. The former relates to the classification of the types of technologies employed and potential emissions savings through the deployment of best available technologies (BATs) or step-change upgrades. This type of analysis, coupled with economic detail pertaining to associated costs (for instance, using data reported to CDP through its corporate climate change questionnaire under the question related to initiatives for emission reductions), could support policymakers in targeting emission reduction options based on asset improvements and be a stepping stone to more complex modelling of asset data.

In addition, many market-intelligence providers currently supplying asset-level data collect information about future constructions, planned closures, and other related business developments that can be integrated into national-level emissions forecasting. In case of electric utilities for example, a view of the plants coming online with details around capacity, technologies, fuel types, etc., and those going offline can be used to model currently “locked-in” emissions (i.e., the guaranteed emissions stemming from currently producing assets) and future changes due to new constructions and plant closures.

C.2.1 Maintaining the dataset

Once constructed, maintaining and updating country-specific datasets will present unique challenges requiring careful consideration, and thorough planning. This would require dedicated staff to manage the dataset, as well as clear communication channels between different data sources, initiatives, and campaigns to ensure periodic updates of relevant data. It will need to be ensured that entities and actions are easily identifiable to avoid redundant entry and double counting. This could be especially challenging for companies whose names often appear differently due to differences in legal and public name or due to mergers and acquisitions. Readily available corporate identifiers are also most often at the securities level, applicable only to public companies. Similarly, ensuring that changes to existing climate actions are

[2] For further information, see https://www.cdp.net/en/investor/ghg-emissions-dataset

reflected in the dataset would require annual verification to check that already included actions are still valid, spot discrepancies and remove expired actions. Whether organised around an annual process or on a rolling basis, ensuring that a country-specific dataset is up to date would require sound data management practices and persistent verification of data accuracy.

C.2.3 The user experience

Proper use of a country-specific dataset could be facilitated through thoughtful design of the user interface that provides an engaging, transparent, and flexible presentation of the data.

Future user accessibility – Principles of data accessibility

Application of the guidance and therefore improved emissions forecasting and more ambitious national emissions reduction targets is dependent upon a transparent, structured, and accessible database. Transparency will be ensured throughout the development process by documenting data sources, data collection methods, and analytical assumptions. The end-user should therefore be able to understand what data are included in the database and make informed decisions about whether they wish to use certain data or not.

A clear data structure should be imposed to ensure that this transparency is preserved, and that the database is as usable as possible for application of the guidance. To this end, use cases of the data will help to assert the final structure, including relationships between data points as well as the data points themselves. These will need to be vetted with data users to ensure applicability and accuracy, requiring several consultative engagements.

Finally, barriers must be removed to ensure the database is accessible to national policymakers, analysts and other decision-makers tasked with reducing national GHG emissions. This entails removing costs, in as much as possible, to the source data. It also requires an online database be made available for users to efficiently access the data, with exportable functionality to support offline analyses. The experience gained through the sample dataset construction indicates that there is little willingness from data providers to make their data public. As a result, issue of data ownership and hosting will need to be addressed, and any solution will likely require in-depth negotiations.

Database and front-end architecture

An online platform supported by a relational database for housing the emissions and commitment data as well as user details is needed. The platform should be accessible via login, provided at little to no cost to national government representatives. To establish a business-model supportive of continued upkeep and maintenance, access may be fee-based for other non-state stakeholders that wish to analyse the information available.

Online business intelligence/ analytical functionality should be embedded to offer users options for easy analysis of the data using charts and graphs. Optimally these could be saved locally or to an online workspace for later review. Additionally, users should be able to export pre-filtered portions of the database (e.g., data relevant to their country) to Excel in order to facilitate offline analysis.

Depending on the funding available, networking capabilities can also be constructed to share best practices and learn from others' experiences. In this way, the platform can serve as a hub for national government representatives and provide a safe space to share and discuss.

C.3 Process to develop country-specific datasets

A detailed breakdown of the methodology used to construct the datasets is explained below.

Once the available climate action data were gathered and input to the dataset, analysis was performed to determine which actions would be the focus of further investigation and which would be excluded. This was carried out in accordance with the *suitability* standards of the guidance, with an understanding of the idiosyncrasies of the data reported to CDP. Next, all suitable climate actions were categorised by type (i.e. commitment/action, emissions reduction/renewable energy, etc.) and by coverage (i.e. geographic and IPCC sectoral), as prescribed in the *NSA/SNA Guidance*. Then, calculations were made to determine the anticipated impact of various types of actions in their target year, and for targets with geographic coverage beyond national borders (e.g. those made by multinational corporations), additional calculations were made to estimate the disaggregated impact within the sample countries. Finally, linear projections were drawn to key milestones, such as 2020 and 2030, assuming the same level of ambition moving forward. Several additional aspects of the *NSA/SNA Guidance* were integrated into the sample dataset, including evaluating the *progress monitoring*, *accuracy*, *likelihood*, and *overlap* of climate actions.

C.3.1 Gather and input data

Construction of the country datasets primarily relied on data collected through CDP's disclosure platform and TCG/CDP's Compact of States and Regions for reasons of data access and expedience. There are other relevant sources of climate action data (see C.4 Overview of existing global datasets), but in most cases, the key data points required to calculate the impact of actions—though likely collected—are not made publicly available. Similar difficulties were encountered in trying to calculate the impact of cooperative initiatives that might be relevant to the two selected countries.

On a fundamental level, the country specific datasets are consistent with Table 5.1, in which each row includes a description of the action being taken and some basic contextualising information, including geographical and IPCC sectorial coverage. For actions to be suitable for further calculation and analysis, however, their descriptions must include some essential information: base year, baseline emissions or renewable energy use, and target year. This information is organised into a table and serves as the foundation for building out the rest of the dataset.

In some cases, it was possible to calculate the anticipated impact of an action within the country based on just this information; however, in most cases, and especially for multinational corporations, additional information was needed to make more accurate estimates of an action's impact within the country's border. When considering the actions of subnational governments, it is relatively straightforward to define the geographical coverage of most actions. However, for large multinational corporations, it can be significantly more challenging to assess where their commitments will be realised. This is due to the nature of most corporate target setting: targets are reported at the entity-level and information on divisional or geographical actions are generally not disclosed. It was also found that certain types of climate actions, primarily those of corporate actors, required additional information. For instance, to estimate the impact of corporate emission reduction intensity targets, additional information supplied to CDP was used to estimate impact in absolute terms. Additional information was also necessary when removing scope 3 emissions from impact calculations (scope 3 was excluded because the impact of indirect value chain activities cannot be easily localised), converting renewable energy actions to associated emission reductions, and disaggregating multinational corporate actions to countries' boundaries.

In constructing the dataset, several limiting characteristics of the currently available climate action data become obvious. The first is that there is much more data directly available for countries with more developed economies. At present, cities and states in developing economies are not as well represented as their counterparts in more developed economies. There are efforts underway to increase data availability in developing economies, which is likely to improve this situation over time. Geographical coverage is somewhat less of an issue for corporations as many have international operations. As such, information on the climate actions of multinational corporations headquartered in developed economies can still provide insight about impacts in less developed economies, though due to limited data availability on the exact geographic distribution of these climate actions within a company's global operations, calculations are assumption dependent.

The second limitation relates to IPCC sectoral coverage. In the country datasets developed, most actions relate to energy use, with fewer relating to transport, buildings, waste, land use, and forestry, which could pose a problem for users interested in targeted assessments of these sectors. With further integration of additional data sources and cooperative initiatives, it may be possible to increase the sectoral coverage. As with localising emissions of multinational climate actions, it can also be challenging to determine the exact IPCC sectors targeted by a community-wide or company-wide climate action, as well as the appropriate allocation of impacts when multiple sectors are indicated, which could make it more challenging to complete a targeted assessment following the guidance. For example, a community-wide emissions reduction target made by a city or state is likely to have impacts in multiple IPCC sectors, but without a detailed breakdown of the associated base year emissions, it would be difficult to say with certainty what portion of the impact would affect say transport as opposed to buildings. With further development of country-specific datasets, it may be possible to use corresponding emissions inventories to estimate the impact across relevant IPCC sectors in the absence of more specific reporting on the anticipated impact across sectors. While this level of detail is less relevant to comprehensive assessments, it could greatly increase the functionality of the guidance for users interested in more targeted sectoral assessments.

Data for Morocco and the United States was gathered or evaluated from the following sources:

- **CDP corporate data –** Beginning with CDP's 2016 corporate response data, first all US-based and Morocco-based companies were identified for inclusion in respective country specific dataset. Then all companies that reported emissions in the US or in Morocco, regardless of where their headquarters are located, were identified, and their emissions reduction and renewable energy targets were included.
- **CDP cities data –** All relevant local government or community-wide emissions reduction and renewable energy commitments from CDP's 2016 cities response data were included.
- **CDP/TCG states and regions data –** All relevant emissions reduction, renewable energy, and energy efficiency targets reported through the states and regions platform were included.
- **Covenant of Mayors –** All relevant commitments collected by the Covenant of Mayors for which it was possible to determine an absolute base year emissions value were included.
- **carbon*n* Climate Registry –** All relevant commitments available through the cCR were evaluated, but it was not possible to determine absolute base year emissions figures based on publicly available information.

- **Climate Initiatives Platform –** Cooperative initiatives that focused on implementation, and reported participation or membership of either country, were identified. However, the identified initiatives did not provide sufficient information to include concrete climate actions in the country specific dataset.

C.3.2 Determine suitability

Once all available climate actions were collected, it was necessary to further review their suitability for inclusion in the dataset. At the most basic level, for a climate action to be considered for inclusion in the country dataset, it must be forward-looking, quantifiable, and provide sufficient information to estimate its anticipated target year impact in terms of emissions reduced. Thus, most of the actions included in the two datasets are emission reduction or renewable energy targets. As mentioned above, the data used was primarily CDP data because the necessary baseline emissions or renewable energy use figures required for basic estimation of the overall impact of an action are disclosed directly. This is not to suggest that other data sources for individual or cooperative climate actions do not collect this information, just that it is not made publicly available and, therefore, could not be reasonably acquired for the purposes of this dataset development. Furthermore, calculation of more robust estimates for the impact of renewable energy targets is likely to require further development of a methodology that more clearly considers the additionality the target represents within energy systems. In its current construction, however, policymakers wishing to forecast national renewable energy supply can compare the available renewable energy consumption/ production targets with their own national data to identify net impacts that these commitments may have.

For actors with multiple, overlapping commitments, the most relevant action was identified, which was generally the one covering the largest scope of emissions over the longest period. However, in cases where an actor had a more (or less) ambitious mid-term target as well, it was factored into the projected impact of the climate action in 2020, 2030, etc. For actors that reported multiple action types (i.e., absolute emissions reduction, intensity emissions reductions, renewable energy, etc.), it was necessary to exclude those that overlap, with a preference for absolute emissions reduction targets, which do not require additional conversion or estimation to reach an impact value in terms of GHG emissions. It was also necessary to exclude corporate emission reduction targets that only cover scope 3 emissions, which cannot as easily be localised within national boundaries, as well as those that explicitly define their scope outside the targeted national boundary.

To determine which actions would be the focus of further analysis in the country datasets, actions were excluded from further consideration for the following reasons:

- **Evaluate all actions by actor and exclude superseded actions –**
    - For actors with multiple climate actions, near-term actions were excluded if a longer-term action was available. However, if there was a mid-term action that was not merely a linear interpolation of the long-term action, both mid-term and long-term actions were used to present more accurate projections.
    - For actors with multiple action types—for example, an absolute emissions reduction, an intensity emissions reduction, and a renewable energy commitment—the general approach was to focus on the absolute emissions reduction target covering the greatest scope of emissions and for the longest term. When no absolute emissions reduction

target was available, an estimated absolute impact for intensity targets or tCO_2e impact of renewable energy and electricity commitments, was calculated where sufficient information was present. In some cases, multiple targets were retained if there seemed to be a significant difference in the coverage described by the targets.

- **Coverage relevant to user –** All actions whose coverage was not relevant to the country were excluded. This is not always obvious in the quantitative information provided, thus requiring evaluation of the qualitative responses provided in the various comment fields in the CDP corporate questionnaire.
- **Exclude scope 3 actions –** The analysis was limited to scope 1 and scope 2 emissions reductions. As such, actions limited to a scope 3 emissions category were excluded. Those that included scope 3 emissions in addition to scope 1 and 2 emissions were included, but required additional calculation to remove the impact of scope 3 emissions (see below).
- **Incomplete/incorrect information –** This primarily refers to instances where it is not possible to calculate an absolute emissions value. It may also include emissions reduction targets that cover less than 100% scope but do not specify where the action applies, or other instances where the information provided is unclear or seems incorrect.
- **Remove non-US-based companies** – For the US dataset, it was necessary to remove non-US-based companies from the US dataset because disaggregating the global impact of all actions from companies that disclose emissions in the US would have required evaluation of over 1700 actions. Given the time constraint, the analysis was limited to US-based companies. In the future, integration of non-USA companies can be envisaged based on available information.

C.3.3 Categorise climate actions

Actions were categorised by the following fields referenced in the guidance:

- **Action –** As most of the data was collected through CDP disclosure platforms, which asks about active targets, all items were defined as actions.
- **Geographic coverage –** For cities and regions, these are defined by whether an action is city- or region-wide, or limited to their local or regional government. For companies, actions were listed as covering global corporate operations, unless more specific coverage was identified.
- **IPCC (sub)sector(s) targeted –** The default sector for most emissions reduction or renewable energy actions was “Energy,” unless buildings or transport is explicitly mentioned in comments for the target. Actions reported by companies engaged in certain GRI business activities were assigned to the “Industrial processes and product use” sector. Deforestation actions were assigned the “Agriculture, forestry, and other land use” sector, and waste diversion was assigned the “Waste” sector.

- **Action Type –** The dataset for each country includes:
    - Absolute emissions reduction
    - Intensity emissions reduction
    - Renewable energy
    - Deforestation
    - Emissions reduction relative to BAU

C.3.4 Calculate target year emissions and impact

Next, anticipated target year emissions and impact were calculated. Each action type required its own method for calculation:

- **Target year emissions and impact for absolute emissions reduction targets –** Anticipated target year emissions for absolute reductions were calculated using the provided base year emissions and the target percentage reduction. Impact was calculated by subtracting the target year emissions from base year emissions.
- **Absolute emissions impact for intensity emissions reduction targets –** The anticipated target year emissions could only be estimated for intensity targets that provided additional information in the comments allowing for an absolute value to be calculated. Additionally, companies that report their intensity target will likely see an increase in absolute emissions. Their target year emissions/ impact was adjusted to reflect this anticipated result.
- **Convert renewable energy actions to $mtCO_2$ impact value –** Impact for renewable energy targets was calculated by converting the anticipated increase in renewable electricity (MWh) to emissions reduced (tCO_2) using current grid emission factor based on IEA data for each country. This assumption, however, is not conservative and further work should be done to supplement it. As currently done, purchase of renewable electricity (RE) can result in no additional RE being brought to the grid, but simply in a re-allocation of existing RE to certain consumers. Although providing a market signal, this is still considered incipient in face of other costs to significantly impact new RE capacity. As such, the current method provides the most optimistic emission reductions that can be achieved by given commitments. A different method needs to be devised to provide the lower-bound, conservative estimate of emission reductions from corporate renewable energy targets. A method is also needed to include and calculate the impact of renewable fuel use and subnational renewable targets, which were not included in the sample dataset.
- **Remove estimated proportion of Scope 3 emissions from impact –** For corporate targets including some scope 3 emissions, these emissions were removed from the anticipated target year emissions before calculating impact. This was done by determining the percent scope 3 emissions represent of the current emissions covered by the target. Emissions equal to this percentage were then removed from the corresponding anticipated impact value.
- **Zero deforestation commitments –** Following the guidance, zero deforestation commitments do not result in any emissions and do not require conversion to tCO_2e.

C.3.5 Disaggregate impact

Next the local impact of global targets was estimated by using the distribution of current reported emissions:

- **Calculate proportion of associated scope in user's country –** Using current scope 1 and scope 2 (location-based and market-based) emissions by country, it was possible to determine the current percentage of a company's emissions that are reported within the borders of the user country.
- **Multiply global impact of target by corresponding percentage of emissions in user's country –** By applying this percentage to the anticipated global impact, it was possible to estimate the localised impact in the user's country, assuming the emissions reduction is proportionally distributed.

C.3.6 Project linear impact to 2020, 2030, and so on

For all suitable climate actions, further analysis was conducted to determine their anticipated impact if achieved and to project their impact to 2020, 2030, and beyond. Projecting the impact of actions past their target year in line with a variety of potential scenarios (e.g., no additional action, same level of ambition moving forward, more/less ambition, etc.), future global and local impacts for continued action were estimated, with the caveat that the farther projections go beyond the target year the less accurate they are likely to be. For actors with mid-term and long-term targets, impacts are split across the two targets in a "best-fit" progression.

C.3.7 Additional information

- **Optional information on progress monitoring –** The monitoring progress policy of the data provider was noted.
- **Accuracy indication –** If many assumptions were made to calculate the anticipated impact, these were noted with a brief explanation.
- **Likelihood –** The likelihood of corporate climate actions was calculated by reviewing the currently reported progress of an action as well as the past performance of similar actions by the same actors. These two indicators were analysed independently and then combined with equal weight to assign a likelihood score to the action.

  Current progress is reported to CDP as percentage of the target achieved over the percent of time completed. This ratio was used to indicate the likelihood that the target would be completed on time. For example, consider a target that has reached its halfway point, i.e., 50% of time complete. If this target was also 50% complete in terms of its emissions reduction or renewable energy goal, the ratio would be 50/50 and one point would be added to its likelihood score. By contrast if it were only 25% complete, the ratio would be 25/50 and a half point would be added to its likelihood score. Targets with ratios higher than one (e.g. 75/50) are capped at one. This approach simplifies emission reductions to a linear pathway, which may not be the case in reality. However, more specific assessments are not possible due to insufficient granularity of data.

The past performance of an actor was determined by comparing the number of past actions that were either completed early or on time with the number of targets that reached their target end date plus those completed early (to cap the performance score at one). For instance, a company has reported four targets as successfully completed, with two of the four completed early. Additionally, they have reported three targets have reached their target end date (i.e., 100% complete in time). This means the ratio of their past performance is four achieved targets to five targets completed early or on time. As a result, 4/5 = 0.8 point is added to their likelihood score.

The overall likelihood was then calculated by adding the past and present performance scores together. As each score has a maximum value of one, the sum of both scores is divided by two, with the resulting decimal understood as the percentage of likelihood between 0 and 100. Based on these scores, different levels of likelihood were assigned to individual actions (Table C.1).

Table C.1: Levels of likelihood assigned to individual actions

Score range	Level of Likelihood
100 – 87.5+	Virtually certain
87.5 – 75+	Very likely
75 – 62.5+	Likely
62.5 – 50+	More likely than not
50 – 37.5+	About as likely as not
37.5 – 25+	Unlikely
25 – 12.5+	Very unlikely
12.5 – 0	Exceptionally unlikely
Unable to calculate past or current performance score	Unknown
Target reported 100% achieved	Complete
100% complete in time, but incomplete	Not achieved - ##% complete

- **Overlap –** Any information used to identify situations where there may be overlap between anticipated impacts. This could be the overlap between the impact of a municipal action on a regional action, or an individual actor that has overlapping commitments that were unique enough to include in the dataset but may not be entirely independent. The country datasets only indicate where overlap may be present between individual actions. The guidance provides a more detailed approach for interpreting various scenarios where actions overlap. Improving the accuracy of how overlap is calculated and integrating it into country-specific climate action datasets is a significant challenge in these exercises.

C.4 Overview of existing global datasets

There are several sources for data on non-state and subnational actions, such as NAZCA, Covenant of Mayors, carbon*n*, CDP, and Climate Initiatives Platform (see Appendix A). Some pertain to individual

actions made by one type of actor, while others include a wide variety of initiatives ranging from specific actions to broad commitments from all kinds of actors. This scoping exercise with conducted during the first phase of the ICAT guidance development, so figures were accurate as of July 2017.

NAZCA (Non-state Action Zone for Climate Action)

The UNFCCC's NAZCA platform, which is mentioned in the Paris Decision text, aggregates both individual and cooperative climate commitments by non-state and subnational actors (UNFCCC, 2015). All NAZCA commitments are required to be forward-looking, quantifiable, and trackable, but otherwise fall into a wide range of categories. As a data aggregator, NAZCA draws from multiple[3] sources—including several of the data sources discussed below—but presents only a basic, often incomplete, picture of the action being taken.

Currently, there are over 12,500 commitments on NAZCA from 2,500+ cities, 2,100+ companies, 450+ investors, 200+ regions, and 200+ civil society organisations. Over 8,000 of these are "individual actions" that are unique to their associated actor, and 4,400 are "cooperative actions." These are classified under one or more themes such as emissions reduction, energy access and efficiency, renewable energy, resilience, transport, building, forest, and innovation. The current geographic distribution of commitments on NAZCA heavily favours developed countries, specifically those in North America or Europe. While it is currently the most comprehensive collection of non-state and subnational commitment data, and is officially recognised as part of the process outlined in the Paris Agreement, it provides very basic, second-hand commitment information that is generally available in more detail elsewhere.

Climate Initiatives Platform (CIP)

A database of over 200 initiatives, the CIP is currently the most wide-ranging and comprehensive collection of international climate initiatives (ICIs). The CIP collects background information on each initiative, which is organised into the following categories:

- General – Includes link to website, geographical coverage, type of initiative, lead organisation
- Description – Includes description, goals, activities
- Monitoring and Impacts – Includes several questions on objectives, planning, and quantitative progress tracking
- Participants – Includes information on participants, funders, and other involved organisations
- Theme – Categorised into one of 21 themes

Portal on Cooperative Initiatives

This is a smaller collection of 60 climate-related initiatives/organisations hosted by the UNFCCC. It has basic information on the type of initiative, thematic focus, goals, activities, mitigation potential, etc. Most of the initiatives are Global in scope, with only a handful specifically focused on smaller geographic regions. However, over 40% of these are already covered by NAZCA and CIP.

[3] CDP, carbon*n* Climate Registry, The Climate Group, the Investors on Climate Change, the UN Global Compact, the Covenant of Mayors, the Climate Bonds Initiative and the UNEP Climate Initiatives Platform.

Covenant of Mayors

An initiative with over 7,200 signatories, the Covenant is a substantial database of European cities' commitments and climate action plans. New signatories pledge to reduce CO_2 emissions by at least 40% by 2030 (earlier signatories may have less ambitious targets) and to adopt an integrated approach to tackling mitigation and adaptation in their cities. It collects a wealth of data from its signatory cities, including relevant background information, descriptions of reduction and adaptation commitments, baseline emissions inventory, plans for achieving commitments, and monitoring and implementation progress. The Covenant primarily covers European cities, with the greatest number of commitments coming from Italy and Spain. There are a handful of cities reporting from across the Mediterranean in North Africa and the Middle East, as well as in the Caribbean and central Asia.

carbonn Climate Registry

It is a reporting platform for local and subnational governments run by ICLEI – Local Governments for Sustainability. Over 700 cities, towns, states, and regions report through the cCR on four key reporting areas:

- City Information, such as population, census year, population forecast, city budget, and predominant economic sector
- Commitments, including boundary, type, target value, base year, target year, and year of adoption
- Emissions performance
- Actions, for example, type of actions, boundary, sectors, finance, year of adoption, quantified achievements of the action, and co-benefits

With over 1,400 climate change mitigation and energy targets reported in 2016, cCR is a valuable data source with its global reach and some coverage in developing countries. There is a higher level of information provided by local and subnational governments in the United States, Europe, and Japan, as well as Tanzania, Mexico, and Thailand.

CDP

Over 5,800 companies, 500 cities, and 100 states and regions (via the Compact of States and Regions, co-run with The Climate Group) disclosed environmental data through CDP in 2016, making CDP's platform one of the richest sources of information globally on how companies and subnational governments are driving environmental change. CDP collected over 60% (5,225 in number) of the individual commitments currently featured on the NAZCA platform, including close to 90% of individual corporate commitments. These include emissions reduction, renewable energy, energy efficiency, deforestation, water resilience, and carbon pricing commitments. Additionally, companies, cities, states, and regions report information on their emissions inventory, active climate actions, and long-term approach to sustainability through CDP's questionnaires. Its coverage is greater in industrialised regions, like the North America, Western Europe, and Japan, and is growing stronger in Brazil, China, South Korea, India, Turkey, Australia, and South Africa.