3 Key concepts, steps and assessment principles

This chapter introduces key concepts contained in this guide, provides an overview of the steps involved and describes principles to help guide the assessment.

Checklist of key recommendations

- Base the assessment on the principles of relevance, completeness, consistency, accuracy, comparability and transparency

3.1 Key concepts

This section provides an overview of key concepts used throughout the guide.

3.1.1 National actions

National actions are interventions taken or mandated by a national government, which may include policies, laws, directives, decrees, regulations, standards, incentives and other types of policy instruments that aim to achieve a specific target.

3.1.2 Non-state and subnational actors

Actors that are distinct from the central government of a nation State are defined using a wide variety of terminology. Within UNFCCC, the terms "non-Party stakeholder" and "observer organization" distinguish individual national government authorities that are signatories (Parties) to the Convention from other actors and groups of actors, including entities within the United Nations system, intergovernmental organizations and NGOs. Within the literature, and throughout the broader climate action community, many categorizations are used for individual actors and groups of actors. The term "non-state actor" is particularly common, and may cover the broad landscape of civil society, economic actors, and subnational or substate actors. The Global Climate Action portal (previously known as NAZCA) uses the following categories: cities, regions, companies, investors, civil society organizations and cooperative initiatives. In some cases, non-state is used synonymously with non-governmental, and may

be interpreted to exclude all government actors, including at the level of nations, cities, regions, local municipalities and other jurisdictions. Common categorizations include non-state, subnational, municipalities, non-federal, intergovernmental organizations, cities and city networks, local governments, public sector, business, private sector, trade unions, research institutions and universities, financial institutions, activist groups, tribes, indigenous peoples, youth or women's groups, and faith-based communities. Varying definitions for non-state actors mean that these categories do not have clear boundaries and often overlap. Furthermore, cooperative efforts may involve actors from different categories, and may also include (national) governments.

For the purposes of this guide, the phrase "non-state and/or subnational actor" refers to the broad range of individual or collective climate actors other than an individual central government authority of a nation State (see Section 4.1). Non-state actors include economic actors such as companies, businesses, trade unions and investors; civil society; and international organizations. Subnational actors include any form of government that is not a national government, such as cities, states, provinces and regions.

3.1.3 Non-state and subnational action

This guide specifically focuses on mitigation actions, and uses the generic term "action" for all mitigation efforts by non-state and subnational actors. Non-state and subnational action is any kind of activity that reduces GHG emissions and is led by non-state and subnational actors.[22] The guide also considers actions that may have other impacts but also reduce GHG emissions – for example, through energy efficiency improvements, renewable energy expansion and other non-GHG actions. Some actions can be legally binding (e.g. a state government setting a GHG emissions reduction target), whereas others are voluntary (e.g. a company committing to 100% renewables).

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[22] An exception can be cooperative initiatives, which are sometimes led by a (national) government or a group of governments.

Actions can be put forward and pursued individually (by *one* subnational or non-state actor) or cooperatively in the form of initiatives (by a *group* of actors, including non-state and/or subnational actors, with or without national governments). A huge variety of individual and cooperative actions exist, including general statements calling for action, political declarations, quantifiable targets for reducing emissions, commitments, pledges, plans, initiatives, strategies, and concrete policies and programmes (Table 3.1).

Actions can also be categorized in terms of targets and policies – which can be either economy-wide or sector-specific (see Section 4.3). They can include both GHG and non-GHG actions. Targets can be represented as a base year absolute target, fixed level target, base year intensity target or baseline scenario target (Table 3.2). However, often targets lack detailed information on the base year or other reference levels (see Section 5.3 on how to address data gaps). Policies refer to interventions by a government or other entity, and can include laws,

directives and decrees; regulations and standards; taxes, charges, subsidies and incentives; information instruments; voluntary agreements; implementation of new technologies, processes or practices; and public or private sector financing and investment. Table 3.3 presents general types of policies and actions; however, the list is not exhaustive, and there may be policies and actions of other types.

At times, actions may be commitments to adopt a target in future. These commitments may have been publicly announced but are still under development.[23] For instance, under the Science Based Targets initiative (SBTi), companies commit to developing a science-based target within 24 months of its public announcement.[24]

Given the wide range of actions, it is important to develop criteria to determine suitability of actions for inclusion in the assessment (see Chapter 6), and clearly indicate which actors or initiatives are retained for the final analysis.

TABLE **3.1**

Examples of individual and cooperative actions

Individual actions
Non-state action
• Iberdrola, a Spanish utility, aims to reduce its direct carbon dioxide (CO_2) emissions by 100% from 2007 to 2050.
• ACC, India (a cement company) aims to reduce operational CO_2 equivalent (CO_2e) emissions intensity by 35% per tonne of product by 2017 compared with 1990 levels through increased energy efficiency.
• ANZ Bank of Australia issues US$ 470 million green bonds worth for projects in renewable energy and energy efficiency in buildings.
• BNP Paribas sets aside €100 million for investment in start-ups working on innovative solutions for energy transitions.
• Mahindra Lifespace Developers Limited (an Indian investor) aims to reduce operations CO_2e emissions intensity by 10% per square metre from 2013 to 2020 through increased energy efficiency and solar energy installations.
Subnational action
• The city of Glasgow aims to reduce CO_2e emissions from government operations by 30% from 2005 to 2020.
• The province of Alberta, Canada, is committed to reducing methane emissions from the oil and gas sector by 45% by 2025.
• The Oriental Region of Morocco pledges to increase its energy efficiency and reduce community energy consumption by 12% by 2020 compared with 2009 levels.
• The state of California sets a goal to reduce petroleum consumption by cars and trucks by 50% by 2030.

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[23] Some actors may not publicly announce their actions, in which case it will not be possible to include them in the assessment.

[24] Further information on the SBTi is available at: http://sciencebasedtargets.org.

TABLE 3.1, continued

Examples of individual and cooperative actions

Cooperative action
• Under the RE100 initiative, companies in different countries each commit to procuring 100% of their electricity consumption from renewable energy.[25]
• Under the Climate & Clean Air Coalition Agriculture Initiative, several international organizations and countries aim to raise ambition in NDCs to include actions to reduce methane and black carbon emissions from key agricultural sectors by sharing and implementing best practices.[26]
• The New York Declaration on Forests – endorsed by national and subnational governments, companies, indigenous peoples and civil society organizations – calls for halving the loss of natural forests globally by 2020, and striving to end it by 2030.
• The Cement Sustainability Initiative aims to reduce CO_2 emissions from cement production and report annually on progress, including independent third-party assurance.
• The Alliance of Energy Efficiency Financing Institutions, led by the European Bank for Reconstruction and Development and the United Nations Environment Programme Finance Initiative (UNEP FI), aims to scale up energy efficiency financing, and work with institutional and public financiers to provide climate finance to clients.

Source: Global Climate Action portal (http://climateaction.unfccc.int).

TABLE 3.2

Types of targets used by non-state and subnational actors

Target type	Description	Common metrics
Base year or absolute emissions	A target that aims to reduce or limit the increase of emissions by a specified quantity relative to emissions in a historical base year	GHG emissions relative to historical emissions of a specified year
Fixed level	A target that aims to reduce or limit the increase of emissions to an absolute emissions level in a target year	Absolute GHG emissions for a target year
Base year intensity	A target that aims to reduce emissions intensity by a specified quantity relative to a historical base year	GHG emissions per unit of another variable (typically gross domestic product, but may also be population, energy use or a different variable)
Baseline scenario	A target that aims to reduce emissions by a specified quantity relative to a projected emissions baseline or business-as-usual scenario	GHG emissions relative to a reference case that represents emissions in the absence of activities taken to meet the target
Non-GHG	Targets framed in terms of energy efficiency, renewable energy or other objectives not directly expressed in terms of GHG emissions or emissions reductions	Varied
Specific policies and actions	Interventions such as laws, directives, and decrees; regulations and standards; taxes, charges, subsidies and incentives; information instruments; voluntary agreements; implementation of new technologies, processes or practices; and public or private sector financing and investment	Varied

Source: Adapted from WRI (2014b).

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[25] Further information on RE100 is available at: http://there100.org/re100.

[26] Further information on the CCAC Agriculture Initiative is available at: https://ccacoalition.org/en/initiatives/agriculture.

TABLE **3.3**

Common types of policies and actions adopted by subnational actors

| Type of policy or action	Description
Regulations and standards	Regulations or standards that specify abatement technologies (technology regulation or standard), or minimum requirements for energy consumption, pollution output or other activities (performance regulation or standard). They typically include penalties for non-compliance.
Taxes and charges	Levies imposed on each unit of activity by a source – for example, a fuel tax, carbon tax, traffic congestion charge, or import or export tax.
Subsidies and incentives	Direct payments, tax reductions, price supports or the equivalent provided by a government to an entity for implementing a practice or performing a specified action.
Voluntary agreements or actions	Agreements, commitments or actions undertaken voluntarily by public or private sector actors, either unilaterally or jointly in a negotiated agreement. Some voluntary agreements include rewards or penalties associated with participating in the agreement or achieving the commitments.
Information instruments	Requirements for public disclosure of information. They include labelling programmes, reporting programmes, rating and certification systems, benchmarking, and information or education campaigns aimed at changing behaviour by increasing awareness.
Emissions trading programmes	Programmes that establish a limit on aggregate emissions of various pollutants from specified sources; require sources to hold permits, allowances or other units equal to their actual emissions; and allow permits to be traded among sources. These programmes are also referred to as emissions trading systems or cap-and-trade programmes.
Research, development and deployment policies	Policies aimed at supporting technological advances, through direct government funding or investment, or facilitation of investment, in technology research, development, demonstration and deployment activities.
Public procurement policies	Policies requiring that specific attributes (such as social or environmental benefits) are considered as part of public procurement processes.
Infrastructure programmes	Provision of (or granting a government permit for) infrastructure, such as roads, water, urban services and high-speed rail.
Implementation of new technologies, processes or practices	Implementation by an entity of new technologies, processes or practices at a broad scale (e.g. those that reduce emissions compared with existing technologies, processes or practices).

3.1.4 Bottom-up aggregation

Bottom-up aggregation refers to adding the individual impacts of non-state and subnational actions to determine the total potential impact of all the actions included within the assessment. It involves estimating GHG reductions from each action relative to individual baseline scenarios that represent what would have happened in the absence of the action, then aggregating the resulting GHG reduction estimates. This method can be used to estimate the collective impact of a group of non-state and/or subnational actors (Figure 3.1). It should be noted that this impact is not additional to the impact of national policies because of potential overlaps with national policies, which are not considered here. GHG reductions can be calculated either on a cumulative basis over a defined time period or on an annual basis for a given year. The aggregation should include adjustments to avoid

FIGURE **3.1**

Example of bottom-up aggregation of estimated GHG reductions from non-state and subnational action

Source: Authors
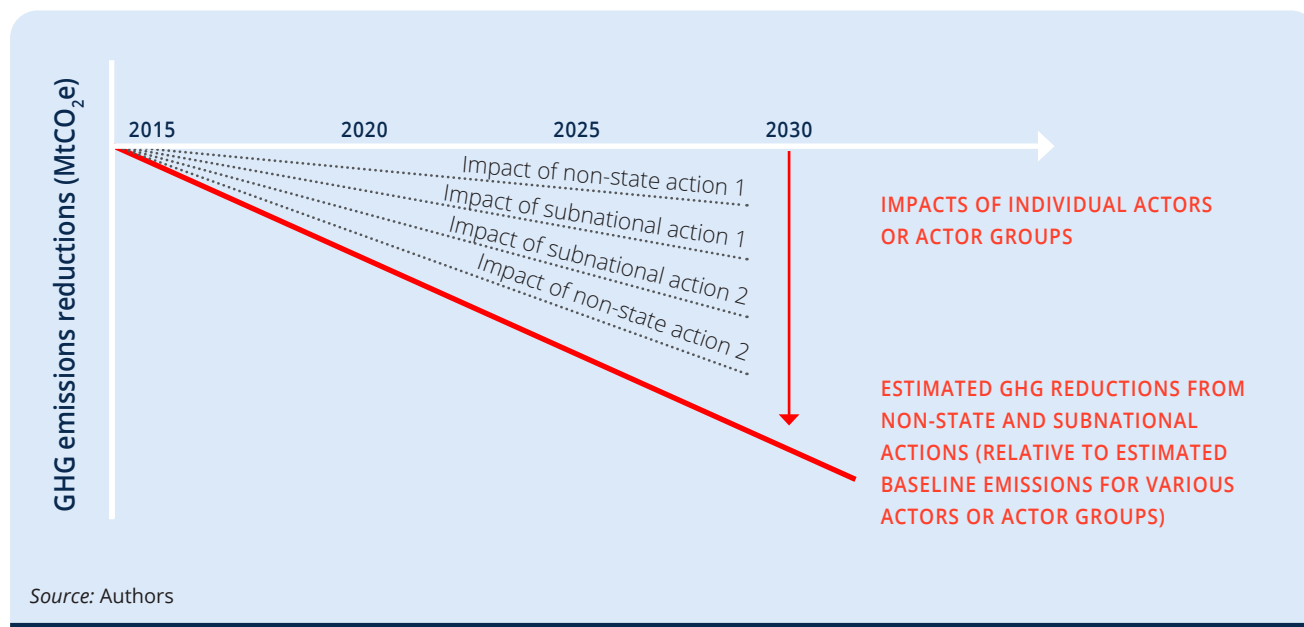
any total or partial overlaps between non-state and subnational actions, to avoid overestimating the collective impact.

The aggregated GHG reduction estimate can be presented without comparison with any reference scenario. For example, the cities and local governments committed to the Global Covenant of Mayors for Climate & Energy could collectively achieve annual reductions of 1.4 GtCO$_2$e in 2030 and 2.8 GtCO$_2$e in 2050 compared with business as usual (BAU).[27] Or the GHG reduction estimate can be compared with national GHG emissions (historical or projected) or a national GHG target. For example, voluntary actions from 53 companies analysed in the India corporate actions assessment could lead to a 12% absolute reduction in GHG emissions by 2030 relative to a BAU scenario, which amounts to a reduction of 1.2–1.5% at the national level by 2030. It is important to note that the comparison cannot simply be assumed to be additional to national action, because potential overlaps with national actions have not been determined, and baselines have not been harmonized with the national target.

It is important that users carefully select a baseline scenario and/or estimate the baseline scenario for each individual action or sector so that they do not overestimate the resulting GHG reductions (also see Section 3.1.6). Another methodological challenge is that subnational actions of different types often interact in complex ways and cannot be simply aggregated to understand their collective impact. For example, efficiency gains from a policy and the policy-driven addition of renewables may both lead to GHG reductions in the power sector, but when occurring simultaneously there are likely to be overlaps. Accounting for this type of overlap may require the development of simplifying assumptions to assess overlap and recognize limitations; alternatively, more sophisticated assessment models incorporating interactions among actions may be used. In many cases, it will not be possible to assign clear causality to individual actions, particularly if they are implemented simultaneously.

3.1.5 Top-down integration

Top-down integration involves estimating the impact of non-state and subnational actions, and incorporating this impact into national projections and scenarios, often based on existing national assessment models. The starting point for the

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[27] Global Covenant of Mayors for Climate & Energy (2018).

analysis is an up-to-date national GHG emissions projection or scenario. An important first step is to review which policies, targets and drivers are already included in the national projection or model. The projection may only reflect the impacts of national policies and targets, along with various socioeconomic drivers and trends, such as gross domestic product (GDP), population and energy prices. In addition, it may already include the impacts of selected non-state and subnational actions. Users should review which non-state and subnational actions are already included, then follow the same steps in the guide as for bottom-up aggregation to identify and estimate the impacts of additional non-state and subnational actions. The national emissions projection should be adjusted to reflect the impacts of non-state and subnational actions not already included in the original projection – for example, because the commitments were made later. The result is a revised GHG emissions projection that incorporates the impacts of non-state and subnational actions, current national policies, and other socioeconomic and market drivers ([Figure 3.2](#)).

The difference between the original projection and the updated projection reveals the potential impact of non-state and subnational actions in the country. The updated projection can be used to set a higher national mitigation target that builds on the additional GHG mitigation efforts undertaken by non-state and subnational actors.
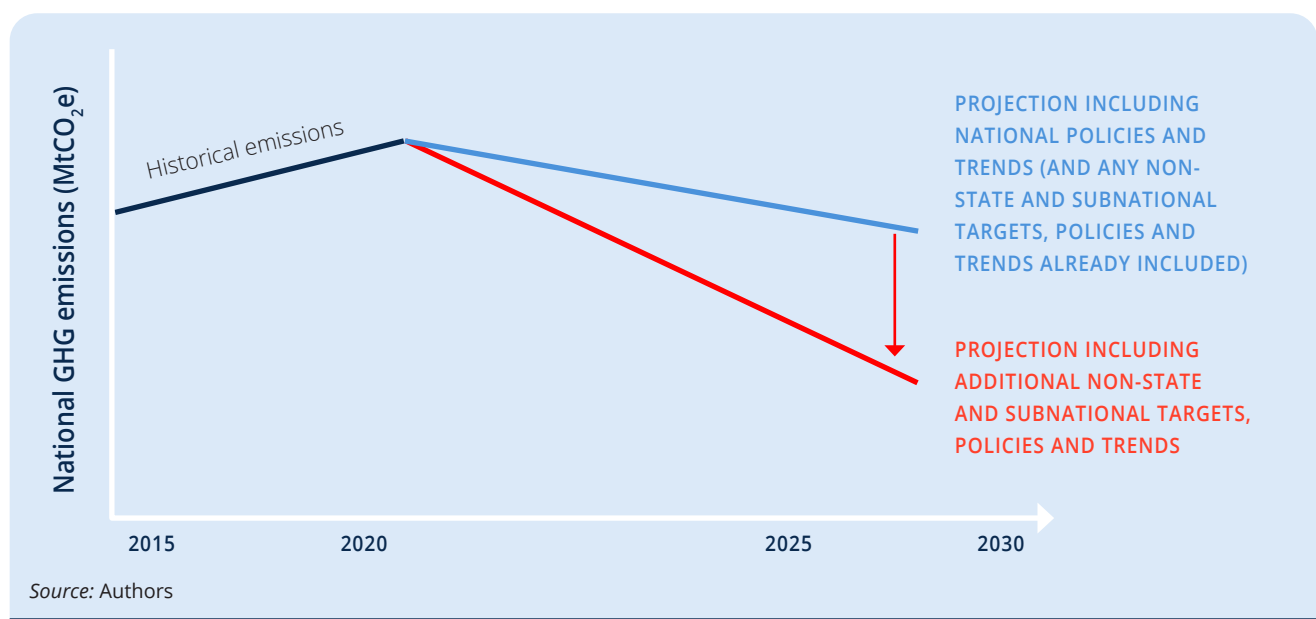
This approach requires that the national GHG projection or scenario is available in a transparent format, where the underlying assumptions can be adjusted to reflect the impacts of additional actions. This approach is not feasible if the user does not have access to the underlying calculations or assumptions. Further, in many cases, national targets do not directly link to specific projections. In some cases, governments use projections as a basis for discussion of the targets; in other cases, the targets are determined in a political process independently of scenario modelling.

3.1.6 Baselines

Baselines are required to provide a reference for the impact of actions. Different approaches can be used to calculate baselines – for example, a constant emissions level can be used (e.g. base year emissions), or users can assume that emissions grow at a certain rate, informed by the historical and projected economic growth rate. Baselines for specific actors can also be determined – for example,

FIGURE **3.2**

Example of integrating the impacts of non-state and subnational action into national GHG emissions projections

PROJECTION INCLUDING NATIONAL POLICIES AND TRENDS (AND ANY NON-STATE AND SUBNATIONAL TARGETS, POLICIES AND TRENDS ALREADY INCLUDED)

PROJECTION INCLUDING ADDITIONAL NON-STATE AND SUBNATIONAL TARGETS, POLICIES AND TRENDS

National GHG emissions (MtCO$_2$e)

Historical emissions

2015   2020   2025   2030

Source: Authors

by using industry sector projections from the International Energy Agency's World Energy Outlook[28] for companies operating in the same sector.

3.2 Overview of steps

Users should follow the assessment steps that are appropriate to their objectives. Some objectives may only require the steps relating to aggregation, which involve adding individual impacts of non-state and subnational actions. Others may require further integration into national emission trajectories, such as projection models or scenarios; for these, users will need some additional steps. The guide indicates which steps are not applicable for a particular objective.

This section provides an overview of steps for some broad objectives that users may be interested in pursuing. Those only seeking to understand the growing landscape of non-state and subnational efforts in a country should follow the steps indicated in Figure 3.3. This kind of landscape analysis can provide insights into the types of actors, actions and sectors covered by non-state and subnational actions.

Users can build on this analysis to determine the aggregate potential impact of identified actions. Figure 3.4 shows the steps needed to account for overlaps between non-state and subnational actions, and aggregate their potential impact at a national or sectoral level. The impact obtained through such analysis is not additional to national policies, as overlaps with national policies have not been determined here.

Users interested in learning about the *additional* impact of non-state and subnational actions should consider how non-state and subnational actions interact with existing national (sectoral) policies. An economy-wide (sectoral) model makes it easier to examine interactions between various policies and actions, but this can also be done without the use of a model if users do not have access to an already developed model. This is illustrated in Figure 3.5.

Users with access to an economy-wide climate model can follow the steps in Figure 3.6 to estimate additional impacts that consider interactions between policies and actions, and incorporate the effect of socioeconomic drivers (e.g. GDP, population growth).

FIGURE **3.3**

Understanding the scope of non-state and subnational actions

Landscape analysis

Define the assessment boundary (Chapter 4)

Create a list of all relevant non-state and subnational actions (Chapter 5)

Select non-state and subnational actions for inclusion in the assessment (Chapter 6)

Analyse information related to non-state and subnational actions to understand the landscape of actions (Chapter 6)

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[28]   Available at: www.iea.org/weo.

FIGURE 3.4

Determine aggregate potential impact of non-state and subnational actions

Aggregate potential impact of non-state and subnational actions (considering overlaps between actions but not with national policites)

Define the assessment boundary (Chapter 4)

Create a list of all relevant non-state and subnational actions (Chapter 5)

Select non-state and subnational actions for inclusion in the assessment (Chapter 6)

Analyse information related to non-state and subnational actions to understand the landscape of actions (Chapter 6)

Harmonize non-state and subnational actions for comparison (Chapter 8)

Assess overlaps between actions (Chapter 9)

Estimate potential impacts for individual actions (Chapter 9)

Aggregate potential impact of non-state and subnational actions (Chapter 9)

Develop new scenarios for enhanced ambition of non-state and subnational actions (Chapter 9)

Aggregate potential impact of non-state and subnational actions for each enhanced ambition scenario (Chapter 9)

FIGURE **3.5**

Determine potential additional impact of non-state and subnational actions

**Additional impact of non-state and subnational actions
(additional to national policies)**

Define the assessment boundary (Chapter 4)

Create a list of all relevant non-state and subnational actions (Chapter 5)

Select non-state and subnational actions for inclusion in the assessment (Chapter 6)

Analyse information related to non-state and subnational actions to understand the landscape of actions (Chapter 6)

List relevant national/sectoral policies and actions (Chapter 7)

Harmonize non-state and subnational actions and national policies for comparison (Chapter 8)

Assess overlaps between non-state and subnational actions and national policies (Chapter 9)

Estimate potential impacts for individual actions (Chapter 9)

Aggregate potential additional impact of non-state and subnational actions (Chapter 9)

Develop new scenarios for enhanced ambition of non-state and subnational actions (Chapter 9)

Aggregate potential additional impact of non-state and subnational actions for each enhanced ambition scenario (Chapter 9)

FIGURE 3.6

Model additional impact of non-state and subnational actions

Model additional impact of non-state and subnational actions
(additional to national policies)

Define the assessment boundary (Chapter 4)

Create a list of all relevant non-state and subnational actions (Chapter 5)

Select non-state and subnational actions for inclusion in the assessment (Chapter 6)

Analyse information related to non-state and subnational actions to understand the landscape of actions
(Chapter 6)

List relevant national/sectoral policies and actions (Chapter 7)

Harmonize non-state and subnational actions and national policies for comparison (Chapter 8)

Select economy-wide/sectoral model to assess interactions and estimate impact (Chapter 9)

Input information on non-state and subnational actions in the model (Chapter 9)

Model additional impact of non-state and subnational actions considering interactions between policies and
incorporating socioeconomic factors (Chapter 9)

Develop new scenarios for enhanced ambition of non-state and subnational actions (Chapter 9)

Model additional impact of non-state and subnational actions for each enhanced ambition scenario
(Chapter 9)

3.2.1 Planning the assessment

It is important to plan the steps, responsibilities and resources needed to meet the objectives of assessing non-state and subnational impacts. The time and human resources required to use this guide in its entirety depend on a variety of factors, such as whether it is a national or sectoral assessment, the range of non-state and subnational actions selected, the extent of data collection needed and whether relevant data have already been collected.

Related resources for quantifying mitigation impact
This guide focuses on assessing the impacts of a range of actions from different types of actors. The information in the guide on quantifying impacts can be supplemented with broader knowledge from

other resources, including methods, databases and tools that are specific to particular types of actors (e.g. companies, subnational entities) or to particular types of actions (e.g. policies, projects, targets). These resources can provide additional information on issues discussed in this guide, such as determining realistic baselines, understanding additionality of actions, and developing mitigation projections.

The Greenhouse Gas Protocol website[29] provides a number of related resources, including the *Policy and Action Standard*, the *Mitigation Goal Standard*, the *Project Protocol*, the *Scope 2 Guidance*, *Guidelines for Quantifying GHG Reductions from Grid-Connected Electricity Projects*, sector-specific emissions calculation tools, and other tools and methods. Platforms such as Climate Action Tracker, Climate Watch, the Global Climate Action portal, the Global Covenant of Mayors, and the Cities GHG Inventory Data Portal (under development) are other useful resources for a variety of policies and actions.

Planning stakeholder participation
Stakeholder participation is recommended at many steps throughout the guide, although it may apply differently depending on the user, the objectives and the scope of assessment. In general, stakeholder participation can strengthen the assessment in many ways, including by:

- ensuring that important non-state and subnational actions are included in the assessment, and accurately accounted for

- providing a mechanism for stakeholders who are engaged in non-state and subnational actions to share information that may affect the likelihood of implementation of the action (see Section 6.2) or overlaps between actions (see Chapter 9)

- supporting the development of realistic assumptions and baselines so that impacts are not overestimated

- building understanding, participation, shared ownership and support for national or sectoral targets, policies and projections among stakeholders, which may enhance implementation and impact

- facilitating buy-in from stakeholders for assessment objectives and results

- providing a mechanism for stakeholders to raise issues relating to non-state and subnational actions

- raising awareness and improving understanding of complex issues for all parties involved, building their capacity to contribute effectively

- addressing stakeholder perceptions of risks and impacts, and helping to develop measures to reduce negative impacts and increase benefits for all stakeholder groups, including the most vulnerable

- enabling enhanced ambition and finance by strengthening the underlying assessment.

Various sections throughout this guide explain where stakeholder participation is recommended – for example, in creating a list of non-state and subnational actions, and selecting relevant ones to assess (Chapters 5 and 6); assessing overlaps and comparing ambition (Chapter 9); reporting results (Chapter 10); and decision-making and using results (Chapter 11).

Before beginning the assessment process, users should consider how stakeholder participation can support their objectives, and include relevant activities and associated resources in their assessment plans. It may be helpful to combine stakeholder participation for non-state and subnational impact assessment with other participatory processes involving similar stakeholders, such as those being conducted for assessment of GHG and sustainable development impacts in the same sector.

It is important to conform with national legal requirements and norms for stakeholder participation in public policies. Requirements of specific donors, and of international treaties, conventions and other instruments that the country is party to should also be met. These are likely to include requirements for disclosure, impact assessments and consultations. They may include specific requirements for certain stakeholder groups (e.g. United Nations Declaration on the Rights of Indigenous Peoples, International Labour Organization Convention 169), or specific types of policies and actions (e.g. UNFCCC guidance on safeguards for activities that reduce emissions from deforestation and degradation in developing countries).

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[29] www.ghgprotocol.org

During the planning phase, users should identify stakeholder groups that may be affected by, or may influence, the assessment (such as representatives of the non-state and subnational actions included in the assessment boundary, or relevant national policymakers). Appropriate approaches should be identified to engage with the target stakeholder groups, including through their legitimate representatives. Effective stakeholder participation could be facilitated by establishing a multi-stakeholder working group or advisory body consisting of stakeholders and experts with relevant and diverse knowledge and experience. Such a group may advise and potentially contribute to decision-making, to ensure that stakeholder interests are reflected in the assessment. It is also important to ensure that stakeholders have access to a grievance redress mechanism to protect their rights relating to the impacts of non-state and subnational actions.

Refer to the ICAT *Stakeholder Participation Guide* for more information, such as how to plan effective stakeholder participation (Chapter 4), identify and analyse different stakeholder groups (Chapter 5), establish multi-stakeholder bodies (Chapter 6), provide information (Chapter 7), design and conduct consultations (Chapter 8), and establish grievance redress mechanisms (Chapter 9). Appendix B of this document summarizes the steps in this guide where stakeholder participation is recommended and provides specific references to relevant information in the *Stakeholder Participation Guide*.

Planning technical review (if relevant)
Before beginning the assessment process, users should consider whether technical review of the assessment report will be pursued. The technical review process emphasizes learning and continual improvement, and can help users identify areas for improving future assessments. Technical review can also provide confidence that the impacts of non-state and subnational actions have been estimated and documented according to ICAT key recommendations. Refer to the ICAT *Technical Review Guide* for more information on the technical review process.

3.3 Assessment principles

This section outlines key principles for the identification, quantification and integration of impacts of non-state and subnational actions and commitments.[30] These principles underlie

the step-by-step approach presented in the following chapters. It is a *key recommendation* to base the assessment on the principles of relevance, completeness, consistency, accuracy, conservativeness, comparability and transparency.

- **Relevance.** Ensure that the assessment appropriately reflects the incremental (additional) GHG impacts of non-state and subnational actions, and serves the decision-making needs of policymakers. Users should apply this principle when selecting the desired level of accuracy and completeness from a range of methodological options.

- **Completeness.** Include all significant non-state and subnational mitigation impacts in the mitigation assessment boundary. The boundary itself can be quite narrow (e.g. the industry sector in the case of the India corporate actions assessment) or broad (e.g. nationwide in the case of the Fulfilling America's Pledge report). Disclose and justify any specific exclusions. To support users with the analysis, especially as data availability can represent a significant challenge for many countries, this guide provides an overview of the principal international databases for non-state and subnational action (Appendix A).

- **Consistency.** The step-by-step approach provides recommendations on how to overcome the many differences in accounting approaches for non-state and subnational actions, as well as data collection and calculation methods. It is recommended that users consistently use this approach to allow meaningful performance tracking over time. Eventually, this may lead to more consistent approaches to accounting, data collection and calculation methods for non-state and subnational actions. Users should transparently document any changes to the data, assessment boundary, methods or any other relevant factors in the time series.

- **Accuracy.** Given the constraints of non-state and subnational actions, which are often voluntary commitments and with limited accountability, it is important to achieve sufficient accuracy to enable users and stakeholders to make appropriate and informed decisions with reasonable confidence about the integrity of the reported information. Users should pursue accuracy to the extent possible; this will be informed by a number of factors, including the objective,

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[30] Adapted from WRI (2014b).

the availability of data, the type of actions to be assessed and levels of uncertainty. Where feasible, users can provide ranges for their impact estimates, corresponding to different underlying assumptions (e.g. high versus low likelihood of achievement of targets, low and high economic growth assumption underlying emissions projections).

• **Conservativeness.** Users should be conservative in their assumptions and approaches, given the often voluntary and sometimes uncertain nature of non-state and subnational actions. A conservative approach may mean that users exclude certain actions from the assessment if data are insufficient or if overlaps cannot be determined. Presenting a range of results, consisting of various scenarios reflecting different assumptions, is recommended to illustrate the sensitivity of the results to the assumptions. Any assumptions used to estimate impact, determine the likelihood of achievement or determine potential overlaps should be carefully recorded, and the underlying rationale explained.

• **Comparability.** Current non-state and subnational actions and initiatives are very difficult to compare, because of different methodologies, data sources, assumptions, objectives and reporting formats. This document offers information to enhance comparability. Users should exercise caution when comparing the impacts of non-state and subnational actions. Differences in reported emission impacts may be a result of differences in methodology or GHG accounting rather than real-world differences. Additional measures are necessary to enable valid comparisons, such as consistency in the time frame of the assessments, the types of impacts included in the assessment boundary, baseline assumptions, calculation methodologies, methods for assessing policy interactions, and data sources. Additional consistency to facilitate comparability can be provided through GHG reporting programmes or more detailed sector-specific methodologies.[31] To understand whether comparisons are valid, all methodologies,

assumptions and data sources used must be transparently documented.

• **Transparency.** Users should provide clear and complete information for reviewers to assess the credibility and reliability of the results. Users should also document data sources, calculations, assumptions and uncertainties. To the extent possible, they should also document the processes, procedures and limitations of the assessment in a clear, factual, neutral and understandable manner (detailed further in Part III).

In practice, users may encounter trade-offs between principles during their assessments. For example, users may find that achieving the most complete assessment requires using less accurate data for a portion of the assessment, which would compromise overall accuracy. Conversely, achieving the most accurate assessment may require excluding sources or effects with less accuracy, compromising overall completeness. Users should balance trade-offs between principles depending on their objectives. Over time, as the accuracy and completeness of data increase, the trade-off between these accounting principles will likely diminish.[32]

3.4 Common challenges in quantification, aggregation and integration

Users may encounter multiple challenges when trying to identify, quantify and aggregate the impacts of non-state and subnational actions, and integrate them into national or sectoral targets and mitigation planning. The approach described in this guide addresses these challenges in the relevant steps outlined in Part II. Where such a challenge may exist, the guide points to it, provides an example and describes how to address it. Table 3.4 lists some of the most frequently encountered challenges and where further information can be found to resolve them.

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31 For example, the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*, the Greenhouse Gas Protocol, and reporting systems such as those managed by UNFCCC, the Global Covenant of Mayors, CDP and The Climate Group.

32 WRI (2014b).

TABLE **3.4**

Common challenges relating to quantification, aggregation and integration of non-state and subnational actions

Challenge	Description	Chapters with information on how to address the challenge
Lack of clarity about non-state and subnational targets	Some non-state and subnational targets are very vague, contain no quantitative information, and therefore may be difficult to assess in terms of their expected mitigation impact. The ambiguity can lead to uncertainty about the impact of non-state and subnational mitigation actions.	Chapters 4 and 6
Overlaps, double counting and additionality of actions[a]	Overlap between non-state and subnational mitigation actions, and with national actions can lead to double counting of mitigation efforts in a system where multiple actors are working towards the same goal. In addition, there may be overlap between targets for sectors and subsectors at national and subnational levels (e.g. national energy efficiency target and state energy efficiency policy for residential and industrial sectors). As a result, the combined effect of these actions could be less (or more) than the sum of the individual effects of implementing them separately. National government and non-state/subnational actors may also take credit for the same reductions and count them as progress towards their individual goals and targets. There are also accounting challenges in avoiding double counting when comparing the impact of non-state and subnational actions aimed at direct and indirect emissions, and national actions. Further, for non-state and subnational actions to contribute to exceeding existing national mitigation efforts or closing the "emissions gap",[b] their impact needs to be additional. Often, non-state and subnational actors formulate their actions in response to climate policy but state them as part of a package as "commitment to climate action". This can again result in double counting. In the case of multinational actions, it can be difficult to attribute the impacts to specific countries. The impact may not be equally distributed across countries. Users may need to make assumptions to estimate distribution, if country-level information is unavailable, which may affect accuracy of the assessment. Fully capturing complex interactions will be difficult with simple bottom-up tools and may require integrated modelling exercises.	Chapters 4, 6, 8, 9 and 10
Differences in baselines, time frames and reference scenarios	Users may find that non-state, subnational and national actions have different baselines/reference scenarios and metrics, making comparisons challenging.	Chapters 8 and 9
Data availability, completeness and usability	Users may want to calculate the impact of non-state and subnational actions when insufficient, outdated or no data are available, or the data are not accurate enough to quantify the impact.	Chapters 5, 7 and 8
Uncertainty in results	A number of factors such as lack of data, opaque underlying assumptions, and the often voluntary nature of non-state and subnational actions can lead to high uncertainty in results.	Chapters 5, 6, 7 and 9
Difficulty in accounting for scope 3 emissions	Scope 3 (indirect) emissions for non-state and subnational actors can be a very significant source of GHG emissions but are currently insufficiently accounted for by a majority of actors and difficult to attribute to specific countries.	Chapters 4 and 5

[a] Overlaps, double counting and additionality are different but closely related topics. For example, overlaps can be caused by a lack of additionality, which can lead to double counting.

[b] The "emissions gap" here refers to the difference between the emissions pathway corresponding with mitigation efforts needed to stay well below a 2°C increase and limit the temperature increase to 1.5°C and the estimated emissions pathway if the country fulfils its current NDC (IVM, 2015).