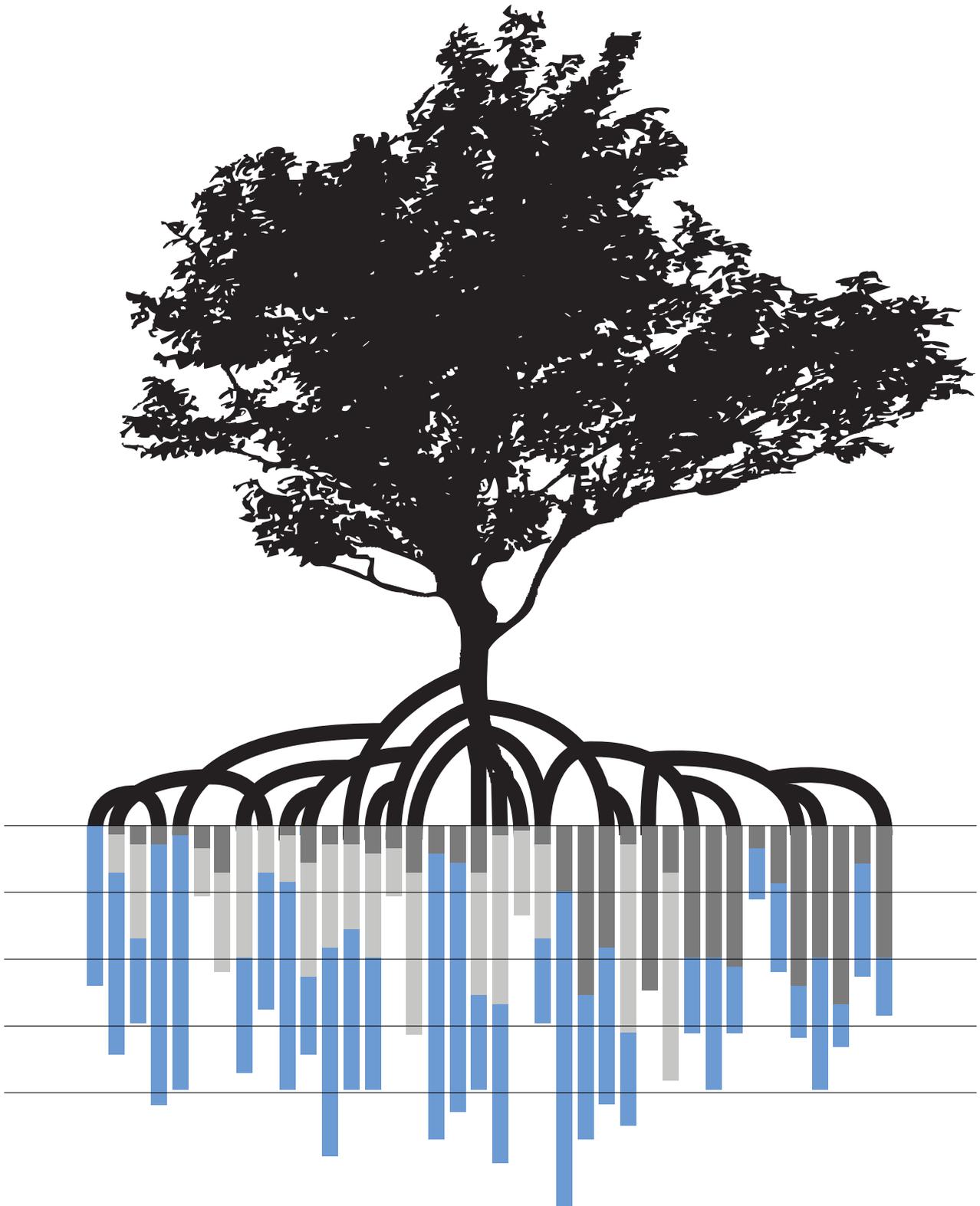




United Nations
Climate Change

Approaches to reviewing the overall progress made in achieving the global goal on adaptation

Technical paper by the Adaptation Committee



Approaches to reviewing the overall progress made in achieving the global goal on adaptation

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the Kyoto Protocol and the Paris Agreement

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FOREWORD

The Adaptation Committee (AC) is the global voice on adaptation, working to drive forward coherent UNFCCC action on adaptation around the world by providing expert guidance, enhancing outreach, and supporting the implementation of the Paris Agreement by addressing crucial adaptation issues.

The global goal on adaptation is one such crucial issue. Contained in Article 7.1 of the Paris Agreement, the global goal on adaptation aims at enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the Agreement's temperature goal of limiting warming to well below 2 or 1.5 °C.

Periodically reviewing progress towards this goal is critical to ensure that the world is on track to achieve its objective. In 2019, the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) requested the AC to consider approaches to reviewing the overall progress made in achieving the global goal on adaptation and to reflect the outcome of this consideration in its 2021 annual report. This technical paper is a central component of our response to this mandate, and it represents close to two years of our work.

The technical paper sheds light on the variety of approaches that may be applied – drawing from academic and grey literatures, as well as real-world examples from different jurisdictions and governance levels – and their associated advantages, challenges, and limitations. It does not recommend a particular approach or set of approaches for reviewing overall progress towards the global goal on adaptation, as our extensive research and deliberations on this issue did not point to an optimal approach or set of approaches that are clearly preferable to the alternatives. Rather, it aims to provide a fair and honest assessment of where we currently stand in relation to our ability to conduct a robust and meaningful review of overall progress towards the global goal on adaptation.

This work has benefitted a great deal from the input of a wide range of Parties and observers as well as practitioners, who have provided thoughtful suggestions, submitted useful resources, and shared their related experiences with us over the past two years. These contributions have enriched both the discussion within the AC and the technical paper immensely. On behalf of the AC, we would like to extend our sincere gratitude to all those who engaged with this work.

We have been pleased to hear that our work on the global goal on adaptation has been well received along the way, and we hope that this technical paper can inform discussions on this important topic going forward. The AC stands ready to undertake further technical work on this issue wherever our contributions can advance work towards both achieving and reviewing progress towards the global goal on adaptation.



Alessandra Sgobbi
Co-Chair of the
Adaptation Committee



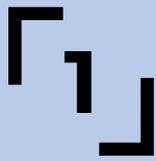
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1.1 Background

Article 7 of the Paris Agreement established the global goal on adaptation of “enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate response in the context of the temperature goal” of “[h]olding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels.”

To assess the collective progress towards achieving the purpose of the Paris Agreement and its long-term goals, Article 14 of the Agreement established the global stocktake, a cyclical mechanism taking place every five years beginning in 2023. In relation to adaptation, the global stocktake will, among other things, review the overall progress made in achieving the global goal on adaptation. Beyond shedding light on what Parties have achieved, the outcomes of the global stocktake will inform Parties in “updating and enhancing, in a nationally determined manner, their actions and support in accordance with the relevant provisions of the Paris Agreement, as well as in enhancing international cooperation for climate action.”

1.2 Unpacking the global goal on adaptation

The global goal on adaptation features three core components: enhancing adaptive capacity, strengthening resilience, and reducing

vulnerability to climate change. These three components are grounded in the aim of contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal referred to in Article 2 of the Paris Agreement.

The IPCC defines adaptive capacity as “The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.” Adaptive capacity relates to both the resources— including natural, financial, institutional, or human— available in a given system for adaptation and the ability of that system to effectively deploy those resources to advance adaptation. Related to the concept of adaptive capacity is the concept of resilience, which the IPCC defines as “The capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure while also maintaining the capacity for adaptation, learning and transformation.” According to the IPCC, vulnerability is “The propensity or predisposition to be adversely affected” and it “encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.”

Academics and practitioners have piloted various methods of assessing these three components individually across different contexts. For example, efforts to assess and measure adaptive capacity using various approaches, including assessments of secondary data sources, self-assessments,



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futures modelling, inductive theory-driven approaches, and psychometric assessments of perceived adaptive capacity. There are also a variety of resilience measurement frameworks with different conceptual entry points that deploy different sets of indicators. Finally, there is a wide range of vulnerability assessment approaches, including hazards approaches, risk management approaches, vulnerability approaches, resilience approaches, ecosystem-based approaches, and expert based approaches, many of which are not mutually exclusive.

1.3 Approaches for assessing collective progress on adaptation

There is emerging literature dealing with the question of how to assess adaptation progress and aggregate or collate these assessments across various scales and dimensions, including in relation to the global goal on adaptation. Some authors identify general avenues for collecting and linking adaptation-related information drawn from different scales. This includes standardized metrics applied consistently at different scales; context-specific metrics that relate to common themes; and informal linkages.

Others have proposed specific frameworks of metrics, such as a framework combining metrics that assess risks, global readiness to address risks, and support required and available for adaptation. Risk metrics would include a composite index of economy-wide risk and an assessment of risk for specific sectors; both would be linked to varying temperature scenarios. Metrics assessing global readiness to address risk, by contrast, would examine three different elements, namely, the global state of adaptation planning readiness, the state of sector-based planning, and whether planning is appropriate in light of risks and vulnerability. Finally, support-related metrics would serve to assess the investment required to address risks linked to varying temperature scenarios, domestic adaptation investments made (to recognize the efforts of developing country Parties), and support provided for adaptation.

Another approach that appears in the literature is a proximity-to-target approach, which attempts to reconcile the tension between

sensitivity to national contexts and the feasibility of a global assessment of progress by using a government's own adaptation targets and goals as benchmarks. This approach can yield purely descriptive assessments of whether a government is meeting its own targets and goals or it can be designed to accommodate more subjective and normative assessments of the sufficiency or appropriateness of a government's goals or the instruments being deployed; this is contingent upon agreement on what constitutes sufficiency or appropriateness or on an ideal model against which such comparisons can be made.

Instead of directly addressing the challenge of how to extract and aggregate information across scales, some authors have suggested that the global stocktake should first attempt to arrive at agreement on the outstanding contentious or ambiguous elements of the global goal on adaptation. This subset of literature focuses on steps such as reaching consensus on the objectives of adaptation action, sources of evidence, methods for tracking adaptation, and how to categorize the adaptation actions, or, more broadly, on agreeing what to track, how to track it, and addressing enduring challenges related to data and other areas.

The development and use of adaptation indicators by academics, donors, and governments have proliferated recently. The IPCC has identified at least three uses of metrics for assessing adaptation: 1) determining the need for adaptation, 2) measuring the process of implementing adaptation, and 3) measuring the effectiveness of adaptation. While there are existing indices with metrics that track the three elements of the global goal on adaptation, the lack of agreement on the relative merits of these indices and the validity of the rankings that they generate renders it unlikely that they can play a prominent role, if any, in the global stocktake. There is no consensus on how to systematically assess, measure, express and compare countries' vulnerability to climate change and none of the existing indices has been endorsed by the Conference of the Parties (COP) to the UNFCCC or the CMA.

Several researchers note that, in implementing the global stocktake, the international climate



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change regime can look to other international review mechanisms and borrow relevant processes and/or indicators. In particular, the Paris Agreement's siblings among the post-2015 development agendas, especially the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction, as well as other Rio Conventions, are cited as offering a set of indicators already tailored to the global level that potentially can be applied to reveal insights into global progress on adaptation. Potentially relevant indicators under the SDG framework include, for example, the number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population (indicator 13.1.1); the number of countries that have communicated the establishment or operationalization of an integrated policy, strategy, or plan which increases their ability to adapt to climate change and foster climate resilience and low emissions development (indicator 13.2.1); and the number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework (indicator 11.b.1). Under the Sendai Framework, examples of indicators relevant to adaptation include direct economic loss attributed to disasters in relation to global GDP (indicator C-1); damage to critical infrastructure attributed to disasters (indicator D-1); and the number of countries that have multi-hazard early warning systems (indicator G-1). Borrowing or tweaking indicators from these other processes must be approached with caution, however, considering the global stocktake's differences in terms of its focus (i.e. on collective versus individual action) and its time horizon, and because indicators or approaches agreed in the context of other processes may not necessarily be agreed for use in this case.

1.4 Key challenges

Assessing collective progress towards the global goal requires navigating a series of significant challenges and trade-offs. This includes methodological challenges (e.g. the difficulty of attributing results to interventions, the shifting baselines and uncertainties of climate hazards, and designing a system that can aggregate results across scales and contexts), empirical challenges (e.g. the rarity of adaptation databases), and conceptual challenges (e.g.

a lack of agreement on what counts as adaptation). There are also political challenges, such as navigating divergent views and political sensitivities surrounding measurement under the UNFCCC regime.

Moreover, the approach taken must manage various trade-offs between key criteria for assessing adaptation progress, such as between aggregability and sensitivity to the national context; between aggregability versus coherence; and between feasibility of reviewing overall process on adaptation and aggregability and the ability to make longitudinal assessments. It must also satisfy the global stocktake's dual mandate of assessing collective progress and informing the update and enhancement of national level actions.

Additionally, there are challenges at the national level that will impact the assessment of the global goal on adaptation, including those associated with developing, implementing, and maintaining monitoring, evaluation, and learning systems for adaptation, which help generate information for Parties' reports, plans, and communications under the UNFCCC.

1.5 Reviewing progress at the global, supranational, national, and subnational levels

Existing global, supranational, national and subnational systems and assessments for tracking adaptation progress may offer insights into how a review of adaptation progress can be done in practice. While the practice of implementing such systems for monitoring and evaluating adaptation efforts is still relatively nascent, several countries, organizations, and institutions have already begun piloting such systems. The design of these systems varies considerably, with differing combinations of qualitative analyses and qualitative and quantitative indicators.

Under the UNFCCC, there is an existing effort to regularly assess progress in the process to formulate and implement NAPs. As part of this effort, the LEG with the support of the secretariat produces annual reports providing information on the progress of Parties in the



process to formulate and implement NAPs, including on support provided and received, as compiled by the LEG as part of its work programme. Further work is underway, with the support of the NAP technical working group, to include new metrics under the PEG M&E Tool to cover the expanded measures being tracked on the progress on NAPs, such as those covering outcomes and impact of adaptation.

Furthermore, the 2020 UNEP Adaptation Gap Report adapted the EU's scoreboard methodology (see below) for a global analysis. It looked at five criteria and 13 corresponding indicators that together assess progress on adaptation planning worldwide based on the NDCs, NAPs, and national communications submitted by Parties to the UNFCCC and produced a similar scoreboard for the global level.

At the supranational level, the EU's scoreboard methodology offers one example of how to assess progress across countries. The scoreboard displays the aggregate status of various indicators across the steps of the EU's adaptation policy cycle; each indicator is scored as either "yes," "no," or "in progress" with an accompanying short narrative explaining the score.

At the national level, countries have used or proposed a variety of methods to review their progress on adaptation. One country is assessing progress towards cross-cutting and cross-sectoral desired adaptation outcomes, wherein a "traffic light" scoring approach has been proposed to assess progress for each outcome. Such an approach would score progress by assigning a colour (red, amber, or green) for each outcome based on the extent to which legal frameworks, plans, strategies, policies, programmes, and projects have been informed by risk and vulnerability profiles including climate change-related risks and impacts.

Many countries deploy largely indicator-based frameworks in which many different indicators and scoring methodologies are used according to the national circumstances, adaptation goals and priorities, and available data and capacity of each country. These systems vary widely, with some countries focusing on fewer than 15 indicators and others incorporating over

100. Countries also take different approaches to dealing with issues of low data availability or quality, such as substituting case studies or proxy indicators where direct measurement is not yet possible or initially limiting assessment to those indicators for which data is already available. Some countries solicit information using questionnaires and information collection cards that yield both information on basic indicators (e.g. whether a sectoral strategy was elaborated, or funding was secured) as well as descriptive aggregate assessments of progress. Another approach is using informal knowledge-exchange where both informal and formal means of gathering information about adaptation – such as stakeholder dialogues and surveys of municipalities, respectively – are used to track progress and inform future vulnerability and adaptation assessments.

National-level approaches to reviewing adaptation progress are not limited to those systems or efforts initiated by national governments. Climate funds may seek to apply approaches that can be deployed in various countries; these approaches must go beyond assessing how much resources have been contributed to adaptation measures in order to shed light on whether adaptation has been mainstreamed, adaptive capacity has been enhanced, resilience has been strengthened, and vulnerability has been reduced. For example, the monitoring and reporting system established by the Climate Investment Fund's Pilot Program for Climate Resilience is a national-level system, applicable to several countries, combines quantitative and qualitative methods and follows a country-driven participatory approach; it includes core and optional indicators and two tracks of data collection and reporting.

In addition to national systems for reviewing adaptation progress, subnational systems and their results – and approaches taken by networks of subnational jurisdictions in particular – can also offer important insights. Existing monitoring, evaluation, and reporting systems from city networks tend to seek balance between context-specificity and aggregability across the network, for example by enabling cities to select among a list of indicators or by delineating both obligatory and optional information.

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1.6 Recurring themes and overarching considerations

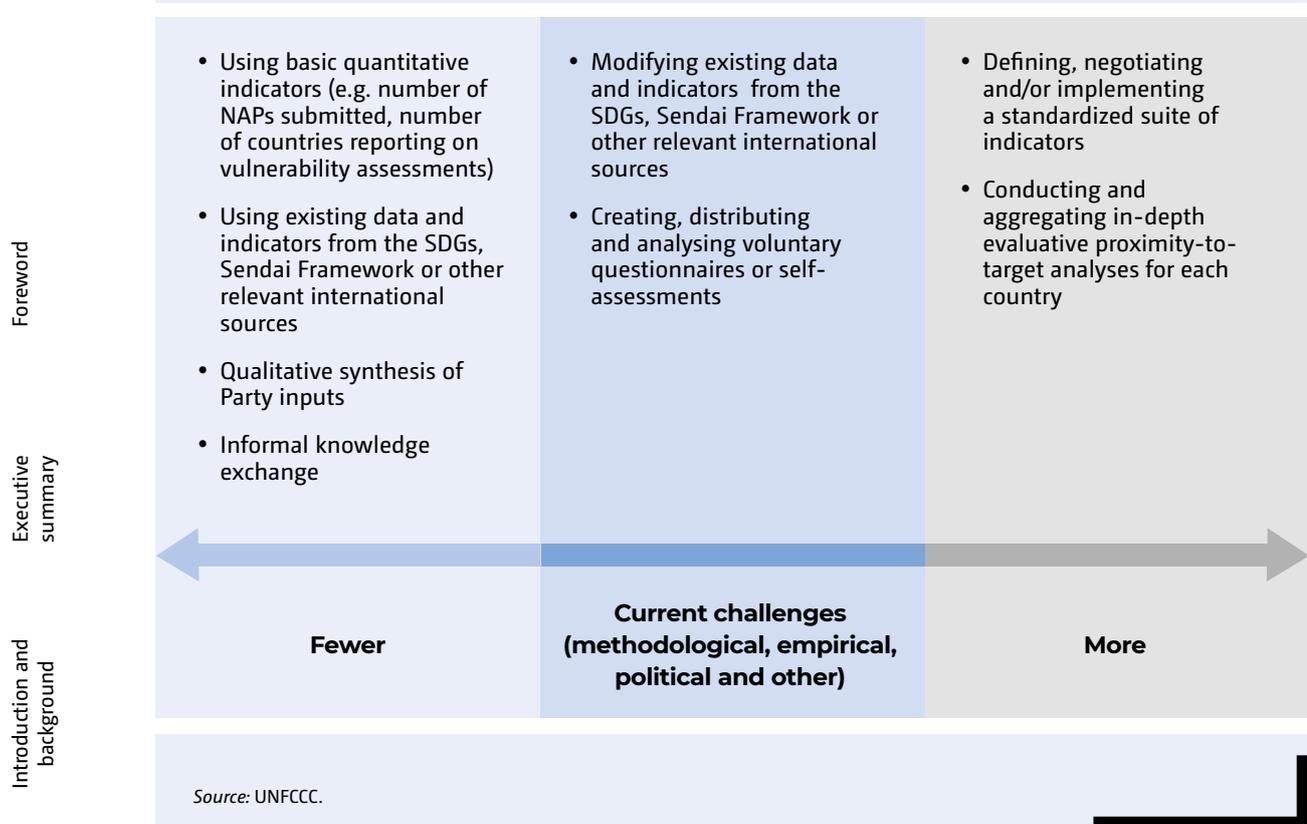
Several key themes and considerations emerged continuously in the range of literature and existing systems reviewed:

- a. **The resources and capacity necessary to pursue each approach and the corresponding burden that will be placed on countries with lower capacity.** These resource-related considerations have given rise to concerted efforts to align new frameworks and systems at the national and other levels with the reporting and review requirements under the UNFCCC. The AC's efforts in this regard—both in providing supplementary guidance for adaptation communications and its consideration of approaches for assessing the global goal on adaptation in the global stocktake—can further advance these efforts to move toward coherence.
- b. **The need to maintain flexibility.** Many of the national level systems reviewed had either already adjusted their approach, expressed the intention to do so, or acknowledged that this would likely happen as methodologies, data, and other key factors improve over time.
- c. **The value of combining various approaches in order to generate a more holistic picture of adaptation progress.** Such combinations (e.g. of qualitative case studies and quantitative indicators, descriptive and evaluative assessments, standard and optional indicators) can help balance the strengths and weaknesses of the different approaches.

1.7 Reflections on potential methodologies

On the basis of the above considerations, as well as the literature and examples reviewed, it might be useful to outline some initial reflections of potential methodologies that may be incorporated into the assessment of the global goal on adaptation. There are many potential approaches to assessing adaptation progress, and a summary of these general approaches is arranged here in a spectrum from those with less to those with more current challenges (e.g. methodological, empirical, political, etc.) (see Figure 1 below). This is a way to simplify the classification rather than a comprehensive characterization of potential approaches for the complex task of assessing the global goal on adaptation.

Given the methodological, empirical, political, and other challenges tied to the development and use of standardized indicators or indices, this approach arguably falls on the more challenges side of the spectrum. Similarly, if a descriptive and evaluative proximity-to-target approach is undertaken in a comprehensive manner for each country, this would likely require a great deal of resources. On the other hand, reporting on basic indicators such as the number of NAPs initiated or submitted, using existing indicators or data from international frameworks, producing a qualitative synthesis of Party inputs, or conducting an informal knowledge exchange fall on the side of the spectrum representing fewer challenges. Such efforts would build on common practices (i.e. reporting on the progress of NAPs or synthesizing documents submitted by Parties) or existing initiatives (i.e. tracking progress under other multilateral agreements) that are already in place. In the middle are approaches such as tweaking indicators or data from international frameworks or creating, distributing, and analyzing voluntary national-level questionnaires or self-assessment.

**FIGURE 1.****SPECTRUM OF APPROACHES TO ASSESSING ADAPTATION PROGRESS AND MAGNITUDE OF ASSOCIATED CHALLENGES**

This spectrum is, however, unidimensional and does not reflect the limitations or trade-offs associated with the various approaches. For example, while collecting data for basic quantitative indicators such as the number of NAPs submitted or the number of countries reporting on vulnerability assessments is a relatively straightforward exercise, and it can offer insights into how many countries have made progress in understanding their vulnerabilities and planning for adaptation, it cannot in many cases directly reveal the extent to which vulnerability has been reduced, adaptive capacity has been enhanced, or resilience has been strengthened while contributing to sustainable development in the context of the Paris Agreement's temperature goal. Therefore, in addition to considering the range of challenges associated with each approach, it is important to simultaneously examine the extent to which each approach yields a meaningful proxy of progress towards the global goal on adaptation.

If it is not burdensome—particularly considering the existing capacity constraints faced by developing countries in particular—a voluntary questionnaire or self-scoring exercise represents one potential avenue for assessing adaptation progress. This can generate an aggregate scoreboard, with the understanding that the same score does not necessarily translate into the same action or result across countries. A starting point for such a questionnaire or self-assessment could be whether there have been demonstrable efforts made to undertake the actions Parties agreed they should or shall pursue in accordance with Article 7 of the Paris Agreement.

Looking ahead, the adaptation communications and biennial transparency reports, along with other national plans, reports, and communications, can provide the raw material for a potential proximity-to-target approach that assesses whether Parties have fulfilled, or are on track to fulfilling, the targets and actions they set.



This would entail comparing the actions reported in biennial transparency reports, including in relation to progress on formulating and implementing national adaptation plans, against those communicated in previously published national adaptation plans, nationally determined contributions, national communications, and adaptation communications.

Another potential approach, building on the prevalence of vulnerability and risk assessments in adaptation planning and assessment, could focus on establishing a baseline of climate change-related risks faced by countries and thereby laying a foundation for assessing changes against this baseline over time. Given

the challenges with regard to vulnerability indices and rankings, and the roles that risk tolerance and societal values play in assessing risk, these risks would likely be self-assessed and reported by countries. Such risk assessments could be disaggregated according to hazard or sector and temperature scenario/timescale, generating a visual representation of the differing dimensions and levels of risk as perceived by countries across the world.

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Kadir van Lohuizen/NOOR/UNEP/Climate Visuals



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Article 7 of the Paris Agreement established the global goal on adaptation of “enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate response in the context of the temperature goal”¹ of “[h]olding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels.”²

To assess the collective progress towards achieving the purpose of the Paris Agreement and its long-term goals, Article 14 of the Agreement established the global stocktake. The global stocktake is a cyclical mechanism taking place every five years beginning in 2023, unless otherwise decided by the Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement (CMA).³ In relation to adaptation, the global stocktake will, among other things, review the overall progress made in achieving the global goal on adaptation.⁴ Beyond shedding light on what Parties have achieved, the outcomes of the global stocktake will inform Parties in “updating and enhancing, in a nationally determined manner, their actions and support in accordance with the relevant provisions of the Paris Agreement, as well as in enhancing international cooperation for climate action.”⁵

The assessment of collective progress towards achieving the global goal on adaptation is therefore a process of measuring the direction of travel in terms of enhancing adaptive capacity, strengthening resilience, and reducing vulnerability. These three elements are related to efforts such as adaptation planning, and investing adequately and effectively in adaptation, and are therefore linked with efforts to understand progress in adaptation action and support in response to priorities and actions, adequate planning for adaptation, and support needs. The elements also should not be considered in isolation from the remainder of the global goal on adaptation, namely contributing to sustainable development within the context of the Paris Agreement’s temperature goal.

It is important to note that, while this paper focuses on approaches to reviewing the overall progress made in achieving the global goal on adaptation, such a review will take place within the broader context of the global stocktake which will include several additional and complementary components. Article 7 of the Paris Agreement stipulates, for example, that besides reviewing the overall progress made towards the global goal on adaptation, the global stocktake will also recognize the adaptation efforts of developing country Parties, enhance the implementation of adaptation action taking into account adaptation

1 Article 7, para. 1, of the Paris Agreement.

2 Article 2, para. 1(a), of the Paris Agreement.

3 Article 14, para. 2, of the Paris Agreement.

4 Article 7, para. 14(d), of the Paris Agreement.

5 Article 14, para. 3, of the Paris Agreement.



communications, and review the adequacy and effectiveness of adaptation and support provided for adaptation.⁶

Setting the overall context for and function of the global stocktake, Article 14 of the Paris Agreement notes that this mechanism will “assess the collective progress towards achieving the purpose of [the Paris] Agreement and its long-term goals...in a comprehensive and facilitative manner, considering mitigation, adaptation, and the means of implementation and support, and in light of equity and the best available science.”⁷ Decision 19/CMA.1 elucidated the additional details of how the global stocktake will work in practice, including that the stocktake will avoid duplication of work,⁸ and will include various types and sources of inputs that cover a wide range of topics such as the state of greenhouse gas emissions, the state of adaptation efforts,

finance flows and means of implementation, barriers and challenges, good practices and more.⁹ Thus, while these additional elements are beyond the scope of this paper, they will nonetheless also form a fundamental part of the global stocktake along with a review of collective progress towards the global goal on adaptation.

When considering potential approaches for assessing progress toward the global goal on adaptation, it is therefore imperative to bear in mind the modalities through which the global stocktake will take place. These modalities, as adopted by the CMA in 2018, shed light on how such an assessment will be considered by Parties which can, in turn, help frame the search for a suitable approach. Figure 2 provides an overview of adaptation in the global stocktake, and box 1 summarizes the modalities through which the global stocktake will proceed.

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Angelo Moleele/Unsplash

6 Article 7, para. 14(a-c), of the Paris Agreement.

7 Article 14, para. 1, of the Paris Agreement.

8 Decision 19/CMA.1, para. 9.

9 Decision 19/CMA.1, paras. 35-37.



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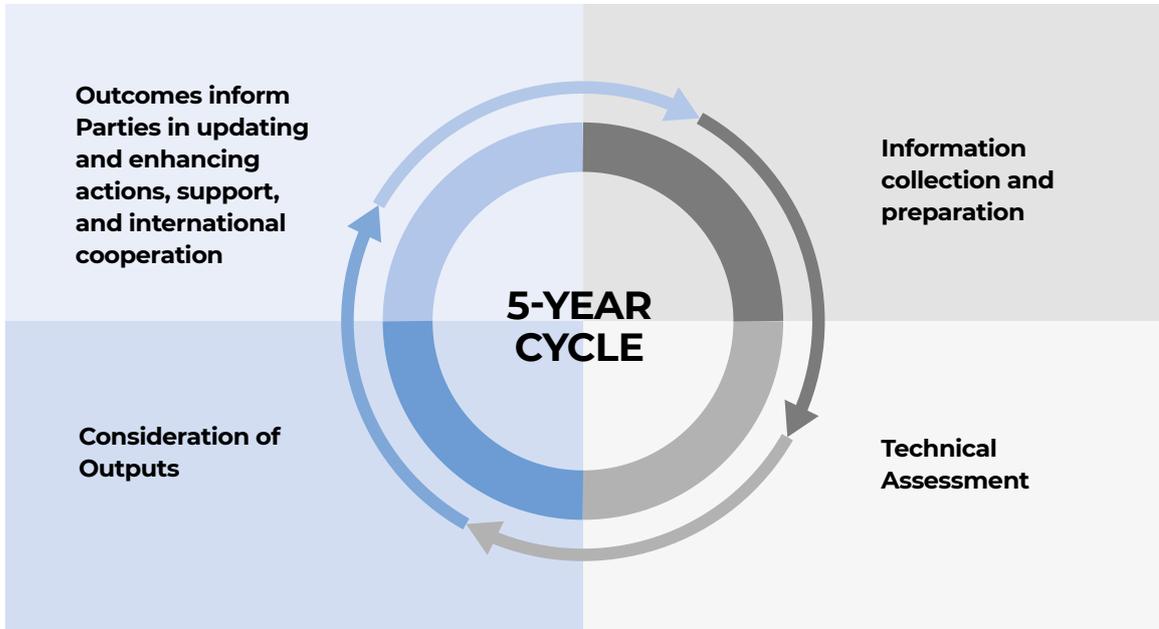
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FIGURE 2.
ADAPTATION IN THE GLOBAL STOCKTAKE



IN RELATION TO ADAPTATION, THE GLOBAL STOCKTAKE WILL:

- Recognize the adaptation efforts of developing countries
- Enhance the implementation of adaptation action
- Review the adequacy and effectiveness of adaptation action and support
- Review overall progress made in achieving the global goal on adaptation

- SOURCES OF INPUT INCLUDE:
- Party reports and communications (e.g. Adaptation Communications and BTRs)
 - Latest IPCC reports
 - Reports from subsidiary bodies
 - Reports from relevant constituted bodies and forum and other institutional arrangements
 - Synthesis reports by the UNFCCC Secretariat
 - Relevant reports from UN agencies and other IGOs
 - Voluntary submissions from Parties
 - Relevant reports from regional groups and institutions
 - Submissions from non-Party stakeholders and UNFCCC observer organizations

Source: Adaptation Committee. 2019. 25 Years of Adaptation Under the UNFCCC. Bonn: UNFCCC. Available at https://unfccc.int/sites/default/files/resource/AC_25%20Years%20of%20Adaptation%20Under%20the%20UNFCCC_2019.pdf



The technical paper includes three substantive chapters, starting from an initial analysis of the scientific literature, then exploring various approaches to assessing adaptation progress in use in various regions and at different levels, and summarizing and reflecting on the spectrum of approaches, as follows below.

A burgeoning academic and grey literature explores the potential means of assessing collective adaptation progress in the global stocktake and in general. This literature grapples with the challenges and trade-offs inherent in reviewing progress made in adapting to climate change. While these challenges certainly complicate the search for a path towards reviewing of the global goal on adaptation in the global stocktake, scholars and practitioners have nonetheless proposed possible ways forward. Chapter 3 of this paper reviews this literature and highlights both the

general insights it reveals as well as the specific approaches proposed for effectively assessing progress. The review is not exhaustive.

Recognizing that global-, supranational-, national- and subnational-level initiatives and analyses aimed at assessing adaptation also offer important lessons that can inform efforts to review progress across borders, Chapter 4 then looks at examples from these existing systems. These examples serve to elucidate what has thus far been feasible and effective at tracking progress, and how that might inform efforts at a broader, international scale.

Based on the findings from Chapters 3 and 4, Chapter 5 reflects on the spectrum of approaches outlined in the scientific literature or used in practice and how they might be applicable in the context of the global stocktake.

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BOX 1.**MODALITIES FOR CONDUCTING THE GLOBAL STOCKTAKE**

As outlined in decision 19/CMA.1, the global stocktake will be a Party-driven process conducted with the assistance of both Subsidiary Bodies. It will include three components: information collection and preparation, technical assessment, and consideration of outputs. Outputs of these components should summarize opportunities and challenges for enhancing action and support in light of equity and the best available science, and lessons learned and good practices. Further, these outputs should focus on collective progress, rather than on individual Parties, and inform the updating and enhancing of action and support.

The Subsidiary Bodies will establish a joint contact group for this purpose. This contact group will be supported by a technical dialogue conducted by two co-facilitators who will prepare a synthesis report on the basis of the dialogue. This technical dialogue will work through a focused exchange of views, information and ideas in in-session roundtables or other activities, and will address the thematic areas of mitigation, adaptation, and means of implementation and support. The Chairs of the Subsidiary Bodies are responsible for preparing thematic and cross-cutting guiding questions for all components of the global stocktake one session prior to the relevant activities beginning.

During the information collection and preparation phase, the Subsidiary Body Chairs will issue a call for inputs. Inputs, as delineated in the decision, include reports from Parties, the IPCC, the subsidiary bodies, constituted bodies and forums, the secretariat, UN agencies and other international organizations, regional groups and institutions, and submissions from non-Party stakeholders and UNFCCC observer organizations. The secretariat will make inputs available online by thematic area, and organize a webinar to explain the methodologies and assumptions used to aggregate the inputs. Additionally, the secretariat will prepare four synthesis reports on various topics, including the state of adaptation efforts. Constituted bodies and forums and other institutional arrangements under the Paris Agreement and/or the Convention are also invited to prepare synthesis reports for the technical assessment in their areas of expertise.

These inputs will be discussed during the technical assessment phase, with balanced time allocation between thematic areas. This phase includes the technical dialogue, which will be open, inclusive, transparent, and facilitative and offer Parties a space to engage with one another and with constituted bodies and other experts.

Finally, the consideration of outputs phase will include high-level events where Parties consider and discuss the findings of the technical assessment and their implications. This phase will identify opportunities for and challenges in enhancing action and support and summarize key political messages for enhancing action and support.

Source: Decision 19/CMA.1



3

OVERVIEW OF THE RELEVANT SCIENTIFIC LITERATURE

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Adaptation practitioners and scholars have generated a diverse literature in recent years dealing with the question of how to assess adaptation progress and aggregate these assessments across various scales and dimensions. Assessing adaptation progress is critical for understanding whether and how vulnerability is changing over time and across scales and dimensions, and how adaptation interventions (or a lack thereof) are influencing these changes. It helps decision-makers to understand “what works well in which contexts”¹⁰ and to develop their plans and priorities accordingly. It may also result in various corollary benefits, such as raising the profile of adaptation nationally, improving estimates of the costs of adaptation, and helping to better target adaptation finance to where it is most needed.¹¹ While the value of assessing adaptation progress is thus clear, the challenges in finding an appropriate, acceptable, and/or feasible method for undertaking such assessments make the task rather difficult.

3.1 Unpacking the global goal on adaptation

The global goal on adaptation features three core components: enhancing adaptive

capacity, strengthening resilience, and reducing vulnerability to climate change. These three components are grounded in the aim of contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal referred to in Article 2 of the Paris Agreement. Academics and practitioners have piloted various methods of assessing these three components individually across different contexts. This section details some of these methods and concludes with some reflections on their potential use in assessing the global goal on adaptation; it does so with the understanding that, while examining options for assessing components of the goal individually can be helpful in the search for a methodology to review overall progress towards it, the global goal on adaptation should nonetheless be pursued, and, to the extent possible, reviewed, holistically.

The IPCC defines adaptive capacity as “The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.”¹² Adaptive capacity relates to both the resources—including natural, financial, institutional, or human—available in a given system for adaptation and the ability

10 Leiter T. 2015. Linking monitoring and evaluation of adaptation to climate change across scales: avenues and practical approaches. *New Directions for Evaluation*. 147: 117-127.

11 Tompkins EL, Vincent K, Nicholls RJ, et al. 2018. Documenting the state of adaptation for the global stocktake of the Paris Agreement. *WIREs Climate Change*. 9(5): 1-9.

12 Intergovernmental Panel on Climate Change. 2018. Annex I: Glossary. In: Masson-Delmotte V, Zhai P, Pörtner H-O, et al. (eds.). *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. IPCC. Available at https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_AnnexI_Glossary.pdf.



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of that system to effectively deploy those resources to advance adaptation.¹³ Over the past two decades, there have been numerous efforts to assess and measure adaptive capacity using various approaches, including assessments of secondary data sources, self-assessments, futures modelling, inductive theory-driven approaches, and psychometric assessments of perceived adaptive capacity.¹⁴ Many of these have focused on particular communities, industries, or regions, raising questions about the extent to which the insights gleaned generalize to other contexts. Lockwood et al., for example, conducted a psychometric self-assessment study of rural

landholders in Australia in an attempt to discover which constructs are reliable and valid dimensions of adaptive capacity; the authors concluded that landholders' orientation toward change was the most important dimension that influenced perceived adaptive capacity, with other noteworthy dimensions including human, financial, and physical capacity and reciprocity.¹⁵ Schneiderbauer et al. developed an indicator and criteria system, and used simple aggregation methods, with both qualitative and quantitative measurable indicators that are tailored for Alpine regions.¹⁶ In doing so, the authors distinguish between three levels of adaptive capacity: impact-specific adaptive

13 Brooks N and Adger WN. 2004. Assessing and Enhancing Adaptive Capacity. In: Lim B (ed.). *Adaptation Policy Frameworks for Climate Change: Developing Strategies, Policies and Measures*. Cambridge, New York, Melbourne, Madrid: UNDP and Cambridge University Press. pp.165-181. Available at https://www.adaptation-undp.org/sites/default/files/downloads/adaptation_policy_frameworks_for_climate_change_-_developing_strategies_policies_and_measures_o.pdf.

14 Lockwood M, Raymond CM, Oczkowski, et al. 2015. Measuring the dimensions of adaptive capacity: a psychometric approach. *Ecology and Society* 20(1): pp.37.

15 Lockwood M, Raymond CM, Oczkowski, et al. 2015. Measuring the dimensions of adaptive capacity: a psychometric approach. *Ecology and Society* 20(1): pp.37.

16 Schneiderbauer S, Pedoth L, Zhang D, et al. 2011. Assessing adaptive capacity within regional climate change vulnerability studies—an Alpine example. *Nat Hazards* 2013(67): pp.1059-1073.



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capacity; sector-specific adaptive capacity; and regional generic adaptive capacity. They contend that while the conceptual division of the concept into these three levels and the aggregation methodology may generalize to other regions, the set of indicators developed would be less generalizable. These examples represent only a sample of the vast literature on assessing adaptive capacity tailored to different areas and sectors.

Recognizing the breadth of empirical case studies examining the concept of adaptive capacity, Beauchamp et al. piloted the use of a quantitative cross-case analysis using five local datasets that study the impacts of climate shocks (resulting from the 2015-2016 El Nino event) on smallholder farmers in countries across the Tropics.¹⁷ Despite the similarities in the research goals of the various studies, and in the demographic focus of these studies (i.e. on smallholder farmers in the Tropics), the contexts were nonetheless sufficiently different to render the value of such statistical post-hoc data aggregation efforts questionable. Indeed, while the aggregation enabled the researchers to uncover patterns that were not visible when looking at the individual studies, the method is nonetheless saddled with significant limitations. These limitations include that most of the key variables in the studies could not be transformed for consideration in an aggregated analysis and therefore were omitted; that adaptive capacity factors such as security, learning, and capacity to organize are difficult to quantify; and that while aggregation was able to confirm which variables were significant predictors of a given phenomenon (i.e. crop loss in this case), this type of analysis is not well suited to inform policymaking. Indeed, the researchers concluded that “the usefulness of aggregated data in supporting

policymaking is limited” and that such analyses “are more useful for academic researchers, by providing evidence towards the support or refutation of general hypotheses about how different socio-demographic variables linked to adaptive capacity affect resilience.”¹⁸ Moreover, the authors highlighted that, completely standardizing data collection formats may not make sense even in cases where comparison is a predefined objective; in spite of this, they note that better aligning core variables “could further help harmonize climate resilience across different study types, for example by adding climate-specific questions that are often currently missing in national censuses.”¹⁹

Related to the concept of adaptive capacity is the concept of resilience, which the IPCC defines as “The capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure while also maintaining the capacity for adaptation, learning and transformation.”²⁰ A comparative overview of resilience measurement frameworks conducted by the Overseas Development Institute (ODI) highlights how the integration of resilience by NGOs and donor agencies across their programmatic pillars resulted in multiple frameworks for measuring the construct even as conceptual debates about what it encompasses continued. Despite the near-ubiquitous enthusiasm for adopting the construct, however, ODI noted that “the ability and methods to measure resilience are contested” and “what counts as an indicator of resilience has been defined and redefined in semi-chaotic fashion according to different interpretations of what the concept means.”²¹ Examining 16 sets of

17 Beauchamp E, Moskeland A, Milner-Gulland EJ, et al. 2019. The role of quantitative cross-case analysis in understanding tropical smallholder farmers' adaptive capacity to climate shocks. *Environmental Research Letters* 14(2019): pp.1-10.

18 Beauchamp E, Moskeland A, Milner-Gulland EJ, et al. 2019. The role of quantitative cross-case analysis in understanding tropical smallholder farmers' adaptive capacity to climate shocks. *Environmental Research Letters* 14(2019): pp.10.

19 Beauchamp E, Moskeland A, Milner-Gulland EJ, et al. 2019. The role of quantitative cross-case analysis in understanding tropical smallholder farmers' adaptive capacity to climate shocks. *Environmental Research Letters* 14(2019): pp.10.

20 Intergovernmental Panel on Climate Change. 2018. Annex I: Glossary. In: Masson-Delmotte V., Zhai P, Pörtner H-O, et al. (eds.). *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. IPCC. Available at https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_AnnexI_Glossary.pdf.

21 Schipper ELF, and Langston L. 2015. *A comparative overview of resilience measurement frameworks: analysing indicators and approaches*. London: ODI. pp. 9. Available at <https://cdn.odi.org/media/documents/9754.pdf>.



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indicators, the ODI analysis resulted in three main findings: comparison across frameworks is only possible in part due to the different conceptual entry points used by the various frameworks; indicators of improved livelihoods and well-being are necessary but not sufficient for measuring climate change resilience and disaster risk; and it is necessary to use indicators with caution, noting that they do not offer scientific proof or in depth explanations of change.

According to the IPCC, vulnerability is “the propensity or predisposition to be adversely affected” and it “encompasses a variety of concepts and elements including sensitivity

or susceptibility to harm and lack of capacity to cope and adapt.”²² Vulnerability assessments have long been a cornerstone of efforts to adapt to climate change. There is a wide range of vulnerability assessment approaches, including hazards approaches, risk management approaches, vulnerability approaches, resilience approaches, ecosystem-based approaches, and expert based approaches.²³ Many of these approaches are not mutually exclusive, and countries looking to develop national adaptation plans and strategies will likely apply a combination of these approaches. Whereas some approaches, such as the risk management approach, make use of quantitative measurements,

22 Intergovernmental Panel on Climate Change. 2018. Annex I: Glossary. In: Masson-Delmotte V., Zhai P, Pörtner H-O, et al. (eds.), *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. IPCC. Available at https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_AnnexI_Glossary.pdf.

23 Least Developed Countries Expert Group. 2012. National Adaptation Plans: Technical guidelines for the national adaptation plan process. Bonn: UNFCCC. pp.65. Available at https://unfccc.int/files/adaptation/cancun_adaptation_framework/application/pdf/naptechguidelines_eng_high_res.pdf.



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others, such as the vulnerability approach and expert-based approach, rely on qualitative assessments. Various vulnerability assessment frameworks have been developed based on such approaches that are tailored to sector, national, subnational, or other relevant levels.

Although there are therefore distinct definitions for each of these three core elements, and various attempts to assess each element individually, there remains considerable overlap and conceptual ambiguity surrounding these elements and how they relate to one another. The ODI analysis, for example, testifies to the “complex and historically intertwined relationship between vulnerability, adaptation and resilience” and the enduring “significant confusion about how resilience and vulnerability relate to each other.”²⁴ Other studies reviewed in this section have similarly made a range of observations about how these three elements are linked. Beauchamp et al. remark, for example, that while resilience and vulnerability can be seen as antonyms, adaptive capacity relates to “factors or conditions that affect overall resilience.”²⁵ Schneiderbauer et al. note that determining adaptive capacity is a critical part of vulnerability assessments.

Moreover, the dynamic relationship between mitigation and adaptation represents an additional component of the global goal, as well as a significant challenge to the task of assessing collective progress towards the global goal on adaptation. The global goal on adaptation is explicitly framed in the context of the Paris Agreement’s temperature goal of limiting warming to well below 2°C or to 1.5°C above pre-industrial levels. In Article 7

of the Paris Agreement, “Parties recognize... that greater levels of mitigation can reduce the need for additional adaptation efforts.”²⁶ The Adaptation Committee has initiated work exploring this relationship, observing that “[a]daptation, mitigation, and sustainable development are inextricably connected, with potential for synergies and trade-offs.”²⁷ Uncertainty surrounding warming trajectories over the long-term renders it much more difficult, however, to assess the extent to which the world is indeed moving towards a state of lower vulnerability, increased resilience, and enhanced adaptive capacity. This may be the case where, for example, adaptation measures that advance these objectives in the near-term lock in development trajectories that are unviable or are maladaptive in the long-term.²⁸ There is currently, however, limited literature that examines how different climate scenarios influence adaptation success.²⁹ Existing studies tend to be limited in both scope and geography,³⁰ and at present are likely of limited use for painting a comprehensive picture of overall progress towards the global goal on adaptation. In addition, the success or adequacy of adaptation under a given level of temperature rise may also be dependent on how success or adequacy is understood by a given country or community, the level of risk tolerance among individuals in that country or community, and other factors which further complicate the task of reviewing overall progress to the global goal on adaptation. The Paris Agreement’s temperature goal is nonetheless an integral component of the global goal on adaptation, and efforts to alleviate these methodological challenges going

24 Schipper ELF, and Langston L. 2015. *A comparative overview of resilience measurement frameworks: analysing indicators and approaches*. London: ODI. pp. 18. Available at <https://cdn.odi.org/media/documents/9754.pdf>.

25 Beauchamp E, Moskeland A, Milner-Gulland EJ, et al. 2019. The role of quantitative cross-case analysis in understanding tropical smallholder farmers’ adaptive capacity to climate shocks. *Environmental Research Letters* 14(2019): pp. 3.

26 Article 7, para. 4 of the Paris Agreement.

27 Adaptation Committee. 2020. Information paper on linkages between adaptation and mitigation. Bonn: UNFCCC. Available at https://unfccc.int/sites/default/files/resource/ac17_8b_ada_miti.pdf.

28 Brooks N, Anderson S, Aragon I, et al. 2019. *Framing and tracking 21st century climate adaptation: Monitoring, evaluation and learning for Paris, the SDGs and beyond*. London: IIED. Available at <https://pubs.iied.org/pdfs/102021IIED.pdf>.

29 Singh C, Ford J, Ley D, et al. 2020. Assessing the feasibility of adaptation options: methodological advancements and directions for climate adaptation research and practice. *Climate Change*. (162): pp.255–277.

30 For example, see Donatelli M, Srivastava AK, Duveiller G, et al. 2015. Climate change impact and potential adaptation strategies under alternate realizations of climate scenarios for three major crops in Europe. *Environmental Research Letters*. 10(075005); Liu T, Ren Z, Zhang Y, et al. 2019. Modification effects of population expansion, ageing, and adaptation on heat-related mortality risks under different climate change scenarios in Guangzhou, China. *International Journal of Environmental Research and Public Health* 16(376).



forward can contribute significantly to building a comprehensive understanding of overall progress towards the global goal in the long run.

3.2 Approaches for assessing collective progress on adaptation

How to assess progress at a collective level is one of the key questions for assessing progress towards the global goal on adaptation in the global stocktake. The AC considered in 2013 the monitoring and evaluation of adaptation, based on the considerations of convened experts, and concluded that adding up indicators from the local level to obtain a national-level aggregate “is neither necessarily possible nor desirable.”³¹ Later, in a number of studies this conclusion was further substantiated.

Leiter and Pringle argue that an understanding of aggregation as “the collation or bringing together of information across spatial scales and geographical boundaries, whether quantitatively or qualitatively” better serves the goal of assessing global adaptation progress than an understanding of aggregation as “simply adding up numbers.”³² Framing the process of gathering and combining relevant information within the assessment of progress made towards the global goal on adaptation as an act of collation, rather than aggregation, may more effectively capture what is feasible and expedient for adaptation. See box 3 for a discussion on the two terms and how their framing of the task at hand in relation to the global goal on adaptation differs.

BOX 3.

AGGREGATION VS. COLLATION

According to the Cambridge Dictionary definition, the verb “aggregate” means “to combine into a single group or total,” “to bring different things together,” or “to add different prices, amounts, etc. in order to get a total.” By contrast, it defines the verb “collate” as “to bring together different pieces of written information so that the similarities and differences can be seen” or “to bring together different pieces of information in order to study and compare them.” Therefore, whereas a framing of aggregation may steer the task towards a pursuit of one ultimate total or overarching conclusion—and may thus privilege quantitative or easily comparable information—a framing of collation leaves more room to consider various types of adaptation information, including disparate types of qualitative information.

To help advance an understanding of global adaptation efforts, however, such a collation must be systematic and clearly structured.

Source: Cambridge Dictionary <https://dictionary.cambridge.org/>

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31 UNFCCC Adaptation Committee. 2014. *Report on the workshop on the monitoring and evaluation of adaptation*. Bonn: UNFCCC. pp.4. Available at https://unfccc.int/sites/default/files/ac_me_ws_report_final.pdf.

32 Berrang-Ford L, Wang FM, Lesnikowski A, et al. 2017. Towards the assessment of adaptation progress at the global level. In: A OIhoff, H Neufeldt, P Naswa et al. (eds). *The Adaptation Gap Report: Towards Global Assessment*. Nairobi: United Nations Environment Programme. pp.38.



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Leiter identifies three potential avenues for linking information on adaptation drawn from different scales. The first avenue uses standardized metrics applied consistently at different scales. This approach is used by multilateral climate funds to assess the performance of their overall portfolio, but, as discussed above, often sacrifices context-specificity in its use of “common-denominator indicators” that measure the total number of beneficiaries or tools developed.³³ It is possible to mitigate this challenge while still pursuing this avenue by allowing for jurisdictions to select indicators applicable to their circumstances from a larger set. The second avenue uses context-specific metrics that are not standardized but that relate to common themes, which offers flexibility but limits the extent to which overall results can be quantified and compared. Finally, the third avenue includes informal linkages, such as networking and information exchange among governments. These three avenues can be pursued together so that, overall, the strengths and weaknesses of the various approaches balance one another out. For example, standardized metrics can be combined with flexible use of context-specific metrics. This combination of approaches is one potential way forward for assessing the global goal on adaptation proposed by Craft and Fisher, who suggested that common themes for the context-specific indicators could include climate-resilient ecosystems and ecosystem management, disaster preparedness and early warning systems, institutional mainstreaming into government institutions, and more.³⁴

Instead of directly addressing the challenge of how to extract and aggregate information across scales, other authors have suggested that the global stocktake return to first principles and broker agreement on the elements of the global goal on adaptation. For example, Tompkins, Vincent, Nicholls, and Suckall

propose what they call a “stocktaking approach” that includes four steps intended to track observed adaptation action across large scales.³⁵ The first step involves reaching consensus on the objectives of adaptation action. Second, relevant stakeholders must agree sources of evidence that can feed into the stocktaking approach. Third, they must agree search methods for tracking adaptation. Finally, they must categorize the adaptations. This approach does not focus on evaluating the success of adaptation action, but rather on establishing a baseline of adaptation by documenting the number of people who are adapting to climate change, and where and by whom adaptation action is taking place. On the objectives of adaptation, the authors argue for three specific objectives as a starting point for the stocktaking approach: reducing socioeconomic vulnerability, disaster risk reduction, and supporting socioecological resilience.

In a similar vein, Olhoff, Väänänen, and Dickson argue that tracking progress towards the global goal on adaptation requires significant preparatory work and arriving at agreement in key areas.³⁶ Specifically, the authors hold that it is necessary to agree on what to track (establishing conceptual clarity on the global goal) and on how to track it (identifying appropriate methodologies, metrics, and indicators). A third key action area the authors highlight is addressing challenges related to existing information and data, including that such data is limited, broad, and generally not tailored enough to adaptation. The authors contend, however, that it is “highly unlikely” that the UNFCCC process can address this challenge on its own.

Also emphasizing the need for further clarity on the elements of the global goal on adaptation, Ngwadla and El-Bakri nonetheless propose a framework of metrics to track the

33 Leiter T. 2015. Linking monitoring and evaluation of adaptation to climate change across scales: avenues and practical approaches. *New Directions for Evaluation*. pp. 121-122.

34 Craft B and Fisher S. 2018. Measuring the adaptation goal in the global stocktake of the Paris Agreement. *Climate Policy*. 18(9): pp.1206.

35 Tompkins EL, Vincent K, Nicholls RJ, et al. 2018. Documenting the state of adaptation for the global stocktake of the Paris Agreement. *WIREs Climate Change*. 9(5): pp.1-9.

36 Olhoff A, Väänänen E, and Dickson B. 2018. Tracking adaptation progress at the global level: Key issues and priorities. In: Z Zommers and K Alverson (eds.). *Resilience: The Science of Adaptation to Climate Change*. Amsterdam, Cambridge, and Oxford: Elsevier. pp.51-61.



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implementation of the goal.³⁷ This framework includes three broad categories of metrics: risk metrics that are tied to different temperature scenarios; metrics that assess global readiness to address risk; and metrics that assess support required and available for adaptation. The first category of risk metrics would include, the authors suggest, a composite index of economy-wide risk and an assessment of risk for specific sectors; both would be linked to varying temperature scenarios. Metrics assessing global readiness to address risk, by contrast, would examine three different elements, namely, the global state of adaptation planning readiness, the state of sector-based planning, and whether planning is appropriate in light of risks and vulnerability. Finally, the third category of support-related metrics would serve to assess the investment required to address risks linked to varying temperature scenarios, domestic adaptation investments made (to recognize the efforts of developing country Parties), and support provided for adaptation. This approach thus advocates for assessing progress towards the goal more holistically and beyond the three individual elements, considering progress in light of the Paris Agreement's temperature goal and the global stocktake's mandate to also recognize the adaptation efforts of developing country Parties and review the adequacy and effectiveness of adaptation and support provided for adaptation.

The 2017 UNEP Adaptation Gap Report, which focused on the topic of global assessment of adaptation, concluded that frameworks for assessing adaptation progress that follow a proximity-to-target approach “have the greatest potential to respect a diversity of national contexts while facilitating global assessment of progress.”³⁸ Such frameworks

generally use a government's own targets and goals as a benchmark and seek to determine whether these are being reached.³⁹ They could also accommodate more subjective and normative assessments of the sufficiency or appropriateness of a government's goals or the instruments being deployed to work towards these goals. Dupuis and Biesbroek contend that such an approach may help solve the “dependent variable problem” complicating the comparison of adaptation policies between and within countries, wherein the scope, boundaries, and concept of the phenomenon being assessed are ambiguous.⁴⁰ Their suggestion, however, is to develop a proximity-to-target framework wherein the comparison is made to an ideal model of adaptation policy. This, of course, requires agreement on what constitutes an ideal model.

Following this overarching proximity-to-target approach, Berrang-Ford et al. propose an overarching conceptual framework for systematically tracking global adaptation efforts that is designed to be both flexible and sensitive to national contexts on the one hand, but also scalable and suitable to diverse contexts on the other hand.⁴¹ The framework combines descriptive assessment of four key elements (vulnerability, adaptation goals/targets, adaptation efforts, and adaptation results) with an evaluative assessment in three areas (sufficiency of goals and targets, sufficiency of adaptation efforts, and attribution and contribution of adaptation efforts). A combination of evaluative and descriptive components is beneficial because while descriptive assessments are better suited to tracking progress objectively over time, evaluative assessments, though more subjective, can potentially capture more

37 Ngwadla X and El-Bakri S. 2016. *The Global Goal for Adaptation under the Paris Agreement: Putting ideas into action*. London, UK: Climate and Development Knowledge Network. Available at: <https://cdkn.org/wp-content/uploads/2016/11/Global-adaptation-goals-paper.pdf>.

38 UNEP. 2017. *The Adaptation Gap Report 2017: Towards Global Assessment*. Nairobi: United Nations Environment Programme (UNEP). pp. xvi. Available at https://wedocs.unep.org/bitstream/handle/20.500.11822/22172/adaptation_gap_2017.pdf?sequence=1&isAllowed=y.

39 Berrang-Ford L, Wang FM, Lesnikowski A, et al. 2017. Towards the assessment of adaptation progress at the global level. In: A Olhoff, H Neufeldt, P Naswa et al. (eds). *The Adaptation Gap Report: Towards Global Assessment*. Nairobi: United Nations Environment Programme. pp. 38. Available at https://wedocs.unep.org/bitstream/handle/20.500.11822/22172/adaptation_gap_2017.pdf?sequence=1&isAllowed=y.

40 Dupuis J and Biesbroek R, 2013. Comparing apples and oranges: The dependent variable problem in comparing and evaluating climate change adaptation policies. *Global Environmental Change* 23(6): pp.1476-1487.

41 Berrang-Ford L, Biesbroek R, Ford J, et al. 2019. Tracking global climate change adaptation among governments. *Nature Climate Change* 9(6): pp.440-449.



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meaningful snapshots of adaptation progress.⁴² In this case, the evaluative assessment enables those using the framework to gain insight into how well-aligned the four key descriptive elements are in each context. For example, it prompts an examination of whether goals and targets are aligned with the vulnerability profile and context, whether the government's adaptation efforts are aligned with its own goals and targets, and, in turn, whether there is evidence that vulnerability changed as a result of the government's efforts or whether the results meet the goals and targets specified.

Notably, the approach does not introduce new tools or identify a particular group of

indicators, but rather presents a set of core concepts and questions in an overarching framework within which relevant tools and indicators can be used. This is what enables the framework to be deployed in different contexts and at different scales, though the type of indicators, data quality, and other factors will therefore be inconsistent depending on the place and level at which it is used. The framework also allows for a deep dive into assessing the alignment of policies in a given context, either horizontally by assessing whether on-the-ground and policy-level goals and details align with high-level ideas, and vertically by assessing whether policy mechanisms chosen at one level align with the policy goal

⁴² Neufeldt H and Berrang-Ford L. 2017. Considerations for a future framework for assessing adaptation progress at the global level. In: A Olhoff, H Neufeldt, P Naswa et al. (eds). *The Adaptation Gap Report: Towards Global Assessment*. Nairobi: United Nations Environment Programme. pp. 49-55. Available at https://wedocs.unep.org/bitstream/handle/20.500.11822/22172/adaptation_gap_2017.pdf?sequence=1&isAllowed=y.



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articulated at that level. For the purpose of assessing the global goal on adaptation in a manner that is consistent with the spirit of the Paris Agreement, descriptive proximity-to-target assessments could be undertaken by governments, while the evaluative portion could be undertaken through participatory, expert review, or country-led mechanisms.⁴³

3.3 Challenges of assessing progress towards the global goal on adaptation

Assessing collective progress towards the global goal requires navigating a series of significant challenges and trade-offs. Craft and Fisher identify four main challenges that complicate the effort to review progress towards the global goal on adaptation in the global stocktake.⁴⁴ This includes: 1) designing a system that can aggregate results across scales and contexts; 2) satisfying the global stocktake's dual mandate of assessing collective progress and informing the update and enhancement of national level actions; 3) overcoming the methodological challenges inherent in evaluating adaptation, such as the difficulty of attributing results to interventions and the shifting baselines and uncertainties of climate hazards; and 4) navigating divergent views and political sensitivities surrounding measurement under the UNFCCC regime. Tompkins et al. also hold that methodological challenges are one key problem area for assessing adaptation under the global stocktake, but argue that empirical challenges (the rarity of adaptation databases) and conceptual challenges (lack of agreement on what counts as adaptation) are two additional core difficulties that must be considered.⁴⁵

Dilling et al. also warn of three challenges that stand in the way of assessing adaptation progress when it is framed as assessing the “success” of adaptation measures.⁴⁶ First, the authors note, is the absence of a single, common definition of adaptation success or effectiveness. Second, different perceptions of what constitutes successful adaptation may arise from different, and evolving, perceptions of what constitutes a risk and varying risk tolerances. Third is the challenge of existing power asymmetries and how they influence who can define what is measured when assessing adaptation success. Similarly, Leiter and Pringle caution that value judgments necessarily enter into the equation when assessing the success of adaptation action because it is possible that cases arise where, for example, adaptation undertaken by one demographic undermines the capacity of another demographic to adapt.⁴⁷

Berrang-Ford et al. highlight six key criteria for indicators or frameworks for assessing adaptation progress that are comparable across the globe—namely, aggregable, transparent, longitudinal, feasible, coherent, and sensitive to national context—but note that trade-offs between these criteria often arise.⁴⁸ For example, the authors find that approaches to assessing progress that focus on the criterion of aggregability often do so at the expense of sensitivity to the national context (including differing political, economic, and socio-cultural priorities and resources) or coherence (the extent to which the measure reflects a meaningful proxy for adaptation). Similarly, if the approach or measure meets the criteria of aggregability or feasibility, it may face trade-offs with the criterion of being longitudinal (having the ability to be tracked over time), as changing

43 Berrang-Ford L, Wang FM, Lesnikowski A, et al. 2017. Towards the assessment of adaptation progress at the global level. In: A Olhoff, H Neufeldt, P Naswa et al. (eds). *The Adaptation Gap Report: Towards Global Assessment*. Nairobi: United Nations Environment Programme. pp. 38. Available at https://wedocs.unep.org/bitstream/handle/20.500.11822/22172/adaptation_gap_2017.pdf?sequence=1&isAllowed=y.

44 Craft B and Fisher S. 2018. Measuring the adaptation goal in the global stocktake of the Paris Agreement. *Climate Policy*. 18(9): pp.1203-1209.

45 Tompkins EL, Vincent K, Nicholls RJ, et al. 2018. Documenting the state of adaptation for the global stocktake of the Paris Agreement. *WIREs Climate Change*. 9(e545).

46 Dilling L, Prakash A, Zommers Z, et al. 2019. Is adaptation success a flawed concept? *Nature Climate Change* (9): pp.570-574.

47 Leiter T and Pringle P. 2018. Pitfalls and potential of measuring climate change adaptation through adaptation metrics. In: L Christiansen, Martinez G, and P Naswa (eds.). *Adaptation metrics: Perspectives on measuring, aggregating and comparing adaptation results*. Copenhagen: UNEP DTU Partnership. pp. 29-48.

48 Berrang-Ford L, Wang FM, Lesnikowski A, et al. 2017. Towards the assessment of adaptation progress at the global level. In: A Olhoff, H Neufeldt, P Naswa et al. (eds). *The Adaptation Gap Report: Towards Global Assessment*. Nairobi: United Nations Environment Programme. pp. 35-48.



priorities or resources may undermine future aggregability and feasibility.

Given that the global stocktake represents the first effort under the UNFCCC to assess global progress on adaptation, it is not yet clear how to strike the optimal balance between these trade-offs in a manner that is feasible and delivers the outputs expected of the process. Even beyond work under the UNFCCC, “understanding of the global state of adaptation... is currently partial and fragmented.”⁴⁹ As such, one author suggests “Parties will need to innovate or borrow” their approach to assessing progress towards the global goal on adaptation in the global stocktake.⁵⁰ Given the distinctive features

of the Paris Agreement and the global stocktake, however, borrowing elements of other regimes can pose challenges and should be approached with caution. It may therefore be worthwhile to more clearly define the concept of adaptation progress specific to the context of the global goal on adaptation and clarify which assumptions will be made to underpin such a concept.

Other challenges to consider include those that countries face as they strive to establish domestic monitoring, evaluation, and learning systems for adaptation. These systems, in many cases, help generate the information that countries include in their reports to the UNFCCC, thereby also generating some of the

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49 Olhoff A, Väänänen E, and Dickson B. 2018. Tracking adaptation progress at the global level: Key issues and priorities. In: Z Zommers and K Alverson (eds.). *Resilience: The Science of Adaptation to Climate Change*. p. 53.

50 Huang J. 2018. What can the Paris Agreement’s global stocktake learn from the Sustainable Development Goals? *Carbon and Climate Law Review* 12(3): p. 225.



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information that may be incorporated into a collective assessment of progress towards the global goal on adaptation. There are, however, persistent challenges that countries must overcome to develop, implement, and maintain these systems over time. The process of designing and implementing such systems is complex, and often marred by difficulties such as measuring results in the face of uncertainty, limited availability of data and baseline information, and managing or assessing multiple scales of interventions.⁵¹ Acquiring the necessary climate data can also prove prohibitively costly in some circumstances. Ensuring that such systems are nuanced and inclusive, including by collecting and assessing highly disaggregated data with a

view to understanding effects of vulnerable and marginalized groups, is yet another challenge. In some cases, a country's primary challenge is not a lack of data but how to operationalize accessing, synthesizing, and reporting data and information.⁵² These systems also tend to be costly and human-resource intensive, which can lead to countries making little progress in implementing them even once they are proposed or designed. As a result, many countries do not yet have such systems in place. Researchers are increasingly exploring avenues to assist countries in developing these systems such that these systems both meet domestic needs and are compatible with the information being sought under the UNFCCC. See box 2 for an example of one such framework.

BOX 2.

DESIGNING MONITORING, EVALUATION, AND LEARNING SYSTEMS

An IIED working paper proposes a framework for creating adaptation monitoring, evaluation, and learning frameworks at the national level that, by design, are aligned with the principles enshrined in Article 7 of the Paris Agreement and the adaptation-related areas of the enhanced transparency framework's modalities, procedures, and guidelines. The framework works to fulfil seven key functions—ranging from the quality assessment of adaptation actions and processes to tracking adaptation implementation to disseminating information and learning—and is built to be both flexible and to facilitate coherent global reporting. As more countries strive to establish new monitoring, evaluation, and learning systems, or update their existing systems, such frameworks and related guidance offer an invaluable opportunity to shape the trajectory of efforts to assess adaptation progress such that the mosaic of efforts made by subnational, national, and international actors is both robust and complementary.

Source: Brooks N, Anderson S, Aragon I, et al. 2019. *Framing and tracking 21st century climate adaptation: Monitoring, evaluation and learning for Paris, the SDGs and beyond*. London: IIED. Available at <https://pubs.iied.org/pdfs/10202IIED.pdf>

51 Mutimba S, Simiyu SW, Lelekoiten TL, et al. 2019. *sNAPshot: Kenya's Monitoring and Evaluation of Adaptation: Simplified, integrated, multilevel*. International Institute for Sustainable Development. Available at <http://napglobalnetwork.org/resource/snapshot-kenyas-monitoring-and-evaluation-of-adaptation-simplified-integrated-multilevel/>.

52 Mutimba S, Simiyu SW, Lelekoiten TL, et al. 2019. *sNAPshot: Kenya's Monitoring and Evaluation of Adaptation: Simplified, integrated, multilevel*. International Institute for Sustainable Development. Available at <http://napglobalnetwork.org/resource/snapshot-kenyas-monitoring-and-evaluation-of-adaptation-simplified-integrated-multilevel/>.



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The transboundary nature of climate change risk and impacts further complicates the task of assessing progress towards the global goal on adaptation. Benzie et al. argue that while the “transboundary dimension needs to be better understood to ensure that international cooperation works towards achieving the global goal on adaptation,” such transnational dimensions have “not been widely acknowledged” to date.⁵³ Most research and assessments related to climate change risk and adaptation have instead focused on the local-to-national dimension without accounting for the climate change impacts that cross national borders through, for example, trade, finance, people, and biophysical pathways such as changes in transboundary ecosystems. In the context of the global stocktake, Benzie et al. underscore the importance of going beyond an aggregation of national contributions by including, for example, measures taken to manage climate risk in financial markets or in global trade in agricultural commodities.⁵⁴ Inclusion of such transboundary risks and efforts could help the assessment of progress towards the global goal on adaptation better capture a holistic picture of adaptation progress and avoid

creating blind spots in cases where climate risks are redistributed rather than reduced.

3.4 Opportunities and limitations of using metrics and indicators to assess the global goal on adaptation

The question of how to assess adaptation progress is related *inter alia* to the search for adaptation metrics and indicators (see box 4 for a discussion on these terms and how they are used in this paper). This search has not been straightforward; on the contrary, it has been, and will likely remain, contentious.⁵⁵ This is in stark contrast to the realm of mitigation. Mitigation effectiveness is measured in units of a universally applicable metric (tonnes of greenhouse gas emissions) against an objective and quantifiable goal (e.g. limiting temperature rise to well below 2°C or to 1.5°C above preindustrial levels) and presented in a uniform and easily comparable format (greenhouse gas emissions inventories). Adaptation, on the other hand, does not easily lend itself to a universal, objective, quantifiable measure of success or effectiveness.

53 Benzie M, Adams KM, Roberts E et al. 2018. *Meeting the global challenge of adaptation by addressing transboundary climate risk*. Stockholm, Sweden: Stockholm Environment Institute. Available at <https://adaptationwithoutborders.org/sites/weadapt.org/files/meetingtheglobalchallengeofadaptation.pdf>.

54 Benzie M, Adams KM, Roberts E et al. 2018. *Meeting the global challenge of adaptation by addressing transboundary climate risk*. Stockholm, Sweden: Stockholm Environment Institute. Available at <https://adaptationwithoutborders.org/sites/weadapt.org/files/meetingtheglobalchallengeofadaptation.pdf>.

55 IPCC. 2014. Adaptation Needs and Options. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 833-868. Available at https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap14_FINAL.pdf.



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BOX 4. METRIC VS INDICATOR

The IPCC distinguished between the terms “metric” and “indicator” by defining a metric as a “group of values (measures) that taken together give a broader indication of the state or the degree of progress” while an indicator “is a sign or estimate of the state of something.” Nonetheless, the IPCC notes that this differentiation is not consistent in the literature and, indeed, for the purposes of this paper this distinction is not clear in most of the work reviewed in this section. For example, the 2017 UNEP Adaptation Gap Report, by contrast, defined indicators as “Quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor” whereas metrics or indices are “a system of measurement that includes the item being measured, the unit of measurement, and the value of the unit.” While the two sets of definitions thus overlap, they emphasize and highlight different aspects. Therefore, the two closely related terms are used interchangeably in this paper, guided by how the terms are used in the literature and examples under discussion.

Sources:

- (1) IPCC. 2014. Adaptation Needs and Options. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 833-868. Available at https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap14_FINAL.pdf
- (2) UNEP. 2017. *The Adaptation Gap Report 2017: Towards Global Assessment*. Nairobi: United Nations Environment Programme (UNEP). p. xvi.

Nonetheless, given the need to understand how adaptation interventions are affecting the capacity of people and ecosystems to cope with climate change impacts, the development and use of adaptation indicators by academics, donors, sub-national and national governments have proliferated recently. The IPCC has identified at least three uses of metrics for assessing adaptation: 1) determining the need for adaptation, 2) measuring the process of implementing adaptation, and 3) measuring the effectiveness of adaptation.⁵⁶ Metrics related to the need for adaptation typically try to measure vulnerability, though it is not clear whether they can go beyond identifying people and places that are vulnerable to effectively shed light on the nature of the vulnerability. Metrics that measure the process of implementing adaptation action include assessments of progress in areas such as spending on adaptation action or the number

of early warning systems implemented. As compared with the other two uses, selecting appropriate metrics for such measurements tends to be less contentious, though there is doubt about whether such metrics are effective proxies for measuring adaptation as opposed to development. Finally, metrics that strive to measure the effectiveness of adaptation are important for measuring progress but are especially difficult to develop due to the long-time horizons of adaptation outcomes and the changing conditions in which they materialize.

In the literature on monitoring and evaluating adaptation, another common categorization framework for adaptation metrics and indicators differentiates between input, output, outcome, and impact indicators. Whereas input and output indicators look to capture the potential for adaptation, outcome and impact indicators look to capture the realization of adaptation.⁵⁷

56 IPCC. 2014. Adaptation Needs and Options. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 833-868. Available at https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap14_FINAL.pdf

57 Leiter T, Olhoff A, Al Azar R, et al. 2019. *Adaptation metrics – Current Landscape and Evolving Practices*. Rotterdam and Washington: Global Commission on Adaptation. Available at <https://unepdtu.org/adaptation-metrics-current-landscape-and-evolving-practices/>.



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Process-oriented input and output indicators have been the most common to date.⁵⁸ Relying on these indicators, however, may generate “misleading conclusions” about the extent to which adaptation is actually taking place.⁵⁹ Leiter and Pringle note that the IPCC’s latter two categories in combination can paint a picture of adaptation progress. While the second category represents a process-oriented assessment of what is being done to advance adaptation (input and output), the third category represents an outcome-oriented assessment of what is resulting from these efforts.

Indicators can be qualitative or quantitative, though Kato and Ellis argue that the portion of the global stocktake that assesses progress towards the global goal on adaptation is likely to be qualitative rather than quantitative due to the challenges such as context-specificity, the flexibility in time and content afforded to countries in reporting on their adaptation-related efforts under the Paris Agreement (i.e. adaptation communications in particular), and varying national practices and capacities in monitoring and evaluating the three elements of the goal.⁶⁰ The authors note that this assessment could yield quantitative information that is based on national self-assessments conducted through scorecards or reports to the UNFCCC, or based on third-party assessments such as IPCC reports or region- or country-specific analyses. Others have voiced a similar opinion. For example, Milkoreit and Haapala hold that, assessing collective progress towards the global goal on adaptation

“is a qualitative rather than quantitative exercise that does not lend itself easily to data aggregation efforts.”⁶¹

While there are existing indices with metrics that track the three elements of the global goal on adaptation (i.e. resilience, vulnerability, and adaptive capacity), the lack of agreement on the relative merits of these indices and the validity of the rankings that they generate renders it unlikely that they can play a prominent role, if any, in the global stocktake.⁶² Indeed, efforts thus far have not yielded consensus on how to systematically assess, measure, express and compare countries’ vulnerability to climate change and none of the existing indices has been endorsed by the Conference of the Parties (COP) to the UNFCCC⁶³ or the CMA. The indices that exist generate significantly different country rankings as a result of the different indicators and weightings used.⁶⁴ Therefore, the question of whether any index can be used to help determine what progress has been made towards the global goal on adaptation inevitably wades into contentious normative and political debates surrounding how to determine the vulnerability of individual countries to climate change.

Other than using vulnerability indicators, Michaelowa and Stadelmann highlight two other approaches for assessing the effectiveness of adaptation, namely, cost-benefit and cost-effectiveness analyses.⁶⁵ Cost-benefit analyses generate estimates of the economic benefits derived from adaptation efforts, though they

58 Olhoff A, Väänänen E, and Dickson B. 2018. Tracking adaptation progress at the global level: Key issues and priorities. In: Z Zommers and K Alverson (eds.). *Resilience: The Science of Adaptation to Climate Change*. Amsterdam, Cambridge, and Oxford: Elsevier. pp.51-61.

59 Leiter T and Pringle P. 2018. Pitfalls and potential of measuring climate change adaptation through adaptation metrics. In: L Christiansen, Martinez G, and P Naswa (eds.). *Adaptation metrics: Perspectives on measuring, aggregating and comparing adaptation results*. Copenhagen: UNEP DTU Partnership. pp.36.

60 Kato T and Ellis J. 2016. *Communicating Progress in National and Global Adaptation to Climate Change*. Paris: OECD.

61 Milkoreit M and Haapala K. 2018. “The global stocktake: design lessons for a new review and ambition mechanism in the international climate regime. In *Environ Agreements*. Pp. 6.

62 Olhoff A, Väänänen E, and Dickson B. 2018. Tracking adaptation progress at the global level: Key issues and priorities. In: Z Zommers and K Alverson (eds.). *Resilience: The Science of Adaptation to Climate Change*. Amsterdam, Cambridge, and Oxford: Elsevier. pp.51-61.

63 Moehner A. 2018. The evolution of adaptation metrics under the UNFCCC and its Paris Agreement. In: L Christiansen, Martinez G, and P Naswa (eds.). *Adaptation metrics: Perspectives on measuring, aggregating and comparing adaptation results*. Copenhagen: UNEP DTU Partnership. pp. 15-28.

64 Leiter T and Pringle P. 2018. Pitfalls and potential of measuring climate change adaptation through adaptation metrics. In: L Christiansen, Martinez G, and P Naswa (eds.). *Adaptation metrics: Perspectives on measuring, aggregating and comparing adaptation results*. Copenhagen: UNEP DTU Partnership. pp.29-48.

65 Michaelowa A and Stadelmann M. Development of universal metrics for adaptation effectiveness. In: L Christiansen, Martinez G, and P Naswa (eds.). *Adaptation metrics: Perspectives on measuring, aggregating and comparing adaptation results*. Copenhagen: UNEP DTU Partnership. pp. 63-72.



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do not consider non-monetary benefits (e.g. health-related benefits). By contrast, cost-effectiveness analyses identify the least costly means of reaching a defined goal, though this approach is less well suited to cases where there are multiple goals. Michaelowa and Stadelmann propose the indicators of Saved Wealth and Saved Health as effective ways to shed light onto the monetary and non-monetary outcomes of adaptation efforts. Whereas the Saved Wealth indicator would offer a calculation of assets saved by an adaptation measure, the Saved Health indicator would estimate health benefits using the concept of Disability Adjusted Life Years Saved, which is common in the public health policy space. Similarly, Magnan and Ribera also argue for a specific proxy that they believe can distil some of the most important outcomes of adaptation into simple and clear summaries of adaptation outcomes and progress.⁶⁶ Specifically, they propose tracking the global goal for adaptation via the proxy of human security. They offer an interpretation of the global adaptation goal that, they believe, is more precise and therefore easier to track at a global level: “the commitment of the international community to ensure human security in a ‘well below +2°C’ world by the end of the century, meaning first, enhancing adaptation efforts when possible, and second, providing adequate answers for those whose security could not be covered in a well below +2°C world.”⁶⁷

Although metrics and indicators have thus received a lot of attention in the literature on monitoring, evaluating, and aggregating information on adaptation, it is important to bear in mind their limitations. As Leiter and Pringle note, while metrics and indicators can help reveal some dimensions of progress on

adaptation, they cannot offer explanations for why that progress has (or has not) taken place.⁶⁸ This, in turn, limits the extent to which these metrics or indicators can inform subsequent adaptation-related decisions taken on the basis of the assessment. This is an important consideration for assessing progress towards the global goal on adaptation in the global stocktake given that the outcome of the stocktake will inform Parties as they update and enhance their adaptation-related action and support.

In light of the challenges tied to indices, Olhoff, Väänänen, and Dickson suggest that sectoral approaches could offer an alternative way forward for the global stocktake.⁶⁹ This would align with the sectoral approaches taken in many nationally determined contributions (NDCs), national adaptation plans (NAPs), and other reporting, monitoring, and evaluation frameworks. Sector-specific literature does offer some insights into potential avenues for measuring progress and/or success in adaptation. The Lancet Commission on health and climate change, for example, has a set of indicators specific to “adaptation, planning, and resilience for health.” As with other efforts to measure and track adaptation, however, the indicators are largely process-based, making it difficult to derive any conclusions about the effectiveness of the processes being tracked. In their 2018 report, the Lancet Commission acknowledged this, noting that “although adaptation activities may have increased, they do not guarantee resilience against future climate change.”⁷⁰ Of the Commission’s eight adaptation-related indicators, only one—their newest indicator, which measures climate change adaptation to vulnerabilities from mosquito-borne diseases—attempts to measure health outcomes. There are additional sectoral tools or frameworks that relate to

66 Magnan A and Ribera T. 2016. Global adaptation after Paris: Climate mitigation and adaptation cannot be uncoupled. *Science* 352(6291): pp.1280-1282.

67 Magnan A and Ribera T. 2016. Global adaptation after Paris: Climate mitigation and adaptation cannot be uncoupled. *Science* 352(6291): pp.1282.

68 Leiter T and Pringle P. 2018. Pitfalls and potential of measuring climate change adaptation through adaptation metrics. In: L Christiansen, Martinez G, and P Naswa (eds.). *Adaptation metrics: Perspectives on measuring, aggregating and comparing adaptation results*. Copenhagen: UNEP DTU Partnership. pp29-48.

69 Olhoff A, Väänänen E, and Dickson B. 2018. Tracking adaptation progress at the global level: Key issues and priorities. In: Z Zommers and K Alverson (eds.). *Resilience: The Science of Adaptation to Climate Change*. Amsterdam, Cambridge, and Oxford: Elsevier. pp.51-61.

70 Watts N, Amann M, Arnell N et al. 2018. The 2018 report of the *Lancet* Countdown on health and climate change: shaping the health of nations for centuries to come. *The Lancet* 392(10163): 2491.



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climate change adaptation, such as the Climate Resilience and Food Security framework from the International Institute for Sustainable Development, the Future Flooding and Coastal Erosion Risk Assessment undertaken in the United Kingdom, or the World Bank's Economic Evaluation of Climate Change Adaptation Projects in the Agricultural Sector.⁷¹ Berrang-Ford et al. argue, however, that by virtue of the goals and focus of such frameworks, they “are not designed—and have negligible potential—to be used for systematic global aggregation or synthesis of nationally-reported data.”⁷²

3.5 Opportunities and procedures from existing multilateral review mechanisms

Several researchers⁷³ note that, in implementing the global stocktake, the international climate change regime can look to other international review mechanisms and borrow relevant processes and/or indicators. In particular, the Paris Agreement's siblings among the post-2015 development agendas, especially the Sustainable Development Goals (SDGs) and the Sendai Framework for Disaster Risk Reduction, as well as other Rio Conventions are cited as offering a set of indicators already tailored to the global level that potentially can be applied to reveal insights into global progress on adaptation.

Olhoff, Väänänen, and Dickson argue that “tweaking” these indicators for use in the global stocktake “may provide cost-effective ways for gathering information on adaptation in climate change impact areas that have been already agreed as global priorities.”⁷⁴ Others argue for “expanding” the global and national monitoring efforts under the SDGs “to provide meaningful coverage of adaptation.”⁷⁵ For example, the Food and Agriculture Organization is already looking to use the existing SDG indicators that it monitors to assess adaptation, and this approach can be taken for the other relevant indicators included in the framework.

Likewise, one of the key messages emerging from the AC's 2018 expert meeting on national adaptation goals/indicators and their relationship with the SDGs and the Sendai Framework was that, in combination, the top-down assessment approaches put in place by the SDGs and the Sendai Framework and the bottom-up approach taken by the Paris Agreement could help “assess collective progress towards global goals.”⁷⁶ Besides lessening the burden of reporting on adaptation, borrowing these indicators for assessing adaptation can help better connect the policy domains of sustainable development, disaster risk reduction, and climate change adaptation⁷⁷ which already have well-recognized synergies.⁷⁸

- 71 Berrang-Ford L, Wang FM, Lesnikowski A, et al. 2017. Towards the assessment of adaptation progress at the global level. In: A Olhoff, H Neufeldt, P Naswa et al. (eds). *The Adaptation Gap Report: Towards Global Assessment*. Nairobi: United Nations Environment Programme. pp. 35-48. Available at https://wedocs.unep.org/bitstream/handle/20.500.11822/22172/adaptation_gap_2017.pdf?sequence=1&isAllowed=y.
- 72 Berrang-Ford L, Wang FM, Lesnikowski A, et al. 2017. Towards the assessment of adaptation progress at the global level. In: A Olhoff, H Neufeldt, P Naswa et al. (eds). *The Adaptation Gap Report: Towards Global Assessment*. Nairobi: United Nations Environment Programme. pp.39. Available at https://wedocs.unep.org/bitstream/handle/20.500.11822/22172/adaptation_gap_2017.pdf?sequence=1&isAllowed=y.
- 73 E.g. Huang J. 2018. What can the Paris Agreement's global stocktake learn from the Sustainable Development Goals? *Carbon and Climate Law Review* 12(3): pp.218-228; Olhoff A, Väänänen E, and Dickson B. 2018. Tracking adaptation progress at the global level: Key issues and priorities. In: Z Zommers and K Alverson (eds.). *Resilience: The Science of Adaptation to Climate Change*. Amsterdam, Cambridge, and Oxford: Elsevier. pp.51-61; Leiter T and Pringle P. 2018. Pitfalls and potential of measuring climate change adaptation through adaptation metrics. In: L Christiansen, Martinez G, and P Naswa (eds.). *Adaptation metrics: Perspectives on measuring, aggregating and comparing adaptation results*. Copenhagen: UNEP DTU Partnership. pp.29-48.
- 74 Olhoff A, Väänänen E, and Dickson B. 2018. Tracking adaptation progress at the global level: Key issues and priorities. In: Z Zommers and K Alverson (eds.). *Resilience: The Science of Adaptation to Climate Change*. Amsterdam, Cambridge, and Oxford: Elsevier. pp.59.
- 75 Leiter T, Olhoff A, Al Azar R, et al. 2019. *Adaptation metrics – Current Landscape and Evolving Practices*. Rotterdam and Washington: Global Commission on Adaptation. Available at <https://unepdtu.org/adaptation-metrics-current-landscape-and-evolving-practices/>.
- 76 UNFCCC Adaptation Committee. 2018. Report on the expert meeting on national adaptation goals/indicators and their relationship with the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction. Bonn: UNFCCC, p. 4. Available at https://unfccc.int/sites/default/files/resource/ac14_indicators.pdf.
- 77 Leiter T and Pringle P. 2018. Pitfalls and potential of measuring climate change adaptation through adaptation metrics. In: L Christiansen, Martinez G, and P Naswa (eds.). *Adaptation metrics: Perspectives on measuring, aggregating and comparing adaptation results*. Copenhagen: UNEP DTU Partnership. pp29-48.
- 78 UNFCCC. 2017. *Opportunities and options for integrating climate change adaptation with the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction 2015-2030*. Bonn: UNFCCC secretariat. Available at https://unfccc.int/files/adaptation/groups_committees/adaptation_committee/application/pdf/techpaper_adaptation.pdf.



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U.S. Army Corps of Engineers/Flickr

Potentially relevant indicators under the SDG framework include, for example, the number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population (indicator 13.1.1); the number of countries that have communicated the establishment or operationalization of an integrated policy, strategy, or plan which increases their ability to adapt to climate change and foster climate resilience and low emissions development (indicator 13.2.1); and the number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework (indicator 11.b.1).⁷⁹

This is only a small sample of indicators under the SDG framework that may be relevant for assessing adaptation progress; select indicators under goal 2 (“End hunger, achieve food security and improved nutrition and promote sustainable agriculture”) goal 6 (“Ensure

availability and sustainable management of water and sanitation for all”), goal 15 (“Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and half and reverse land degradation and halt biodiversity loss”), as well as those under several other goals can also contribute to assessing global adaptation action. Indeed, in some cases, reporting under some of these indicators is already explicitly referencing adaptation action; for example, reporting under SDG indicator 6.5.2 (“Proportion of transboundary basin area with an operational arrangement for water cooperation”) has helped shed light on the degree to which adaptation has been integrated into transboundary water cooperation.⁸⁰ In addition to having relevant indicators as part of its assessment framework, the SDG process is invoked as a potential model because it shares similar overarching goals with the global stocktake, namely, assessing collective progress,

79 For a full list of SDG indicators, see https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202019%20refinement_Eng.pdf.

80 United Nations and UNESCO. 2018. *Progress on Transboundary Water Cooperation: Global baseline for SDG indicator 6.5.2*. France: UNESCO. Available at https://www.unece.org/fileadmin/DAM/env/water/publications/WAT_57/ECE_MP.WAT_57.pdf.



offering an opportunity for countries to share experiences and lessons learned, and bolstering ambition and implementation.⁸¹

Under the Sendai Framework, examples of indicators relevant to adaptation include direct economic loss attributed to disasters in relation to global GDP (indicator C-1); damage to critical infrastructure attributed to disasters (indicator D-1); and the number of countries that have multi-hazard early warning systems (indicator G-1).⁸² The Sendai Framework, however, encompasses disasters caused by natural and man-made hazards; to use data collected through its processes, it would therefore be necessary to disaggregate the data to include only climate-related natural disasters.⁸³ Moreover, drawing on these indicators borrowed from the SDGs and the Sendai Framework can shed only some light on adaptation progress, offering “a rough snapshot of some adaptation outcomes,” in order to accurately depict progress and help steer adaptation-related decision-making, “country-tailored national adaptation metrics that rely on quantitative and qualitative data”⁸⁴ are necessary.

Although the SDGs and the Sendai Framework are the most commonly cited multilateral review mechanisms after which the global stocktake could be modelled, Milkoreit and Haapala also present a useful contrast between the stocktake and three other mechanisms: the International Monetary Fund’s Bilateral Surveillance, the World Trade Organization’s Trade Policy Review Mechanism, and the Montreal Protocol’s Implementation Review.⁸⁵ Notably, the global stocktake’s focus on assessing collective, rather than individual, progress differentiates it from these other mechanisms where the collective assessment is undertaken over and above the primary

function of assessing individual action. The stocktake also differs in its time horizon, which is significantly longer than those integrated in other review mechanisms.

Comparisons with the other two Rio Conventions—namely, the Convention on Biological Diversity (CBD) and the UN Convention to Combat Desertification (UNCCD)—can also offer insights into how the international community has collectively set objectives and measured progress towards those objectives in complementary arenas. Under the CBD, the Strategic Plan for Biodiversity 2011–2020 adopted in 2010 outlined 5 strategic goals and 20 corresponding targets, titled the “Aichi Biodiversity Targets.” In a decision taken by the Conference of the Parties to the CBD in 2014, Parties requested that the Executive Secretary of the CBD “convene a meeting of the Ad Hoc Technical Expert Group on Indicators for the Strategic Plan for Biodiversity 2011–2020,”⁸⁶ and requested that this group “identify a small set of measurable potential indicators that could be used to monitor progress at the global level towards the Aichi Biodiversity Targets.”⁸⁷

The Technical Expert Group identified both generic and specific indicators for each of the 20 Aichi Targets; this included 58 specific indicators, of which 30 were considered easy to communicate and suitable for use at the national level and were therefore put forward as the “small set of indicators” requested by Parties to the CBD.⁸⁸ An additional 27 indicators identified were under active development, and seen to hold potential to fill gaps left by the indicators in the small set. In its report, the Technical Expert Group noted that while the set of global indicators offered a solid foundation for assessing progress,

81 Huang J. 2018. What can the Paris Agreement’s global stocktake learn from the Sustainable Development Goals? *Carbon and Climate Law Review* 12(3): pp.218–228.

82 For a full list of Sendai Framework indicators, see <https://www.preventionweb.net/sendai-framework/sendai-framework-monitor/indicators>.

83 Vallejo L. 2017. *Insights from national adaptation monitoring and evaluation systems*. Paris: OECD. Available at <https://www.oecd.org/environment/cc/Insights%20from%20national%20adaptation%20monitoring%20and%20evaluation%20systems.pdf>.

84 Moehner A. 2018. The evolution of adaptation metrics under the UNFCCC and its Paris Agreement. . In: L Christiansen, Martinez G, and P Naswa (eds.), *Adaptation metrics: Perspectives on measuring, aggregating and comparing adaptation results*. Copenhagen: UNEP DTU Partnership. pp. 15–28.

85 Milkoreit M and Haapala K. 2017. *Designing the Global Stocktake: A Global Governance Innovation*. West Lafayette, Indiana: Center for Climate and Energy Solutions.

86 See UNEP/CBD/COP/DEC/XII/1, para. 20(b).

87 See UNEP/CBD/COP/DEC/XII/1, Annex II.

88 See UNEP/CBD/ID/AHTEG/2015/1/3.

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it should be complemented with additional sources of information such as national reports, contributions from other multilateral environmental agreements, and contributions from indigenous peoples and local communities.

The list of Aichi Target indicators was later revised; the revised list includes 79 generic indicators and 147 specific indicators.⁸⁹ Of these specific indicators, 40 are also indicators included under the SDG framework. Examples of specific indicators with potential relevance for assessing global adaptation progress include the Global Ecosystem Restoration Index (a composite index measured by the Group on Earth Observations Biodiversity Observation Network); the prevalence of moderate or severe food insecurity in the population (also SDG Indicator 2.1.2); and the number of countries with ecosystem impact monitoring and/or assessment programmes. In the decision welcoming the updated list of

indicators, the CBD COP encouraged Parties “[t]o use a variety of approaches, according to national circumstances, in assessing progress towards national implementation of the Strategic Plan for Biodiversity 2011–2020, including quantitative indicators, expert opinion, stakeholder consultation and case studies, clearly documented in order to record uncertainty, contradictory evidence and gaps in knowledge to enable comparable assessments to be undertaken.”⁹⁰

As the timeline set for the Strategic Plan for Biodiversity 2011–2020 is elapsing, Parties to the CBD are currently working towards a post-2020 biodiversity framework. The first draft of the post-2020 global biodiversity framework outlines an overarching vision where, “By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for

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Asia Development Bank/Climate Visuals

⁸⁹ See CBD/COP/DEC/XIII/28.

⁹⁰ See CBD/COP/DEC/XIII/28.



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all people.”⁹¹ Related to this vision, there are four long-term goals for 2050, each of which is accompanied by corresponding milestones to assess, in 2030, progress towards the 2050 goals. In addition, there are 21 action-oriented targets for urgent action leading up to 2030, which will enable achievement of the 2030 milestones and 2050 goals. The draft framework highlights the importance of responsibility and transparency—stating that Parties to the CBD have a responsibility to implement mechanisms for planning, monitoring, reporting and review—and it will be supported by a monitoring framework with headline indicators. At the time of writing, there are 38 proposed headline indicators; 15 of these are an SDG indicator; seven relate to the GEO-BON essential biodiversity variable indicators or the System of Environmental Economic Accounting indicators; six are covered by an existing intergovernmental process or international data provider; and the remaining 10 need further research and development, although many are indicators of policy measures which will be developed on the basis of existing reporting through national reports under the Convention, national biodiversity finance plans, or reporting under CBD Protocols.⁹² Notably, according to the first draft, the post-2020 global biodiversity framework is intended to be used not only under the CBD and its Protocols, but also under other biodiversity-related agreements and conventions, including the UNFCCC and the UNCCD.

Parties to the UNCCD adopted the 2018-2030 Strategic Framework in 2017, which included five strategic objectives intended to guide the actions of all UNCCD stakeholders and partners in the twelve-year period covered by the Strategic Framework.⁹³ The Strategic Framework specifies that monitoring progress made towards implementing the Strategic Framework will take place through national reporting, sharing national experiences, best practices and lessons learned, as well as a review and evaluation by the Committee for

the Review of the Implementation of the Convention which is under the authority and guidance of the UNCCD COP.

Parties identified indicators for tracking progress made in achieving the strategic objectives. Several of these indicators are relevant for climate change adaptation and resilience-building. For example, under strategic objective one, which seeks “to improve the condition of affected ecosystems,” indicators include “trends in land cover” and “trends in land productivity or functioning of the land.” To facilitate national reporting on these indicators, the UNCCD secretariat provided Parties with national estimates for each indicator on the basis of available data (e.g. from the Climate Change Initiative Land Cover of the European Space Agency or the SoilGrids250m of the International Soil Reference and Information Centre); Parties were then asked to verify or replace these estimates with national or local data.⁹⁴ The assessment of “global” progress towards this strategic objective is therefore limited to those Parties that submit a national report by the reporting deadline which includes data on this strategic objective that is appropriate for global and regional analysis. By these criteria, the first (and most recent) assessment of progress included aggregated data from 135 out of a total of 197 Parties to the UNCCD. Strategic objective two, which aims “to improve the living conditions of affected populations,” also includes indicators relevant for adaptation: “trends in population living below the relative poverty line and/or income inequality in affected areas” and “trends in access to safe drinking water in affected areas.” By contrast to the progress assessment for strategic objective one, Parties did not receive estimates of these indicators, but they were pointed to suitable data sources (e.g. the World Bank estimate of the Gini index or the United Nations Statistics Division Statistical Services Branch SDG indicators database) for use in the absence of, or as a complement to, national

⁹¹ See CBD/WG2020/3/3.

⁹² See CBD/WG2020/3/3/Add.1.

⁹³ See ICCD/COP(13)/L.18.

⁹⁴ See ICCD/CRIC(17)/2.



data.⁹⁵ For strategic objective three, which aims “to mitigate, adapt to, and manage the effects of drought in order to enhance resilience of vulnerable populations and ecosystems,” however there is no indicator specified in the Strategic Framework. For the initial reporting cycle, Parties were therefore asked to report on national-level indicators in use to estimate progress towards the objective, qualitative trend assessments in those indicators, and related targets that had been set.⁹⁶

The Strategic Framework did not outline a mechanism analogous to the global stocktake to periodically assess progress and inform further

action; at the UNCCD COP 14 in 2019, however, the COP agreed on the modalities, criteria, and terms of reference for a midterm evaluation of the Strategic Framework.⁹⁷ Accordingly, a midterm evaluation will take place in 2024-2025 and examine progress made in achieving the five strategic objectives, along with factors such as continued relevance and efficiency. The evaluation will be supervised by an intergovernmental working group and will include an independent assessment conducted by an external expert, a participatory consultation on the conclusions and recommendations of said assessment, and a UNCCD COP decision on action to further enhance the implementation of the strategic framework.⁹⁸

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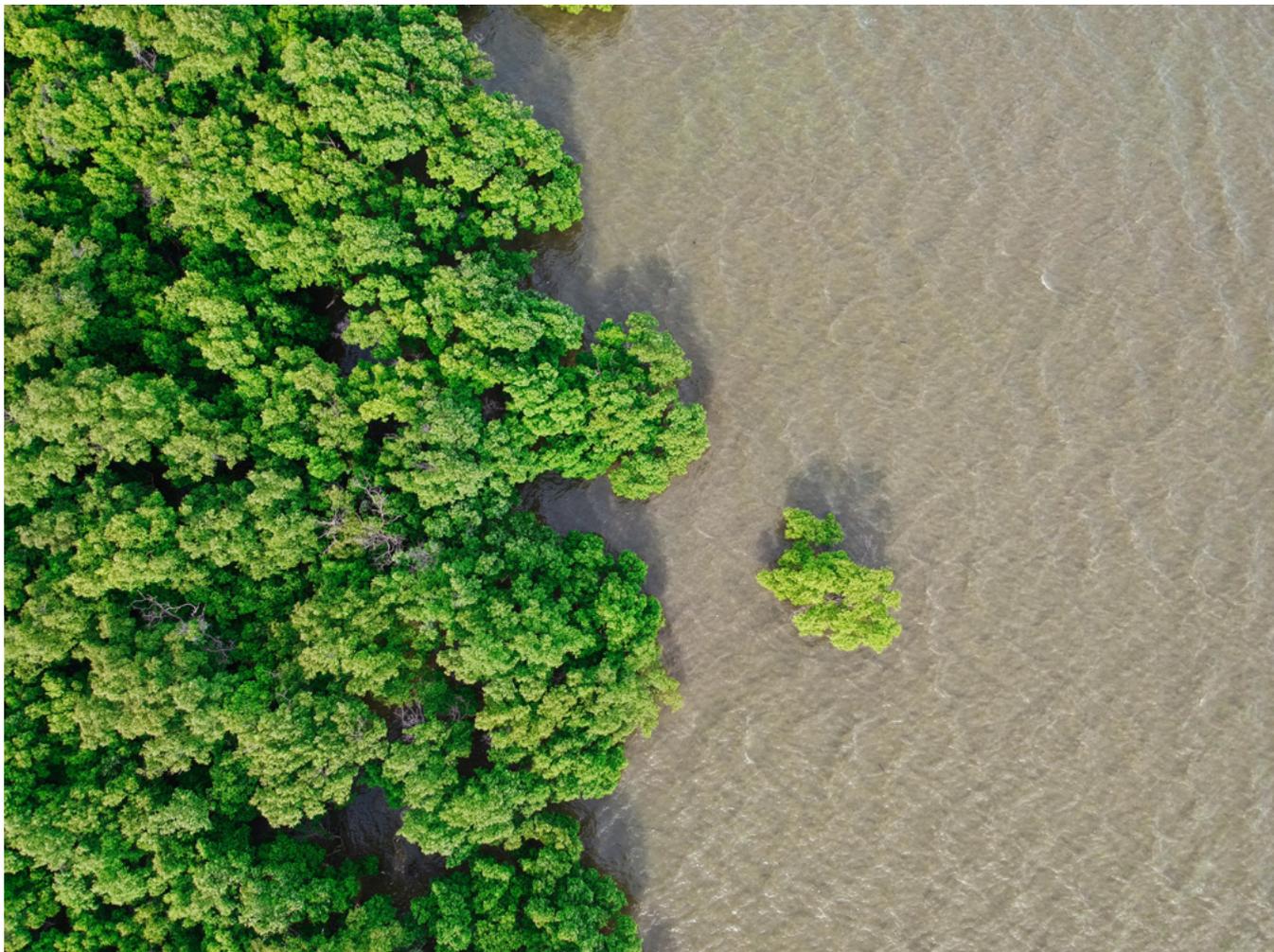
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Joe Waranont/Unsplash

⁹⁵ See ICCD/CRIC(17)/4.

⁹⁶ See ICCD/CRIC(17)/5.

⁹⁷ See ICCD/COP(14)/23.

⁹⁸ See ICCD/COP(14)/3.



4

EXISTING SYSTEMS AND APPROACHES FOR REVIEWING ADAPTATION PROGRESS AT DIFFERENT LEVELS

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Existing systems for tracking adaptation progress may offer insights into how a review of adaptation progress can be done in practice. Monitoring and evaluation frameworks shed light on options for aggregating adaptation assessments; national systems aggregate information both across sectors (horizontally) and across different levels of government (vertically).⁹⁹ While the practice of implementing national-level systems for monitoring and evaluating adaptation efforts is still relatively nascent, several countries have already begun piloting such systems.¹⁰⁰ The 2020 UNEP Adaptation Gap Report found that 33 per cent of countries have put in place dedicated monitoring and evaluation systems for adaptation, while a further 11 per cent were in the process of developing such systems.¹⁰¹ The design of these systems varies considerably, with differing combinations of qualitative analyses and qualitative and quantitative indicators. This chapter presents various examples of national-level systems drawn from different regions of the world. It also presents examples of systems operating at different levels, including at the international and subnational level that have been established by different types of organizations and institutions.

4.1 Assessing progress in the process to formulate and implement national adaptation plans

Under the UNFCCC, there is an existing effort to regularly assess progress in the process to formulate and implement NAPs. As part of this effort, the LEG with the support of the secretariat produces annual reports providing information on the progress of Parties in the process to formulate and implement NAPs, including on support provided and received, as compiled by the LEG as part of its work programme. The reports are based on various information sources, including national reports submitted under the Convention and the Paris Agreement, information shared by countries under the Open NAP initiative, NAPs and other outputs related to the NAP process shared on NAP Central, information submitted through the online questionnaire on NAPs¹⁰², as well as information provided to the LEG by the Green Climate Fund (GCF) and Global Environment Facility secretariats and agencies and organizations supporting countries in the process to formulate and implement NAPs.¹⁰³

99 Vallejo L. 2017. *Insights from national adaptation monitoring and evaluation systems*. Paris: OECD. Available at <https://www.oecd.org/environment/cc/Insights%20from%20national%20adaptation%20monitoring%20and%20evaluation%20systems.pdf>.

100 Vallejo L. 2017. *Insights from national adaptation monitoring and evaluation systems*. Paris: OECD. Available at <https://www.oecd.org/environment/cc/Insights%20from%20national%20adaptation%20monitoring%20and%20evaluation%20systems.pdf>.

101 Moehner A, Navi M, and Tawfig F. 2021. Assessing global progress on adaptation planning. In: *Adaptation Gap Report 2020*. Nairobi: UNEP. Available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/34751/AGR20Ch3.pdf?sequence=3&isAllowed=y>.

102 Available at <https://www4.unfccc.int/sites/NAPC/Pages/assessingprogress.aspx>.

103 FCCC/SB/2020/INF.13.



This regular review of progress is facilitated by various decisions of the COP, which have invited Parties, constituted bodies under the Convention, operating entities of the Financial Mechanism, United Nations organizations, and bilateral, multilateral, intergovernmental, and other international and regional organizations to provide information related to the process to formulate and implement NAPs.¹⁰⁴

The reports provide a summary of the status of NAP formulation and implementation across developing countries, highlighting facts and figures such as the number of developing countries

who: have initiated the process to formulate and implement NAPs; have submitted proposals for accessing funding for NAP formulation under the GCF Readiness and Preparatory Support Programme; are being supported by the GCF in formulating their NAPs; have submitted their NAPs to NAP Central; and more. These reports also provide insights on progress in relation to the four elements of the NAP process (see Table 1 below), the progress in achieving the objectives of the process to formulate and implement NAPs, and detailed information on support provided and received relevant to the process to formulate and implement NAPs.

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Eric Sales/Asian Development Bank/Climate Visuals

¹⁰⁴ See decisions 5/CP.17, paras. 32–35; 12/CP.18, paras. 2 and 10; 4/CP.21, para. 12(b); 6/CP.22, para. 12; and 8/CP.24, paras. 22–23.

**TABLE 1.** MEASURES UNDERTAKEN BY DEVELOPING COUNTRY PARTIES IN THE PROCESS TO FORMULATE AND IMPLEMENT NATIONAL ADAPTATION PLANS AS AT 14 OCTOBER 2021

Element	Number of developing countries ^a	Measure
A. Laying the groundwork and addressing gaps	129 (46)	Initiating and/or launching the process
	101 (36) ^b	Submitting proposals to the GCF Readiness and Preparatory Support Programme
	68 (25)	Receiving approval from the GCF Readiness and Preparatory Support Programme
	61 (21)	Receiving disbursement from GCF Readiness and Preparatory Support Programme
	18 (7)	Formulating a mandate for the process
	51 (22)	Defining institutional arrangements and a coordination mechanism to support the process
	57 (28)	Consulting stakeholders for input and validation
	70 (37)	Synthesizing available adaptation information, stocktaking relevant activities, and assessing gaps and needs as input to the process
	21 (17) ^c	Developing a road map for the process
	37 (20)	Publishing the road map for the process
B. Preparatory elements	47 (21)	Analysing past climate data and scenarios of climate change
	29 (16)	Comprehensively assessing climate vulnerability
	49 (25)	Undertaking activities on integrating adaptation into national and subnational development planning ^d
	29 (10)	Identifying adaptation options to address key vulnerabilities
	29 (11)	Appraising, prioritizing and ranking adaptation options
	17 (13) ^e	Compiling draft NAPs for consultation and endorsement
	26 (7)	Publishing NAPs and submitting them to NAP Central

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C. Implementation strategies	30 (11)	Prioritizing climate change adaptation in national planning
	26 (7)	Designing coherent NAP implementation strategies comprising policies, projects and programmes, taking into account synergies, and ensuring alignment with the GCF country programme
	13 (6)	Implementing and managing actions in NAPs to reduce vulnerability and to facilitate the integration of adaptation into development planning through policies, projects, programmes and other activities ^f
D. Reporting, monitoring and review	22 (7)	Designing and applying a monitoring and evaluation framework or system for NAPs
	69 (25)	Communicating progress on NAPs
	11 (3)	Monitoring and periodically reviewing the process
	12 (3)	Iteratively updating NAPs

Note: This table provides an update to table 1 in document FCCC/SBI/2020/INF.13. A list of the Parties that have undertaken these measures is available at <http://unfccc.int/9295>. The total number of developing countries is 154.

- a. Figures in parentheses indicate the number of LDCs.
- b. Other countries have received either partial or full support from bilateral and other sources for the formulation of their NAPs.
- c. Countries that have completed the road map were removed, which resulted in a decrease from the number listed in the previous report.
- d. Activities considered were those reported and cited by countries that were undertaken within the context of the process to formulate and implement NAPs.
- e. Countries that have published their NAPs and submitted them to NAP Central were removed, which resulted in a decrease from the number listed in the previous report.
- f. Activities considered in this measure pertain to policies, projects and programmes identified in the NAPs.

Source: SOURCE: FCCC/SBI/2021/INF.7, table 1



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Further work is underway, with the support of the NAP technical working group, to include new metrics under the PEG M&E Tool to cover the expanded measures being tracked on the progress on NAPs, such as those covering outcomes and impact of adaptation. The COP has also conducted two assessments of progress in the process to formulate and implement NAPs in 2015 and 2018, noting, among other things, that there was not enough information to assess the extent to which this process is reducing vulnerability to climate change, strengthening resilience and building adaptive capacity.¹⁰⁵ Nonetheless, this effort does provide an example of how information can be collected and synthesized from a variety of sources to provide a global picture of progress on an adaptation-related process under the UNFCCC.

4.2 Using a scoreboard to assess progress across countries

The European Union (EU) adopted a strategy on adaptation to climate change in 2013 and published an evaluation of the strategy in 2018. The strategy defined three core objectives: 1) promoting adaptation action by EU Member States, 2) climate-proofing action taken at the EU level, and 3) leading to better informed decision-making. It also outlines eight actions to meet these objectives. To evaluate the strategy, the EU decided to develop an adaptation preparedness scoreboard with key indicators for assessing the readiness level of Member States.¹⁰⁶ Based on discussions with EU Member States, a draft scoreboard methodology was created and then piloted in

2015. The pilot phase generated an unpublished assessment consisting of national scoreboards for each Member State, and the lessons learned from this pilot were used to revise the methodology. The methodology focuses on 11 main performance areas that relate to the five steps of the EU's adaptation policy cycle. For each of the 30 indicators, the status is assessed as either being met ("Yes") or not met ("No"), and in some cases "in progress." Each indicator score is accompanied by a short narrative explaining the reason for the score. An aggregate scoreboard for the entire EU can then be built based upon the national scoreboards; this aggregate scoreboard shows the status for each indicator at the bloc level (i.e. the extent to which an indicator is met, not met, or in progress across the bloc – see Figure 3).

This methodology offers one option for collecting and presenting information on adaptation progress across countries, though in this case the countries undergoing the assessment are bound together under the same regional policy. Despite this, there are a number of limitations to the methodology. First, the information gathered to conduct the analysis was collected through desk research, so the accuracy and the comprehensiveness depends upon what information was published and/or volunteered by Member State representatives. Further, the evaluation report discourages using the results of the assessment to directly compare Member States against one another; though two Member States may have the same score on a given indicator, what that score represents could differ significantly between the two.

¹⁰⁵ Decision 8/CP.24, para. 3.

¹⁰⁶ European Commission. 2018. *Horizontal assessment of the adaptation preparedness country fiches*. Brussels: European Commission. Available at https://ec.europa.eu/clima/sites/clima/files/adaptation/what/docs/horizontal_assessment_en.pdf.



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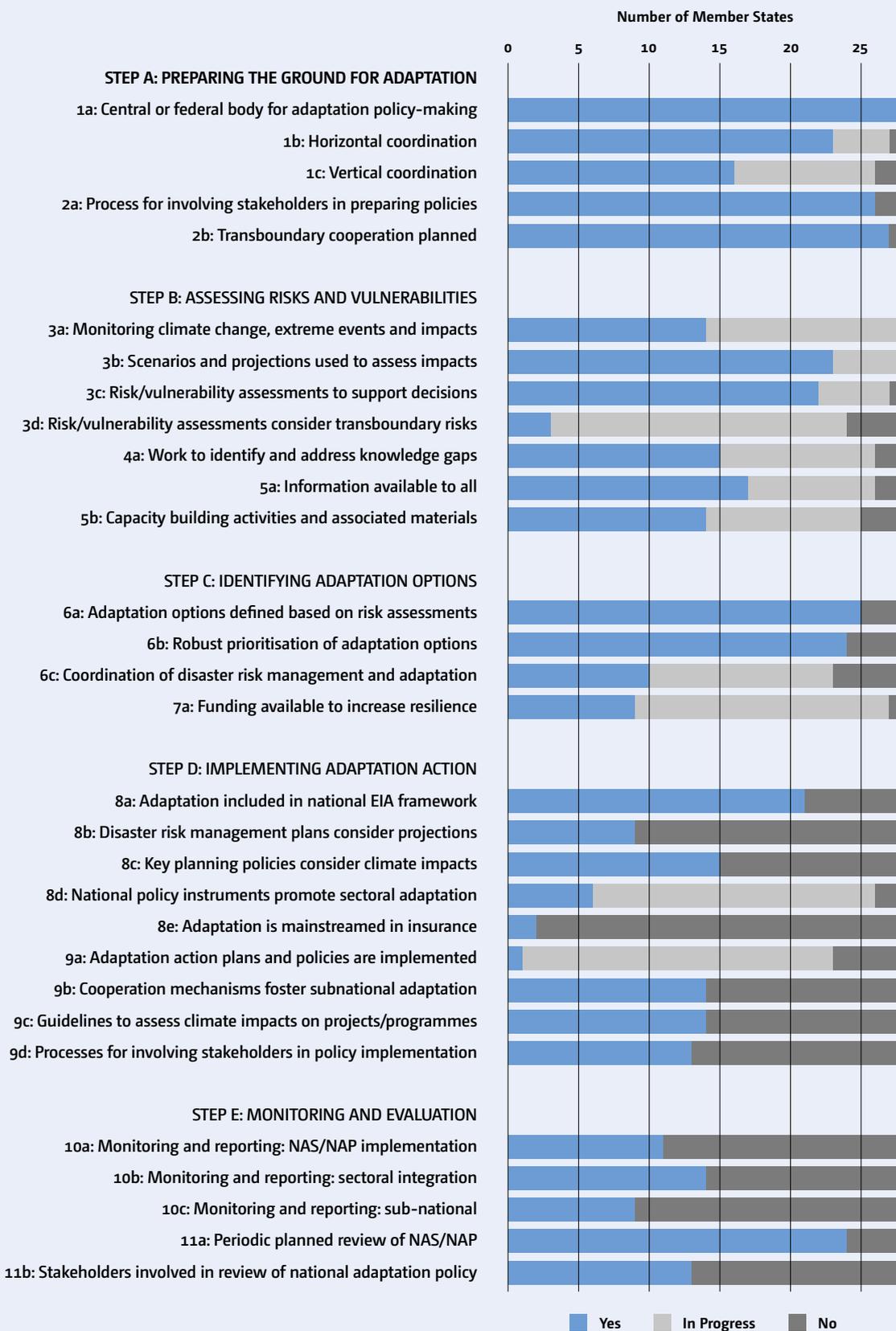
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FIGURE 3. AGGREGATED ADAPTATION SCOREBOARD OF EU MEMBER STATES
(reproduced from European Commission 2018)





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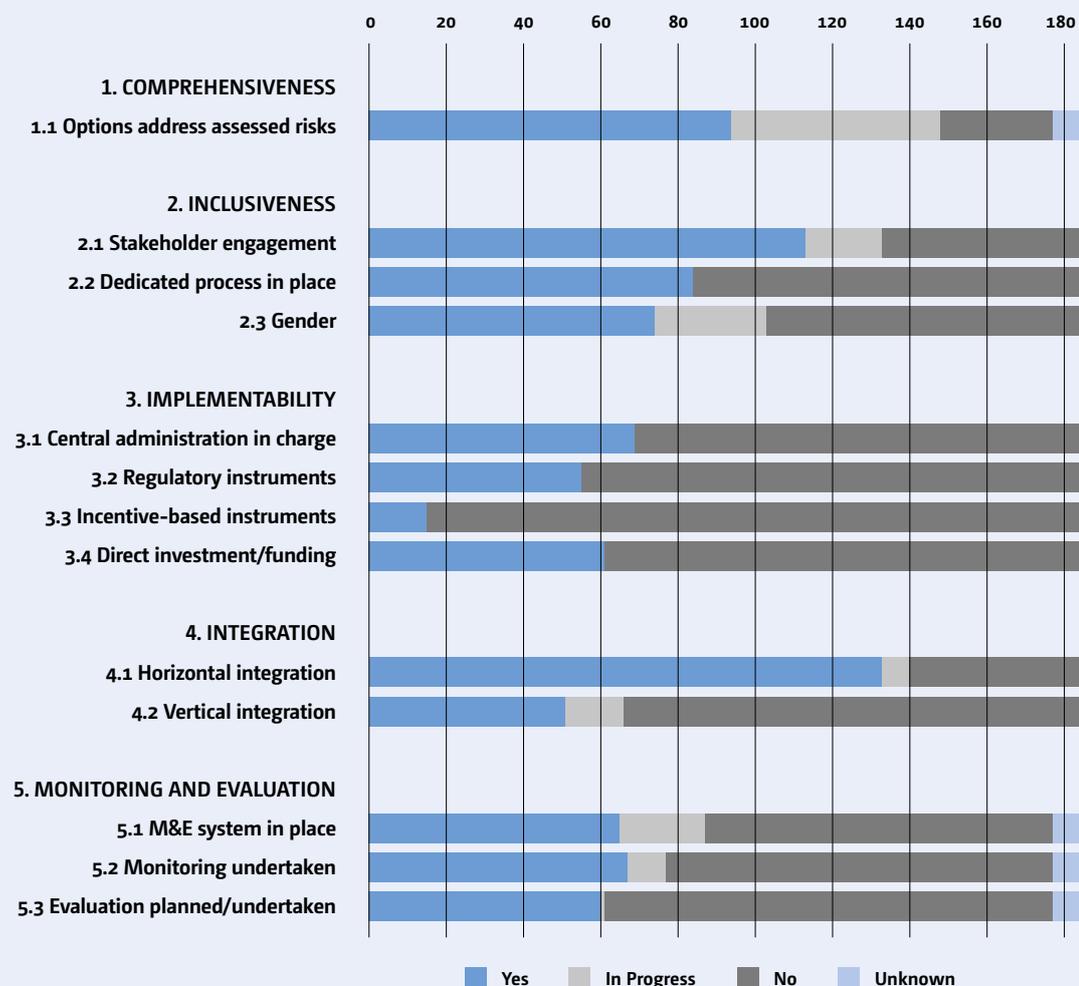
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The 2020 UNEP Adaptation Gap Report adapted and simplified this approach to assess global progress on adaptation planning.¹⁰⁷ Specifically, the analysis sought to assess whether the adaptation plans and strategies in place are adequate and effective in facilitating enhanced adaptive capacity, strengthened resilience, and reduced vulnerability. To do so, it evaluated the information submitted by 196¹⁰⁸ Parties to the UNFCCC in their most recent NDCs, NAPs, and national communications against five key criteria

– namely, comprehensiveness, inclusiveness, implementability, integration, and monitoring and evaluation – and 13 corresponding indicators that can reasonably be expected to contribute towards the adequacy and effectiveness of adaptation planning (see Figure 4). Though not reflected in the scoreboard graphic, the analysis was disaggregated into figures for least developed countries and small island developing States, demonstrating how this approach can be tailored to highlight nuances in specific sub-groups of countries.

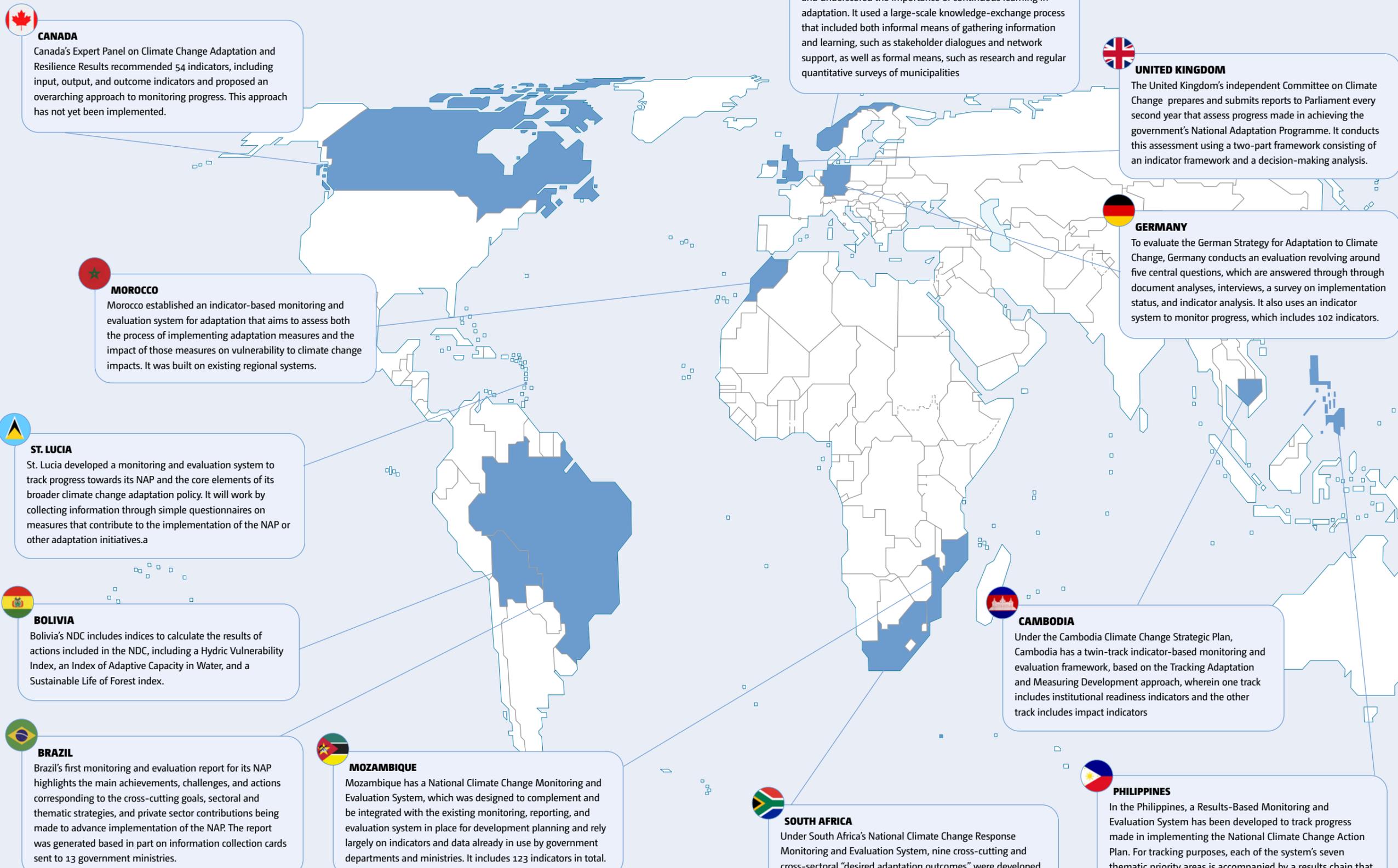
FIGURE 4. AGGREGATED SCOREBOARD ASSESSING CRITERIA RELATED TO ADEQUACY AND EFFECTIVENESS OF ADAPTATION PLANNING WORLDWIDE (REPRODUCED FROM 2020 ADAPTATION GAP REPORT)



107 Moehner A, Navi M, and Tawfig F. 2021. Assessing global progress on adaptation planning. *In: Adaptation Gap Report 2020*. Nairobi: UNEP. Available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/34751/AGR20Ch3.pdf?sequence=3&isAllowed=y>.

108 Excluding the European Union.

FIGURE 5. SYSTEMS AND APPROACHES FOR REVIEWING ADAPTATION PROGRESS AT THE NATIONAL LEVEL: CASE STUDIES



The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.



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4.3 Assessing progress towards desired adaptation outcomes

To track its transition to a climate-resilient and low-carbon society, South Africa established a National Climate Change Response Monitoring and Evaluation System.¹⁰⁹ It consists of five primary components: monitoring, evaluation, guidance, outputs, and feedback, learning, and review. These five components apply to tracking not only adaptation and resilience, but also mitigation and climate finance. With respect to adaptation in particular, South Africa's monitoring and evaluation system includes three building blocks, namely, climate information; climate risks, impacts, and vulnerability; and adaptation response measures. As part of this system, nine cross-cutting and cross-sectoral "desired adaptation outcomes" were developed to complement these building blocks. Together, these outcomes paint a picture of a more climate-resilient South Africa against which progress can be assessed. Six of these desired outcomes capture the inputs necessary to enable effective adaptation (e.g. capacity building, education, and awareness programmes for adaptation), and the remaining three capture the impacts of adaptation interventions (e.g. secure food, water, and energy supplies for all citizens).¹¹⁰

According to South Africa's latest biennial update report, a "traffic light" scoring approach has been proposed to assess the progress made towards the desired adaptation outcomes.¹¹¹ Such an approach would score progress by assigning a colour (red, amber, or green) for each outcome based on the extent to which legal frameworks, plans, strategies, policies, programmes, and projects have been informed by risk and vulnerability profiles including climate change-related risks and impacts. It would aggregate information provided by different stakeholders

and present it graphically. Over time, comparing these summaries is expected to shed light on the effectiveness of adaptation interventions and progress made in delivering climate resilience. Notably, as part of the outputs component, the results of the evaluation process contribute to fulfilling South Africa's reporting obligations under the UNFCCC, including national communications and biennial update reports.

4.4 Using indicator-based frameworks

In its first NDC, Bolivia outlines various indices to calculate the results of the actions included in the NDC.¹¹² In relation to water resources, this includes the Hydric Vulnerability Index, which is based on a comprehensive analysis of severable variables, including the intensity, persistence, and recurrence of climate change-related threats; the sensitivity of living systems and communities; and the ability to adapt to climate change, including catchment, reservoir, storage and provision of water for human consumption and irrigation, increased community water management, improved agricultural production with more efficient irrigation systems, wastewater reuse in big cities, and the universal expansion of national coverage of drinking water. The index follows the logic set out in the following equation:

$$\text{Hydric vulnerability} = \text{Hazard} + \text{Sensitivity} - \text{Water adaptability.}$$

In addition, Bolivia has developed the Index of Adaptive Capacity in Water, which is a function of variables including community management, productivity, water storage, access to water, and poverty between 2015 and 2030. This index functions such that an increase in community management, productivity, storage and access to water increase the value of the index, which

109 Department of Environmental Affairs, Republic of South Africa. 2015. *The National Climate Change Response Monitoring and Evaluation System Framework*. Pretoria: Department of Environmental Affairs, Republic of South Africa. Available at https://www.environment.gov.za/sites/default/files/reports/nationalclimatechangeresponse_MESF.pdf.

110 Department of Environmental Affairs, Republic of South Africa. 2018. *National Climate Change Adaptation Strategy, Republic of South Africa*. Pretoria: Department of Environmental Affairs, Republic of South Africa. Available at https://www.preventionweb.net/files/65184_20181130nccasv4.pdf.

111 Department of Environmental Affairs, Republic of South Africa. 2018. *South Africa's 3rd Biennial Update Report to the United Nations Framework Convention on Climate Change*. Pretoria: Department of Environmental Affairs, Republic of South Africa. Available at <https://unfccc.int/sites/default/files/resource/Final%203rd%20BUR%20of%20South%20Africa%20100.pdf>.

112 Plurinational State of Bolivia. 2016. *Intended Nationally Determined Contribution from the Plurinational State of Bolivia*. Available at: [https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Bolivia%20\(Plurinational%20State%20of\)%20First/INDC-Bolivia-english.pdf](https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Bolivia%20(Plurinational%20State%20of)%20First/INDC-Bolivia-english.pdf).



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reflects greater resilience, whereas an increase in poverty reduces the value of the index, reflecting lower resilience. Further, beyond water resources, the NDC describes Bolivia's Sustainable Life of Forest Index, which measures the combined capacity to mitigate and adapt in the forestry, agriculture, and livestock sector. It incorporates variables of poverty, community management, production, forest cover, as well as an environmental functions variable that accounts for carbon capture and storage, the presence of organic matter in the soil, water availability, and presence of biodiversity in areas with high conservation value. A rise in poverty reduces the value of the index, whereas a rise in all other variables increases the value of the index.

Under its Cambodia Climate Change Strategic Plan (CCCSP 2014-2023), Cambodia has a twin-track indicator-based monitoring and evaluation framework, based on the Tracking Adaptation and Measuring Development (TAMD) approach, wherein one track includes institutional readiness indicators and the other track includes impact indicators.¹¹³ This framework serves to assess both adaptation and mitigation actions in the country, as well as inform policy making, support the integration of climate change monitoring and evaluation into key sectors and national planning efforts, and help the country fulfil its reporting obligations under the UNFCCC and to its development partners. It functions at both the subnational and national levels and considers the country's key climate-sensitive sectors.

The framework includes five indicators to assess institutional readiness; these indicators assess the status of climate policy and strategies, climate integration into development,

coordination, climate information, and integration into financing.¹¹⁴ These are assessed through scorecards on a regular basis to track progress against a baseline. Scorecards are completed by key sectors and the ministries that form part of Cambodia's Climate Change Technical Working Group. They incorporate a "readiness ladder" approach wherein the rungs of the ladder correspond to milestones and scores are assigned for each milestone according to whether it has been reached, has not been reached, or has been partially reached.¹¹⁵ This allows for a total score to be calculated for each of the indicators, helping to illustrate Cambodia's progress towards building up its institutional readiness. Accompanying the scores are narratives and other pieces of supporting evidence that help contextualize and explain the score.

In addition to the readiness indicators, there are eight core impact indicators. Of these, adaptation-related indicators include the percentage of vulnerable communes (as assessed through vulnerability index values) and families affected by floods, storms, and droughts.¹¹⁶ To assess the percentage of vulnerable communes, Cambodia uses a vulnerability index constructed with the International Institute for Environment and Development on the basis of existing vulnerability indices already in use in the country.¹¹⁷

In 2017, Canada launched an Expert Panel on Climate Change Adaptation and Resilience Results to investigate and make recommendations on how to best assess progress in the country's efforts to adapt and build resilience to climate change.¹¹⁸ This Expert Panel was tasked with recommending

113 Rai N, Brooks N, Ponlok T, et al. 2015. *Developing a National M&E framework for climate change: Tracking Adaptation and Measuring Development (TAMD) in Cambodia*. London: IIED. Available at <https://pubs.iied.org/pdfs/10118IIED.pdf>.

114 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. 2017. *Cambodia: The national climate change monitoring & evaluation framework*. Eschborn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Available at <https://www.adaptationcommunity.net/wp-content/uploads/2017/11/13-giz2017-en-factsheet-cambodia.pdf>.

115 Rai N, Brooks N, Ponlok T, et al. 2015. *Developing a National M&E framework for climate change: Tracking Adaptation and Measuring Development (TAMD) in Cambodia*. London: IIED. Available at <https://pubs.iied.org/pdfs/10118IIED.pdf>.

116 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. 2017. *Cambodia: The national climate change monitoring & evaluation framework*. Eschborn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Available at <https://www.adaptationcommunity.net/wp-content/uploads/2017/11/13-giz2017-en-factsheet-cambodia.pdf>.

117 Rai N, Brooks N, Ponlok T, et al. 2015. *Developing a National M&E framework for climate change: Tracking Adaptation and Measuring Development (TAMD) in Cambodia*. London: IIED. Available at <https://pubs.iied.org/pdfs/10118IIED.pdf>.

118 Expert Panel on Climate Change Adaptation and Resilience Results. 2018. *Measuring Progress on Adaptation and Climate Resilience: Recommendations to the Government of Canada*. Gatineau: Environment and Climate Change Canada. Available at http://publications.gc.ca/collections/collection_2018/eccc/En4-329-2018-eng.pdf.



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indicators for measuring progress that align with the five action areas defined under the adaptation and resilience pillar of the country's framework climate policy. At the conclusion of its deliberations, the panel recommended 54 indicators, including input, output, and outcome indicators. Examples of indicators include the number of health care practitioners trained to identify and respond to climate-related health effects (for the action area on protecting and improving health and well-being); maximum response times in northern, remote, and coastal regions related to search and rescue/emergency response (for the action area on supporting particularly vulnerable regions); percentage of total financial losses restored (for the action area on reducing climate-related hazards and disaster risks); the number of days of disruption to basic services and critical infrastructure (for the action area on building climate resilience through infrastructure); and the number of community-based climate-related monitoring and adaptation programs that include indigenous, local, and scientific knowledge (for the action area on translating scientific information and indigenous knowledge into action).

In addition to the suggested indicators, the report offers a proposed overarching approach to monitoring progress. After defining a purpose and context and developing (or refining) indicators, the next step is collecting data. For this step, although the Expert Panel does not spell out precisely how data should be aggregated across the provinces and territories in the country, it notes that the system is scalable and can be applied by individual regions or sectors. Further, the Expert Panel does recommend first evaluating data availability and existing or potential data exchange agreements and considering various data collection and reporting relationships (e.g. federal-provincial/territorial, municipal-municipal, or from NGO or indigenous organizations). The remaining steps include data analysis and evaluation, communicating results, and continually

improving the system. Canada has not yet made available a decision on the way forward after the publication of the report.

Germany is yet another country that has established a national-level process for evaluating its adaptation efforts. The results of the first evaluation of the German Strategy for Adaptation to Climate Change (DAS) were published in 2019, showcasing the outputs of a methodology developed to assess whether the DAS's instruments and measures are conducive to achieving its goal of "the reduction of the vulnerability and the maintenance and improvement of the adaptability of natural, societal and economic systems to the unavoidable impacts of global climate change."¹¹⁹ The evaluation revolves around five central questions that assess e.g. the implementation status of Germany's Adaptation Action Plan II, to what extent adaptation has been mainstreamed at the federal government level, and whether it has been possible to enhance adaptability and reduce vulnerability. The questions were answered through document analyses, interviews, a survey on implementation status, and indicator analysis.

This evaluation of the DAS itself complements other periodic efforts to assess the status of climate risks and adaptation in Germany, namely, the progress report on the implementation of the strategy and the monitoring report and vulnerability analysis on which the progress report was based. At the heart of the monitoring report is the indicator system developed for the DAS, which consists of 102 indicators.¹²⁰ Of these, 55 describe climate change impacts. An additional 42 are response indicators which describe adaptation measures or factors affecting the process of adaptation. Finally, five capture the overarching activities of the German government. The impact and response indicators are spread across the 13 action fields of the DAS, which correspond to various at-risk sectors such

119 Gaus H, Silvestrini S, Kind C, et al. 2019. *Politikanalyse zur Evaluation der Deutschen Anpassungsstrategie an den Klimawandel (DAS)*. Dessau-Roßlau: Umweltbundesamt. Available at https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/politikanalyse_zur_evaluation_der_deutschen_anpassungsstrategie_an_den_klimawandel_das_-_evaluationsbericht.pdf.

120 Schönthaler K and von Andrian-Werburg S. 2015. *Evaluation of the German Strategy for Adaptation to Climate Change (DAS): Reporting and Closing Indicator Gaps*. Dessau-Roßlau: Umweltbundesamt. Available at https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/neuclimate_change_16_2015_evaluation_of_the_german_strategy_for_adaption_to_climate_change_das.pdf.



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as health, agriculture, tourism, and trade, as well as the two cross-sectional issues, i.e. development planning and civil protection.

In circumstances where data cannot yet be calculated for the entire country or available data does not meet the desired quality standards, the monitoring system allows for the use of case studies to provide insights into climate change impacts or adaptation efforts. The system envisages that case studies will be replaced by a nationwide indicator in the foreseeable future once the required data is available across the country and holds that case studies have the potential to encourage sub-national governments to make related data available if they do not do so already. Alternatively, proxy indicators may be used where direct measurement of an indicator parameter is not yet possible or further conceptual or methodological development is necessary. These are some of the ways in which the monitoring

system has been designed to be adapted as new knowledge or data becomes available.

Morocco established an indicator-based monitoring and evaluation system for adaptation that aims to assess both the process of implementing adaptation measures and the impact of those measures on vulnerability to climate change impacts.¹²¹ Its system was built on the foundation of an existing system, namely the Regional Information Systems on Environment and Sustainable Development; integrating the new monitoring and evaluation system into this existing information system was intended to avoid redundancies, take advantage of synergies, and optimize the use of resources. These existing subnational systems were well-functioning and therefore offered a “good entry point” for integrating systematic monitoring and evaluation of adaptation.¹²² Additionally, Morocco opted to gather data for the system through existing networks and inter-sectoral exchange

121 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. 2017. *Morocco: Adaptation monitoring and evaluation as part of the Regional Information Systems*. Eschborn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Available at <https://www.adaptationcommunity.net/wp-content/uploads/2017/11/05-giz2017-en-factsheet-morocco.pdf>.

122 International Institute for Environment and Development. 2019. *Subnational adaptation monitoring and evaluation in Morocco*. London: IIED. Available at <https://www.iied.org/subnational-adaptation-monitoring-evaluation-morocco>.



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platforms, which further contributed to the cost-efficiency and pragmatism of the system.¹²³

The national monitoring and evaluation approach included five core elements: pre-selecting vulnerable sectors on which to focus; a context analysis for adaptation monitoring; introducing causality chains for each vulnerable sector as a pre-cursor to defining and selecting indicators; developing information sheets for the indicators; and analyzing and visualizing indicators (e.g. through graphs, maps, or tables). Moreover, the system included five types of indicators: indicators assessing vulnerability; indicators tracking adaptation measures; indicators measuring the impact of adaptation actions; climate finance indicators; and governance indicators. The data is centralized in an online database which includes both region-specific indicators as well as standard indicators that will be aggregated at the national level.¹²⁴ Examples of process-related indicators tracking the implementation of adaptation measures in the agriculture sector include cultivated surface area with drought resistant varieties; forested areas covered by territorial plans; and the number of farmers involved in pilot irrigation services.¹²⁵ Examples of indicators measuring the impact of adaptation measures in the agriculture sector include demand for water by sector, share of additional fodder for grazing livestock, and the poverty rate in rural areas.

When rolling out the system, the country limited itself to using those indicators for which data was already available.¹²⁶ At the same time, however, the stakeholder dialogues wherein the indicators were prioritized also generated a

list of indicators saved for potential future use if data and the other required resources become available. Morocco will have the opportunity to revise and adapt the monitoring and evaluation system during an envisioned revision phase.¹²⁷

Mozambique published its National Climate Change Monitoring and Evaluation System (SNMAMC) in 2014.¹²⁸ The SNMAMC addresses mitigation, adaptation, and cross-cutting elements. Notably, Mozambique established its national system partly to help fulfil its international reporting requirements, including under the UNFCCC, and to mitigate the risk of proliferating reporting requirements arising from multilateral and bilateral sources of climate finance. At the outset, Mozambique acknowledged that the system would likely have to be revised over time as experience with the system grows and as methods for designing and implementing such systems improves over time. To reduce the cost of the system, improve integration, and increase efficiency in data collection, analysis, and reporting, the system was designed to complement and be integrated with the existing monitoring, reporting, and evaluation system in place for the country's development planning and rely as much as possible on indicators and data already in use by government departments and ministries. The system includes a national and sectoral level indicator framework, climate finance tracking, vulnerability assessments at local and sectoral levels, long-term program evaluation, a learning mechanism, and a communications and results sharing component.

The indicator framework includes 123 indicators in total, of which three are impact indicators

123 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. 2017. *Morocco: Adaptation monitoring and evaluation as part of the Regional Information Systems*. Eschborn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Available at <https://www.adaptationcommunity.net/wp-content/uploads/2017/11/05-giz2017-en-factsheet-morocco.pdf>.

124 International Institute for Environment and Development. 2019. *Subnational adaptation monitoring and evaluation in Morocco*. London: IIED. Available at <https://www.iied.org/subnational-adaptation-monitoring-evaluation-morocco>.

125 Food and Agriculture Organization of the United Nations (FAO) and United Nations Development Programme (UNDP). 2019. *Strengthening monitoring and evaluation for adaptation planning in the agriculture sectors*. Rome: FAO and UNDP. Available at <http://www.fao.org/3/ca5271en/ca5271en.pdf>.

126 Food and Agriculture Organization of the United Nations (FAO) and United Nations Development Programme (UNDP). 2019. *Strengthening monitoring and evaluation for adaptation planning in the agriculture sectors*. Rome: FAO and UNDP. Available at <http://www.fao.org/3/ca5271en/ca5271en.pdf>.

127 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. 2017. *Morocco: Adaptation monitoring and evaluation as part of the Regional Information Systems*. Eschborn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Available at <https://www.adaptationcommunity.net/wp-content/uploads/2017/11/05-giz2017-en-factsheet-morocco.pdf>.

128 Republic of Mozambique National Council for Sustainable Development. 2014. *National Climate Change Monitoring and Evaluation System (SNMAMC)*. Republic of Mozambique National Council for Sustainable Development. Available at <http://www.cgcmc.gov.mz/attachments/article/176/SNMAMC%20English%20Final%20Version%2020150929%20Final.pdf>.



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(which measure the ultimate effects of policies on reducing vulnerability and improving risk management) and 120 result indicators (that measure high-level intended achievements rather than delivered outputs or products). Thirteen of the result indicators are core indicators, which are prioritized, while the remaining 107 are secondary. The three impact indicators correspond to the three pillars and strategic objectives of the system; of these, the indicator related to adaptation seeks to measure variations in the climate change vulnerability index aggregated across households. This will be based on the household budget survey, which was amended to include questions related to vulnerability. To accompany the survey results, local level assessments and case studies will also be conducted in order to shed more light on the context in which vulnerability is changing. The indicator framework includes only national-level indicators because local- and project-level indicators would be highly context specific and could not easily be standardized to aggregate across the country.

In the Philippines, a Results-Based Monitoring and Evaluation System has been developed to track progress made in implementing the National Climate Change Action Plan (NCCAP) 2011-2028.¹²⁹ The NCCAP has seven thematic priority areas that address both adaptation and mitigation, including food security, water sufficiency, ecosystem and environmental stability, human security, climate-smart industries and services, sustainable energy, and knowledge and capacity development.¹³⁰ For tracking purposes, each of these seven areas is accompanied by a results chain that includes ultimate, intermediate, and immediate outcomes, output areas, and indicators.¹³¹ Indicators are predominantly input- and output-oriented. For example, they assess variables such as whether water resources

management laws have been reviewed and harmonized in the priority area of water sufficiency, or the number of vulnerability and risk assessments conducted in the priority area of knowledge and capacity development.

In 2018, the country's Climate Change Commission published a monitoring and evaluation report brief, which summarized progress made towards the intermediate outcomes in each of the seven areas.¹³² Rather than listing scores for all the indicators, the brief instead highlights the accomplishments and gaps under five key, general headings for each priority area. The five headings include the policy context, institutional cooperation, the adaptation-development continuum, targeting of adaptation initiatives, and public finance priorities. The brief therefore offers government agencies and other decision-makers a concise, qualitative description of what meaningful progress has been made, while also directing their attention to areas where progress has so far fallen short.

The United Kingdom's Climate Change Act of 2008 initiated a cyclical process of assessing climate change-related risks, developing objectives, policies, and proposals to address these risks, and periodically assessing progress towards these measures.¹³³ As part of this process, the independent Committee on Climate Change, which was created by the Act, prepares and submits reports to Parliament every second year that assess progress made in achieving the government's National Adaptation Programme. To conduct its assessment, the Climate Change Committee uses a two-part framework. Part one consists of an indicator framework that analyzes trends in risk factors (including hazards, vulnerability, and exposure), adaptation action, and impacts. Part two consists of a decision-making analysis that assesses whether and to

129 International Institute for Environment and Development. 2019. *How the Philippines' national M&E system integrates climate and development*. London: IIED. Available at <https://www.iied.org/how-philippines-national-me-system-integrates-climate-development>.

130 Climate Change Commission. 2019. *Executive Brief: The Philippine National Climate Change Action Plan, Monitoring and Evaluation Report 2011-2016*. Manila: Climate Change Commission. Available at https://climate.gov.ph/public/ckfinder/userfiles/files/Knowledge/The%20Philippine%20NCCAP%20M%26E%20Executive%20Brief_FINAL%20for%20Printing.pdf.

131 OECD. 2015. *National Climate Change Adaptation: Emerging Practices in Monitoring and Evaluation*. Paris: OECD Publishing. pp.71-79. https://read.oecd-ilibrary.org/environment/national-climate-change-adaptation_9789264229679-en#page74.

132 Climate Change Commission. 2019. *Executive Brief: The Philippine National Climate Change Action Plan, Monitoring and Evaluation Report 2011-2016*. Manila: Climate Change Commission. Available at https://climate.gov.ph/public/ckfinder/userfiles/files/Knowledge/The%20Philippine%20NCCAP%20M%26E%20Executive%20Brief_FINAL%20for%20Printing.pdf.

133 See <http://www.legislation.gov.uk/ukpga/2008/27>.



what extent plans are being made to prepare for climate change, and the adequacy of these plans in considering climate change-related risks and opportunities.¹³⁴

The current assessment framework in place assigns a numerical score between one and nine for 33 adaptation priorities related to the categories of climate risk included in the government's latest climate change risk assessment. Scores are assigned on the basis of the quality of plan in place and progress made in managing risks. A score of one corresponds to a low-quality plan and low level of progress in managing risk or a lack of evidence available on risk management. By contrast, a score of nine corresponds to a high-quality plan in place and good progress made in risk management. To earn a high-quality plan score, a plan must meet criteria such as considering climate change,

setting out specific actions, having an effective monitoring and evaluation component, and being up to date. To earn a good risk management score, there must be some evidence that risk is being reduced at an appropriate rate or good evidence of the impact actions are having on risks. This system was used for the first time in the 2019 assessment report; in previous assessments, adaptation priorities were given a score of Red, Amber, Green, or Grey on the questions of whether there was a plan, whether actions are taking place, and whether progress is being made in managing vulnerability.

4.5 Using informal knowledge-exchange

Norway's initial approach to assessing its adaptation progress did not rely on indicators or

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134 Committee on Climate Change. 2019. *Progress in preparing for climate change: 2019 Report to Parliament*. London: Committee on Climate Change. Available at <https://www.theccc.org.uk/publication/progress-in-preparing-for-climate-change-2019-progress-report-to-parliament/>.



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on a formal monitoring and evaluation system.¹³⁵ Rather, it made use of existing systems in place for tracking progress and underscored the importance of continuous learning in adaptation. The approach sought to build an understanding of what is working and why, and to use that information to inform policy decisions. The process made use of a large-scale knowledge-exchange process that included both informal means of gathering information and learning about adaptation progress, such as stakeholder dialogues and network support, as well as formal means, such as research and regular quantitative surveys of municipalities. Information is also drawn from annual budget reporting on progress made towards reaching goals and downscaled climate projections. The results were then fed into national vulnerability and adaptation assessments that assessed the country's progress on adaptation. As a principle, this approach was pursued such that reporting burdens placed on municipalities were reduced, and existing online and offline platforms for learning and knowledge exchange were used to increase efficiency. It is also flexible, and avoids putting in place a rigid, sequential process for assessing progress and learning, so that policy development and decision making can be more responsive. In its seventh national communication to the UNFCCC, Norway noted that a national system for monitoring and evaluating adaptation is under way; therefore, this approach may change in the future.¹³⁶

4.6 Using questionnaires and information collection cards to assess progress

Similar to the monitoring and evaluation report brief published by the Philippines, Brazil's first monitoring and evaluation report for its NAP

highlights the main achievements, challenges, and actions corresponding to the cross-cutting goals, sectoral and thematic strategies, and private sector contributions being made to advance implementation of the NAP. The report was generated based in part on information collection cards sent to 13 government ministries that sought information on, among other things, the status of implementing adaptation actions, whether these actions related to the SDGs, and whether they were related to other international frameworks or national policies.¹³⁷ As an aggregate assessment, the report presented descriptive statistics highlighting the percentage of goals and sectoral guidelines where action had been taken in the past year, as well as the percentage of actions contributing to each of the NAP's three primary objectives. The assessment of aggregate outcomes also summarizes the key achievements under each objective and the number of international frameworks to which NAP-related activities contributed; this included an overview of how many of the SDGs and SDG targets were advanced through work on the NAP. Looking ahead, the evaluation report noted that Brazil aims to enhance the monitoring and evaluation system of its NAP in the future by finding a way to include actions reported by civil society and subnational governments.¹³⁸

St. Lucia developed a monitoring and evaluation system to track progress towards its NAP and the core elements of its broader climate change adaptation policy.¹³⁹ The system is designed to be simple and ready to implement immediately; it does not require the use of additional government resources. By designing a simple and cost-efficient system, St. Lucia hoped to encourage long-term use of the system. It is built in part on the foundation laid by the Pilot

135 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. 2014. *Norway: Learning by doing for measuring progress in adaptation*. Eschborn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Available at https://www.adaptationcommunity.net/?wpfb_dl=228.

136 Norwegian Ministry of Climate and Environment. 2018. *Norway's Seventh National Communication Under the Framework Convention on Climate Change*. Oslo: Norwegian Ministry of Climate and Environment. Available at https://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/529371_norway-nc7-br3-1-nc7-br3-final.pdf.

137 Presentation by a representative of the Ministry of Environment of Brazil during a workshop on national adaptation goals/indicators and their relationship with the SDGs and the Sendai Framework for Disaster Risk Reduction in Tokyo, Japan. 2018. *Monitoring and Evaluation of NAP: Brazil's experience*. Available at <https://unfccc.int/sites/default/files/resource/2Brazil%E2%80%99s%20experience%5B2%5D.pdf>.

138 Brazil Ministry of Environment. 2017. *National Adaptation Plan Brazil: 1st Monitoring and Evaluation Report 2016-2017*. Brasilia: Ministry of Environment. Available at http://euroclimaplus.org/intranet/_documentos/repositorio/Plan%20Nacional%20de%20Adaptaci%C3%B3n_2016.pdf.

139 Government of Saint Lucia. 2018. *Monitoring and Evaluation Plan of Saint Lucia's National Adaptation Planning Process*. Castries: Saint Lucia Ministry of Education, Innovation, Gender Relations and Sustainable Development. Available at <https://www4.unfccc.int/sites/NAPC/Documents/Parties/Saint%20Lucia%20Monitoring%20and%20Evaluation%20for%20NAP.pdf>.



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Program for Climate Resilience (PPCR – see section 4.7 below), which collected information since 2012 to monitor the implementation of its projects in the country. The monitoring and evaluation system used for the programme itself was deemed too time consuming to be continued in the long term in the absence of additional support.

The new system will work by collecting information through simple questionnaires on measures that contribute to the implementation of the NAP or other adaptation initiatives; questionnaires will be distributed along with the annual request for information to monitor progress made under the PPCR projects. Questionnaires are distributed to members of the country's national climate change committee and agency representatives, and solicit descriptive information on elements such as whether sectoral strategies were elaborated, major projects and programmes that integrate adaptation, whether funding was secured for implementing the NAP or sectoral plan, whether adaptation-related partnerships were established, and the implementation status of measures included in the NAP (whether not initiated, initiated, ongoing, or completed). Based on the completed questionnaires, St. Lucia's Department of Sustainable Development will complete a monitoring template that aggregates the information. The aggregate will offer insights into the total number of sectoral strategies completed during the year, the proportion of major programmes approved that explicitly include adaptation, the total number of sectoral and cross-sectoral adaptation measures that were initiated, completed, or are ongoing, the vulnerable groups specifically targeted in measures, etc. As needed, the questionnaires will be complemented by individual or focus group interviews.

4.7 Assessing progress by a climate fund

National-level approaches to reviewing adaptation progress are not limited to those systems or efforts initiated by national governments. For example, climate funds may seek to apply approaches that can be deployed in various countries; these approaches must go beyond assessing how much resources have been contributed to adaptation measures in order to shed light on whether adaptation has been mainstreamed, adaptive capacity has been enhanced, resilience has been strengthened, and vulnerability has been reduced. The monitoring and reporting system established by the Climate Investment Fund's PPCR offers an example of national-level systems that are applied to various countries. The PPCR, a USD 1.2 billion programme, was established to support developing countries in adapting to climate change by helping governments integrate resilience into their strategic planning and offering concessional or grant funding to implement the plans and pilot innovative solutions. To track investment performance and ensure accountability, learning, progress, and results in its work, the PPCR developed a monitoring and results (M&R) system that combines quantitative and qualitative methods and follows a country-driven, participatory approach.¹⁴⁰ It is based on the PPCR's results framework, which includes five core indicators including the degree of integration of climate change in national planning and the number of people supported to cope with climate change impacts. Additionally, there are six optional indicators that can be adapted to the national context when they are deemed useful.¹⁴¹

Data collection and reporting through the M&R system follows two parallel, complementary tracks: national-level country reporting and reporting from the multilateral development banks that implement the PPCR funding.¹⁴²

140 Climate Investment Funds. 2018. *PPCR Monitoring and Reporting Toolkit*. Washington: Climate Investment Funds. Available at https://www.climateinvestmentfunds.org/sites/cif_enc/files/knowledge-documents/ppcr_mr_toolkit_july_2018.pdf.

141 Climate Investment Funds. 2012. *Revised PPCR Results Framework*. Washington: Climate Investment Funds. Available at https://www.climateinvestmentfunds.org/sites/default/files/meeting-documents/revised_ppcr_results_framework_0.pdf.

142 Climate Investment Funds. 2018. *PPCR Monitoring and Reporting Toolkit*. Washington: Climate Investment Funds. Available at https://www.climateinvestmentfunds.org/sites/cif_enc/files/knowledge-documents/ppcr_mr_toolkit_july_2018.pdf.



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Data collection and reporting is completed on an annual basis. Annual results reports are submitted by 15 original pilot countries and two regional programs (in the Caribbean and Pacific) while project-level reports and project-level reporting submitted by the multilateral development banks implementing the funding.¹⁴³ Altogether, PPCR M&R results reporting covers 62 multilateral development bank-approved projects in 17 countries and two regions. At the country level, PPCR focal points convene scoring workshops to establish scoring criteria and that reflect domestic development processes and institutional and policy ecosystems, and subsequently use these criteria to assess progress over time. For indicators that are qualitative in nature, this process of defining and abiding by clear scoring criteria helps ensure that subjective assessments become more consistent, reliable, and objective while remaining sensitive to national circumstances and priorities. To lessen the burden of this process, PPCR's M&R system is designed to be

compatible with existing national systems and avoid duplication.

In 2017, the PPCR conducted a stocktaking review of its M&R system.¹⁴⁴ The majority of countries participating in the system rated its effectiveness as “good,” and noted various benefits drawn from the system, including that the participatory approach enabled widespread stakeholder engagement and that system helped build capacity in the area of climate resilience and in monitoring and evaluation more broadly. Countries also outlined several challenges, such as weak monitoring and evaluation capacity as a foundational challenge to the system, logistical challenges that hindered inclusive and cost-effective data collection, and inconsistent participation in the scoring workshops year-to-year. Countries also questioned the long-term sustainability of the M&R system; indeed, St. Lucia's experience, detailed in section 4.5 above, built on the foundation of the PPCR system

¹⁴³ See <https://www.climateinvestmentfunds.org/results/ppcr-results>.

¹⁴⁴ Climate Investment Funds. 2017. *Report on PPCR Monitoring and Reporting Stocktaking Review*. Washington: Climate Investment Funds. Available at https://www.climateinvestmentfunds.org/sites/default/files/meeting-documents/ppcr_20_4_report_on_ppcr_monitoring_and_reporting_stocktaking_review_0.pdf.



but did not continue it as such because it was too time-intensive to sustain in the absence of continued support. The CIF notes, however, that the difficulties identified relate primarily “to implementation challenges and technical clarifications rather than macro-design issues.”¹⁴⁵

4.8 Existing transboundary approaches to assessing adaptation progress

Riparian countries have long been engaging in transboundary cooperation with a view to managing their shared water resources. Increasingly, these transboundary arrangements are expanding to include cooperation on climate change adaptation. Good practices for pursuing adaptation in transboundary water basins include developing a common monitoring system among riparian countries, ensuring that such systems are able to adjust to changing information needs, building a basin-wide evaluation system for adaptation actions, and using a portfolio of monitoring and evaluation tools.¹⁴⁶

The International Commission for the Protection of the Danube River—a joint endeavour comprising 15 countries as contracting parties—launched its TransNational Monitoring Network (TNMN) in 1996 to offer an overview of pollution and long-term trends in water quality and pollution loads in the Danube River Basin’s major rivers.¹⁴⁷ Overall, the TNMN includes 101 monitoring stations with up to three sampling points. Its work includes monitoring the impacts of climate change in the river basin.¹⁴⁸ In a 2018 update of its adaptation strategy, the

International Commission for the Protection of the Danube River included further monitoring and evaluation as a potential adaptation measure to pursue going forward.¹⁴⁹

The previous example speaks to climate change impacts that are transboundary in the sense that they affect a water basin that is shared by multiple countries. As described above, however, transboundary risks and impacts can extend far beyond countries that share ecosystems (i.e. through other biophysical pathways, as well as finance, people, and trade pathways). Some countries have also begun undertaking national-level assessments of transboundary climate risks. Recognizing the possible transboundary channels through which climate change may impact the Swiss economy, Switzerland conducted a study to examine these channels and estimate their significance.¹⁵⁰ At the basis of this study was a multi-country input-output model that illustrates Switzerland’s economic interdependence with the rest of the world as a result of goods imports and exports. It accounts for both direct links and indirect links via third countries. The assessment estimated the exposure of the Swiss economy to transboundary climate impacts both in the present and in 2050. Export flows were quantitatively assessed, whereas imports, trade in services, natural resource availability, migration, global conflict, and capital markets were assessed qualitatively. Germany has also conducted a national-level assessment.¹⁵¹

The Transnational Climate Impacts (TCI) Index, developed by Hedlund et al., is the first attempt to create a global quantitative index of

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145 Climate Investment Funds. 2017. *Report on PPCR Monitoring and Reporting Stocktaking Review*. Washington: Climate Investment Funds. Available at https://www.climateinvestmentfunds.org/sites/default/files/meeting-documents/ppcr_20_4_report_on_ppcr_monitoring_and_reporting_stocktaking_review_0.pdf pp.10.

146 United Nations Economic Commission for Europe and International Network of Basin Organizations. *Water and Climate Change Adaptation in Transboundary Basins: Lessons Learned and Good Practices*. Geneva: United Nations. Available at. https://www.unece.org/fileadmin/DAM/env/water/publications/WAT_Good_practices/ece.mp.wat.45.pdf.

147 See <http://www.icpdr.org/main/activities-projects/tnmn-transnational-monitoring-network>.

148 International Commission for the Protection of the Danube River (ICPDR). 2019. *Climate Change Adaptation Strategy*. Vienna: ICPDR. Available at http://www.icpdr.org/flowpaper/app/services/view.php?doc=icpdr_climatechangeadaptationstrategy_2.pdf&format=pdf&page={page}&subfolder=default/files/nodes/documents/.

149 See <http://www.icpdr.org/main/activities-projects/climate-change-adaptation>.

150 INFRAS, Ecologic, and Rütter + Partner. 2007. *Auswirkungen der Klimaänderung auf die Schweizer Volkswirtschaft (Internationale Einflüsse)*. [Effects of climate change on the Swiss economy (international influences)]. Bern: Bundesamt für Umwelt. Available at <https://www.ecologic.eu/de/13441>.

151 INFRAS. 2019. *Folgen des globalen Klimawandels für Deutschland*, in German (Translated Title: Consequences of global climate change for Germany). Umweltbundesamt. Available at https://www.infras.ch/media/filer_public/00/0f/000f7523-3924-4cfe-8950-f227c519940e/teilbericht_die_wirkungsketten_in_der_ubersicht.pdf.



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transnational climate change risks.¹⁵² This index assesses exposure to transnational climate risks for 172 countries and incorporates nine indicators covering the biophysical pathway (transboundary water dependency); the finance pathway (bilateral climate weighted foreign direct investment and remittance flows); the people pathway (openness to asylum and migration from climate vulnerable countries); the trade pathway (trade openness, general import dependency, and embedded water risk); and the global context (the KOF Globalisation Index). It does not account for dimensions of vulnerability other than exposure, such as adaptive capacity. A score was calculated for each country for which there was sufficient data (i.e. data for at least six of the nine indicators), and a global TCI score was calculated using the mean value of the nine indicators.

The TCI Index illustrates the complexity inherent in the relationship between exposure to climate change risks and levels of development, as well as in the geographical distribution of exposure. It also underscores the importance of enhancing international cooperation on adaptation. Although the index therefore plays an important role in shedding light on vulnerability to transboundary climate change risks, its developers note that in its current state it “should be used primarily to raise awareness and start discussions about the relevance of transnational climate impacts, but not yet to inform decision-making or provide a mechanism for benchmarking progress towards adaptation goals.”¹⁵³ The authors further state that qualitative analyses are needed to complement the quantitative analysis. While integrating such a quantitative analysis into assessment of the global goal on adaptation may therefore be premature, the Index nonetheless testifies to the importance of explicitly considering transboundary factors in this assessment in order to understand the

nature of risk, vulnerability, and exposure in a holistic manner.

4.9 Reviewing progress at the subnational level

In addition to national systems for reviewing adaptation progress, subnational systems and their results can also offer important insights. Subnational systems can offer more detailed and robust information to feed into national planning and can inform the design and development of national monitoring, evaluation, and learning systems.¹⁵⁴ Indeed, countries that are in the process of creating or revising their own systems could increase the efficiency of their system and reduce the burden it imposes by building on data and indicators that are already in use at the subnational level within their national context. This information may, in turn, help to inform global assessments.

Understanding results across a set of subnational systems once again poses the challenge of balancing context-specificity and the ability to combine and collate information across these systems. Additionally, subnational assessments of adaptation face many of the same challenges as national systems, including uncertainty surrounding climate change impacts, which may be especially high for cities or other subnational jurisdictions due to the difficulty of interpolating climate models.¹⁵⁵

C40 Cities, a network of 96 cities around the world representing 700+ million citizens and one quarter of the global economy, developed a monitoring, evaluation, and reporting framework to help guide the cities in the network as they seek to develop their own systems for assessing adaptation progress. The objectives of this framework include facilitating learning across cities, encouraging participation

152 Hedlund K, Fick S, Carlsen H, et al. 2018. “Quantifying transnational climate impact exposure: New perspectives on the global distribution of climate risk.” *Global Environmental Change* 52(2018): pp.75-85.

153 Hedlund K, Fick S, Carlsen H, et al. 2018. “Quantifying transnational climate impact exposure: New perspectives on the global distribution of climate risk.” *Global Environmental Change* 52(2018): pp.82.

154 International Institute for Environment and Development (IIED). 2018. *How bottom-up M&E insights can inform national adaptation planning and reporting*. London: IIED. Available at <https://pubs.iied.org/pdfs/174881IIED.pdf>.

155 C40 Cities, Ramboll Foundation, Ramboll. 2019. *Measuring Progress in Urban Climate Change Adaptation: Monitoring – Evaluating – Reporting Framework*. New York: C40 Cities. Available at https://c40-production-images.s3.amazonaws.com/other_uploads/images/2154_20190228_MER_Framework_Final.original.pdf?1553033351.



and engagement in inclusive climate action, informing decision-making, enhancing transparency and accountability, and helping to make the case for adaptation actions.¹⁵⁶ In this framework, comparability across cities is recognized as a potentially worthwhile endeavour, but this is secondary to the primary purpose of helping city practitioners design a system appropriate for their local circumstances that helps them advance towards the objectives outlined above. Accordingly, the framework includes a set of indicators from which city practitioners can select or tailor to their particular

context as appropriate; where multiple cities make use of the same indicator, these results can be compared relatively easily across contexts. Indeed, the framework notes that “[w]idespread adoption of these indicators could enable benchmarking and standardisation of climate adaptation reporting among the world’s cities, helping to build a more comprehensive picture of urban progress on climate adaptation” but that “unavoidable differences in data and methods at participating cities’ disposal” will continue to render comparing findings difficult.¹⁵⁷

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The Integrated Flood and River Bank Erosion Risk Management/Asian Development Bank/Climate Visuals

¹⁵⁶ C40 Cities, Ramboll Foundation, Ramboll. 2019. *Measuring Progress in Urban Climate Change Adaptation: Monitoring – Evaluating – Reporting Framework*. New York: C40 Cities. Available at https://c40-production-images.s3.amazonaws.com/other_uploads/images/2154_20190228_MER_Framework_Final.original.pdf?1553033351.

¹⁵⁷ C40 Cities, Ramboll Foundation, Ramboll. 2019. *Measuring Progress in Urban Climate Change Adaptation: Monitoring – Evaluating – Reporting Indicator Matrix Manual*. New York: C40 Cities. pp.3. Available at https://c40-production-images.s3.amazonaws.com/other_uploads/images/2154_20190228_MER_Framework_Final.original.pdf?1553033351.



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The framework's indicators correspond to actions addressing specific hazards or multiple hazards, and each action includes output, outcome, and impact indicators. For example, under the rainfall hazard category, one action listed is adapting assets (hardening, elevating) and the associated output indicator is the number of assets retrofitted, the associated outcome indicator is the percentage of assets protected from floods, and the associated impact indicators are the number of assets affected/damaged, the cost of repairs, the cost to economic productivity, as well as people displaced, injured, or dead. One example of a multi-hazard action is implementing emergency management and evacuation plans, and the associated output indicator is the percentage of the city covered under the plan, the associated outcome indicator is the percentage of emergency situations where emergency services responded safely and in a timely manner, and the associated impact indicators are once again the number of assets affected/damaged, the cost of repairs, the cost to economic productivity, as well as people displaced, injured, or dead.

Defining indicators is only one step in the C40 monitoring, evaluation, and reporting framework, however. Preceding this step are targeting hazards, formulating intended impact, and developing intervention logic; the steps following defining indicators include collecting data, reporting, and evaluating. In the data collection step, the framework emphasizes the value of collecting baseline data where feasible, the importance of using existing data to reduce costs and resource burdens, and the possibility of collecting qualitative and quantitative data through various mechanisms, including observations, interviews, focus groups, household surveys and panel surveys.

The Global Covenant of Mayors is a global alliance of cities committed to climate leadership. It includes over 10,000 cities and local governments from 138 countries that represent more than 800 million people.¹⁵⁸ Through this alliance, which focuses on both adaptation and mitigation, cities register, implement, and monitor strategic climate action plans, making information related to these areas publicly available. Recently, the Global Covenant of Mayors has moved towards a common reporting framework to streamline measurement and reporting and allow for global aggregation and data comparisons.¹⁵⁹ The common reporting framework was endorsed in 2018 and has been in operation as of January 2019.¹⁶⁰ It builds on existing frameworks, such as those that were in use among cities and local governments at a regional level in Europe.¹⁶¹ To develop the framework, a draft version was created on the basis of in-depth discussions with experts, which was then open for review and input by stakeholders to ensure that it was suited to the wide range of local circumstances encompassed by the alliance. Embedded in the framework are various overarching principles, which include, among others, providing flexibility to accommodate local needs and circumstances; facilitating consistency with national, subnational and UNFCCC reporting requirements; allowing for the continuation of regional reporting requirements to which some cities and local governments are committed; and enabling meaningful comparison and aggregation across cities. To facilitate the reporting process, detailed tables have been developed to guide local governments through the range of obligatory and optional information.¹⁶²

The common reporting framework delineates requirements for risk and vulnerability assessments conducted as part of adaptation

158 See <https://www.globalcovenantofmayors.org/about/>.

159 Global Covenant of Mayors. 2018. *Global Covenant of Mayors Common Reporting Framework*. Global Covenant of Mayors. Available at https://www.globalcovenantofmayors.org/wp-content/uploads/2019/04/FINAL_Data-TWG_Reporting-Framework_website_FINAL-13-Sept-2018_for-translation.pdf.

160 See <https://www.globalcovenantofmayors.org/our-initiatives/data4cities/common-global-reporting-framework/>.

161 Global Covenant of Mayors. 2018. *Global Covenant of Mayors Common Reporting Framework*. Global Covenant of Mayors. Available at https://www.globalcovenantofmayors.org/wp-content/uploads/2019/04/FINAL_Data-TWG_Reporting-Framework_website_FINAL-13-Sept-2018_for-translation.pdf.

162 These tables are included in the Annex of the common reporting framework, available at https://www.globalcovenantofmayors.org/wp-content/uploads/2019/04/FINAL_Data-TWG_Reporting-Framework_website_FINAL-13-Sept-2018_for-translation.pdf.



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and resilience plans.¹⁶³ This section of the framework includes four broad categories of information, under which some information is mandatory to report and other types are encouraged. These categories include climate risk and vulnerability assessment, climate hazards, adaptive capacity, and major climate hazards that have occurred in the past years. Under the category of climate hazards, examples of mandatory information include the current risk level (probability x consequence) of the most significant climate hazards facing the community and all relevant sectors, assets, or services expected to be most impacted, as well as the magnitude of the impact on all of these identified elements. Under the category of adaptive capacity, local governments are obligated to identify, and report on, factors that will most affect the city's adaptive capacity and enhance climate resilience, describing each factor and the degree to which it challenges (rather than supports) the adaptive capacity or resilience of the city.

In addition to this risk and vulnerability assessment section, there is a section on climate action and energy access plans that combines both adaptation- and mitigation-related reporting requirements. Types of adaptation-related information that local governments are obligated to report on in this section include adaptation/climate resilience goal(s) and synergies, trade-offs, and co-benefits of mitigation and adaptation actions. Local governments are also encouraged to report on, for each action, action area, or sector, information such as the financial strategy for implementation, the implementation status and timeframe, and stakeholders involved in planning and implementation. This section also institutes a biennial reporting cycle, wherein local governments are required to submit monitoring reports every two years after submitting their action plan or plans. All monitoring reports are required to include information regarding the implementation status of every action, action area, and sector contained in the action plan to monitor progress.



Georgina Smith/CIAT/Climate Visuals

163 Global Covenant of Mayors. 2018. *Global Covenant of Mayors Common Reporting Framework*. Global Covenant of Mayors. Available at https://www.globalcovenantofmayors.org/wp-content/uploads/2019/04/FINAL_Data-TWG_Reporting-Framework_website_FINAL-13-Sept-2018_for-translation.pdf.



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5.1 Reflections on existing methodologies and case studies

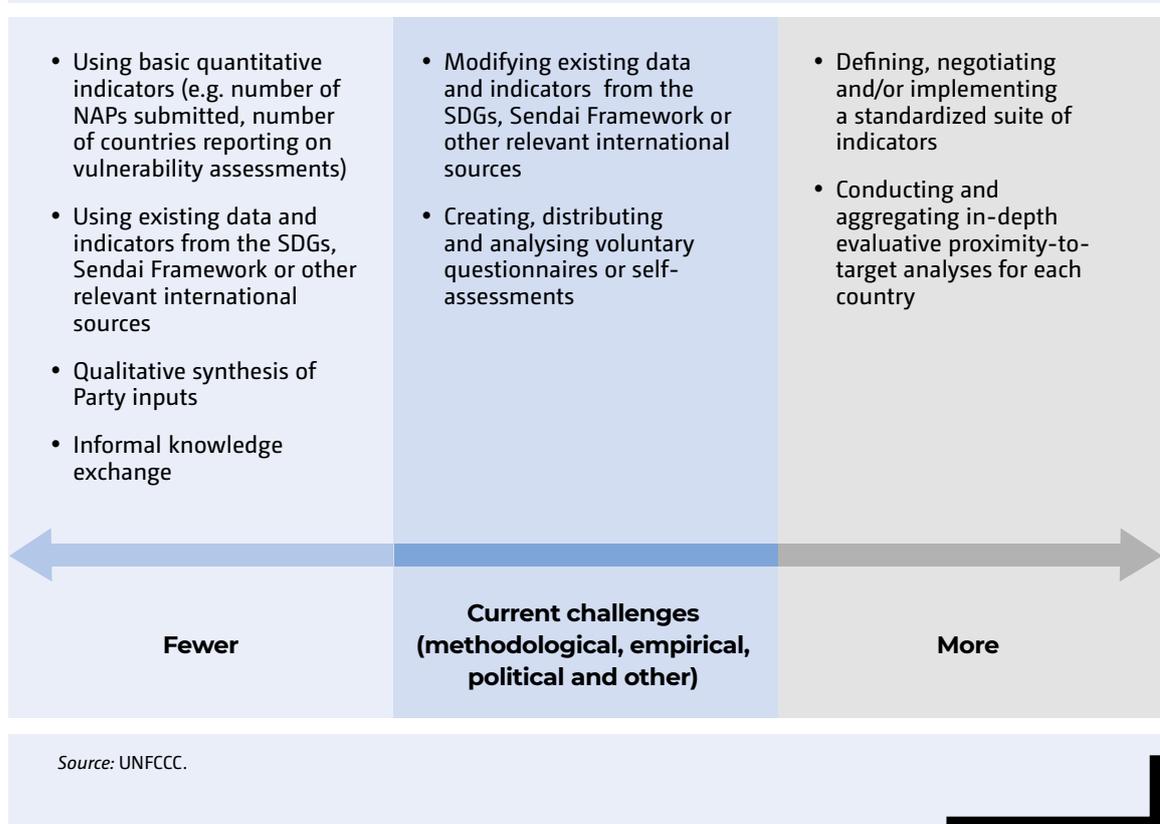
The preceding chapters illustrate the breadth of approaches to assessing adaptation progress. These chapters also illustrate some of the considerations that might help choose or develop an approach or combination of approaches for assessing progress towards the global goal on adaptation. The summary of these general approaches is arranged here in a spectrum from those with less to those with more current challenges (e.g. methodological, empirical, political, etc.) (see Figure 5). This is a way to simplify the classification rather than a comprehensive characterization of potential approaches for the complex task of assessing the global goal on adaptation.

Given the methodological, empirical, political, and other challenges tied to the development and use of standardized indicators or indices, as discussed in Chapter II above, this approach

arguably falls on the more challenges side of the spectrum. Similarly, if a descriptive and evaluative proximity-to-target approach, like that described by Berrang-Ford et al. is undertaken in a comprehensive manner for each country, this would likely require a great deal of resources. On the other hand, reporting on basic indicators such as the number of NAPs initiated or submitted, using existing indicators or data from international frameworks, producing a qualitative synthesis of Party inputs, or conducting an informal knowledge exchange fall on the side of the spectrum representing fewer challenges. Such efforts would build on common practices (i.e. reporting on the progress of NAPs or synthesizing documents submitted by Parties) or existing initiatives (i.e. tracking progress under other multilateral agreements) that are already in place. In the middle are approaches such as tweaking indicators or data from international frameworks or creating, distributing, and analysing voluntary national-level questionnaires or self-assessment.



FIGURE 6. SPECTRUM OF APPROACHES TO ASSESSING ADAPTATION PROGRESS AND MAGNITUDE OF ASSOCIATED CHALLENGES



This spectrum is, however, unidimensional and does not reflect the limitations or trade-offs associated with the various approaches. For example, while collecting data for basic quantitative indicators such as the number of NAPs submitted or the number of countries reporting on vulnerability assessments is a relatively straightforward exercise, and it can offer insights into how many countries have made progress in understanding their vulnerabilities and planning for adaptation, it cannot in many cases directly reveal the extent to which vulnerability has been reduced, adaptive

capacity has been enhanced, or resilience has been strengthened while contributing to sustainable development in the context of the Paris Agreement's temperature goal. Therefore, in addition to considering the range of challenges associated with each approach, it is important to simultaneously examine the extent to which each approach yields a meaningful proxy of progress towards the global goal on adaptation. Taking this into account, it may be worthwhile to combine approaches (discussed further in section 4.2 below) and build up to more sophisticated and complex approaches over time.



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5.2 Recurring themes and overarching considerations

Current challenges are not the only important factors for evaluating approaches to assessing adaptation progress when it comes to reviewing overall progress towards the global goal on adaptation in the global stocktake. A particularly important and related consideration is the resources and capacity necessary to pursue each approach and the corresponding burden that will be placed on countries with lower capacity. Such resources include quality data, along with the capacity to collect and interpret this data. The communication and reporting instruments established by the Paris Agreement, including the adaptation communications under Article 7 and the biennial transparency reports for the enhanced transparency framework under Article 13, aim to avoid creating any additional burden for developing country Parties. Because the process of assessing progress towards the global goal on adaptation under the global stocktake does not create any additional reporting instruments, this principle must also be respected when considering viable approaches to carrying out this process. Indeed, efficiency, cost reduction, and taking advantage of existing systems and data are recurring themes in both the scientific literature and the existing concrete examples reviewed. Most countries reviewed in Chapter 4 above emphasize the importance of these principles in their national systems. In the context of the process to review the overall progress made in achieving the global goal on adaptation, this also implies taking full advantage of the range of communications and reporting instruments through which Parties relay adaptation information, including biennial transparency reports, adaptation communications, NAPs, and nationally determined contributions. Combined with the best available science and the sources of input identified for the global stocktake, these existing resources can help construct a picture of overall progress towards the global goal on adaptation without placing additional burdens on Parties.

These resource-related considerations have given rise to concerted efforts to align new frameworks and systems at the national and other levels with the reporting and review requirements under the UNFCCC. This is evident from the examples and case studies reviewed above (e.g. the Global Covenant of Mayors common reporting framework, the monitoring and evaluation framework under the Cambodia Climate Change Strategic Plan, etc.).

The Adaptation Committee's efforts in this regard—both in providing supplementary guidance for communicating information through adaptation communications and its consideration of approaches for assessing the global goal on adaptation in the global stocktake—can further advance these efforts to move toward coherence. A crucial foundation for this work is understanding clearly what information Parties are obligated and encouraged to submit under the UNFCCC and Paris Agreement. These details will be elucidated in depth in the Adaptation Committee's draft supplementary guidance in relation to adaptation communications;¹⁶⁴ in addition, some of this information is summarized in this discussion section below.

Another important consideration that was consistently demonstrated in the conceptual work and practical examples reviewed in the preceding chapters is the need to maintain flexibility. Many of the national level systems reviewed in Chapter 4 had either already made adjustments to their approach, expressed the intention to do so, or acknowledged that this would likely take place as methodologies, data, and other key factors improve over time. Although the first global stocktake will set an important precedent regarding how to assess progress made towards the global goal on adaptation, and the other adaptation-related elements of the stocktake, there will likewise also be opportunities to iteratively improve upon this first approach over time.

Indeed, the CMA itself envisioned the potential for refining the procedure and logistics of

¹⁶⁴ Adaptation Committee. 2021. *Draft initial outline for draft supplementary guidance for voluntary use by Parties in communicating information in accordance with the possible elements of an adaptation communication*. Bonn: UNFCCC. https://unfccc.int/sites/default/files/resource/ac20_5b_adcomms.pdf.



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the global stocktake over time based on its experience.¹⁶⁵ In a similar spirit, Neufeldt and Berrang-Ford suggested that, given the numerous challenges associated with assessing global adaptation progress, the global stocktake could begin with a basic but flexible design that works towards more comprehensive assessments in the future.¹⁶⁶ Some fundamental organizing principles for such an approach include being broad enough to absorb the wide variety of sources and formats of information, rigorous enough to capture data to characterize progress towards the goal, and open enough to accommodate new developments in the field of assessing adaptation. Beyond these overarching principles, however, it is difficult to already prescribe any specific approach to updating the system over time. Indeed, the CMA asked the Chairs of the Subsidiary Bodies “to work on identifying opportunities for learning-by-doing, including for assessing collective progress.”¹⁶⁷

Besides the need to avoid creating additional burdens and maintain flexibility, another recurring theme in the literature is the value of combining various approaches in order to generate a more holistic picture of adaptation progress. Such combinations (e.g. of qualitative case studies and quantitative indicators, descriptive and evaluative assessments, standard and optional indicators) can help balance the strengths and weaknesses of the different approaches. Deploying mixed methods “is necessary to provide triangulated evidence upon which to base policies,”¹⁶⁸ and is therefore a particularly important consideration for a process intended to inform further planning and action. Despite the proliferation of quantitative approaches to assessing adaptation progress, deploying solely quantitative indicators does not allow for a holistic and comprehensive understanding of constructs such as adaptive capacity, vulnerability, and resilience, which are grounded in complex

socioecological systems.¹⁶⁹ This is a persistent theme throughout the literature and the examples reviewed for this paper; while metrics and indicators can facilitate comparison across countries or other jurisdictions, and offer insights related to patterns and trends, qualitative reporting and analysis offers much-needed context and depth to large-scale assessments. Nonetheless, while a combination of different approaches may help overcome some of the limitations of one given approach, there will likely continue to be limitations with any combination chosen.

The approach taken to assess progress towards the global goal on adaptation may, to the extent possible and without adding any additional burdens on Parties, take into account transnational climate change risks, impacts, and adaptation efforts. Although this is undoubtedly a complex undertaking, assessments of progress towards addressing transboundary climate change risks can add significant value in the effort to understand global progress towards achieving the global goal on adaptation. Such considerations can add nuance to the picture of vulnerability to climate change by demonstrating the fundamental interconnectedness of this vulnerability across the globe. Such an analysis may be particularly apt for assessing the global goal on adaptation as it underscores the international nature of climate change risks and the necessity of international cooperation for comprehensively working towards the global goal on adaptation.

5.3 Reflections on other potential methodologies

On the basis of these considerations, as well as the literature and examples reviewed above, it might be useful to outline some initial reflections on the range of potential methodologies that

165 Decision 19/CMA.1, para. 15.

166 Neufeldt H and Berrang-Ford L. Considerations for a future framework for assessing adaptation progress at the global level. In: A Olhoff, H Neufeldt, P Naswa et al. (eds). *The Adaptation Gap Report: Towards Global Assessment*. Nairobi: United Nations Environment Programme. pp. 49–55.

167 Decision 19/CMA.1, para. 16.

168 Beauchamp E, Moskeland A, Milner-Gulland EJ, et al. 2019. The role of quantitative cross-case analysis in understanding tropical smallholder farmers’ adaptive capacity to climate shocks. *Environmental Research Letters* 14(2019): P. 10.

169 Beauchamp E, Moskeland A, Milner-Gulland EJ, et al. 2019. The role of quantitative cross-case analysis in understanding tropical smallholder farmers’ adaptive capacity to climate shocks. *Environmental Research Letters* 14(2019): P. 10.



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may be incorporated into the assessment of the global goal on adaptation and their associated limitations and advantages. The approaches presented in this section are not recommended ways forward; they instead constitute an additional layer of analysis for consideration.

As long as it is not burdensome—particularly considering the existing capacity constraints faced by developing countries in particular—a voluntary questionnaire or self-scoring exercise represents one potential avenue for assessing adaptation progress. The additional burden here relates to the time, resources, and expertise required to complete such a questionnaire in time and with sufficient data for the corresponding assessment; a questionnaire that requires too much time or data collection beyond the current capacity of countries can lead to results that disproportionately exclude those countries without sufficient capacity for engaging in such an exercise. The data collected through such an approach enables generating an aggregate scoreboard (which may be akin to the EU and Adaptation Gap Report 2020 models reviewed in Chapter 4 above), with the understanding that the same score does not necessarily translate into the same action or result across countries. A starting point for such a questionnaire or self-assessment could be whether there have been demonstrable efforts made to undertake the actions Parties agreed they should or shall pursue in accordance with Article 7 of the Paris Agreement. This includes efforts towards strengthening cooperation on enhancing adaptation action as outlined in Article 7.7:

- a. Sharing information, good practices, experiences and lessons learned, including, as appropriate, as these relate to science, planning, policies and implementation in relation to adaptation actions;
- b. Strengthening institutional arrangements, including those under the Convention that serve the Paris Agreement, to support the synthesis of relevant information and knowledge, and the provision of technical support and guidance to Parties;
- c. Strengthening scientific knowledge on climate, including research, systematic observation of the climate system and early warning systems,

in a manner that informs climate services and supports decision-making;

- d. Assisting developing country Parties in identifying effective practices, adaptation needs, priorities, support provided and received for adaptation actions and efforts, and challenges and gaps, in a manner consistent with encouraging good practices; and
- e. Improving the effectiveness and durability of adaptation actions.

This also includes efforts to engage in adaptation planning processes and the implementation of adaptation actions as outlined in Article 7.9:

- a. The implementation of adaptation actions, undertakings and/or efforts;
- b. The process to formulate and implement national adaptation plans;
- c. The assessment of climate change impacts and vulnerability, with a view to formulating nationally determined prioritized actions, taking into account vulnerable people, places and ecosystems;
- d. Monitoring and evaluating and learning from adaptation plans, policies, programmes and actions; and
- e. Building the resilience of socioeconomic and ecological systems, including through economic diversification and sustainable management of natural resources.

Looking ahead, the adaptation communications and biennial transparency reports, along with other national documents, can provide the raw material for a potential proximity-to-target approach that assesses whether Parties have fulfilled, or are on track to fulfilling, the targets and actions they set out for themselves. This would entail comparing the actions reported in biennial transparency reports against those communicated in previously published adaptation communications and other national plans, reports, and communications. These reports and communications will serve as inputs to the global stocktake and are expected



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to be sources of adaptation information that are relevant for understanding progress towards the global goal on adaptation.

Adaptation communications were foreseen to play a role in the global stocktake and specifically in the assessment of progress towards the global goal on adaptation; COP 24 “acknowledge[d] that adaptation communications...will contribute to reviewing the overall progress in achieving the global goal on adaptation.”¹⁷⁰ Similarly, the relevance of biennial transparency reports for assessing progress in this area is also clear. Under the modalities, procedures and guidelines for the Paris Agreement’s enhanced transparency framework, there are nine broad categories of information that Parties are encouraged, though not required, to report on.¹⁷¹ Under the category of “adaptation strategies, policies, plans, goals and actions to integrate adaptation into national policies and strategies,” Parties should provide information on, as appropriate, the implementation of adaptation actions in accordance with the global goal on adaptation.¹⁷² Moreover, under the category of “progress on implementation of adaptation,” it specifies that Parties should provide information, as appropriate, on progress on the implementation of adaptation actions identified in adaptation communications¹⁷³ as well as the in the adaptation component of NDCs,¹⁷⁴ as applicable. Parties are therefore encouraged to report on progress made towards the objectives and plans previously specified in their own commitments and communications, thereby laying the groundwork for a periodic evaluation that compares Parties’ intended actions with their actual progress.

In addition, by communicating information on support needs, as well as support provided and

received, in adaptation communications and biennial transparency reports, along with other national plans, reports, and communications, Parties can also help shed light on the extent to which adaptation-related support needs are being met. Implementation and support needs of, and provision of support to, developing country Parties is one of elements of an adaptation communication outlined in the annex of decision 9/CMA.1.¹⁷⁵ At the same time, the modalities, procedures, and guidelines for the enhanced transparency framework include sections dedicated to financial, technology development and transfer and capacity-building support provided and mobilized,¹⁷⁶ as well as needed and received,¹⁷⁷ under Articles 9-11 of the Paris Agreement. While this information would not facilitate a direct review of overall progress towards the global goal on adaptation, it could help determine whether key enabling conditions for making such progress are in place. This, in turn, can contribute to informing Parties in updating and enhancing, in a nationally determined manner, their actions and support in accordance with relevant provisions of the Paris Agreement, as well as in enhancing international cooperation for climate action, as stipulated by Article 14.3 of the Paris Agreement.

Because the first biennial transparency reports are not due until 31 December 2024, however, this is likely not feasible for the first global stocktake but can remain an option for future stocktakes. Moreover, because reporting on adaptation under the enhanced transparency framework is not obligatory, the extent to which this approach can yield a picture of collective progress towards the global goal on adaptation will depend on the extent to which Parties are able and willing to include relevant adaptation

170 Decision 9/CMA.1, para. 14.

171 These categories include: national circumstances, institutional arrangements and legal frameworks; impacts, risks and vulnerabilities; adaptation priorities and barriers; adaptation strategies, policies, plans, goals and actions to integrate adaptation into national policies and strategies; progress on implementation of adaptation; monitoring and evaluation of adaptation actions and processes; information related to averting, minimizing and addressing loss and damage associated with climate change impacts; and any other information related to climate change impacts and adaptation under Article 7 of the Paris Agreement.

172 Decision 18/CMA.1, annex, para. 109a.

173 Decision 18/CMA.1, annex, para. 110c.

174 Decision 18/CMA.1, annex, para. 110d.

175 Decision 9/CMA.1, annex, para. (d).

176 Decision 18/CMA.1, annex, paras. 118-129.

177 Decision 18/CMA.1, annex, paras. 130-145.



information in their biennial transparency reports. It will also depend on the number of countries who choose to submit adaptation communications. This option is presented here for consideration and discussion.

Another potential approach, building on the prevalence of vulnerability and risk assessments in adaptation planning and assessment, could focus on establishing a baseline of climate change-related risks faced by countries and thereby laying a foundation for assessing changes against this baseline over time. Given the challenges described above with regard

to vulnerability indices and rankings, and the roles that risk tolerance and societal values play in assessing risk, these risks would likely be self-assessed and reported by countries. This is, in turn, consistent with some of the core principles reflected throughout the Paris Agreement that adaptation action should follow a country-driven approach based on the best available science. Such risk assessments could be disaggregated according to hazard or sector and temperature scenario/timescale, generating a visual representation of the differing dimensions and levels of risk as perceived by countries across the world.

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Taking place eight years after the adoption of the Paris Agreement and the establishment of its global goal on adaptation, the first global stocktake will break new ground in the effort to understand how many steps the world has taken in its journey to adapt to the adverse impacts of climate change. This technical paper is a first step in considering potential approaches to reviewing overall progress towards the global goal on adaptation as well as what other analysis would be helpful, what information and processes can be prioritized in the short term, and what steps can be taken to work towards progressively more comprehensive and rigorous assessments over time.

In addition, while considering the various approaches presented here, it is critical to bear in mind the principles and modalities agreed by Parties in connection with the global goal

on adaptation and the global stocktake, as well as the imperative of reviewing overall progress made in achieving the global goal on adaptation in a manner that is as robust as possible given current limitations, constraints, and resources. In light of these limitations and constraints, taking full advantage of existing sources of information will be crucial to conduct a collective review of progress towards the global goal on adaptation without placing any additional burdens on Parties.

With each passing year, the impacts of climate change are becoming more severe and the need for adaptation is becoming more urgent. It is clear that, despite the challenges enumerated in this paper, efforts to achieve the global goal on adaptation, and to understand where the world stands in relation to that goal, must not be stalled.

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