

Climate Change Expert Group
Paper No.2017(3)

Insights from national adaptation monitoring and evaluation systems

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May 2017

OECD/IEA CLIMATE CHANGE EXPERT GROUP PAPERS

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FOREWORD

This document was prepared by the OECD and IEA Secretariats in response to a request from the Climate Change Expert Group (CCXG) on the United Nations Framework Convention on Climate Change (UNFCCC). The Climate Change Expert Group oversees development of analytical papers for the purpose of providing useful and timely input to the climate change negotiations. These papers may also be useful to national policy-makers and other decision-makers. Authors work with the CCXG to develop these papers. However, the papers do not necessarily represent the views of the OECD or the IEA, nor are they intended to prejudge the views of countries participating in the CCXG. Rather, they are Secretariat information papers intended to inform Member countries, as well as the UNFCCC audience.

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ACKNOWLEDGEMENTS

The author would like to acknowledge the helpful comments from OECD and IEA colleagues Simon Buckle, Jane Ellis, Takayoshi Kato, Nicolina Lamhauge, Caroline Lee, Sara Moarif, Michael Mullan and Manasvini Vaidyula, as well as Timo Leiter (GIZ), Hayley Price-Kelly (IISD), and Lisa Gittos (Australian Department of Foreign Affairs and Trade), Susanne Hempen (German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety), Ju Youn Kang (Korea Adaptation Center for Climate Change), Marianne Karlsen (Norwegian Ministry of Climate and Environment), Petter Lyden (Swedish Environmental Protection Agency), Jiyoung Shin (Korea Adaptation Center for Climate Change), Patrick Spicer (Environment and Climate Change Canada) on earlier versions of this document. This paper greatly benefited from the experiences and insights shared during the CCXG Global Forum on the Environment and Climate Change, on 14-15 March 2017 in Paris.

The Secretariat would like to thank Australia (Department of Foreign Affairs and Trade), Belgium (Federal Public Service Health, Food Chain Safety and Environment), Canada (Environment Canada), the European Commission, Finland (Ministry of the Environment), France (Ministry of Foreign Affairs and International Development), Germany (Ministry for Environment, Nature, Conservation, Building and Nuclear Safety), Japan (Ministry of the Environment), Netherlands (Ministry of Infrastructure and Environment), New Zealand (Ministry for the Environment), Norway (Ministry of Climate and Environment), Republic of Korea (Korea Energy Economics Institute), Sweden (Swedish Energy Agency and Swedish Environmental Protection Agency), Switzerland (Federal Office for the Environment) and the United States (Department of State), for their direct funding of the CCXG in 2016/17, and the OECD and IEA for their in-kind support.

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ABSTRACT

Insights from national adaptation monitoring and evaluation systems

Adaptation monitoring and evaluation is increasingly recognised by the UNFCCC as an important step of the process of adapting to climate change, by enabling Parties to learn on climate risks and adaptation measures' effectiveness and increase accountability. While relatively few countries to date have designed and implemented a national system for adaptation monitoring and evaluation globally, many more have indicated in their Nationally Determined Contribution (NDC) that they are developing one or that they plan to do so.

National systems for the monitoring and evaluation of adaptation are tailored to domestic circumstances, priorities and capacities. Systems to date have focused on a diverse range of specific purposes, types of indicators or self-assessment, and taken different approaches to aggregate information from sub-national scales. Several bilateral and multilateral channels of support aim at addressing information gaps, capacity and resource constraints, which can be one of the limiting factors to building national systems for adaptation monitoring and evaluation. The processes and results of national adaptation monitoring and evaluation systems have the potential to provide relevant information to assess progress towards the global goal on adaptation under the UNFCCC, but the extent to which this can be done is still uncertain.

JEL Classification: F53, H43, O22, Q54, Q58, Q56

Keywords: adaptation, national monitoring and evaluation, UNFCCC, climate

RÉSUMÉ

Enseignements tirés des systèmes nationaux de suivi et d'évaluation de l'adaptation

L'importance du suivi et de l'évaluation de l'adaptation comme maillon essentiel du processus d'adaptation au changement climatique permettant aux Parties de mieux connaître les risques climatiques et l'efficacité des mesures d'adaptation et de renforcer la transparence, est de plus en plus reconnue par la CCNUCC. Si jusqu'ici relativement peu de pays ont élaboré et mis en œuvre un système national de suivi et d'évaluation de l'adaptation, beaucoup ont indiqué dans leur contribution déterminée au niveau national (CDN) qu'ils s'y attelaient ou prévoyaient de le faire.

Les systèmes nationaux de suivi et d'évaluation doivent être adaptés à la situation, aux priorités et aux capacités de chaque pays. Jusqu'ici, ces systèmes ont mis l'accent sur divers objectifs spécifiques, types d'indicateurs ou auto-évaluations, et adopté différentes approches pour agréger les informations recueillies à l'échelle infranationale. Plusieurs dispositifs d'assistance bilatérale et multilatérale sont prévus pour remédier aux déficits d'information et aux contraintes de capacités et de ressources, qui font partie des facteurs susceptibles d'entraver l'établissement de systèmes nationaux de suivi et d'évaluation de l'adaptation. Les procédures et résultats des systèmes nationaux de suivi et d'évaluation de l'adaptation peuvent apporter des informations utiles pour évaluer les progrès réalisés vers l'objectif mondial d'adaptation dans le cadre de la CCNUCC, mais il est encore difficile de dire dans quelle mesure cela pourra se faire.

Classification JEL : F53, H43, O22, Q54, Q58, Q56

Mots-clés : adaptation, suivi et évaluation national, CCNUCC, climat

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Executive summary

Adaptation monitoring and evaluation is increasingly recognised by the United Nations Framework Convention on Climate Change (UNFCCC) as an important step in the process of adapting to climate change, by enabling Parties to increase their understanding of climate risks, improve the effectiveness of adaptation measures, and increase accountability under the UNFCCC. Prior to adoption of the Paris Agreement in December 2015, only Non-Annex I Parties were explicitly encouraged to provide information on and evaluate adaptation strategies and measures, via guidelines on National Communications. All Parties are now requested to monitor and evaluate adaptation activities at the national level under Article 7.9 of the Paris Agreement, and report on their adaptation activities under Article 7.10. In both cases, collecting and providing information on adaptation monitoring and evaluation is at the discretion of Parties. Under its Article 14, the Paris Agreement also requires the Conference of the Parties to periodically take stock of the collective progress made towards achieving the global goal on adaptation (Article 7.1), through a process called the “global stocktake”.

While relatively few countries to date have designed and implemented a national system for adaptation monitoring and evaluation, many more have indicated in their Nationally Determined Contributions (NDCs) that they are either developing one or plan to do so. National adaptation monitoring and evaluation is a relatively recent activity, and there is limited experience with mid-term and end-term evaluations of adaptation policies at the national level. Evidence of growing interest in adaptation monitoring and evaluation at the national level can be found in the recent proliferation of initiatives, guidelines and frameworks to develop systems in the policy and research communities, as well as references made within countries’ NDCs. Among the large majority of Parties who have included adaptation within their NDCs, almost half reference the importance of monitoring and evaluation systems, often indicating they plan to develop one.

Most adaptation monitoring and evaluation systems address one or both of two purposes, broadly categorised between learning and accountability. The former refers to improving the effectiveness and efficiency of the adaptation process through the incorporation of new information and lessons learned, while the latter is about demonstrating that actions have taken place and led to a result. National systems for the monitoring and evaluation of adaptation are tailored to domestic circumstances, priorities and capacities, and reflect the context-specific nature of adaptation responses. Systems to date have focused on a diverse range of specific purposes, types of indicators or self-assessment, and taken different approaches to aggregate information from sub-national scales.

Many monitoring and evaluation systems rely on a combination of indicators that: provide information on climate hazards; impacts of climate change, exposure, or adaptive capacity; adaptation processes and outcomes. While adaptation processes are most commonly monitored, adaptation outcome indicators are among the least used and most difficult to produce, although they play an important role in evaluating adaptation effectiveness over time. Assessing whether adaptation measures contribute to reducing a country’s exposure and vulnerability to climate change requires aggregating information horizontally across climate-sensitive sectors, as well as vertically across different levels of government.

Very few national adaptation monitoring and evaluation systems have a co-ordinated approach to aggregate information from sub-national scales, but developing such approaches may be key, in particular for countries with very large and/or diverse territories. Another important spatial dimension is that of transboundary climate risks, which can be unintentionally imported or exported across countries, for instance through international business supply chains or trade. There are emerging examples of climate risk monitoring at the transnational river basin level.

There are many challenges attached to developing an adaptation monitoring and evaluation system at the national level, some of which relate to the nature of climate adaptation itself (e.g. long timescales for impacts and outcomes, determining attribution). Other challenges include the lack of an “off the shelf” methodology to assess adaptation outcomes; the difficulty to identify, combine and interpret relevant indicators; and information gaps. Capacity and resource constraints are additional limiting factors to building national systems for adaptation monitoring and evaluation, which an increasing number of bilateral and multilateral channels of support aim to address.

The processes and outputs of national adaptation monitoring and evaluation systems could potentially be used as a resource to inform Parties’ communication of progress on adaptation under the UNFCCC, for instance regarding the implementation of the adaptation component of NDCs (for countries which have one). As neither the existing UNFCCC reporting and review framework nor the transparency framework currently under development on adaptation require reporting of all the information needed to fulfil the purposes of the global stocktake, this information gap would need to be filled by other sources. The processes and outputs of national adaptation monitoring and evaluation systems could, indirectly, contribute to the assessment of collective progress towards the global goal on adaptation, should Parties allow the use of country-specific information to that purpose. The extent to which this can be done is uncertain and varies according to which of the stated objectives of the global stocktake on adaptation is considered.

Outputs from adaptation monitoring could indirectly support the provision of information to fulfil the objective of recognising “adaptation efforts of developing country Parties” (Art. 7.14a) by indicating i) the development and implementation of adaptation policies (monitoring processes) as well as ii) the financial or human resources allocated to developing and implementing these (monitoring inputs). Monitoring and evaluation of adaptation aims to improve the effectiveness of adaptation action by evaluating its outcomes and continuously learning from them. Provided the results from national monitoring and evaluation are included in the adaptation communications established under Article 7.10 of the Paris Agreement, they could also inform the objective of the global stocktake under Article 7.14(b) to “Enhance the implementation of adaptation action taking into account the adaptation communication (...)”. In practice, this may be challenging, as evaluation of adaptation action is less developed than adaptation monitoring to date. This is partly explained by the fact that in many cases adaptation policies and programmes lack measurable targets or clearly defined expected outcomes.

1. Context and overview

Parties to the United Nations Framework Convention on Climate Change (UNFCCC) are requested, but not required, to monitor and evaluate adaptation activities at the national level by Article 7.9 in the Paris Agreement (UNFCCC, 2015a), among others.¹

“Each Party shall, as appropriate, engage in adaptation planning processes and the implementation of actions, including the development or enhancement of relevant plans, policies and/or contributions, which may include: [...] (d) Monitoring and evaluating and learning from adaptation plans, policies, programmes and actions”

As per Article 13.8, “Each Party should provide information related to climate change impacts and adaptation under Article 7, as appropriate”. Article 13.5 further outlines that the framework for transparency of action’s purpose is to “provide a clear understanding of climate change action [...] to inform the global stocktake under Article 14”, which requires the Conference of the Parties to periodically take stock of progress made towards achieving the global goal on adaptation, described in Article 7.1.

“Parties hereby establish 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 adaptation response in the context of the temperature goal referred to in Article 2.”

An open-ended list of the objectives of the global stocktake on adaptation is detailed in Article 7.14.

“The global stocktake referred to in Article 14 shall, inter alia: (a) Recognize adaptation efforts of developing country Parties; (b) Enhance the implementation of adaptation action taking into account the adaptation communication referred to in paragraph 10 of this Article; (c) Review the adequacy and effectiveness of adaptation and support provided for adaptation; and (d) Review the overall progress made in achieving the global goal on adaptation referred to in paragraph 1 of this Article.”

“Monitoring and evaluating and learning from adaptation plans, policies, programmes and actions” could potentially inform the global stocktake through the framework for transparency of action, outlined in Article 13 of the Paris Agreement.

Adaptation monitoring and evaluation demonstrates whether actions have taken place and can enable lessons learnt from practice to inform and strengthen future adaptation action. As such, it is increasingly recognised as an important component of national adaptation responses, which are in turn closely connected to several other policy areas. In particular, climate risks need to be considered in development planning (OECD, 2015a, 2009). It is therefore important that monitoring and evaluation systems for adaptation responses are developed in coherence with systems tracking the progress of development plans or of broader sustainable development goals under Agenda 2030. National approaches to adaptation monitoring and evaluation pioneered to date can provide examples and insights to the many countries interested in developing their own approaches. Results from those approaches, could inform the collective assessment of progress towards the global goal on adaptation once developed.

This document draws on insights related to current national approaches to monitoring and evaluation of adaptation, and puts them in the context of the international climate negotiations. Section 2 provides a definition of adaptation monitoring and evaluation, and gives an overview of the development of national approaches to adaptation monitoring and evaluation to date. Section 3 then presents examples of national approaches to date showcasing the diversity of existing systems in terms of purpose, indicators and geographical aggregation. Finally, Section 4 concludes with some key challenges related to national

¹ See Section 2.2 for more information.

approaches to adaptation monitoring and evaluation and to what extent they may benefit from, or contribute to, the UNFCCC process.

2. Definition and state-of-play of national-level monitoring and evaluation of adaptation

Monitoring and evaluation can potentially play an important part in the adaptation process. While relatively few countries to date have designed and implemented a national system for adaptation monitoring and evaluation, many more have indicated in their Nationally Determined Contribution (NDC) that they are working on developing one, or intend to do so.

2.1 Definition

Monitoring and evaluation of adaptation at the national level are two distinct but related activities (OECD, 2015b):

- The monitoring of adaptation can examine, on an on-going basis, one or several of the following aspects: i) progress made in implementing planned initiatives that directly or indirectly affect the level of climate resilience or the capacities to develop and implement adaptation policies, plans and strategies, known as adaptive capacity ii) changes in the enabling environment in place for adaptation actions and adaptive capacity, iii) trends in exposure and vulnerability to climate-related hazards,² or realised impacts of climate events, iv) tracking financial or non-financial resources spent on adaptation initiatives.
- The evaluation of adaptation is a periodic assessment to answer one or several of the following questions: i) Are adaptation action(s) on track to meet pre-defined objective(s) and why/why not? ii) Are resources spent efficiently allocated? iii) Are these actions effectively reducing climate risks and how are they doing so? Evaluations are partly based on the information monitored, but also draw on other relevant information such as stakeholder consultations and expert reviews.

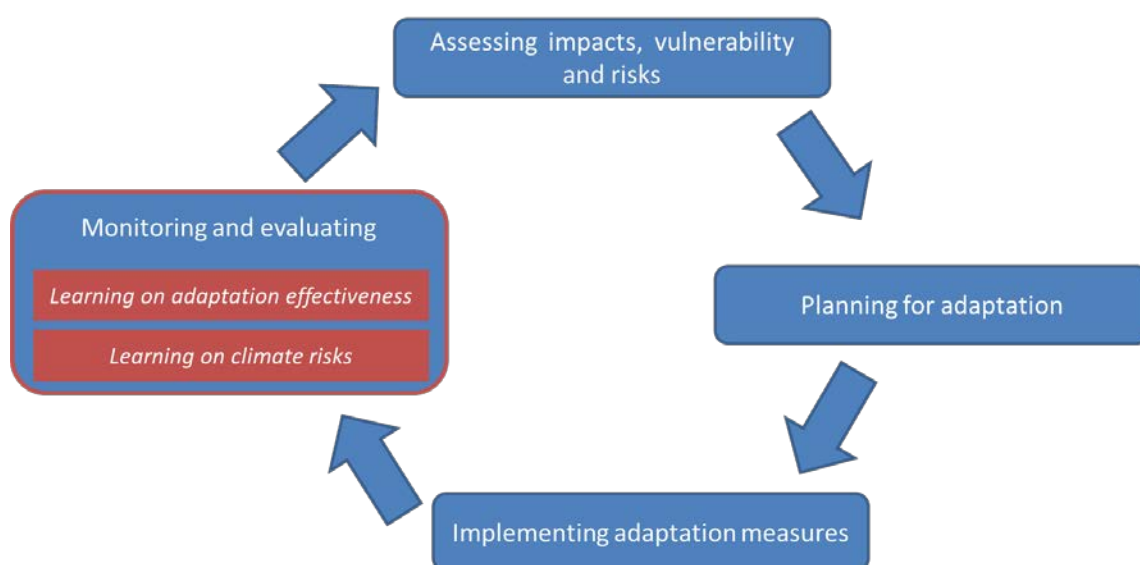
The activity of monitoring and evaluation is sometimes described in slightly different terms³ to emphasise that, for instance, the information collected through monitoring needs to be periodically reported, or lessons learnt from the evaluation have to inform planning of future adaptation action, including modifying plans and actions to improve outcomes.

A monitoring and evaluation system generally forms part of a comprehensive and iterative process that includes the assessment of impacts, vulnerability and risks, planning for adaptation and the implementation of adaptation measures (Figure 1). The monitoring and evaluation can take stock of the implementation of adaptation measures, which can spur learning on their effectiveness. It can also or alternatively focus on fostering continuous learning on climate vulnerability to inform a periodic climate risk assessment. Monitoring and evaluation systems can also fulfil other purposes detailed in the next section.

² Hazard refers to the possible, future occurrence of natural or human-induced physical events that may have adverse effects on vulnerable and exposed elements. Exposure refers to the inventory of elements in an area in which hazard events may occur. Vulnerability refers to the propensity of exposed elements such as human beings, their livelihoods, and assets to suffer adverse effects when impacted by hazard events (IPCC, 2012).

³ These include for instance “monitoring and evaluating and learning” in the Paris Agreement (UNFCCC, 2015a), “reporting, monitoring and review” in guidelines for NAPs (LEG, 2012) or “monitoring, reporting and evaluation” (EEA, 2015).

Figure 1. Iterative adaptation cycle



Source: Author, based on Adaptation Committee (2015)

Applying monitoring and evaluation to adaptation responses comes with a set of challenges due to the nature of climate adaptation itself. These include the lack of a single common metric, the long timeframes over which the effects of adaptation measures may be felt, or the degree of uncertainty inherent to our understanding of the climate system, particularly when projecting localised climate impacts (Bours et al., 2014). Mindful of those challenges, the UNFCCC Subsidiary Body for Scientific and Technological Advice states “it is essential that adaptation be designed as a continuous and flexible process and subjected to periodic review” (SBSTA, 2010).

Adaptation monitoring and evaluation systems have been developed at many levels: national, sub-national, programme and project level. The specificities of national-level monitoring and evaluation systems lie in its potentially broader scope in terms of the sectors, climate hazards, geographic area and adaptation measures considered. National-level monitoring and evaluation can also assess the degree of co-ordination between different actors, and/or between institutions/government bodies in charge of adaptation. It can also evaluate to which extent consideration of climate impacts and adaptation is embedded across different policy priorities or in operational and planning decisions, regarding for instance natural resource management or development planning. This practice, known as adaptation mainstreaming, can increase the efficiency and effectiveness of adaptation planning (OECD, 2015b).

2.2 State of play

National monitoring and evaluation of adaptation is a topic of significant interest for Parties to the UNFCCC. Reporting on adaptation monitoring and evaluation under the UNFCCC has been requested by several guidelines and agreements. These requests to report on adaptation monitoring and evaluation historically focused first on non-Annex I Parties before applying to all Parties:

- The guidelines on National Communications for Non-Annex I Parties “encourage” them to provide “information on and, to the extent possible, an evaluation of, strategies and measures for adapting to climate change” (paragraph 35 in UNFCCC, 2002).

- The optional technical guidelines for the realisation of National Adaptation Plans (NAPs) process developed by the Least Developed Countries Expert Group (LEG) mention “monitoring, evaluation and learning” as one of four key elements (LEG, 2012).⁴
- Article 7.9 in the Paris Agreement indicates that Parties “shall, as appropriate, engage in adaptation planning and the implementation of actions [...] which may include [...] (d) Monitoring and evaluating and learning from adaptation plans, policies, programmes and actions”. This information may be reported under the framework for transparency of action, as per Article 13.8 “each Party should also provide information related to climate change impacts and adaptation under Article 7, as appropriate”.
- The guidelines on National Communications for Annex I Parties currently applied (UNFCCC, 1999) do not mention monitoring and evaluation, but a proposed revision from EU suggests Parties could include information on planned, developed or already implemented national approaches for M&E of adaptation strategies and programmes (UNFCCC, 2015b).⁵

The importance of monitoring and evaluation is reflected in the Nationally Determined Contributions (NDCs) submitted by Parties to the UNFCCC, setting out what climate actions they intend to take post-2020. Among the majority⁶ of Parties who included adaptation within their NDCs, almost half make a reference to the importance of monitoring and evaluation system for adaptation (Kato and Ellis, 2016). Some Parties may also be developing monitoring and evaluation systems as part of their national adaptation planning process and not report on it in the adaptation component of their NDC, or not include any adaptation component (GIZ, 2016a). For instance, the European Union’s NDC does not include an adaptation component and as a result does not mention the adaptation monitoring and evaluation systems set up by some of its member countries such as Finland and France.

There has recently been a proliferation of initiatives, guidelines and frameworks on developing systems for monitoring and evaluating adaptation at all levels. Practitioners (SEA Change and UKCIP, 2013, 2014) and the Adaptation Committee (AC, 2016) have developed syntheses and inventories of existing adaptation monitoring and evaluation tools and frameworks.⁷ In addition to the aforementioned LEG guidelines for National Adaptation Plans, a subset of the literature focuses on providing guidance to develop national level systems for monitoring and evaluation (GIZ and IISD, 2016), or providing information and insights from a set of existing systems (OECD, 2015b; EEA, 2015; GIZ and IISD 2013).

However, there are still only a few examples of monitoring and evaluation systems for adaptation being implemented at the national (rather than e.g. programme or project) level. The large majority of the Parties mentioning adaptation monitoring and evaluation in their NDCs indicate that they are still in the process of developing their national approach (Kato and Ellis, 2016). Indeed, only a relatively small number of

⁴ The technical guidelines include four steps in “*Element D. Reporting, Monitoring and Review*”: monitoring the NAP process; reviewing the NAP process to assess progress, effectiveness and gaps; iteratively updating the national adaptation plans; outreach on the NAP process and reporting on progress and effectiveness.

⁵ The revision of UNFCCC reporting guidelines on national communications will be discussed at a pre-session workshop prior to SBI 44 (May 2016), based on the updated technical paper reflecting the views submitted by Parties and discussions at SBI 41 and SBI 42 (FCCC/TP/2015/3).

⁶ 86% of the 162 Nationally Determined Contributions (NDCs) submitted by Parties to the UNFCCC as of January 2017 included an adaptation component (author update on GIZ, 2016a).

⁷ Sea Change and UKCIP 2014 synthesis reviewed 22 tools, while the Adaptation Committee inventoried 90 examples of tools and frameworks.

Parties have reported on having designed and/or implemented a national system for monitoring and evaluation (Table 1).

Some of the salient characteristics of these national adaptation monitoring and evaluation systems are:

- Most of these systems have been finalised and implemented very recently, although in some instances work started much earlier, such as in 2005 for Finland.
- Only a few countries have completed the evaluation of their national adaptation plan or strategy, such as Finland (2013), France (2015) and the United-Kingdom (2015). This means that there is limited experience with mid-term and end-term evaluations of policies at the national level.
- Several systems include a built-in objective to regularly update evaluations and reports, or in some cases a legal mandate; update frequency is between every one-to-five years.
- The national institution leading the evaluation can be the same as the policy lead for adaptation (such as the Environment Ministry for Germany or the Department for Environmental Affairs in South Africa) or a distinct public body (such as the Adaptation Sub-Committee in the United Kingdom and the National Planning Commission in Nepal).
- Most monitoring and evaluation systems were set up a few years after the adoption of a national strategy, plan or programme for adaptation, except in Australia, where a system was set up beforehand,⁸ and Kenya where it was set up simultaneously.
- Approaches to monitoring and evaluation to date combine a varying number of qualitative and quantitative indicators, ranging between three (Mexico) and over a hundred (such as France, Germany, Kenya and the Philippines for instance) with qualitative analysis. These indicators can, for instance, be used to monitor trends in climate exposure and vulnerability, realised impacts of climate events, and/or assess either adaptation processes or outcomes.

The following section presents a more detailed overview of the monitoring and evaluation systems' diversity.

⁸ The National Adaptation Assessment Framework was due to be finalised and used to produce a full assessment of Australia's progress in managing the impacts of unavoidable climate change in 2014 (Australian Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, 2013). A National Climate Resilience and Adaptation Strategy was published in 2015 (Australian Department of the Environment and Energy, 2015).

Table 1. Selected adaptation monitoring and evaluation systems implemented and/or being designed at the national level

Country (Date of adaptation strategy/plan)	Summary description	Reporting cycle	Report date	Leading institution
Australia (2015)	The National Adaptation Assessment Framework proposed in 2013 includes 12 indicators structured around social and economic drivers for adaptation, the definition of priority activities and preferred outcomes, with a preliminary focus on adaptation in coastal areas.	-	-	Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education
Austria (2012)	The system comprises a self-assessment by actors in charge of each of 132 actions of the Austrian Adaptation Strategy and Action Plan (ministries, provinces, organised interest groups), complemented by 45 qualitative and quantitative key indicators to monitor the processes, outputs or outcomes of adaptation interventions in 14 areas, using existing data sources.	Every 5 years	2015	Federal Ministry of Agriculture, Forestry, Environment and Water Management
Finland (2005)	Finland applies a five-step qualitative scale to indicate the level of adaptation in different sectors. The 2009 mid-term report was based on a survey of public and private actors on adaptation-related research and measures launched across different sectors.	-	2009 2013	Ministry of Agriculture and Forestry
France (2007)	The system consists of monitoring progress across 19 areas and one cross-sectoral theme outlined in the NAP (2011–2015). For each area and theme, an action sheet outlines one to six actions, each comprising several measures that must be undertaken in that area, totalling 84 actions and 230 measures.	-	2015	General Council of the Environment and Sustainable Development (CGEDD)
Germany (2008)	Following adoption of the National Adaptation Strategy (2008), 102 indicators were identified and applied in 2015 for the monitoring of climate impacts and adaptation progress: 97 for climate impacts and implementation of adaptation measures, and 5 overarching indicators (e.g. public awareness, funding for research and municipalities, international funding). A methodology for evaluating adaptation is currently under development.	Every 4 years	2015	Environment Ministry, with support from the Federal Environment Agency
Kenya (2012)	The proposed National Performance and Benefits Measurement Framework (NPBMF) combines 73 top-down indicators that assess institutional (adaptive) capacity and 72 bottom-up indicators that measure vulnerability, both at national and county level.	-	2012	Ministry of Environment and Mineral Resources
Republic of Korea (2015)	The ministries responsible of the 341 adaptation actions set out in the 2nd National Climate Change Master Plan (2016-2020) self-monitor the implementation of their actions and report it annually to the Ministry of Environment. The Ministry of Environment subsequently plans to review the completeness of a 100 selected adaptation actions every two years including by assessing their level of implementation, stakeholders' cooperation and communication efforts, and policy outcomes.	Annually (monitoring), Every 2 years (evaluation)	2018 (planned)	Ministry of Environment
Mexico	The Special Programme for Climate Change (PECC II) includes three adaptation	Annually	2014	National Institute for

(2013)	indicators. The information system on climate change (SICC) is looking to develop more detailed process- and result-based indicators on the implementation of adaptation actions.	(monitoring), Every 2 years (evaluation)		Statistics, Geography and Information (INEGI), National Institute for Ecology and Climate Change (INECC)
Morocco (2009)	A national system is under development, building on sub-national efforts; Regional Environmental Information System (SIRE) in pilot regions focusing on changes in vulnerability in key sectors (water, agriculture, tourism and biodiversity/forests), the status of implementing interventions, and impacts/lessons learnt from those measures, all based on readily available data.	-	2014	Regional Observatories on Environment and Sustainable Development (OREDDs)
Mozambique (2012)	The National Climate Change Monitoring and Evaluation Framework (SNMAMC) includes a set of 63 indicators to monitor changes in climate vulnerability across eight sectors and inform allocations in the national budget and international climate finance.	-	2014	Climate Change Coordination Unit (UMC)
Netherlands (2016)	The draft approach includes 16 qualitative and quantitative adaptation indicators, to be integrated at every stage of the policy process. The system is due to be revised and formally adopted following the publication of the National Adaptation Strategy.	-	2015	Environmental Assessment Agency (PBL)
Philippines (2009)	The Results-Based Monitoring and Evaluation System is made of 102 indicators on activities and outputs set against immediate, intermediate and ultimate outcomes across seven priority areas: i) food security, ii) water sufficiency, iii) ecological and environmental stability, iv) human security, v) climate-smart industries and services, vi) sustainable energy, and vii) knowledge and capacity development.	Every 3 years	2011	Philippines Climate Change Commission
South Africa (2004)	The National Climate Change Response M&E system is made of building blocks focusing on i) climate information (observations and projections), ii) monitoring climate risks, impacts and vulnerability, iii) adaptation response measures (including governance and effectiveness aspects). South Africa defined ten generic Desired Adaptation Outcomes against which progress will be measured, and categorised its existing adaptation projects. Subsequent reports aim to assess the effectiveness of these projects and their contribution to the Desired Adaptation Outcomes.	Annually	2016	Department Environmental Affairs
United Kingdom (2013)	The system combines self-reporting of progress by organisations responsible of the 371 actions of the NAP with an independent evaluation of adaptation priorities in six areas. The evaluation assesses the existence of relevant policies, levels of action, and progress on managing vulnerability, based on qualitative and quantitative analysis.	Every 2 years	2015	Committee on Climate Change's Adaptation Sub-Committee

Source: OECD, drawing from EEA, OECD and GIZ and IISD (2015). All the monitoring and evaluation reports listed are included in the references.

3. Overview of national approaches to adaptation monitoring and evaluation

A national monitoring and evaluation of adaptation system needs to be tailored to domestic circumstances, which is reflected in the diversity of existing systems to date, either in their purpose, content or degree of aggregation with sub-national scales.

3.1 Purpose

National adaptation monitoring and evaluation systems may fulfil a number of specific purposes assessing adaptation processes or outcomes, which can be broadly categorised as pursuing learning and accountability (OECD, 2015b).

Learning aims to enhance stakeholders' understanding of one or both of the following: the country's climate change risks and vulnerabilities over time, and whether adaptation interventions are achieving their objectives, including how and why that might be the case (Figure 1). This in turn allows a country to improve on planning or implementing adaptation policies. A country's learning priorities may depend on progress made in national adaptation planning. While a national climate change plan or strategy is being developed, a system focused on periodically understanding climate impacts and vulnerability can provide information to support future planning efforts, and make a contribution towards national climate change risk assessments. In countries where an adaptation plan or strategy is designed prior to a national monitoring and evaluation system, that system can be used to assess progress in implementation. To facilitate learning, it is beneficial for those closely linked to policy making processes such as budget negotiations or national planning, to be involved in designing the system. In developing countries, it can be useful to have input from national authorities responsible for climate finance, as reporting obligations towards climate finance providers can take up an important share of domestic capacities (OECD, 2015b).

Accountability refers to demonstrating that actions have taken place and led to a result. This can, for instance, ensure that resources for adaptation are efficiently allocated, demonstrate progress for taxpayers, constituents, and/or development partners, or showcase results on the international stage, which can in turn provide a learning opportunity for other countries. Often, systems aim to address both learning and accountability purposes. The LEG technical guidelines for the National Adaptation Plans process list for instance both learning and accountability related objectives for monitoring and evaluation (LEG, 2012).⁹

The accountability driver for monitoring and evaluating adaptation is particularly important for Parties who have a legislative requirement to conduct adaptation monitoring and evaluation activities, such as under the Climate Change Act (2008) in the United Kingdom, the General Law on Climate Change (2013) in Mexico, or, among countries which are still developing their national system such as Lithuania and Malta (EEA, 2015). Finland represents a hybrid model whereby monitoring and reporting adaptation progress is a legal requirement, but evaluating this progress is not (ibid). On the other hand, the South African system, focuses strongly on learning regarding "the effectiveness of adaptation projects in enhancing climate resilience and [...] their respective contributions to the Desired Adaptation Outcomes and to the goals that have been identified in South Africa's Intended Nationally Determined Contribution" (DEA, 2016).

⁹ These objectives are: to improve the effectiveness and efficiency of the adaptation process, and facilitate incorporation of new assessments and emerging science as well as lessons learned (learning-related); to provide information in national communications and other channels on the progress made and the effectiveness of the national adaptation plan process (accountability-related).

3.2 Choice of indicators

An adaptation indicator is a characteristic or variable which helps to describe an existing situation and to track changes or trends over a period of time. An indicator can provide either qualitative information on, for instance, the degree of development and implementation of a policy process, or quantitative information, such as the amount of funding dedicated to the policy. As of April 2016, about 70% of INDCs with adaptation components include qualitative indicators by which progress towards their goals can be communicated (Kato and Ellis, 2016). Fewer (about 20%) also have quantitative indicators that can be used to assess progress. However, some adaptation components of INDCs do not include any indication (e.g. proposed indicators) against which progress can be assessed (ibid).

A country's risks from climate change are defined by its specific exposure to risks, economic and social vulnerability and adaptive capacity. A country's adaptation planning or monitoring and evaluation system can therefore choose to focus on a particular economic sector (e.g. agriculture or tourism), natural resources (e.g. water or forests) or category of assets at risk (e.g. buildings, infrastructure, health systems) which it sees as a priority. For instance, Australia's Proposed National Adaptation Assessment Framework focuses on the coastal zone, home to 85% of the Australian population, which is at risk from sea level rise and increased storm surge due to more intense storms and tropical cyclones (Australian Government, 2013). South Africa also developed a climate change monitoring and evaluation system specific to its Agriculture, Forestry and Other Land Use (AFOLU) sector (Promethium Carbon, 2015). The system reflects the costs, impacts, outcomes and co-benefits of the sector's management through both adaptation and mitigation interventions and was developed alongside South Africa's national greenhouse gas inventory for this sector.

The indicators found in national adaptation monitoring and evaluation systems can be broadly categorised between indicators providing information on climate risks, on adaptation processes and on adaptation outcomes. As described by the IPCC (2013), climate risk is determined by climate and weather events, known as hazards, but also by the exposure and adaptive capacity of economies, societies and ecosystems to these hazards. Therefore, climate risk indicators can focus on tracking climate hazards, impacts, exposure or adaptive capacity. Definitions and examples of each indicator type are presented in Table 2.

Table 2. Illustrative indicator types to monitor and evaluate adaptation at the national level

Indicator type		Definition	Examples from existing systems
Climate risk	Climate hazards	Observed climatic parameters which may adversely affect people and assets	- Monthly precipitation - Change in annual precipitation, - Number of hot days per year (Mekong River Commission)
	Climate impacts	Observed impacts of climate variability and change on socio-ecological systems	- Percentage of total livestock killed by drought in a given year - Number of hectares of productive land lost to soil erosion (Kenya National Climate Change Action Plan)
	Exposure	Presence of people and assets in areas that could be adversely affected by climate hazards	- Number of businesses, hospitals and households within most deprived communities located in areas at risk of flood or coastal erosion (United Kingdom Adaptation Framework)
	Adaptive Capacity	Capacity of exposed institutions, systems, and individuals to adjust or cope with potential risks (and take advantage of opportunities)	- Percentage of municipalities with local regulations considering adaptation and vulnerability assessment results - Percentage of coastline under marine protection

			(Mexico Adaptation Monitoring and Evaluation system)
Adaptation Process	Implementation of strategies and plans through policy action or allocation of financial and human resources (inputs)		- Percentage of transport infrastructure revised to account for climate change - Number of mechanisms identified which could potentially fund adaptation (France Evaluation of National Adaptation Plan)
Adaptation Outcomes	Results of adaptation policies and plans on climate risks		- Increase in the no. of small farmers and fisher folk who are credit worthy - Water supply coverage of previously waterless communities (Philippines Results-Based Monitoring and Evaluation System)

Source: OECD based on national documents and GIZ and IISD (2014)

National approaches to adaptation monitoring and evaluation to date usually favour adaptation process indicators. Klostermann et al. (2015) further distinguish process-based from output-based¹⁰ indicators, and state that both types of indicators are easier to establish initially (Harley et al. 2008 and Harley and van Minnen, 2009 in Klostermann et al., 2015). Once policy goals become more targeted, outcome-based indicators tend to assume a greater importance. France’s approach aims to primarily track progress on the implementation of its 230 adaptation measures, on the assumption that implementing its NAP would lead to a reduction in the country’s vulnerability to climate change (Government of France, 2015). Kenya and Philippines’ approaches focus primarily on evaluating the outcomes of their adaptation plans, with Philippines even defining immediate, intermediate and ultimate desired outcomes (Philippines, 2011; Kenya, 2012). The United Kingdom’s first statutory assessment of national progress on adaptation first monitors the degree of achievement of actions planned in its NAP (Figure 2). For each of the NAP’s priority sectors, the United Kingdom then assesses whether there is a policy in place to address the sector’s key climate risk (which may or may not be listed in the NAP), and provides an assessment of this policy’s implementation, as well as an evaluation of whether action to date has contributed to reducing the sector’s vulnerability to climate change (Figure 3).

¹⁰ According to Klostermann et al., “process-based indicators monitor the policy, institutional and governance processes needed to build capacities to develop and implement adaptation policies, measures and actions. Output-based indicators capture the implementation of adaptation policies [and] show that governments and other stakeholders have kept word, but they do not show if vulnerability has been reduced.”

Figure 2. Status of actions listed in the United Kingdom National Adaptation Programme

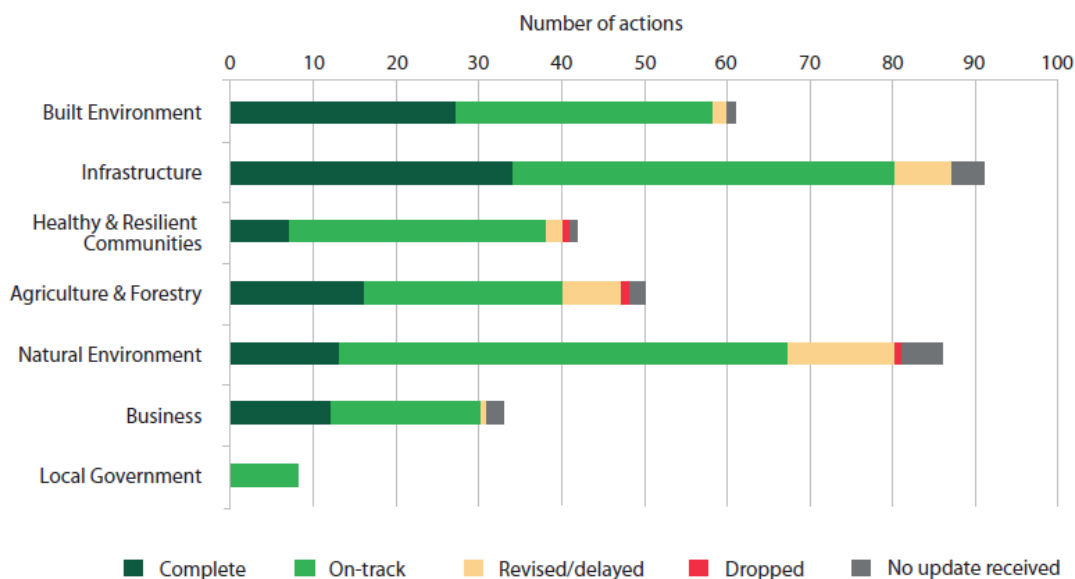
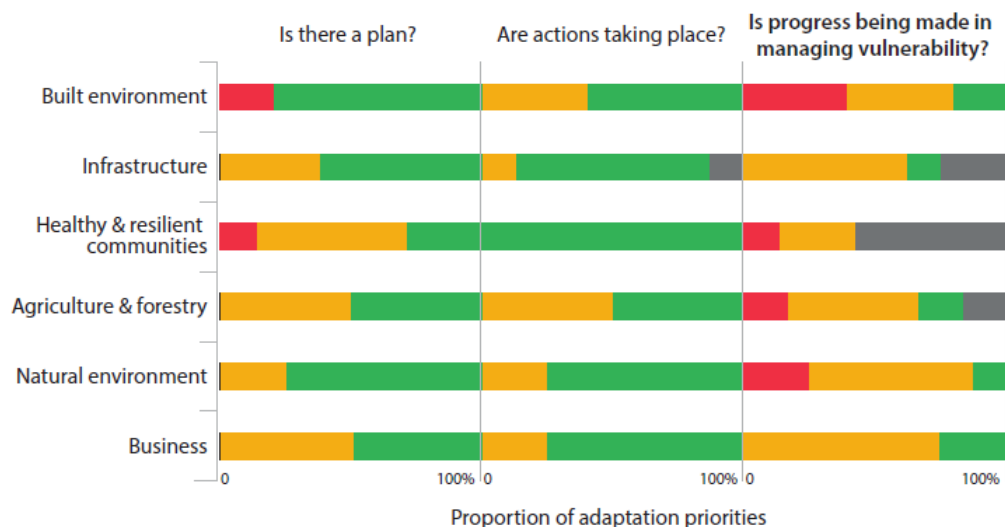


Figure 3. Summary of the Adaptation Sub-Committee’s assessment of progress by the United Kingdom National Adaptation Programme



Source: Adaptation Sub-Committee (2015).

Note: The colours depict the proportion of ‘adaptation priorities’ identified for each theme categorised as either: (i) Red: plans and policies, delivery of actions or progress in addressing vulnerabilities, are lacking; (ii) Amber: Adaptation priority has been partially addressed, some evidence of progress in some areas; (iii) Green: plans are in place, actions are being delivered, progress is being made; (iv) Grey: insufficient evidence to form a judgement.

3.3 Linking-up with sub-national and transboundary information

One of the important purposes of a national-level adaptation monitoring and evaluation system is to assess whether adaptation measures contribute to reducing the country’s exposure and vulnerability to climate change. This requires aggregating information horizontally across climate-sensitive sectors, as well as

vertically across different levels of government. A national-level adaptation framework is important as national governments play an essential role in facilitating adaptation through agenda setting, planning and budgeting (Cimato and Mullan, 2010). However, getting a complete picture of the implementation of adaptation measures and their effectiveness would require combining national and sub-national information, particularly for countries with decentralised administration or a large territory. To avoid simply adding up indicators from the local level to get an aggregate number, national level and subnational assessments could also focus on monitoring and evaluating different aspects of adaptation measures (AC, 2014).

The appropriate scale for adaptation decision-making may require aggregating across sub-national scales or national borders. For example, flood management decisions may be better made at the level of a river basin/catchment area, which may not coincide with administrative boundaries. The Danish cities of Copenhagen and Frederiksberg, for instance, devised 26 local water catchment areas over existing administrative boundaries to better manage surface water flooding on their territory (City of Copenhagen, 2012). Climate risks can be unintentionally imported or exported across countries, for instance through international business supply chains and trade (Dellink et al., 2017) or transnational river basin management. As an example, the 2011/2012 US drought contributed to an increase in the price of soya, causing up to an estimated 25% of UK pig farmers leaving the industry by the end of 2012 (Benton, 2012 in CCC, 2017). Mindful of the transnational nature of flood risks across the Lower Mekong Basin, the Mekong River Commission promotes co-ordinated management between Cambodia, Laos, Thailand and Viet Nam. The Commission is looking to harmonise climate change adaptation planning and implementation through the development of a climate strategy, which would be integrated to the Commission's monitoring and evaluation framework (Mekong River Commission, 2016).

There is little experience of vertical aggregation of adaptation monitoring and evaluation and most emerging approaches to date focus on the implementation of national plans or strategies without taking into account sub-national adaptation efforts. However, Dazé et al. (2016) identified three main enabling factors for some vertical integration of adaptation monitoring and evaluation systems at the national and sub-national levels: institutional arrangements facilitating dialogue between national and subnational level, information sharing agreements, and capacity development, particularly at the sub-national level. Leiter (2015) also formalised three ways in which information could be aggregated:

- Using standardised indicators for each sector across geographical levels to facilitate the aggregation of information. Germany has for instance developed 102 indicators to monitor adaptation action and climate impacts, many of which are based on information that is similarly reported by all federal states.
- Allowing both sub-national and national-level actors to use level-specific metrics that address common themes identified at the national level. South Africa is following this path through a set of Desired Adaptation Outcomes, allowing information on progress towards each outcome to be gathered in different ways by various stakeholders (DEA, 2016).
- Focusing on informal links instead of designated indicators, as Norway does through occasional surveys of municipalities and consultations with stakeholders regarding sectoral adaptation progress.¹¹

¹¹ The Norwegian government has conducted a preliminary assessment regarding the possibility to develop climate change adaptation indicators and a reporting system at the national level under the authority of the Climate and Environment Ministry. Currently, adaptation policy implementation, monitoring and evaluation is only led at the sectoral level and is not aggregated nationally.

The diversity of these national approaches offers examples for countries looking to develop their own adaptation monitoring and evaluation systems. Nevertheless, there are several challenges associated with developing these systems, which may have important implications for the UNFCCC process.

4. Challenges of national approaches to adaptation monitoring and evaluation and implications for the global stocktake

Information gaps, capacity and resource constraints can be a limiting factor to building national systems for adaptation monitoring and evaluation. Several initiatives from bilateral development co-operation providers or multilateral bodies under the UNFCCC provide support to Parties to fill those gaps. The extent to which national adaptation monitoring and evaluation systems can be used to assess progress towards the global goal on adaptation is potentially important but still highly uncertain.

4.1 Information gaps, capacity and resource constraints

There are many challenges attached to developing an adaptation monitoring and evaluation system at the national level. Some of those challenges relate to the nature of climate adaptation itself, such as long timescales, the uncertainty associated with the localised impacts, difficulties in setting of baselines and targets, or the difficulty of attributing cause and effect (AC, 2014; OECD, 2015b). Indicators are not the only or indeed always the most appropriate tool for monitoring and evaluation; qualitative narratives or consultations can be useful in particular to assess adaptation from the viewpoint of the most vulnerable communities (AC, 2014). There are also challenges with identifying and combining relevant indicators, as well as interpreting them correctly. For example, some of the common challenges identified by an evaluation of SIDA's Climate Change Initiative (César et al., 2013) include the definition of indicators that are too vague and difficult to measure, too narrow output-focused indicators that only provide a piecemeal picture of the whole, or the development of a very high number of indicators which are very resource-intensive.

Monitoring and evaluating adaptation action or climate vulnerability and resilience requires resources, including data and the human and technical capacity to collect and interpret it. In particular, monitoring relevant data or developing data of sufficient quality, such as long and continuous time series at an appropriate level of disaggregation, remains a challenge for many countries. For instance, when conducting an audit of the Brazilian government's response to adaptation in 2010, auditors found that climate risks in the agricultural sector, coastal zones and relating to water security could not be properly assessed and managed. This was in part due to the lack of monitoring of some variables crucial for constructing robust projections and the lack of a centralised system to co-ordinate and store meteorological data (INTOSAI, 2010 in OECD, 2015b).

A phased approach to adaptation monitoring and evaluation can contribute to overcoming some of these challenges over time. Countries may wish to start by conducting an inventory of adaptation-related monitoring processes already in place to get an overview of existing data availability, identify redundant collection processes then rationalise these activities to meet emerging needs (Bedi et al., 2006 in OECD, 2015b). To efficiently meet adaptation-related resource needs, questions specific to climate change can be inserted into established data collection processes, such as household surveys which are in many cases conducted every four to five years (OECD, 2015b). Mozambique has for instance included nine climate change questions in its household survey in 2014, on topics including perceived climate impacts, information sources on disaster and weather risks, and approaches taken to adaptation and sources of support (INE, n.a. in OECD, 2015b).

Emerging national approaches to monitoring and evaluation of climate change adaptation illustrate that these systems may not need to be very complex or resource-intensive to support adaptation planning.

Morocco has for instance prioritised using indicators from already available data sources for its pilot phase for monitoring and evaluation (Royaume du Maroc and GIZ, 2014). Countries also may separate the upfront resource implications of building the monitoring and evaluation system and agreeing on what to measure, with the ongoing resource implications of routinely running the monitoring and evaluation processes. For instance, although the German system for monitoring and evaluation focused on available data at the national level to lower replication costs, agreeing on the final indicators was more resource-intensive (Federal Environment Agency, 2015).¹²

There are several channels supporting the development of national adaptation monitoring and evaluation systems through technical or financial assistance. Bilateral development co-operation providers have supported several countries on building monitoring and evaluation systems by piloting local or national approaches. Examples include the United Kingdom's DfID supporting the Tracking Adaptation and Measuring Development (TAMD) initiative to track adaptation and measure its impact on development, led by IIED,¹³ or Germany's GIZ support through "M&E Adapt" project on behalf of BMZ and BMUB and other bilateral projects.¹⁴ At the multilateral level, the Climate Investment Fund's Pilot Program for Climate Resilience (PPCR), which supports adaptation programmes in 28 pilot countries, held regional workshops in Tajikistan (2015), Jamaica and Tonga (2016) on climate adaptation "monitoring and reporting" across a broad range of sectors (CIF, 2016a). Each PPCR pilot country is also expected to report on five core indicators during the life of their PPCR investment plan, including the "degree of integration of climate change in national, including sector planning", or the "extent to which vulnerable households, communities, businesses, and public sector services use improved PPCR supported tools, instruments, strategies, and activities to respond to climate variability or climate change" (CIF, 2016b).

Several resources have also been developed under the UNFCCC to support capacity-building for monitoring and evaluation of adaptation. The first of those is the Nairobi Work Programme (NWP), established at COP11 (December 2005). The NWP's main role is to be a knowledge hub to support enhanced action on adaptation, in part through its Adaptation Knowledge Portal,¹⁵ which also provides information on monitoring and evaluation tools.

The Capacity-building Initiative for Transparency (CBIT) is established in the Paragraph 84 of Decision 1/CP.21 "in order to build institutional and technical capacity, both pre- and post-2020" and may contribute to capacity building on adaptation monitoring and evaluation. Supported by the Global Environment Facility (GEF), CBIT has approved three capacity-building projects in Costa Rica, Kenya and South Africa as of November 2016 (GEF, 2016). Although none of the projects approved to date are focused on adaptation, the successful deployment of the CBIT could eventually contribute to building adaptation monitoring and evaluation systems at the national level, given many Parties expressed their aim to do so in their NDCs.

¹² 85% of the data used by the indicators of the German monitoring systems was already collected on a routine basis. It took nearly six years and consultations with 450 people from governmental departments, sectoral agencies at Federal and Länder level and from scientific and private institutions to agree on the final 102 indicators (German Federal Environment Agency, 2015).

¹³ IIED first supported local adaptation planning Kenya, Mozambique, Nepal, and Pakistan in 2012, before continuing the development of its framework through pilots in Cambodia, Ethiopia, Tanzania and Uganda in 2014. The TAMD framework, aiming to help governments "to demonstrate if climate finance has been well spent and that the climate vulnerability of communities has been reduced" (Craft and Fischer, 2016) was formally launched in 2015.

¹⁴ Bilateral projects on behalf of BMUB were conducted in Brazil, Grenada, Thailand and the Philippines. Global projects on behalf of BMZ were conducted in Cambodia (in collaboration with IIED), Bolivia (at the state level only), Mexico, Morocco, Mozambique, Togo and South Africa.

¹⁵ Available at: www4.unfccc.int/sites/nwp/Pages/Home.aspx

4.2 Relevance of national monitoring and evaluation systems to assess progress towards the global goal on adaptation

The Paris Agreement requires the Conference of Parties to periodically take stock of its implementation and assess the collective progress towards achieving the long-term goal on adaptation. As per Article 7.14, the adaptation component of this global stocktake “shall” inter alia “(a) Recognize adaptation efforts of developing country Parties, (b) Enhance the implementation of adaptation action taking into account the adaptation communication (...), (c) Review the adequacy and effectiveness of adaptation and support provided for adaptation; and (d) Review the overall progress made in achieving the global goal on adaptation (...)”. To explore how the adaptation component of stocktake might take place, Kato and Ellis (2016) reviewed national communications guidelines and information identified by the Paris Agreement relating to adaptation communications. They concluded that neither the existing UNFCCC reporting and review framework nor the transparency framework currently under development on adaptation require reporting of all of the information needed to fulfil the purposes of the global stocktake.

While discussions on how to undertake the global stocktake have started (UNFCCC, 2016), there is no agreement yet on how this stocktake will be carried out, nor what – if any - role national-level monitoring and evaluation assessments could play. Nevertheless, the country-specific approaches to adaptation monitoring and evaluation can potentially provide information to track progress towards national adaptation goals. By extension, national monitoring and evaluation approaches could serve as a potential information source for the global stocktake, in particular the following two objectives: “Recognize adaptation efforts of developing country Parties” (Article 7, paragraph 14 (a)) and Enhance the implementation of adaptation action taking into account the adaptation communication referred to in paragraph 10 of this Article” (Article 7, paragraph 14 (b)). The extent to which this information could be used is explained and caveated below.

Among the views submitted to the UNFCCC Ad Hoc Working Group on the Paris Agreement (APA) regarding the identification of the sources of input and modalities for the global stocktake (UNFCCC, 2016), the sources of input for the global goal on adaptation most commonly referred to include the output of the enhanced transparency framework, the adaptation communication and scientific input from the IPCC. Some Parties mention the possibility to use other inputs, “as technical basis [is] strengthened at the national and international level” (Independent Association for Latin America and the Caribbean, or AILAC) (ibid). Of the eleven submissions received, only Japan’s explicitly mentions that it would be “helpful to make use of the outcome generated through the monitoring and evaluation (M&E) framework for adaptation planning processes and actions, which each Party has engaged in”(ibid).

The first stated objective of the global stocktake on adaptation is to “(a) recognise adaptation efforts of developing country Parties”. Although there is no commonly agreed definition of what might constitute “adaptation efforts”, these could refer to the development and implementation of specific adaptation responses, or the resources invested in these development and implementation processes, as opposed to the results or outcomes achieved by adaptation responses. The monitoring component of national systems for adaptation monitoring and evaluation can provide information regarding the progress made with regards to i) the development and implementation of adaptation policies (monitoring processes) as well as ii) the financial or human resources allocated to developing and implementing these (monitoring inputs). Monitoring of adaptation at the national level could thus indirectly contribute to the information provision that may underpin the recognition of developing country Parties’ adaptation efforts, by feeding into Parties’ respective adaptation communications, national communications or submissions.

The reporting of adaptation efforts could be done through several formats, ranging from less resource-intensive “self-assessment scorecards” and/or providing specific examples illustrating efforts in a non-exhaustive way, to qualitative or quantitative aggregated assessments of Parties’ efforts (Kato and Ellis,

2016). As an illustration, a developing country could for instance highlight the development of a climate risk assessment for its coastline, and the passing of a regulation prohibiting building houses or infrastructure too close to the shore (accounting for projected erosion rates), as well as the resources that have been necessary for completing the risk assessment and designing and/or enforcing the land-use planning regulation.

National monitoring and evaluation systems for adaptation could also potentially inform the global stocktake's objective to "(b) enhance the implementation of adaptation action taking into account the adaptation communication (...)", under certain conditions. Meeting this objective could draw from the evaluation component of monitoring and evaluation systems, which allows countries to learn and draw lessons from their adaptation action to date. At the national level, adaptation evaluation aims to assess whether adaptation efforts actually delivered a reduction in vulnerability to climate change, whether the plans and policies were fit-for-purpose, and resources efficiently allocated. Integrating results from national-level adaptation evaluation in Parties' adaptation communications could facilitate learning at the collective level, particularly among countries faced with similar climate hazards or development challenges (bearing in mind adaptation is ultimately context-specific).

A first important caveat is that, using national systems for adaptation monitoring and evaluation to meet the global stocktake's objective to "(b) enhance the implementation of adaptation action taking into account the adaptation communication (...)", countries with national monitoring and evaluation systems need to include the results of such a system into their adaptation communications. Including the results of national monitoring and evaluation efforts has not been specifically identified by the Paris Agreement as one of the potential elements relating to adaptation communications, and reflecting adaptation monitoring and evaluation efforts is only encouraged in the guidelines for national communications for non-Annex I Parties.¹⁶ A second caveat is that learning from adaptation experiences depends to some extent on the availability of adaptation evaluation at the national level, which is currently less developed than adaptation monitoring activities.¹⁷ While adaptation monitoring focuses on whether plans or policies were implemented, adaptation evaluation focuses on the results of these plans and policies.

There are several reasons for which using national monitoring and evaluation systems to inform some of the objectives of the global stocktake (Art. 7.14 (a) and (b)) would be challenging. There are currently relatively few existing systems for adaptation monitoring and evaluation at the national level,¹⁸ and experiences to date have relatively focused more on adaptation monitoring than on adaptation evaluation. The fact that few outcome indicators have been developed at the national level can be partly explained as in many cases adaptation policies and programmes lack measurable targets or clearly defined expected outcomes necessary to assess their effectiveness using indicators (SBSTA, 2010). Almost half of the (I)NDCs detailing planned adaptation policies and programmes include a mention of the need to monitor and evaluate progress, but where this need is mentioned, the indicators used are mainly qualitative as mentioned in section 3.2 (Kato and Ellis, 2016).

Although in keeping with the purpose of the global stocktake on adaptation, information from national monitoring and evaluation systems could potentially also contribute to the other two objectives (Article 7.14 (c) and (d)), such a potential contribution is more uncertain. Article 7.14 (c) requires the global stocktake to "review the adequacy and effectiveness of adaptation and support provided to adaptation". While national-level evaluation of adaptation is useful to assess adaptation effectiveness (Craft and Fischer, 2015, 2016), such national assessment would not be available for all countries. This would make

¹⁶ See Section 1.

¹⁷ Section 3.

¹⁸ See Section 1.

any review based on bottom-up data incomplete. Furthermore, as these systems would be developed in different ways, they would be difficult to compare and therefore aggregate to inform a global review. Finally, there might be subjective components to “effectiveness”, and the issue of “adequacy” can conflate climate and non-climate factors (Kato and Ellis, 2016).

Article 7.14 (d) requires the global stocktake to “review the overall progress made in achieving the global goal on adaptation”. The global goal on adaptation stated in Article 7.1 of the Paris Agreement consists of “enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change (...)”. Adaptation is context-specific by nature (AC, 2015) and adaptation responses need to be tailored to a country’s geography and socio-economic, political, as well as ecological systems. National approaches to adaptation, as well as to monitoring and evaluating adaptation reflect this and vary considerably between countries, which would make them very difficult to aggregate.¹⁹ Similarly, the context-specificity of adaptation would make it very challenging, if not impossible, to develop a common set of indicators for all countries to comprehensively assess global progress towards the global adaptation goal (Kato and Ellis, 2016). Indeed, the Adaptation Committee (2015) also indicates that it would “not be useful” for all countries to use the same set of adaptation indicators. A partial avenue to review the collective progress made towards the global adaptation goal would be to build on existing frameworks whose aims coincide with those of climate change adaptation, such as the Sustainable Development Goals (SDGs) and the Sendai Framework for Disaster Risk Reduction 2015–2030.

Table 3 presents a non-exhaustive list of the indicators for SDGs adopted at the March 2017 48th session of the United Nations Statistical Commission (IAEG-SDGs, 2017) which could be linked to the review of the overall progress made in achieving the global goal on adaptation under the UNFCCC (Kato and Ellis, 2016). Some of the processes under which countries may already report this information include responding to questionnaires from international bodies under the United Nations umbrella such as the Food and Agriculture Organisation (UN FAO), International Strategy for Disaster Reduction (UNISDR), Environment Programme (UNEP), the Statistics Division (UNSD), or others (OECD, Eurostat), as well as national farm surveys (UNSD, 2016).

Table 3. Examples of SDG indicators that could relate to climate change adaptation

Goal		Indicators
Climate action	13.1.1	Number of deaths, missing people, injured, relocated or evacuated due to disasters per 100,000 population
	13.2.1	Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)
	13.3.1	Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula
Zero hunger	2.4.1	Proportion of agricultural area under productive and sustainable agriculture
Clean water and sanitation	6.4.1	Change in water-use efficiency over time
	6.5.1	Degree of integrated water resources management implementation (0-100)
Sustainable cities and communities	11.b.1	Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030
	11.b.2	Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies
Life on land	15.2.1	Progress towards sustainable forest management

Source: Adapted from Kato and Ellis (2016), IAEG-SDGs (2017)

¹⁹ See previous sections 2.2 and 3.

Countries also report on their progress against the Sendai Framework for Disaster Risk Reduction’s seven global targets for the reduction of disasters by 2030. The set of indicators used for measuring global progress on reducing disaster losses could to some extent be used to monitor progress towards global adaptation, with important caveats. First, losses are a factor of the severity and frequency of hazards, as well as a factor of the reduction in vulnerability- some indicators could show a decrease in losses because an extreme weather event (e.g. storm) has not hit a country that particular year, for instance. A reduction in losses could also be due to the implementation of disaster risk reduction or adaptation policies, or of a ‘near-miss’, namely an extreme weather event narrowly missing a country’s vulnerability hotspots. Furthermore, as the definition given in the Sendai Framework of disasters²⁰ encompasses both man-made and natural events, the first set of indicators relating to the outcomes of disaster risk reduction could only relate to climate change adaptation provided they are disaggregated by disaster type to focus on climate-related natural disasters²¹ (Table 4). A second set of indicators relating to the enabling environment for and the implementation of disaster risk reduction policies broadly support climate adaption objectives, although they relate to more specifically to current vulnerability (Table 5).

Table 4. Examples of Sendai Framework compound indicators on disaster risk reduction outcomes that could relate to climate change adaptation

Global target		Indicators
Disaster mortality	A-1	Number of deaths and missing persons attributed to disasters, per 100,000 population
Affected people	B-1	Number of directly affected people attributed to disasters, per 100,000 population (including population injured or ill, whose dwelling is damaged or destroyed, and whose livelihood is disrupted or destroyed)
Economic loss	C-1	Direct economic loss attributed to disasters in relation to global gross domestic product (including losses from agriculture, housing sector, productive assets, critical infrastructure and cultural heritage damaged or destroyed)
Critical infrastructure and basic services	D-1	Damage to critical infrastructure attributed to disasters (including health and educational facilities damaged or destroyed and critical infrastructure units and facilities)
	D-5	Number of disruptions to basic services attributed to disasters (including educational, health and other basic services)

Table 5. Examples of Sendai Framework indicator on enabling environment for disaster risk reduction that could relate to climate change adaptation

Global target		Indicators
Risk reduction strategies	E-1	Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030
Developing countries’ support	F-1	Total official international support, (official development assistance (ODA) plus other official flows), for national disaster risk reduction actions
Early warning systems	G-1	Number of countries that have multi-hazard early warning systems

Source: IAEG-SDGs, 2017

²⁰ The Sendai Framework defines disasters as “small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters caused by natural or man-made hazards, as well as related environmental, technological and biological hazards and risk”.

²¹ An existing source for this information is the country-level Emergency Event Database on climatological, meteorological and hydrological disasters compiled by the Centre for Research on the Epidemiology of Disasters (EM-DAT).

5. Conclusions

Adaptation monitoring and evaluation is increasingly recognised by the UNFCCC as an important step of the process of adapting to climate change, by enabling Parties to better address climate risks, improve the effectiveness of adaptation measures, and increase accountability. There is currently more experience in devising and implementing adaptation monitoring and evaluation systems at the project and programme level than at the national level. However, national-level monitoring and evaluation enables the assessment of unique aspects of adaptation, such as the mainstreaming and integration of adaptation in various national policy areas. Many Parties' NDCs have expressed their interest in developing a national monitoring and evaluation system at the national level in their NDCs. Other countries may not see the use for a national-level system, particularly when adaptation-related policies are led at the sub-national level, and do not mention adaptation monitoring and evaluation in their NDC.

Despite growing interest from both policy-makers and researchers, and several countries monitoring their adaptation efforts across various policy areas, on-the-ground experience with evaluating adaptation responses' effectiveness at the national level is still scarce. Evaluation is in many ways more methodologically challenging than monitoring, because adaptation policies and programmes often lack measurable targets or clearly defined expected outcomes. It is nevertheless a useful activity to allow countries to learn from their experience, and support the improvement of future adaptation planning and implementation.

There are various bilateral and multilateral channels dedicated to supporting the development of adaptation monitoring and evaluation systems, such as those supported for instance by donor countries, as well as internationally, such as the Pilot Program for Climate Resilience under the Climate Investment Funds as well as the Capacity-building Initiative for Transparency. These could helpfully focus or continue focusing their efforts on this evaluation and learning gap.

Assuming national systems for adaptation monitoring and evaluation continue to develop as planned, they may become a useful source for countries to meet some of the information needs of the Paris Agreement's provisions on adaptation. In particular, the monitoring component of national systems for adaptation monitoring and evaluation could provide information on the development and implementation of specific adaptation responses, which could be included in countries' adaptation communications. Further, the resources invested in developing and implementing such processes could be reported in countries' biennial update reports (for resource needs) or biennial reports (for resources provided).

Results of monitoring of adaptation at the national level could be one of the inputs to the global stocktake on collective progress on adaptation, for example, for the recognition of developing country Parties' adaptation efforts (Art. 7.14 (a)) or to enhance adaptation action taking into account adaptation communications (Art. 7.14(b)). Provided Parties monitor and evaluate their adaptation actions at the national level, and reflect this in information they communicate to the UNFCCC on adaptation, this could help support learning and increase accountability among Parties. Using national systems for monitoring and evaluation would reinforce the purpose of the framework for transparency of action (Article 13.5), which is to "provide a clear understanding of climate change action (...) including good practices, priorities, needs and gaps, to inform the global stocktake under Article 14". However, it is unclear if such bottom-up information could have a role in any assessment of adequacy and effectiveness at the global level, or review the overall progress made in achieving the global goal on adaptation (Article 7.14 (c) and (d)).

In any case, national adaptation monitoring and evaluation systems can only be one of the sources of information used to inform the adaptation communications, and (indirectly) contribute to other information needs of the Paris Agreement on adaptation. Information needs of the Paris Agreement on adaptation can

also be met by, for instance, assessment reports from the IPCC or UNEP. Information collected for other purposes could also be used to inform the global stocktake on adaptation. Potential sources include other international reports with partly overlapping aims, such as those produced in relation to the Sustainable Development Goals (SDGs) and the Sendai Framework for Disaster Risk Reduction 2015–2030. The ability of the adaptation communications to meet the global information needs on adaptation depends on their scope and structure, which is yet to be defined but for which some proposals already exist (Kato and Ellis, 2016), as well as on the extent of reporting by individual Parties.

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LIST OF ACRONYMS

AFOLU	Agriculture, Forestry and Other Land Use
APA	Ad hoc Working Group on the Paris Agreement
CCXG	Climate Change Expert Group
CBIT	Capacity-building Initiative for Transparency
GEF	The Global Environment Facility
IEA	International Energy Agency
LEG	Least Developed Countries Expert Group
M&E	Monitoring and evaluation
NAPs	National Adaptation Plans
NDCs	Nationally Determined Contributions
NWP	Nairobi Work Programme
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
PPCR	Climate Investment Fund Pilot Program for Climate Resilience
SDGs	Sustainable Development Goals
TAMD	Tracking Adaptation and Measuring Development
UN FAO	Food and Agriculture Organisation
UNFCCC	United Nations Framework Convention on Climate Change
UNEP	United Nations Environment Programme
UNISDR	United Nations International Strategy for Disaster Reduction
UNSD	United Nations Statistics Division

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