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Communicating Progress in National and Global Adaptation to Climate Change

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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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ABSTRACT

Communicating progress in national and global adaptation to climate change

The Paris Agreement, adopted by the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), reinforces the international framework for adaptation action by establishing a global adaptation goal. Under the Paris Agreement, countries have also agreed to an enhanced transparency framework for action, which includes adaptation. The Agreement also requests each Party to submit and update an "adaptation communication" as appropriate. This paper explores what elements of countries' adaptation responses and progress could be reported under the Paris Agreement so as to better communicate efforts towards enhanced adaptation and resilience. The paper also highlights the potential benefits both at a national and an international level from identifying and collating adaptation-related information. Finally the paper outlines a possible structure of an adaptation communication, and identifies options and associated information needs for the adaptation-related components of the global stocktake agreed to in the Paris Agreement.

JEL Classification: F53, O29, Q54, Q58
Keywords: adaptation, UNFCCC, climate change, Paris Agreement, transparency, adaptation communication

RÉSUMÉ

Communiquer sur les progrès accomplis au plan national et international en matière d'adaptation au changement climatique

L'Accord de Paris, adopté par les Parties à la Convention-cadre des Nations Unies sur le changement climatique (CCNUCC), renforce le cadre international des efforts d'adaptation en établissant un objectif mondial d'adaptation. Au sein de l'Accord, les pays sont également convenus d'un cadre de transparence renforcé pour l'action, qui comprend l'adaptation. Aux termes de l'Accord, chaque Partie devrait aussi, selon qu'il convient, présenter et actualiser une « communication relative à l'adaptation ». Le présent rapport passe en revue les éléments des mesures d'adaptation et des progrès accomplis par les pays qui pourraient être notifiés au titre de l'Accord de Paris, afin d'améliorer la communication sur les efforts déployés en faveur de l'adaptation et de la résilience. Ce rapport montre les retombées positives que pourraient avoir l'identification et le rassemblement des informations sur l'adaptation au plan tant national qu'international. Il propose enfin une structure pour une communication relative à l'adaptation, et recense les options envisageables pour la composante adaptation du bilan mondial prévu dans l'Accord de Paris, ainsi que les besoins d'information correspondants.

Classification JEL : F53, O29, Q54, Q58
Mots clés : adaptation, CCNUCC, changement climatique, Accord de Paris, transparence, communication relative à l'adaptation

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List of acronyms

AC	Adaptation Committee
APA	Ad Hoc Working Group on the Paris Agreement
BR	Biennial Report (from Annex I countries)
BUR	Biennial Update Report (from developing countries)
CARICOM	Caribbean Community
CCXG	Climate Change Expert Group
CIFs	Climate Investment Funds
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
COP	Conference of the Parties to the UNFCCC
EC	European Commission
GCF	Green Climate Fund
GEF	Global Environmental Facility
GHG	Greenhouse Gas
IGOs	Inter-governmental Organisations
INDC	Intended Nationally-determined Contributions
IPCC	Intergovernmental Panel on Climate Change
I&V	(Climate) Impacts and vulnerability
LDC	Least Developed Country
LEG	LDC Expert Group
MRV	Measurable, Reportable and Verifiable
M&E	Monitoring and evaluation
NAI	Non-Annex I (countries)
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NC	National Communications
OECD	Organisation for Economic Co-operation and Development
ODA	Official Development Assistance
PA	The Paris Agreement
PPCR	Pilot Program for Climate Resilience (of CIFs)
SBI	Subsidiary Body for Implementation
SBSTA	Subsidiary Body for Scientific and Technological Advice
SDGs	Sustainable Development Goals
SIDS	Small Island Development States
TNAs	Technology Needs Assessment Reports
UN	United Nations
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

Executive summary

The Paris Agreement, adopted by the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), reinforces the international framework for adaptation action by establishing a global adaptation goal of enhancing adaptive capacity, strengthening resilience and reducing vulnerability. Under the Paris Agreement, countries have also agreed to an enhanced transparency framework for action, including adaptation, with built-in flexibility. However, adaptation reporting is not mandatory, as the Paris Agreement states that Parties "should", as appropriate, submit and update an "adaptation communication" (Article 7.10). Decision 1/CP.21 states that this information "shall" be submitted biennially for all countries other than Least Developed Countries (LDCs) and Small Island Developing States (SIDS) (paragraph 90).

The Paris Agreement also stresses that adaptation reporting needs to avoid creating any additional burden for developing country Parties (Article 7.10). Regular reporting on adaptation is already done under the UNFCCC, including via national communications (NCs). The majority of countries have also included information on adaptation in their intended nationally determined contributions (INDCs) communicated to the UNFCCC. The Paris Agreement has indicated that Parties "should" submit and update "adaptation communications". These communications can be a standalone document or part of other documents such as a nationally determined contribution, a NC, or a national adaptation plan, NAP (Article 7.11). One way of minimising the reporting burden would be to report adaptation communications as part of existing reporting tools (e.g. NCs), and to maximise the overlap between what is included in these reports and information needed for efficient national adaptation planning and implementation.

There are potential benefits both at a national and an international level from identifying and collating adaptation-related information. At a national level, these benefits could include communicating priorities in adaptation-related needs and actions, evaluating progress towards any national goals, and identifying where support for adaptation is needed. While international reporting of such information would require some resources, this is likely to be small compared to those needed to identify and collate the relevant information for national purposes. International reporting of a country's adaptation response may also bring further benefits such as attracting international support for proposed adaptation actions or plans. Increased availability of information on adaptation could also be beneficial to the global community, by helping to identify and disseminate lessons learned in planning, implementing and funding adaptation. Further, the global stocktake of collective progress towards the purpose of the Paris Agreement and its long-term goals would also benefit from adaptation-related information submitted by Parties, and potentially by other organisations. Indeed, there has already been a range of adaptation-related information communicated through NCs and NAPs as well as shared at workshops and meetings within and outside UNFCCC initiatives.

Key issues are thus whether and how adaptation-related information can most efficiently be identified and collated by countries in order to meet their national needs, as well as reported to the international community. This paper explores what elements of countries' adaptation responses could be reported under the Paris Agreement so as to better communicate efforts towards enhanced adaptation and resilience, while avoiding an undue reporting burden.

Many countries communicated information to the UNFCCC in 2015 on their current or planned adaptation responses via their INDCs. National communications (submitted every four years for Annex I countries, and less regularly for most non-Annex I countries) have also provided broad sets of adaptation-related information. More than three-quarters of submitted INDCs have an adaptation component, but their contents vary greatly in terms of their scope, aims, content, clarity, timeline, link with existing policies including mitigation actions, and "measurability".

A possible structure of an adaptation communication is outlined in Table ES1 below, based on information needed to identify, assess and prioritise adaptation options, as well as requests specifically mentioned in the Paris Agreement. The table illustrates the overlap between information requests for NCs and for adaptation communications. This report structure could alternatively be used for the adaptation chapter of a country's NC. Table ES1 also highlights that in several cases the

current UNFCCC transparency framework does not require reporting of information needed to fulfil the purposes of the global stocktake (Article 7.14).

Table ES1. Different adaptation-related information needs and reporting requirements

Possible structure of an adaptation commu-nication*	**Information needed to meet national and global aims**	**Identified by Paris Agreement relating to adaptation commu-nications**	**Included in guidelines for:**		**Needed for global stocktake**
			NCs for AI Parties	**NCs for NAI Parties**	
Section 1: background	*Climate impacts and vulnerability*	×	✓	✓	✓
	Information on resilience	×	×	×	✓
	Information on adaptive capacity	×	×	×	✓
Section 2: Actions and plans	Adaptation plans/strategies	✓	✓	✓	✓(dev'g countries)
	Adaptation priorities	✓	×	✓	×
	Planned adaptation actions and expected results	✓(actions), ×(results)	×	✓	×
	Implemented adaptation actions and their results	✓	✓	✓	✓(dev'g countries)**
	Process to formulate plans and M&E system	×	×	✓	×
Section 3: Goals and progress towards them	*National goals related to adaptive capacity, resilience, vulnerability*	×	×	×	✓(dev'g countries)
	Results from M&E of progress to goals	×	×	✓	×
Section 4: Needs for support for adaptation	Implementation and support needs, and provision of support	✓	✓	✓	✓
Section 5: Further information, e.g. useful for global stocktake	Effectiveness of support for adaptation	×	×	×	✓
	Effectiveness of adaptation actions	×	×	×	✓
	Adequacy of support for adaptation	×	×	×	✓
	Adequacy of adaptation actions	×	×	×	✓

* Topics not explicitly mentioned by the Paris Agreement in the context of an adaptation communication are included in italics.

** The global stocktake shall recognise the adaptation efforts of "developing country Parties".

The Paris Agreement establishes a global stocktake with four adaptation-related components. This includes a review of the adequacy and effectiveness of adaptation and support for adaptation. As countries are not explicitly asked to report on adaptation effectiveness (and as effectiveness is challenging to measure in an objective manner), this renders it difficult to use national communications or adaptation communications to develop a robust assessment of this aspect of the global stocktake. Decision 1/CP.21 gives flexibility to developing countries in reporting on the scope, level of detail and frequency of, among others, their national adaptation response and needs. This means that a qualitative assessment of adequacy, effectiveness and progress towards the global goal could be challenging if it is based only on country-reported information, as this is unlikely to be reported in a timely and consistent manner across countries. If information on adequacy and effectiveness were to be requested from Parties, it would contradict the need to avoid any additional reporting burden for developing countries. The global stocktake could potentially also use information from third parties in its assessment. However, agreeing on the source and role of such information in the stocktake may be challenging as different third-party assessments, e.g. of a country's vulnerability, can vary widely.

1. Introduction

Adaptation is an important part of countries' responses to climate change. The Paris Agreement and associated decision (1/CP.21) under the United Nations Framework Convention on Climate Change (UNFCCC) recognise this, and reinforce the international framework for adaptation action by establishing a global goal of enhancing adaptive capacity, strengthening resilience and reducing vulnerability. The Paris Agreement also states that Parties shall as appropriate engage in adaptation planning processes and the implementation of adaptation actions.

The Paris Agreement and the accompanying decision explicitly indicate that "each Party should … provide information related to climate change impacts and adaptation… as appropriate" (Article 13.8), via an "adaptation communication". Decision 1/CP.21 (paragraph 90) stipulates that provision of information shall be done "no less frequently than on a biennial basis", although least developed countries (LDCs) as well as small island developing states (SIDS) may submit this information at their discretion. Nevertheless, it should also be noted that biennial reporting on adaptation under Article 13 and adaptation communications under Article 7 are not mandatory.

There is significant flexibility provided in the Paris Agreement regarding the form and content of any adaptation communication, as well as its timing. However, the decision also indicates that modalities will be developed in order to "recognise the adaptation efforts of developing country Parties", which is also one of four adaptation-related aims of the global stocktake listed in Article 7.14. This implies that communicated information on adaptation could inform the global stocktake. In order to assess collective progress towards global goals, some degree of consistency and comparability would be helpful in adaptation communications, taking into account the need to limit the reporting burden of Parties and ensuring that information is country-driven.

As outlined in previous OECD and CCXG analyses (e.g. OECD, 2015a; Ellis and Moarif, 2015), identifying and attributing the effects of specific adaptation actions is not straightforward for several reasons. Moreover, while a majority of countries have included some information on adaptation in their Intended Nationally Determined Contributions (INDCs), their scope, timeline and clarity vary considerably. Many INDCs indicate that their country does not yet have systems, methods or indicators by which progress with these adaptation contributions can be identified. Some INDCs also imply that certain indicators may relate to those needed to track progress under the other development processes such as the UN Sustainable Development Goals (SDGs).

This paper explores what elements of countries' adaptation responses could be reported under the Paris Agreement so as to better communicate efforts towards enhanced adaptation and resilience.[1] The paper also outlines a possible structure of an adaptation communication that would build on information included in national reports to the UNFCCC, and identifies options and associated information needs for the adaptation-related components of the global stocktake.

This paper is structured as follows: Section 2 outlines background and context relating to communicating adaptation information under the Paris Agreement. It also discusses possible national- and global-level benefits from identifying, collating and communicating adaptation information. Section 3 discusses what information would need to be gathered in order to obtain these benefits, and highlights how experience to date on reporting such information under the UNFCCC can be built on. Section 4 identifies options for the adaptation-related components of the global stocktake, and assesses their feasibility and resource implications. Section 5 presents conclusions.

[1] A separate CCXG paper (Briner and Moarif, 2016) discusses transparency for mitigation and support in the Paris Agreement.

2. Background and context

The Paris Agreement requests Parties to submit and update adaptation communications.[2] To date, the main international reporting channel for countries' national adaptation responses has been national communications. National communications have been reported approximately every 4 years since 1994 for Annex I countries, and much less frequently for many non-Annex I countries (see Briner and Moarif, 2016, for a summary). Recent (2015) information on countries' current and/or planned adaptation responses has been communicated via their intended nationally determined contributions. In addition, several developing countries have communicated some adaptation information via technology need assessments (TNAs) and national adaptation plans.

There are many possible domestic and international benefits from identifying, collating and communicating information on adaptation progress. Some of these are outlined in the Paris Agreement, including disseminating knowledge and lessons learned, and improving the effectiveness and durability of adaptation actions. Information on progress towards national and international adaptation goals will also inform enhanced implementation of adaptation actions over time. Moreover, national monitoring exercises to generate relevant information for adaptation communications under the Paris Agreement could help to inform reporting for other development agendas such as the UN Sustainable Development Goals (SDGs) and the Sendai Framework for Disaster Risk Reduction. There can also be linkages between such monitoring exercises and other work streams under the UNFCCC, such as work under the Nairobi Work Programme on development and dissemination of information and knowledge.

This section gives an overview of information reported in INDCs (see Annex for more detail) and some background such as relevant outcomes of COP 21 and possible links with the other development agendas. It also outlines some of the national and international benefits from identifying, collating and reporting adaptation information.

2.1 Adaptation components of INDCs

Of 160 INDCs submitted as of January 2016, nearly 80% have adaptation components. However, information contained in these adaptation components varies greatly in terms of: timescale; focus areas/sectors; overarching objectives; qualitative or qualitative indicators about adaptation actions; financial needs; references to other documents (e.g. National Adaptation Plans); and monitoring and evaluation provisions.

The level of variation in information is much greater for adaptation than mitigation. For example, some INDCs include detailed information on adaptation projects or programmes to be implemented, their timeframes, and the general aims and goals of adaptation. Other INDCs are unclear about whether actions mentioned are new or part of broader development actions, what the aims of these individual actions are, whether they are being implemented, and how progress towards them can be identified. A few countries include adaptation undertakings in an annex or an "other information" section, rather than a dedicated section on adaptation contributions. More than a dozen INDCs with adaptation components have dedicated sections that mention adaptation but provide no specific action plans or timeframes for implementation. Furthermore there are examples where adaptation efforts have linkages to mitigation approaches, for instance Antigua and Barbuda where increasing desalination capacity will be achieved through use of renewable energy sources.

Table 1 highlights some key observations relating to the transparency and clarity of adaptation components of INDCs. For each issue, more detailed discussions and examples are provided in the Annex.

[2] Article 7.10 of the Paris Agreement states that: "Each Party should, as appropriate, submit and update periodically an adaptation communication…".

Table 1. Summary of key observations relating to transparency from the adaptation components of submitted INDCs

Issue	Observations
Timeframes	Timescales vary: half of them set the period 2015-2030 as a timeline for their adaptation action. Some have multiple timeframes. About one-third of the adaptation components of INDCs (the adaptation components) do not mention timeframes.
Monitoring and evaluation	Nearly half of the adaptation components mention monitoring and evaluation systems, but most of them indicate that these systems are still being developed.
Indicators to measure progress	Approximately two-thirds of the adaptation components include qualitative indicators. Many fewer countries have quantitative indicators that can be used to assess progress.
Linkages with national adaptation plans	About one-fifth of the adaptation components mention linkages between their adaptation components and their future national adaptation plan processes.
Need for support	Half of the adaptation components indicate a need for international support to undertake (some of) their actions. Some INDCs quantify support needs, while others do not. It is often not clear how costs were calculated or what they include.

2.2 COP 21 outcomes relating to communication and transparency of adaptation information

Several articles of the Paris Agreement and the accompanying COP decision relate to transparency for adaptation. Table 2 outlines articles and paragraphs relevant to communication and transparency regarding information on adaptation under the Paris Agreement. The purpose of enhancing a transparency framework for adaptation action is "to provide a clear understanding of climate change action in the light of the objective of the Convention as set out in its Article 2 … and Parties' adaptation actions under Article 7, including good practices, priorities, needs and gaps, to inform the global stocktake under Article 14" (Article 13.5). The Paris Agreement provides that Parties "should" as appropriate submit and update an adaptation communication, which may include priorities, implementation and support needs, plans and actions regarding adaptation action (Article 7.10).

The Paris Agreement also stresses that communicating adaptation-related information should avoid creating any additional burden for developing country Parties. One way of doing this would be for the enhanced transparency framework to build on the UNFCCC's current transparency arrangements, including national communications, e.g. to allow adaptation communications to form part of current reporting documents such as national communications. How those arrangements would relate to an adaptation communication and an enhanced transparency framework for adaptation will be further discussed in Section 3.

Table 2. Overview of Paris Agreement provisions on communication and transparency of adaptation

Item	Selected content relating to transparency for adaptation
Adaptation (Article 7)	A qualitative global goal on adaptation is established for enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change. (7.1)
	Co-operation on sharing information, good practices, experiences and lessons learned **should** be strengthened. (7.7)
	Parties **shall, as appropriate,** engage in adaptation processes and actions, including monitoring and evaluation as well as learning from plans, policies and action on adaptation. (7.9)
	An adaptation communication **should** be submitted and updated, as appropriate, without creating any additional burden for developing country Parties. (7.10)
	An adaptation communication **may** include each Party's priorities, implementation and support needs, plans and actions. (7.10)
	Adaptation communication **shall be, as appropriate,** submitted through (e.g.) a national adaptation plan, a nationally determined contribution and/or a national communication, as a component of, or in conjunction with, such documents (7.11)
	Global stocktake (detailed in Article 14) **shall**: • recognise the adaptation efforts of developing country Parties; • take into account the adaptation communication in order to enhance the adaptation action; • review the adequacy and effectiveness of adaptation and support; and • review the collective progress made towards the global adaptation goal. (7.14)
Transparency (Article 13)	Adaptation is a focus of an enhanced transparency framework. (13.1)
	The framework **shall** be implemented in a facilitative, non-intrusive, non-punitive manner, respectful of national sovereignty. (13.3)
	The framework **shall** avoid placing undue burden on Parties. (13.3)
	The framework **shall** build on the current UNFCCC's transparency arrangements. (13.4)
	The framework aims to provide a clear understanding of Parties' adaptation actions (e.g. good practices, priorities, needs and gaps) (13.5)
	Each Party **should** provide information related to climate change impacts and adaptation, as appropriate (Article 13.8)
	CMA[3] **shall** adopt common modalities, procedures and guidelines for transparency at its first session. (13.13)
Global stocktake (Article 14)	Global stocktake **shall** be a comprehensive and facilitative mechanism to assess the collective progress towards the purpose and the long-term adaptation goal of the Paris Agreement. (14.1)
	The first global stocktake **shall** be undertaken in 2023 and every 5 years thereafter. (14.2)
	The outcome of the global stock take shall inform Parties, as they update or enhance their actions. (14.3)

The enhanced transparency framework agreed at COP 21 aims to promote transparency, accuracy, completeness, consistency and comparability (paragraph 92, Decision 1/CP.21). However, the diversity of adaptation priorities and plans, as well as of possible criteria to monitor progress, may make it difficult to assess overall progress at a national and a global level in a complete and consistent manner (see, e.g. AC, 2014).

Guidance in the Paris Agreement and the decision relating to the transparency framework for adaptation is relatively vague. The Paris Agreement only states that "(e)ach Party should also provide information related to climate change impacts and adaptation under Article 7, as appropriate". To adopt common modalities, procedures and guidelines for the enhanced transparency framework at the first session of the CMA, the COP has requested the Ad Hoc Working Group on the Paris Agreement

[3] CMA: the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement.

(APA) to consider a range of issues such as flexibility available to countries that need it, consistency in reporting methodologies, functions for lesson sharing, reporting on support (provided and received), and linkages between the Standing Committee on Finance and other UNFCCC bodies (paragraph 94, Decision 1/CP.21).

The global stocktake will be a comprehensive and facilitative mechanism whereby the CMA will assess the collective progress towards achieving the purpose and the long-term goals of the Paris Agreement, including adaptation as well as mitigation action and support (Article 14.1). The CMA currently plans to undertake the first global stocktake in 2023 and every five years thereafter (Article 14.2). The APA is requested to identify sources of input for the global stocktake. Examples include information on the state of adaptation efforts, support, experiences and priorities from submitted adaptation communications; the mobilisation and provision of support; the latest reports of the Intergovernmental Panel on Climate Change; and relevant reports of the subsidiary bodies (paragraph 99, Decision 1/CP.21).

The COP requests the Adaptation Committee and the LDC Expert Group to, with a view to making recommendations to the CMA, consider methodologies for assessing adaptation needs and to develop methodologies for reviewing the adequacy and effectiveness of adaptation and support (paragraphs 42(b) and 45(b), Decision 1/CP.21). COP 21 also adopted the 2016-2018 Adaptation Committee's work plan, one item of which is related to a better use of monitoring and evaluation as a means to learn from actions taken and support provided and received.

The Adaptation Committee has already started considering and elaborating its workplan to 2018 (AC, 2016a). Specific work items include: exploring ways to monitor and evaluate support provided and received for adaptation (in 2017); convening a meeting to exchange views on national adaptation goals and indicators; and the possible relation of such indicators with those for sustainable development and for disaster risk reduction in the context of the Sendai Framework for Disaster Risk Reduction 2015–2030 (AC, 2016b). The Adaptation Committee, together with the LDC Expert Group, will also help to develop modalities and methodologies for two out of the four objectives of the adaptation-related components of the global stocktake (AC, 2016a).

2.3 Other processes for sustainable development agendas

Adaptation is a component of broader development issues such as poverty alleviation, disaster risk management, water resource management, food security and migration. Jordan's INDC, for instance, states that their mitigation and adaptation measures should be linked and also aligned with specific Sustainable Development Goals. In terms of communication on adaptation-related information, it may be useful to explore whether monitoring and reporting exercises under the Paris Agreement could help to inform the work being done under separate but mutually-supportive development agendas (and vice versa). These include the UN Sustainable Development Goals (SDGs)[4] and disaster risk reduction, notably the Sendai Framework for Disaster Risk Reduction 2015–2030.

The work plan of the Adaptation Committee for the period 2016-2018 adopted at COP 21 includes exploring the relation between indicators for climate change adaptation and those for the other processes. This includes for disaster risk reduction in the context of the Sendai Framework (AC, 2015).

The SDGs include a dedicated goal on climate change (Goal 13). A number of other goals also relate to climate change adaptation to various degrees, including, but not limited to, Goals 2 (food security), 3 (health), 6 (water and sanitation), 7 (energy), 9 (infrastructure), 11 (cities), 14 (oceans), 15 (biodiversity, forests and desertification). While there is not a formal link between the Paris

[4] Officially known as: Transforming our world: the 2030 Agenda for Sustainable Development, *https://sustainabledevelopment.un.org/post2015/transformingourworldhttps://sustainabledevelopment.un.org/post2015/transformingourworldhttps://sustainabledevelopment.un.org/post2015/transformingourworld*.

Agreement and the process for UN SDGs, some of the targets under those goals may coincide with aims of adaptation actions in practice. Examples of those targets include:

- Ensuring sustainable food production systems that strengthen capacity for adaptation to climate change (Goal 2).
- Strengthening capacity of all countries for early warning, risk reduction and management of national and global health risk (Goal 3).
- Implementing integrated water resources management at all levels (Goal 6).
- Facilitating sustainable and resilient infrastructure development (Goal 9).
- Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters (Goal 13).
- Ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services (Goal 15).

Measuring progress on SDGs also adopts a multi-level monitoring framework that focuses primarily on national-level monitoring, but also includes global, regional and thematic monitoring aspects. Global monitoring is a vital complement to ensure global co-ordination and support strategies to manage global public goods. How such multi-level monitoring processes may be organised is still an open question (Leadership Council of the Sustainable Development Solutions Network, 2015).

Table 3 is a non-exhaustive list of proposed indicators for SDGs, which can relate to reporting adaptation efforts under the UNFCCC. While there are several similarities in indicators between adaptation and certain SDGs, some INDCs and other documents on national-level adaptation plans seem to adopt a wider range of (and more detailed) indicators than those proposed for SDGs. Discussions on how to track the implementation of actions towards the SDGs are still being carried out as of April 2016, e.g. at the High-level Group for Partnership, Co-ordination and Capacity-Building for statistics for the 2030 Agenda for Sustainable Development (HLG).[5]

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

Goal		Indicators
Climate action	13.2.1	Number of countries that have formally communicated the establishment of integrated low-carbon, climate-resilient, disaster risk reduction development strategies (e.g. a national adaptation plan process, national policies and measures to promote transition to environmentally-friendly substances and technologies).
	13.1.1	Number of deaths, missing people, injured, relocated or evacuated due to disasters per 100,000 people
	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	Percentage of agricultural area under sustainable agricultural practices
	2.4.2.	Percentage of agricultural households using irrigation systems compared to all agricultural households
Clean water & sanitation	6.4.1	Percentage 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	Percentage of cities implementing risk reduction and resilience strategies aligned with accepted international frameworks (such as the Sendai Framework)
Life on land	15.2.1	Forest cover under sustainable forest management

[5] Updated information is available on its website: *http://unstats.un.org/sdgs/hlg/*.

2.4 Benefits from communicating information at national and international levels

There are potential benefits both at a national and an international level from identifying, collating and reporting adaptation-related information (summarised in Table 4). At the national level, the benefits of identifying and collating adaptation-related information can be closely related to filling knowledge gaps in order to enhance domestic actions and co-ordination, and attracting international support for such actions. Such benefits may be gained through countries' national adaptation planning processes as well as processes of preparing national communications. Collecting information for adaptation communications may also help policy makers identify progress towards their national goals or adaptation targets expressed e.g. in nationally determined contributions (NDCs), national adaptation plans or national communications. For instance, information on climate change risk and vulnerability assessments helps a country identify and prioritise its adaptation needs and actions. Since adaptation is a long-term, iterative process, processes of enhancing adaptation actions will greatly benefit from sharing information on negative and positive results and lessons from implementation of current adaptation efforts.

Developing estimates of the amount of finance and types of interventions (e.g. capital investments, capacity building, and technology transfer) necessary for adaptation actions may also help countries inform and attract international support. Some countries have estimated their needs through National Adaptation Programmes of Action (NAPAs) and INDCs, or may do so for their NAPs or NDCs. Better information on national goals, priorities, vulnerability and impacts can help to justify why a particular project or programme seeking international funding is needed to enhance resilience within a country. Section 3 discusses these national aims in more detail.

The aims of communicating information on adaptation at the international level can closely relate to three of the four adaptation-related purposes of the global stocktake under the Paris Agreement. These three purposes are: recognising adaptation efforts of developing country Parties; reviewing adequacy and effectiveness of adaptation action and support; and reviewing progress towards the global adaptation goal. Those aims can also include sharing lessons among countries about good practices and actions that worked less well, as well as the narratives behind these results, which in turn can help to enhance implementation of adaptation action. Much of the information needed to fulfil these global aims is the same as that needed to gain national-level benefits, but also possibly a broader range of information. Further details are discussed in Section 4.

Table 4. Benefits from collecting and communicating adaptation information at national and global levels

National-level benefits	• Communicate the prioritisation of needs and actions • Attract international support • Implement/strengthen adaptation actions • Identify progress towards national goals and/or an NDC • Better co-ordinate & communicate within a country • Monitor & evaluate adaptation actions and plans, and foster lesson sharing within a country
Global-level benefits	• Better understand needs of each country for action and support • Recognise adaptation efforts • Review adequacy, effectiveness of action and support • Review progress towards the global adaptation goal • Share lessons among countries to enhance implementation of adaptation action

3. Communicating national progress on adaptation

This section explores what information would need to be gathered to gain the national-level benefits outlined in Section 2, while avoiding undue burden for communication, and highlights how experience to date on reporting such information under the UNFCCC can be built on. The Paris Agreement indicates both what country adaptation actions could comprise and what an "adaptation communication" could include, along with the channels through which an adaptation communication could be submitted, while leaving the form of an adaptation communication open. Thus, this section summarises: what types of adaptation-related information are already reported to the UNFCCC; how reporting on these different topics can help countries improve their adaptive capacity and increase resilience; how an adaptation communication could be structured to maximise its utility while minimising the extra work needed to develop it.

3.1 Experience gained with communicating national adaptation information under the Convention, and how can this be built upon

Some information related to adaptation is already requested and/or voluntarily submitted to the UNFCCC by countries, e.g. via national communications, NAPAs, Technology Needs Assessments and national adaptation plans. At present, national communications are submitted every four years for Annex I countries, and much less frequently for most non-Annex I countries.[6]

Under the current reporting framework, reporting guidelines for the adaptation components of national communications are more detailed for developing countries. The Paris Agreement strengthens several provisions relating to information provision on adaptation (Table 5 below), and is applicable to all countries.

[6] See Briner and Moarif (2016) for a detailed timeline.

Table 5. Scope of different UNFCCC-based requests relating to adaptation

Issue	**Paris Agreement**		**Guidelines for nat'l communications****		**NAP guidelines** (LEG 2012)
	Adaptation commu-nication	**Adaptation implementation, planning***	**Annex I** (UNFCCC 2000)	**Non-Annex I** (UNFCCC 2002)	
Adaptation actions, undertakings or efforts	Yes – actions "should" be reported (no further details given)	Yes – implementing actions, undertakings, efforts	Yes – outline of actions "shall" be included	Yes – "shall" include a general description of steps taken	(Focus is on adaptation planning/ integration, rather than specific actions)
Adaptation plans	Yes – to be reported (no further details given)	Yes – formulate and implement	Yes – Parties "may" refer to "integrated plans" (for specific areas)	Yes – "may" report on plans	Yes – developing a long-term national adaptation implementation strategy
Impacts and vulnerability (I&V)	No explicit request	Yes – assessing I&V with a view to determining prioritised actions	Yes - shall include info on the expected impacts of climate change	Yes – "should" provide info on vulnerability to adverse impacts of climate change	Yes – countries recommended to report results of new assessments and emerging science
Priorities	Yes	Yes – see above	No explicit request	Partial (to identify most critical vulnerable areas)	Yes – prioritising adaptation in national planning
M&E and learning	No explicit request	Yes	No explicit request	Yes: "encouraged" to provide evaluation of adaptation strategies & measures	Yes, countries are recommended to "monitor and review efforts undertaken" and "reflect lessons learned"
Building resilience	No explicit request	Yes – both for socioeconomic and ecological systems	No explicit request	No explicit request	Yes (implicitly): building resilience is one of the key aims of developing a NAP
Implement-ation and support needs	Yes	No	n/a	Yes (encouraged to provide…a list of projects proposed for financing; may include information on adaptation measures)	Yes – part of the NAP process is assessing and addressing gaps and needs
Process to formulate NAPs etc.	No explicit request	Yes – explicit mention of the process to formulate and implement NAPs	No explicit request	Yes – "may" report on use of policy frameworks for developing strategies	Yes – the NAP process covers compiling and communicating adaptation plans, and integrating adaptation into broader planning.

* The Paris Agreement indicates that "each Party shall, as appropriate" engage in adaptation planning and implementation.
** The guidelines for National Communications were developed in 1999 for Annex I countries and 2002 for non-Annex I countries

3.1.1 Information on climate impacts and vulnerability, resilience, adaptive capacity

An understanding of climate impacts and vulnerability is key to better understanding adaptation-related needs, and therefore in developing adaptation plans and actions, as well as in prioritising and mainstreaming them. Indeed, the LEG (2015) indicates that "undertaking comprehensive climate risk and vulnerability assessments is necessary to be able to design adaptation plans for the medium and long term." Providing information on impacts and vulnerability in national communications is mandatory for Annex I Parties, and is also requested for non-Annex I Parties (UNFCCC, 2002), and an assessment of main vulnerabilities is included in NAPAs. Identifying and assessing information on climate vulnerabilities are also two suggested steps described in the technical guidelines of the NAP process (LEG, 2012).

The Paris Agreement does not include a specific request to report information on impacts and vulnerability in a country's adaptation communication. Nevertheless, country reporting on how they have gone about conducting assessments of impacts and vulnerability could help other countries learn lessons as to how to improve such assessments. As this information is already requested for countries' National Communications, it could be argued that reporting it in an adaptation communication (which the Paris Agreement indicates can also be part of a National Communication) does not constitute an additional burden.

There is a growing body of experience in assessing and reporting on impacts and vulnerability. Many Annex I Parties' National Communications include information on the respective country's efforts related to undertaking national vulnerability assessments, and have identified areas of vulnerability as a result (UNFCCC, 2014). Several developing countries also include detailed descriptions of vulnerability and/or impact assessments in their National Communications (e.g. Bangladesh, MOEF 2002; Ghana, GoG 2015).

As well as outlining what expected impacts and vulnerabilities to climate change are, several National Communications include information on how impacts and vulnerability assessments have been done. For example, Thailand's 2nd National Communication outlines the models used to develop higher resolution climate impact projections (MNRE, 2011). Some national climate/adaptation action plans also include indicators used to assess climate impacts or vulnerability. For example, the 2nd Brazilian National Communication to the UNFCCC summarises information on expected changes under different climate scenarios in the extent of low-risk areas for growing particular crops. It then uses this to identify measures to reduce vulnerability of its agricultural systems (GoB, 2010). In addition, information on good practices and lessons learned relating to assessing climate impacts and vulnerability has been developed by UNFCCC (e.g. UNFCCC, 2009). Information on impacts and vulnerability was included in many countries' INDCs, but often in quite a summarised manner, e.g. outlining the key environmental vulnerabilities of a country.

Information on how a country is strengthening its resilience to climate change is not explicitly requested to be reported in National Communications or in adaptation communications under the Paris Agreement. However, National Communications do encourage countries to report on relevant integrated plans – which may include information on resilience. Information on adaptive capacity is also not explicitly requested in National Communications, although countries are asked to report information on capacity gaps.

3.1.2 Adaptation actions and their relative priorities

Given many countries' large adaptation needs but limited resources, identifying adaptation priorities is important in order to effectively allocate support for adaptation at a national or sub-national level. Working to identify priority actions (or to identify priorities for implementation) can have several benefits at the national level such as helping to increase internal co-ordination, and may also help to attract international support for such actions. Several countries' INDCs identify priority sectors or sub-sectors for adaptation, such as water supply and availability, agriculture or coastal zones. This

would imply that for many countries, reporting on their adaptation priorities would not be an additional burden.

The Paris Agreement indicates that adaptation communications "may" include information on a country's adaptation priorities. This leaves open whether any such information submitted should focus on the priorities themselves, or also include information on how these priorities were determined.

While the LEG technical guidelines for the NAP process recommend that national criteria for prioritising implementation of adaptation are defined, they do not provide suggestions for how this can be done (LEG, 2012). However, some countries or organisations have outlined how they have prioritised different adaptation options (Table 6 below). These usually include multiple criteria, each of which requires an understanding of the context of the proposed action. Thus, some countries explicitly highlight the need for data and information on a country or sector's vulnerability as a first step in prioritising adaptation actions.[7]

Table 6. Examples of criteria used in prioritising adaptation actions at the national level

Possible criteria to prioritise adaptation actions	**Suggested by**
Cost-benefit ratio, economic impacts	EEA[1], Australia
Environmental magnitude of impacts	Australia, Lesotho, Sri Lanka, Tuvalu
Identify development priorities	Sri Lanka
Impact on poverty reduction	Lesotho
Impact on vulnerable groups and resources	Lesotho
Importance of early action to manage risks	EEA, Australia
Long-term sustainability	Ghana, Lesotho, Tuvalu
Multiple-benefit options	EEA, Ghana, Mexico
Political, social, cultural acceptability/impacts	Australia, EEA, Lesotho
Replicability	Ghana
Robustness under a range of climate impacts	EEA, Ghana (resilience of action)
Synergy with other plans, strategies	Lesotho, Tuvalu
Technical feasibility	Tuvalu
Time-effectiveness of actions, timing of impacts	EEA, Australia
Urgency	EEA

Sources: Climate-ADAPT (2014), COAG (n.d.), GoM (2015), GoSL (2011), MNREAL (2007), MNR (n.d.), NCCAS (2012)

3.1.3 Adaptation plans and processes

Developing broad adaptation plans helps countries understand, assess and prioritise their adaptation needs, and is something that the UNFCCC has been encouraging for several years. For example, the Cancun Adaptation Framework (established in 2010 at COP 16) invites all Parties to plan, prioritise and implement adaptation actions (UNFCCC, 2010). Parties agreed at COP 17 in Durban that adaptation planning is a "continuous, progressive and iterative process" (UNFCCC, 2011). This implies that plans will need to be updated to take into account the changing environmental (as well as

[7] The guidelines for producing NAPAs (LEG 2002) contains a flowchart to identify a method by which adaptation actions can be prioritised, but does not suggest specific criterion to be used in prioritisation.

socio-economic) context within a country. It also implies that learning lessons from previous experience is thus a crucial aspect of adaptation planning. The LDC Expert Group has highlighted best practices and lessons learned in addressing adaptation in least developed countries (LEG 2015).

Technical guidelines for establishing a National Adaptation Plan were developed by the LDC Expert Group in 2012 (LEG, 2012). They highlight the significant role that sub-national actors can play in climate change adaptation (see Box 1). The Paris Agreement strengthens the encouragement for adaptation planning by indicating that "each Party shall, as appropriate" engage in it. Indeed, several countries have already established adaptation plans or strategies aiming to mainstream adaptation – independent of requests in the UNFCCC framework. For example, in 2009, Caribbean Community (CARICOM) members established a regional adaptation strategy that aimed to mainstream adaptation into development strategies (CCCCC, 2009). More recently (2011-13), several countries (e.g. Cambodia, Mozambique, Samoa, Tonga, Zambia) have developed a "strategic plan for climate resilience" in the context of the Pilot Program for Climate Resilience, PPCR (CIF n.d.). Cambodia's "Strategic Program for Climate Resilience" includes an action on strengthening institutional capacity for planning and implementing climate actions (CIF, 2011). In addition, 20 of the 28 EU member countries had developed a national adaptation strategy by April 2015 (EU, 2015).

Establishing a national adaptation plan and continuing the NAP process over time can take significant resources and time. Indeed, Burkina Faso, one of the two countries to have submitted a NAP to date (via the UNFCCC's NAP central), indicates that the process of developing a NAP was "long and costly" (CNPP, 2014). The INDCs of several countries indicate that they are in the process of developing a NAP, and imply that this may take several years (e.g. Uruguay and South Africa's INDC indicate that the NAP will be developed by 2020). There can also be a significant delay between developing an overarching adaptation strategy, and a plan to implement that strategy. For example, France established a National Adaptation Strategy in 2006, and it took until 2011 for a National Adaptation Plan to be developed (Climate-ADAPT, 2015). PPCR countries have been allocated USD 1.5 million each in order to develop a resilience strategy (see e.g. CIF, 2010).

While information on a country's adaptation plan "may" be included in its adaptation communication, this is not a requirement, and neither is providing information on the process to develop and implement plans (Art 7.10). However, this latter information is requested within the NAP guidelines, and also encouraged to be reported as part of non-Annex I countries' National Communications. Further, Article 7.9 of the Paris Agreement indicates that countries "shall, as appropriate, engage in" adaptation planning. Including information in an adaptation communication of a process already undertaken may therefore not "increase the burden" on developing countries, while providing an opportunity to recognise their adaptation efforts and to highlight lessons learned (or to learn lessons from others).

Box 1: Role of sub-national adaptation actions

Climate impacts can vary widely within an individual country, as well as between different countries. Appropriate climate adaptation responses may therefore also vary within an individual country. Non-Party stakeholders such as sub-national governments will often have the mandate to develop and implement actions (such as flood protection measures) which can enhance an area's climate resilience. Indeed, some non-Party stakeholders have developed good practice guidance for adaptation in certain types of cities, e.g. C40 has highlighted a 9-step approach to adaptation in delta cities (C40, 2015).

The effectiveness of a country's adaptation response will therefore be improved if there are good links between local adaptation planning and actions and any national plans, strategies or actions. This has been started in some countries, e.g. Nepal, which has established "Local Adaptation Plans of Action" in order to help vulnerable communities decide on their priority adaptation actions (IDS n.d.). States and municipalities in Mexico have also developed adaptation plans (GoM, 2015). Regions and municipalities are also responsible for the implementation of much of Finland's National Adaptation Strategy, and approximately a third of regions/municipalities had an adaptation strategy by 2012 (Luhtala, 2012).

It is also important to ensure that sub-national actors have access to funding for adaptation activities, particularly as the adaptive capacity of different regions within a country may differ. Some climate funds have specific "windows" for funding local adaptation actions. For example, the Bangladesh Climate Change Resilience Fund (BCCRF) includes a USD 10.4 million window for a "Community Climate Change Fund" which is to provide grants for community-based projects (BCCRF, 2012).

Ensuring greater integration between national and sub-national adaptation is a relatively new area. It could therefore be very beneficial for countries wanting to do this if the countries that have done so reported on lessons learned on how best to integrate national and sub-national adaptation actions and plans.

3.1.4 Identifying adaptation-related goals and monitoring and evaluation (M&E) of progress

Information on what progress is being made towards a country's adaptation-related goals will help countries identify if they are on track to meet these aims, and thus if their adaptation plans or actions need to be adjusted. This can therefore help countries strengthen their adaptation actions, if needed. Monitoring and evaluating policies and learning lessons from what went well (as well as less well) can help to improve the effectiveness of adaptation policies as well as their implementation. Indeed, monitoring, evaluation and learning is a key part of the LEG technical guidelines for the NAP process (LEG, 2012).

However, as outlined in several analyses (e.g. OECD, 2015a; ODI, 2015; GIZ, 2015; Ellis and Moarif, 2015) there are significant challenges in monitoring and evaluating individual adaptation actions or plans, and there is no one-size-fits-all response. These challenges are compounded when trying to assess the overall adaptation effects of multiple actions at an aggregated level, as there is no single indicator that can be used to assess the extent of a country's multiple different adaptation actions, approaches and needs – and not always a reliable "baseline" against which effects can be measured (AFD, 2012). Others have highlighted that indicators alone are not always sufficient (or appropriate) to monitor and evaluate progress in adaptation (AC, 2014b).

Further, even when M&E has taken place, results have not to date always been used in a way that maximises learning. Thus, while there is some experience with M&E of individual adaptation actions, this has tended to focus on positive lessons. Learning from what has worked less well is also valuable, but such information is less readily shared (UNFCCC, 2014).

M&E of adaptation often includes qualitative or subjective, as well as quantitative, assessments. Such M&E can include process indicators, as well as outcome indicators. For example, one of the core indicators that the Pilot Program for Climate Resilience use in their evaluations is the extent of integration of adaptation into national and sector planning (CIF, 2012), which is to be done via a qualitative assessment using a standardised scorecard. The recently-prepared EU's "adaptation preparedness scoreboard" is focused on qualitative assessments, e.g. observation systems are in place, whether scenarios are used to assess impacts, and whether fora are in place to facilitate dialogue

between the scientific and policy community (EC 2015). Further, evaluation of some programmes with broad aims (including, but not focused on adaptation) has focused on evaluating the outputs of specific pilot activities: this illustrates the difficulty in conducting broad-based evaluation of impacts of adaptation actions on a country's overall climate resilience and vulnerability (UNDP, 2012).

There is much less experience with M&E of national adaptation strategies and plans, as the majority of these are fairly new. However, both Finland and France have done mid-term evaluations of their adaptation plans. France's mid-term evaluation of its 2011-15 Adaptation Plan found that while 92% of planned actions had been initiated and 60% of them were proceeding according to plan, 35% of actions were now expected to only partially reach their initial objectives (MEDDE 2013). Further, mid-term evaluations have been found to be very useful in helping countries to re-focus work plans and budgets (Luhtala, 2012; UNDP, 2013). Other countries are establishing climate change progress reports (e.g. South Africa, which plans to do this yearly, including a section on monitoring adaptation, DEA 2016 forthcoming). Some countries have also identified monitoring and evaluation indicators (e.g. Comoros – PAG-PNA, 2014), even though they do not yet have a NAP or other national strategic framework in place.

However, many countries do not yet have clear adaptation-related goals (i.e. specific outcomes, timelines, actions at the national or sub-national level). For these countries, it will be extremely challenging to assess and communicate progress towards the aspirational, qualitative or non-time bound aims outlined in e.g. their NCs or INDCs. In addition, as adaptation is very context-specific, countries have different needs and objectives. Barriers to obtaining a clear view on progress towards national adaptation goals may not be a problem at a country level, but would impede the global stocktake from producing an assessment of progress on adaptation at a global scale, if this stocktake is based purely on information submitted by individual countries and is to be conducted in an aggregated manner (see Section 4).

3.1.5 Adaptation support

Reporting on adaptation support is important for several reasons. For developed countries, it will be important to show progress towards targets relating to climate finance, as well as to the balance of climate finance between mitigation and adaptation. For developing countries, many have indicated in biennial update reports, National Communications and/or their INDC what level of support is needed in order to implement their adaptation response. Country reporting on how much support has been received will therefore help in any national assessments of whether support levels meet the needs identified nationally, and if not, what adaptation actions/results are to be expected with the support that has been received. Collecting national-level information on adaptation support needed will help developing countries to identify and quantify what type of support is needed where, information that is also useful to developed countries and other providers of climate support.

Under the UNFCCC, Annex II countries are already required to report biennially on support provided (although they are not required to report on support mobilised). In contrast, reporting by non-Annex I countries on support received was not mandatory. The Paris Agreement continues this bifurcation in some respects by not making reporting on financial, technology transfer and capacity-building support received mandatory (Article 13.10 indicates that developing countries "should" provide this information). However, the Paris Agreement does indicate that developed countries "shall" biennially communicate indicative quantitative and qualitative information on climate finance, technology transfer and capacity building provided to developing country parties, as well as on climate finance mobilised, and that other countries "are encouraged to do so".

Developing country reporting on support needs (finance, technology and capacity building) is more widespread than on support received. This information on support needs is included in various documents that have been prepared inside the UNFCCC framework (e.g. BURs, NCs, NAPAs, TNAs and INDCs) as well as outside (e.g. Strategic Program for Climate Resilience - SPCR, national climate funds). However, information reported within the UNFCCC process on finance needs for

adaptation is patchy for multiple reasons. These include because: identifying needs and associated costs is not a straightforward task and takes resources and time which may not be available; defining the boundaries of what "adaptation" (or adaptation finance) includes is not straightforward and may not have been defined at a national level – which means that different estimates are calculated on different bases; providing information on adaptation needs is not mandatory (see Ellis and Moarif, 2015 for a discussion of gaps in the climate finance reporting framework); and also because not all countries have been able to identify specific finance needs.

However, several developing countries have some experience with identifying support needs for adaptation. For example, this was part of the NAPAs established by LDCs, as well as Technology Needs Assessments, biennial update reports and national communications. Many developing countries have also indicated adaptation support needs for adaptation (including finance) in their intended nationally determined contributions. As there is no single definition of what climate finance (or adaptation) comprises, it is unsurprising that different countries have established their proposals in different ways. For example, some countries' INDCs provide quantified support needs, while others provide qualitative indications. Further, quantified support needs have been expressed differently. For example, India's INDC outlines that it would need USD 206bn for adaptation actions between 2016-30. The Dominican Republic's INDC indicates that it would need USD 358.3m in *incremental* costs for the period 2005-30. Ghana's BUR highlights project-specific cost needs (RoG 2015). Other countries (e.g. Cambodia, in its NC2, DCC 2015) highlights specific and qualitative adaptation-related capacity building needs, while others (e.g. Guatemala, in its INDC) indicate that international adaptation support will be needed, but do not specify how much. This means that it is not currently possible to quantify total needs by developing countries for adaptation finance or other support.

There are also several reasons why it is not straightforward to quantify international support provided or mobilised from developed countries for adaptation. For example, it can be difficult to disentangle "adaptation" from development funding, whether a specific activity could help increase adaptation or not depends on site-specific characteristics, and whether the activity should "count" as adaptation will be influenced by the intent of the project. This complicates an assessment of public climate finance for adaptation. Assessing mobilised climate finance for adaptation is also complicated given the complex financing structures of several adaptation activities and the long time delays between providing support for an adaptation project (particularly in the form of technology assistance or capacity building) and climate finance mobilisation (see e.g. CPI and OECD, 2015 for a more detailed discussion).

Bilateral and multilateral (i.e. public) funding for adaptation has grown since 2010. In 2013-14, adaptation-focused ODA accounted for 25% of total climate-related ODA, and a further 12% of climate-related ODA targeted joint mitigation and adaptation actions (OECD, 2015b). Nevertheless, recent estimates of international adaptation finance indicate that this represented only 16% of total mobilised (i.e. public and private) climate finance in the context of the USD 100bn goal – with a further 7% addressing both adaptation and mitigation goals (OECD, 2015d).

3.2 Proposals for a possible structure and content of an "adaptation communication"

The Paris Agreement provides some guidance regarding what information to include in adaptation communications. As highlighted in Section 3.1, this overlaps to some extent with other information requests relating to adaptation under the UNFCCC. In addition, as highlighted in Section 2.1, there is an extremely large diversity in countries' adaptation responses as outlined in their NC, INDC or other reports. This includes variation in the scope, timeline(s),[8] content, clarity and specificity of adaptation plans and actions. Some INDCs provide specific, quantified adaptation-related goals or targets (with a few INDCs indicating how progress towards these goals will be evaluated) and specified timeframes.

[8] Some individual INDCs contain multiple timeframes for different aspects of their adaptation communication.

While it is important to maintain flexibility in adaptation-related reporting, it may also be useful to provide non-prescriptive guidance on what such reporting could contain. Such guidance could facilitate looking across a wide range of reports, which would in turn facilitate adaptation-related tasks of the global stocktake (discussed in Section 4, below).

Table 7 shows a possible structure of an adaptation communication, and highlights synergies with existing reporting guidelines (e.g. for National Communications or for National Adaptation Plans). This structure highlights information specifically mentioned by the Paris Agreement in the context of adaptation communications, and also includes *(in italics)* other information that could facilitate clarity and understanding. Clarifying what the INDC is proposing, and what adaptation actions are currently being implemented is particularly important, given the current lack of clarity on these topics in the adaptation components of many INDCs at present. Given the need to avoid undue burden on countries for preparing an adaptation communication (Article 13.3), this structure could be used for the adaptation chapter of a country's National Communication.

Table 7. Possible structure of an adaptation communication

Possible structure of an adaptation communication		**Information specifically mentioned in the context of adaptation communications**
Section 1: Background	*Impacts, climate resilience and climate vulnerability*	No (but requested in National Communications)
Section 2: Adaptation actions and plans	Adaptation plans/strategies	Yes
	Adaptation priorities	Yes
	Planned actions and their expected results	Yes
	Implemented adaptation actions and their results	Yes
	Process to formulate plans and M&E system	Only for Non-Annex I Parties (also requested in NAPs)
Section 3: Adaptation goals and progress towards them	*National goals related to adaptive capacity, resilience, vulnerability*	*No (but included in most INDCs)*
	Progress measured in qualitative and/or qualitative indicators; learning	*No*
Section 4: Needs for support for adaptation	Qualitative and/or quantitative needs for support	Yes
	Support provided or received by Parties	Yes
Section 5: Further information, e.g. useful for global stocktake	*Adequacy of support received*	No
	Adequacy of adaptation	No
	Effectiveness of adaptation	No
	Effectiveness of support	No

Table 8 highlights the information needs to meet specific national adaptation-related aims (Section 4 includes a similar table for international adaptation-related aims). There is a good match between these information needs and the information that countries are already requested or able to report to the UNFCCC via National Communications, adaptation communications or NAPs. However, some of these information needs, such as the results from individual adaptation actions or broad adaptation strategies, may be difficult to assess and quantify.

Table 8. Information needs to meet specific national adaptation-related aims

Types of information needed		National aims					
		Communicate priorities in needs and actions	**Attract and inform international support**	**Implement/ strengthen adaptation actions**	**Identify progress towards national goals and/or INDC**	**Better co-ordinate & communicate within a country**	**Monitor & evaluate adaptation actions and plans, and foster lesson sharing within a country**
Background	Climate impacts and vulnerability	✓	✓	✓	✓		✓
	Information on resilience	✓	✓	✓	✓		✓
	Information on adaptive capacity	✓	✓	✓	✓		✓
Adaptation actions and plans	Adaptation plans/strategies	✓	✓	✓			
	Adaptation priorities		✓			✓	
	Planned adaptation actions and expected results		✓			✓	
	Implemented adaptation actions and their results		✓	✓	✓		✓
	Process to establish and implement plans and M&E system			✓			✓
Adaptation goals and progress	National goals related to adaptive capacity, resilience, vulnerability	✓	✓	✓	✓		
	Results from M&E of progress towards goals			✓	✓	✓	✓
Needs	Implementation and support needs		✓	✓		✓	
	Support provided or received			✓	✓		✓
Further information (for global stocktake)	Effectiveness of adaptation support						
	Effectiveness of adaptation						
	Adequacy of support for adaptation						
	Adequacy of adaptation action	(Depends if focusing on current or expected future needs)					

Note: Ticked cells highlight which type of information is needed to meet which aim.

4. Global stocktake – options for how to communicate global progress on adaptation

The global stocktake agreed to in the Paris Agreement includes four adaptation-specific components. These are: recognising the adaptation efforts of developing country Parties; enhancing the implementation of "adaptation action" taking into account adaptation communications; review the adequacy and effectiveness of adaptation and support; review the overall progress in achieving the global adaptation goal. This section explores how the global stocktake could fulfil these aims.

4.1 Recognising the adaptation efforts of developing country Parties

This part of the global stocktake could be relatively straightforward to do in a qualitative and non-comprehensive manner based on information already submitted by countries to the UNFCCC. It could therefore be done without creating any additional reporting burden for developing countries. The Paris Agreement requests the Adaptation Committee and the LEG to jointly develop modalities related to recognising these efforts for the consideration and adoption of the Parties to the agreement. Options for recognising adaptation efforts of developing countries could include:

- An overview indication of the number of developing countries who have developed a NAP and/or who have otherwise communicated about their adaptation undertakings.
- A summary report outlining the types of adaptation activities undertaken, and lessons learned.
- Collating information on adaptation submitted from developing countries into a registry or other knowledge platform.[9]

The resource implications for the actors involved in the global stocktake of these different options vary considerably, as does the user-friendliness and ability to draw out lessons. These are summarised in Table 9 below.

Table 9. Recognising the adaptation efforts of developing countries: options and implications

Type of output	Feasibility	Resource implications	Comment
Qualitative overview	High	Low-Medium	Stocktake could provide a picture of any increase in coverage of individual country adaptation efforts. However, given that the Paris Agreement provides developing countries with flexibility in i.a. the scope, frequency and level of detail of reporting, information would not necessarily show the scope of these efforts or their results.
Summary report	High	Medium	Stocktake could highlight trends and/or frequently-used adaptation actions, key challenges relating to adaptation and adaptation support, and/or partial results.
Collated information	High	Low	Stocktake could cut and paste adaptation-related information from National Communications, Adaptation Communications, NAPs, (I)NDCs or other sources into a registry or other knowledge platform (e.g. similarly to the interactive platform of information from developed countries' biennial reports). This would have the benefit of being comprehensive, but the disadvantage of not looking across countries to bring out key themes or lessons learned.

[9] Article 7.12 of the Paris Agreement indicates that adaptation communications will be recorded in a public registry. If information in adaptation communications is recorded in a manner similar to the "data interface" for Annex I biennial reports, this would facilitate recognising individual aspects of countries' communications.

4.2 Enhancing the implementation of adaptation action

The global stocktake would not be able to directly affect the implementation of adaptation action. This is because the global stocktake is to be undertaken by the COP, which does not have the authority, mandate or funding to undertake specific adaptation actions. Nevertheless, the global stocktake could indirectly enhance adaptation if it can distil information included in countries' adaptation communications (or other information submitted, including that to the UNFCCC) in order to fill knowledge gaps and disseminate lessons learned. Part of the third component of the global stocktake (reviewing the adequacy of adaptation support – discussed below) could potentially also lead to enhanced adaptation action, if it led to increases in funding for adaptation. If the global stocktake increased links to (non-UNFCCC) analyses of lessons learned, it could also help to indirectly enhance adaptation.

Options to enhance the implementation of adaptation action include:

- Establishing a summary of adaptation actions described in adaptation communications, e.g. as prepared for point a) of the stocktake (Section 4.1), in order to synthesise lessons learned from these actions.
- Preparing an expanded summary of adaptation actions and lessons learned, based on information in adaptation communications as well as from third parties (e.g. local-level adaptation practitioners, financiers).
- Increasing the visibility/accessibility of resources that provide lessons on enhancing the implementation of adaptation actions, for example by increasing links to relevant analyses from the UNFCCC website.

Table 10. Indirectly enhancing adaptation implementation: options and implications

Type of output	Feasibility	Resource implications	Comment
Summary & synthesis of country information submitted to UNFCCC	High	Medium	A summary and synthesis could build on the summary of adaptation actions prepared in order to recognise developing country adaptation action. Including a synthesis aspect would help to identify lessons learned (in terms of process, institutions, actions and/or funding), and therefore help to identify promising options for the future.
As above + summary of other relevant analysis	Medium-High	Medium-High	An expanded summary and synthesis could build on the item above, and also include results from relevant analyses by other bodies (e.g. Adaptation Committee), research or other international organisations etc.
Increasing links	High	Low	The stocktake could increase the visibility and/or content of the adaptation knowledge resource hub, already on the UNFCCC website, as well as other adaptation learning sources and lessons learned (e.g. LEG 2015)..

4.3 Reviewing adequacy and effectiveness of adaptation and adaptation support

Reviewing the adequacy and effectiveness of adaptation, and the support provided for it, will be an extremely challenging task to do thoroughly. This is because many countries have not identified in communications to the UNFCCC what their adaptation needs are (in terms of actions and/or support), nor what would constitute effectiveness of such action. And for those countries that have identified needs for adaptation support, this has been done in different metrics and often not in a transparent

manner. While the NAP guidelines include a section on identifying the effectiveness of the NAP process (LEG, 2012), there are no available guidelines for identifying the effectiveness of adaptation actions or plans as a whole. The COP requests the Adaptation Committee and LEG, in collaboration with the Standing Committee on Finance and other institutions, to develop methods and make recommendations to the CMA on how to review the adequacy and effectiveness of adaptation.

Even if all developing countries did communicate specific information on what their adaptation needs were in terms of actions and support in a timely manner, it would still be extremely challenging for the stocktake to produce a quantitative assessment related to adequacy and effectiveness of adaptation and support. This is because:

- It is difficult to quantitatively assess, especially on an aggregate level all four components highlighted as related to this review (adequacy of adaptation, effectiveness of adaptation, adequacy of support provided, effectiveness of support provided for adaptation).

- The "answer" to this review will be influenced by both climate and non-climate factors. For example, population growth and non-implementation of zoning laws can affect the number of people and value of assets vulnerable to flooding (see Helgeson and Ellis, 2015 for a discussion of this). Identifying if adaptation is "adequate" would therefore conflate climate and non-climate factors.

- The "answer" will also depend on subjective factors, such as what the aim(s) of the action are (for a detailed discussion, see Ellis et al., 2013). For example, if a country's INDC is to develop a strategy that integrates adaptation into broader sectoral plans, a measure of effectiveness could be whether an integrated plan is established (however, adaptive capacity and resilience will only be affected if the plan is implemented). Further, adaptation actions are often integrated into broader plans, and it is difficult to assess the "effectiveness" of a multi-pronged action. Moreover, many countries have yet to develop an M&E system for adaptation.

- Given the intertwined nature of adaptation and development, it is difficult to quantify both the support provided for adaptation as well as the support needed for adaptation (see discussion in section 3.1.5).

- In order to assess if support for adaptation is at the levels needed, the international community may need to agree on the scope of international support for adaptation (e.g. whether international support for adaptation should cover incremental costs for actions, total costs for reporting or total adaptation costs). Such definitions have not yet been agreed. Further, National Communications, adaptation communications or other country-specific adaptation information would need to clarify what levels of international support for adaptation are needed. (At present, adaptation support needs presented by countries are patchy and/or out of date, and for those INDCs highlighting quantified support needs, it is not always clear which part of these needs are to be met from national and/or international sources).

The part of the global stocktake focused on review of the adequacy and effectiveness of adaptation and support for adaptation could lead to different outputs. These could potentially include:

- A qualitative assessment of the adaptation efforts of individual countries, based either on official country reports to the UNFCCC, on a country scorecard, or on information from third parties (e.g. Adaptation Committee, research organisations).

- A qualitative assessment of adaptation support, and how this compares to support needs as identified in e.g. NCs, BURs or INDCs.

- Information drawn from third parties on trends in the environmental and economic impacts of climate-related events.

- A quantitative assessment of adaptation support needs, and how this compares to adaptation support provided.

- A review of the effectiveness of adaptation and support for adaptation.

These different outputs would have different information requirements, resource needs, and feasibility. These are outlined further in Table 11. However, none of the options would have high feasibility and be able to provide a comprehensive answer to the issue to be assessed.

Table 11. Reviewing the adequacy and effectiveness of adaptation and adaptation support

Type of output	Feasibility	Resource requ'ts	Comment
Qualitative assessment of adaptation effort	Medium-High	Low-Medium	This could be relatively straightforward to do in a non-comprehensive manner, based on country submissions to UNFCCC (flexibility in reporting timelines would mean that reporting is necessarily patchy in terms of country coverage). However, this item only encompasses part of the focus of this aspect of the stocktake.
Qualitative assessment of adaptation support, needs	Medium	Medium-High	This aspect could identify that X countries had identified some needs for adaptation activities, that Y countries had identified associated support needs and that support provided for adaptation was Z. However, Z cannot be estimated purely from country Biennial Reports, so would need further inputs. Moreover, this output would not identify the adequacy of such support, nor its effectiveness
Trends in the environmental and economic impacts of climate-related events	Medium-Low	Medium-High	This aspect would need to identify sources of proxy from third parties (such as insurance companies) to aggregate levels of damages and costs from extreme climate events, and use this as a proxy for adaptation effectiveness. However, the accuracy of such a proxy may not be very high, such a proxy would not assess the effectiveness of support, and would also conflate climate and non-climate factors.
Quantitative assessment of adaptation support & adequacy	Low	High	Support needs as presented in e.g. INDCs and NCs are not reported in a complete, clear or consistent manner (e.g. total vs incremental costs), so it would be challenging to establish a quantitative estimate. Also, assessing the adequacy of adaptation conflates climate and non-climate factors (Helgeson and Ellis 2015).
Review of effectiveness of adaptation and support	Very low	High	As outlined above, assessing effectiveness of actions is both subjective, and would need to be built on some level of M&E of adaptation – which is challenging, and also not yet available for many countries. Further, it would suffer the same drawbacks related to support needs as outlined above.

4.4 Reviewing overall progress in achieving the global adaptation goal

One of the aims of the global stocktake is to review the overall progress made in achieving the global goal on adaptation. This goal is qualitative, and has three components: enhancing adaptive capacity, strengthening resilience and reducing vulnerability. The Paris Agreement does not specify whether this aspect of the global stocktake will address the three components individually or collectively.

However, the diversity of aims, clarity and coverage of different countries' adaptation responses do not always cover these three components. Further, the diversity of these responses means that "translating" different countries' progress in adaptation into a single unit would be difficult. Indeed, a review of principles for indicator development, selection, and use in climate change adaptation monitoring and evaluation highlighted that "There are no universal metrics or indicators for adaptation" (Climate-Eval, 2015). Thus, this component of the global stocktake is more likely to be qualitative rather than quantitative.

This part of the global stocktake could include:

- Qualitative information based on countries' bottom-up self-assessments via a scorecard.
- Qualitative information based on countries' bottom-up self-assessments via reports to the UNFCCC (e.g. adaptation communication, National Communication).
- Qualitative information based on top-down or bottom-up third-party assessment/analysis (e.g. IPCC assessment reports, region-specific or country-specific analysis such as indices aiming to identify changes in a country's vulnerability or resilience (CAF 2014, Chen et al 2015).

Table 12. Reviewing progress towards the global adaptation goal: options and implications

Type of output	Feasibility	Resource implications	Comment
Qualitative self-assessment (scorecard)	Medium-High	Low-Medium	Several countries and communities have used self-assessment scorecards or scoreboards to assess their progress in one or more areas related to adaptation (e.g. CIF 2012, EEA 2015, UNISDR 2014). This can take less time and fewer resources than preparing detailed adaptation-related information such as National Communications. Using a scorecard to assess progress towards a global goal may therefore lead to greater participation and more timely results, and therefore to an approximate assessment of trends. However, it would be less transparent/more difficult to verify.
Qualitative self-assessment (report)	Medium	Medium-High	Unless adaptation communications are regularly submitted as stand-alone documents (which has not been requested), basing this aspect of the global stocktake on submitted National Communications or NAPs may lead to information being based on patchy and/or out-of-date submissions - particularly for LDCs and SIDs, which have flexibility in reporting and may also be vulnerable to climate change.
Qualitative assessment based on third-party information.	Medium	Low-Medium	Many actors undertake adaptation-related analysis. For example, the IPCC Fifth Assessment Report included detailed region-specific discussions on vulnerabilities and adaptive capacity (see IPCC 2014, although significant uncertainties remain for some regions). Such information could be used to feed into a global stocktake at relatively low resource requirements. Expanding analysis to look at more national and region-specific information would increase the resource implications (and may reduce the political acceptability of results).

Thus, a qualitative assessment of this part of the global stocktake is potentially feasible, and could be supported by the use of third-party assessments, such as those done by the IPCC. However, there can be substantial variations in different third-party estimates, which means that agreeing on which specific tool or estimate to use may not necessarily be straightforward. For example, both the ND-GAIN index and an index developed by CAF aim to identify country-specific rankings and trends in

vulnerability. However, the two different indices give widely different results as well as relative rankings of countries (CAF 2014, Chen et al 2015). Basing this aspect of the global stocktake on country-specific information is likely to lead to a picture that is more patchy, subjective and/or out-of-date.

4.5 Summary of information needs to meet global stocktake and other international aims

Table 13 summarises the information needed in order to meet the four individual tasks of the global stocktake as outlined in the Paris Agreement, as well as to disseminate lessons learned on adaptation between countries. Different sets of information are needed to meet each aim. For some tasks of the global stocktake (e.g. determining the effectiveness of adaptation and of support for adaptation), some of the information needs will be difficult to meet in a comprehensive and objective manner.

Key findings are that:

- The information that may be needed to satisfy national aims could also be used as input to the global stocktake. However, by itself, this information may not be sufficient to meet the eventual demands of the global stocktake and other international aims such as learning lessons on the effectiveness of seeking and using adaptation support.
- Thus, in order to work towards meeting the (sometimes difficult) aims of the global stocktake, extra information may need to be reported by countries, or such information may need to be gathered from third parties.

Table 13. Information needs to meet specific international adaptation-related aims

Types of information needed to achieve the aims		**Global aims**				
		Better understand needs of each country for action and support (part of global stocktake)	**Recognise adaptation efforts (part of global stocktake)**	**Review adequacy, effectiveness of action and support (part of global stocktake)**	**Review progress towards the global adaptation goal (part of global stocktake)**	**Share lessons among countries to enhance implementation of adaptation action**
Background	Climate impacts and vulnerability	✓			✓	✓
	Information on resilience	✓		✓	✓	✓
	Information on adaptive capacity	✓		✓	✓	✓
Adaptation actions and plans	Adaptation plans/strategies	✓	✓			
	Adaptation priorities	✓				
	Planned adaptation actions and expected results					✓
	Implemented adaptation actions and their results		✓		✓	✓
	Process to formulate plans and M&E system		✓			✓
Adaptation goals and progress	National goals related to adaptive capacity, resilience, vulnerability	✓		✓	✓	✓
	Results from M&E of progress towards goals			✓	✓	✓
Needs	Implementation and support needs	✓		✓		
	Support provided or received	✓		✓		
Further information (for global stocktake)	Effectiveness of adaptation support			✓		✓
	Effectiveness of adaptation action	✓		✓		✓
	Adequacy of support for adaptation	✓		✓		✓
	Adequacy of adaptation action	✓		✓	✓	✓

Note: Ticked cells highlight which type of information is needed to meet which aim.

5. Conclusions

Under the Paris Agreement, countries have agreed to enhancing both adaptation and transparency in adaptation actions, and to building flexibility into the transparency framework. The Paris Agreement states that all Parties "should" submit and update an "adaptation communication". The Paris Agreement indicates both what country adaptation actions could comprise and what information could be included in an adaptation communication. The Agreement lists possible vehicles through which an adaptation communication could be submitted (Article 7.11), while leaving the form and timing of an adaptation communication open. The Paris Agreement also stresses that adaptation reporting should avoid creating any additional burden for developing country Parties.

There are multiple benefits both at a national and an international level from identifying, collating and reporting adaptation-related information. At a national level, identifying and collating information could help a country communicate its priority needs and actions, identify progress towards national goals, highlight the need for international support, and better co-ordinate and communicate actions and funding within the country. All these benefits can in turn contribute to enhanced implementation of adaptation actions over time. Increased availability of information on adaptation can also be beneficial to the global community by helping to identify and disseminate lessons learned in planning, implementing and funding adaptation.

Many countries have recently communicated adaptation-related information to the UNFCCC through submission of their "Intended Nationally Determined Contributions" (INDCs). The contents of these INDCs vary greatly in terms of their scope, aims, content, clarity, timeline, link with existing policies (including mitigation actions), and "measurability". This reflects the fact that adaptation is context-specific and changing over time. Only a limited number of adaptation INDCs have specific actions or aims, and quantitative indicators by which progress toward these aims will be assessed. Several other INDCs include qualitative indicators to measure progress and/or indicate that a monitoring system will be developed, but it is not yet clear how progress will be measured through such indicators and systems. This means that many of the current INDCs are likely to face challenges in assessing progress made towards their adaptation-related targets and goals.

Nevertheless, both developing and developed countries have also provided adaptation-related information through National Communications in the past, where information contained is often more comprehensive and detailed than in INDCs. Some developed and developing countries are also reporting (or planning to report) nationally on their progress on adaptation. Reviewing and analysing information already contained in National Communications across countries could inform Parties on how to better collect, report and use adaptation information at both national and international levels. It may also be useful to explore whether monitoring, evaluation and communication exercises under the Paris Agreement could help to inform work on other development processes (and vice versa). These could include work under the separate but mutually-supportive agendas such as measuring progress on the UN Sustainable Development Goals (SDGs) and the Sendai Framework for Disaster Risk Reduction (2015–2030).

National adaptation reporting under the UNFCCC and the Paris Agreement

In order to avoid creating any additional burden for developing countries, key questions would be how adaptation-related information can most efficiently be identified and collated by countries in order to meet their national needs, and how such information can be reported to the international community in order to meet international needs. The answers should be considered bearing in mind different purposes and audiences of such information (Pierre-Nathoniel and Chan, 2016). Transparency provisions under the Paris Agreement are to build on the current system for measurement, reporting and review. Thus, it is timely to explore possible elements of an adaptation communication that is conducive to enhancing the national and global benefits while maximising synergies with existing reporting practices (e.g. National Communications).

Table 14 shows a potential structure of an adaptation communication and types of information that would be needed by countries in order to gain the national and global benefits highlighted above. The table illustrates that there is a good match between the information that countries need to meet national aims on adaptation, information that countries are asked or encouraged to report in their National Communications, and information that the Paris Agreement indicates may be included in adaptation communications. This structure could thus alternatively be used for the adaptation chapter of a country's National Communication to minimise reporting channels. This information also coincides with information identified by the Least Developed Country Expert Group as useful for countries in establishing a National Adaptation Plan.

Table 14 also highlights that there are fewer overlaps between the possible content of individual (country) adaptation communications, and information needed for some of the adaptation aspects of the global stocktake under the Paris Agreement (i.a. reviewing the adequacy and effectiveness of adaptation and support). This implies that achieving these aims of the global stocktake may require further information than that needed purely for ensuring national benefits from identifying and collating adaptation-related information. If this extra information needs to be reported by Parties, it could considerably increase the level of time and resources needed for adaptation reporting, which may not be consistent with the concept of avoiding additional burden for developing country Parties.

Table 14. Differing information needs relating to adaptation reporting tools under the Convention

Possible structure of an adaptation commu-nication*	**Information needed to meet national and global aims**	**Identified by Paris Agreement relating to adaptation commu-nications**	**Included in guidelines for:**		**Needed for global stocktake**
			NCs for AI Parties	**NCs for NAI Parties**	
Section 1: background	*Climate impacts and vulnerability*	×	✓	✓	✓
	Information on resilience	×	×	×	✓
	Information on adaptive capacity	×	×	×	✓
Section 2 Actions and plans	Adaptation plans/strategies	✓	✓	✓	✓(dev'g countries)
	Adaptation priorities	✓	×	✓	×
	Planned adaptation actions and expected results	✓(actions), ×(results)	×	✓	×
	Implemented adaptation actions and their results	✓	✓	✓	✓(dev'g countries)#
	Process to formulate plans and M&E system	×	×	✓	×
Section. 3 - Goals and progress towards them	*National goals related to adaptive capacity, resilience, vulnerability*	×	×	×	✓(dev'g countries)
	Results from M&E of progress to goals	×	×	✓	×
Section. 4 Needs for support for adaptation	Implementation and support needs, and provision of support	✓	✓	✓	✓
Section 5: Further information, e.g. useful for global stocktake	*Effectiveness of support for adaptation*	×	×	×	✓
	Effectiveness of adaptation actions	×	×	×	✓
	Adequacy of support for adaptation	×	×	×	✓
	Adequacy of adaptation actions	×	×	×	✓

* NB – topics not explicitly mentioned by the Paris Agreement in the context of an adaptation communication are included in italics.
# Note that the global stocktake indicates that it is to explicitly recognise the adaptation efforts of "developing country Parties".

Global stocktake and adaptation communications

The global stocktake under the Paris Agreement has four adaptation-related aims, and explicitly references adaptation communications in one of them. Table 15 summarises those four aims of the global stocktake, the ease of achieving each aim, and identifies possible options to conduct the global stocktake. Among four aims of the global stocktake, it would be relatively straightforward to achieve "recognising the adaptation efforts of developing countries". Another aim "enhancing the implementation of adaptation action" can be met indirectly. The other two aims of the global stocktake may be more difficult to achieve (i.e. to review the adequacy and effectiveness of adaptation and support for adaptation, and to review the overall progress towards the global adaptation goal – particularly if this is to be done in a quantitative manner).

It would be difficult to conduct a robust assessment of the adequacy and effectiveness of adaptation and support for adaptation, if it is to be based on country-reported information. This is because countries are not explicitly asked to report on adaptation effectiveness, and effectiveness is challenging to measure in an objective. Further, decision 1/CP.21 gives flexibility to developing countries in reporting on the scope, levels of detail and frequency of i.a. their national adaptation response and needs. Therefore, it is unlikely that information reported will be consistent or timely across countries. Other possible technical or political challenges include: defining what adaptation support comprises; identifying what levels of support would be "adequate" and/or "effective"; and disentangling finance for "adaptation" from development funding. Non-comprehensive, qualitative assessments of the level of adaptation actions and support may be relatively straightforward to carry out at an aggregate level. However, this is not as broad as assessing the adequacy or effectiveness of adaptation and adaptation support at a global level.

Assessments of "the overall progress made in achieving the global goal on adaptation" could also be qualitative rather than quantitative. The reporting flexibility allowed for in individual Parties' adaptation communications is likely to lead to differences in what is reported to the UNFCCC by Parties, and when. This might also make it difficult to use such information to track the progress towards the three individual aspects of the global adaptation goal agreed on in the Paris Agreement (i.e. enhancing adaptive capacity, strengthening resilience, and reducing vulnerability). The typical characteristics of adaptation, which is context-specific, long-term and changing over time, can also impede such assessments – which may explain why assessments of the same issue done by different organisations in different ways can lead to such wide variations in results. Moreover, different countries' adaptation efforts cannot be "translated" into a single unit.

Nevertheless, the global stocktake could indirectly enhance adaptation if it can distil information included in countries' adaptation communications (or other information submitted) in order to fill knowledge gaps and disseminate lessons learned and provide good examples and practices with regards to policies, approaches and integrated planning or mainstreaming of adaptation. Such information will be useful for improving adaptation plans and enhancing adaptation actions, and may also help to improve their effectiveness in countries and could point to potential areas of cooperation. Information useful for the global stocktake may include not only quantitative or qualitative indicators, but also narratives on, for instance, backgrounds, exposures to climate risks, changes in vulnerability/readiness levels, key success factors for achievements, and challenges to further improvement. Information from relevant outside processes (e.g. SDGs and the Sendai Framework on Disaster Risk Reduction) could also inform the stocktake, as appropriate.

Table 15. Aims of the global stocktake, possible options for achieving them, and associated feasibility and resource needs

Aims of the global stocktake	Feasibility of achieving aim	Resource implications	Possible options
Recognising adaptation efforts of developing countries	High: relatively straightforward to achieve	Low-Medium	Qualitative overview indication of the number of developing countries' specific adaptation efforts
		Medium	Summary report of adaptation efforts
		Low	Collated information on adaptation submitted to (e.g.) a registry
Enhancing implementation of adaptation actions	Medium-High (indirect): filling knowledge gaps within and between countries can help, albeit indirectly	Medium	Summary and synthesis of country information submitted to UNFCCC
		Medium-High	The reports above, strengthened by results from other UNFCCC bodies or organisations
		Low	Increasing the visibility and/or content of the adaptation knowledge resource hub(s)
Reviewing the adequacy and effectiveness of adaptation and support for adaptation	Low: difficult to do thoroughly and objectively, without conflating with non-climate issues	Low-Medium	Qualitative assessment of adaptation effort
		Medium-High	Qualitative assessment of adaptation support, needs
		Medium-High	Trends in extreme events & associated damages and responses
		High	Quantitative assessment of adaptation support & adequacy
		High	Review of effectiveness of adaptation and support
Reviewing overall progress in achieving global adaptation goal	Medium-High (if qualitative); Low (if quantitative)	Low-Medium	Qualitative self-assessment (scorecard)
		Medium-High	Qualitative self-assessment (report)
		Low-Medium	Qualitative assessment based on third-party information.

Information needed to gain national and global benefits

Table 16 highlights examples of (i) the information needed to meet specific national adaptation-related aims, and (ii) the information needed to conduct the four individual tasks of the global stocktake as well as lesson learning between countries. As highlighted above, there is a good match between information needed to gain national-level benefits and information that countries are already requested to report to the UNFCCC via National Communications or other types of documents (e.g. adaptation communications or NAPs) as in Article 7.11 of the Paris Agreement. However, some of these information needs, such as the results from individual adaptation actions or broad adaptation strategies, may be difficult to assess and quantify.

Regarding the global stocktake, the information needed to satisfy national aims is insufficient. For one of the global stocktake tasks (e.g. determining the effectiveness of adaptation and of support for adaptation), some of the information needs will be difficult to meet in a comprehensive and objective manner.

In order to work towards meeting the (sometimes difficult) aims of the global stocktake, either extra information will need to be reported by countries, or such information will need to be gathered from other sources, such as the IPCC or other organisations and relevant outside processes. Communicating qualitative information for the global stocktake based on countries' self-assessments via a scorecard and/or reports to the UNFCCC (e.g. adaptation communication, National Communication) may be more feasible for countries than reporting quantitative information. Qualitative information based on third-party assessment/analysis (e.g. IPCC assessment reports) could also help to inform the global stocktake while limiting resource requirements for individual countries. However, there can be wide variations in the results of different third-party assessment/analyses. Thus, given that the outcome of the global stocktake is to inform Parties in updating their nationally determined contributions, identifying which third-party sources of information can be used as input to the global stocktake may not be straightforward to agree upon.

Table 16. National and international benefits of identifying, collating and communicating on adaptation, and associated information needs

Types of information needed		National benefits						Global benefits				
		Commu-nicate priorities in needs and actions	Attract and inform inter-national support	Implement/ strengthen adaptation actions	Identify progress towards national goals and/or INDC	Better co-ordinate & communi-cate within a country	M&E for adaptation actions and plans, and foster lesson sharing within a country	Better understand needs of each country for action and support *	Recog-nise adapt-ation efforts*	Review adequacy, effective-ness of action and support *	Review progress towards the global adaptation goal *	Share lessons among countries to enhance imple-mentation of adaptation action
Back-ground	Climate impacts and vulnerability	✓	✓	✓	✓		✓	✓			✓	✓
	Information on resilience	✓	✓	✓	✓		✓	✓		✓	✓	✓
	Information on adaptive capacity	✓	✓	✓	✓		✓	✓		✓	✓	✓
Adaptation actions and plans	Adaptation plans/strategies	✓	✓	✓				✓	✓			
	Adaptation priorities		✓			✓		✓				
	Planned adaptation actions and expected results		✓			✓						✓
	Implemented adaptation actions and their results		✓	✓	✓		✓		✓		✓	✓
	Process to formulate plans and M&E system			✓			✓		✓			✓
Adaptation goals and progress	National goals related to adaptive capacity, resilience, vulnerability	✓	✓	✓	✓			✓		✓	✓	✓
	Results from M&E of progress towards goals			✓	✓	✓	✓			✓	✓	✓
Needs	Implementation and support needs		✓	✓		✓		✓		✓		
	Support provided or received			✓	✓		✓	✓		✓		
Further information (for global stocktake)	Effectiveness of adaptation support									✓		✓
	Effectiveness of adaptation							✓		✓		✓
	Adequacy of support for adaptation							✓		✓		✓
	Adequacy of adaptation action							✓		✓	✓	✓

* Part of the global stocktake

Note: Ticked cells highlight which type of information is needed to meet which aim.

Annex: Adaptation components of INDCs

Overview

Of 160 INDCs as of January 2016, nearly 80% of them have adaptation components. However, information contained in these adaptation components of INDCs varies greatly in terms of: timescale; focus areas/sectors; overarching objectives; qualitative or qualitative indicators about adaptation actions; financial needs; references to other documents (e.g. National Adaptation Plans); and monitoring and evaluation provisions.

The level of variation in information is much greater for the adaptation components of INDCs than mitigation components. For example, some adaptation components include detailed information on projects or programmes to be implemented; their timeframes; and the general aims and goals of adaptation. On the other hand, others are unclear about whether actions mentioned are new and/or implemented, what the aims of these individual actions are, and how progress towards them can be identified. A few countries include adaptation undertakings in an annex or an "other information" section, rather than a dedicated section on adaptation contributions. More than a dozen adaptation components have dedicated sections that mention adaptation but provide no specific action plans or timeframes for implementation.

About 45 INDCs have overarching adaptation objectives at the national level. Typically, overarching objectives state the importance of undertaking actions to protect the most vulnerable populations or sectors (e.g. agriculture, water supply and biodiversity) and enhancing in-country institutional arrangements to implement such actions. Sri Lanka's INDC explicitly links its national goal to a global adaptation goal by enhancing local climate change adaptation (Sri Lanka, 2015).

Some INDCs stress the need for mainstreaming climate change adaptation activities into national development planning as part of overarching objectives (e.g. Colombia, Gabon, Grenada and Guatemala). For instance, Jordan's INDC states that their mitigation and adaptation measures should be linked and also aligned with specific Sustainable Development Goals. This approach could help countries streamline their effort for monitoring and reporting given that a number of indicators to monitor progress towards SDGs and their targets might overlap with those needed for adaptation.

Timescales of goals, plans and actions expressed in adaptation components of INDCs also vary significantly with many focusing on 2030, but others having end-points ranging from 2015 to 2050. (e.g. Rwanda has communicated a range of adaptation actions to be fully or partially achieved by 2050). Some countries use different timescales for different sectors (e.g. Guinea-Bissau's and Lao People's Republic), while about 40 countries' adaptation components of INDCs have no mention of timeframes.

Nearly half of adaptation components of the INCDs mention monitoring and evaluation systems, but often indicate that these systems are currently being developed. Some INDCs have expressed that they will use existing systems to monitor and evaluate the effectiveness of adaptation actions (e.g. Zambia).

About 70% of INDCs with adaptation components include qualitative indicators by which progress towards their goals can be communicated. Fewer (about 20%) also have quantitative indicators that can be used to assess progress (e.g. Antigua and Barbuda, and Costa Rica). Monitoring points for those indicators in the lifecycles of adaptation actions also considerably vary among the INDCs (i.e. input, output, outcome or impact indicators). Some of the adaptation components of INDCs mainly consist of input or output indicators (e.g. introducing X km of irrigation systems) while others are outcome or impact indicators (e.g. improving water access of populations in the arid area by X thousands people)

About 20% of INDCs with adaptation components mention linkages between their adaptation components with their future National Adaptation Plan processes. Since the NAP processes may include a monitoring and reporting component, its content could inform countries' effort to enhance transparency for adaptation action. Some INDCs (e.g. Brazil and Honduras) refer to their NAPs that they are currently developing, and mention that detailed information on adaptation actions will be provided once the NAPs have been completed.

Timescales

Timescales of goals, plans and actions expressed in INDCs also vary significantly with many focusing on 2030, but others having end-points ranging from 2015 to 2050. For instance, Rwanda has communicated a range of adaptation actions to be fully or partially achieved by 2050 based on the Rwanda's Green Growth and Climate Resilient Strategy that was put in place in 2011.

Some countries use different timescales for different sectors. For instance, Guinea-Bissau's INDC adopts both short-term targets and medium- to long-term targets (i.e. 2025-2030), and each of the timescales has specific adaptation actions associated with it. Other countries use different timescales to communicate different financial needs (e.g. the INDC of Lao People's Republic whereby, for instance, the estimated cost of adaptation until 2030 is indicated for the agriculture sector, and the costs of adaptation for transport and public health are estimated for the period until 2020).

About 40 countries' INDCs have no mention of timeframes for adaptation, which may cause difficulty in implementing and managing adaptation projects, monitoring their progress and evaluating the effectiveness. It will be important for countries to recognise what actions will need to be evaluated in the long run, and what will need more frequent monitoring and evaluation.

Some other INDCs focus on current policies or action plans included in their proposals for National Adaptation Programmes of Action (NAPAs), rather than their future plans (e.g. Equatorial Guinea, Samoa and Democratic Republic of Congo). This may be a sensible approach to building on current practices to save resources for developing INDCs. Nevertheless, given that Parties now recognise that adaptation is a key component of the long-term global response to climate change (Paris Agreement, Art 7.2), all Parties would also be encouraged to consider establishing long-term adaptation actions to enhance adaptive capacity, strengthen resilience and reduce vulnerability.

Monitoring and evaluation

Monitoring adaptation actions has an important role to play in generating information on progress toward specific goals. Evaluation of the progress is also important to regularly revisit and improve the effectiveness of such measures. This is largely due to the relatively long timeframe (e.g. 2030 and 2050) of adaptation planning and implementation, and deep uncertainties faced by decision making on adaptation-related measures (OECD, 2015c).

Nearly half of INDCs with adaptation components mention monitoring and evaluation systems, but often indicate that these systems are currently being developed. Some adaptation components of INDCs have expressed that they will use existing systems to monitor and evaluate the effectiveness of adaptation actions. For instance, Zambia will use the existing monitoring and evaluation frameworks, since the INDC is a part of the national development and planning process for climate change issues, which has already been put in place in the country. Morocco has set up regional monitoring and evaluation systems in Souss-Massa-Drâa and Marrakech Tensift Al Haouz, which aim to monitor and assess vulnerability and the results of adaptation actions to climate change (GIZ, 2014). These systems are expected to be the basis of an institutional arrangement, and extended to a national governance mechanism to oversee the monitoring and evaluation system for adaptation actions in the medium-term. Bangladesh has also indicated in its INDC that it will mainstream adaptation initiatives in a national Monitoring, Reporting and Verification system that is currently under development,

acknowledging that monitoring and evaluation is crucial to ensure the best allocation of resources to enhance resilience.

Quantitative and qualitative indicators to measure progress

About 70% of INDCs with adaptation components include qualitative indicators by which progress towards their goals can be communicated. Fewer (about 20%) also have quantitative indicators that can be used to assess progress. For instance, Antigua and Barbuda sets such targets as "By 2025, increase seawater desalination capacity by 50% above 2015 levels" and "By 2030, all buildings are improved and prepared for extreme climate event". However, some adaptation components of INDCs do not include any indication (e.g. proposed indicators) against which progress can be assessed.

Many of the INDCs have concrete indicators for their actions to be taken in the specified timeframes, yet in some cases it may not be clear what adaptation activities the countries will implement and how they will monitor and communicate progress against those proposed indicators. Indeed, depending on the characteristics of the indictors, it might be challenging for some of the countries to properly monitor progress in their adaptation actions.

Monitoring points for those indicators in the lifecycles of adaptation actions also considerably vary among the INDCs (i.e. input, output, outcome or impact indicators). Some of them mainly consist of input or output indicators (e.g. introducing X km of irrigation systems) while others are outcome or impact indicators (e.g. improving water access of populations in the arid area by X thousands people). For instance, Malawi's INDC adopts mainly qualitative input or output indicators such as action plans for capacity building and policies for supporting construction of climate resilient infrastructure. Vietnam's INDC contains indicators that can be considered to be quantitative impact indicators, such as: decreasing average national poverty rate by 2% per year (and 4% in the poorer districts); at least 90% of city-dwellers and 80% of rural inhabitants to have access to clean water; and increasing the population with access to health care services to 100%.

A number of indicators included in the INDCs seem to relate to those that can be, or have already been, used for monitoring effectiveness of broader development co-operation activities. For instance, Indonesia's INDC takes into account the post-2015 Sustainable Development Goals on, for instance, climate change, food security, and agriculture, amongst others. Moreover, some of the indicators in Thailand's INDC seem to have linkages with their national disaster risk management plans (e.g. strengthen disaster risk reduction measures and reduce vulnerability to climate risks.

Links with National Adaptation Plans or other processes

About 20% of INDCs with adaptation components mention linkages between their adaptation components with their future National Adaptation Plan processes (Box 2). Since the NAP processes may include a monitoring and reporting component, its content could inform countries' effort to communicate adaptation-related information. More adaptation components refer to existing adaptation plans at the national level. In Belarus's INDC, the adaptation component is linked with the country's Strategy for Forestry to Climate Change to 2050, and the Strategy for the Adaptation of Agriculture to Climate Change.

Some INDCs (e.g. Brazil and Honduras) refer to NAPs that they are currently being developed, and mention that detailed information on adaptation actions will be provided once the NAPs have been completed. Adaptation actions listed in some INDCs build on projects communicated through National Adaptation Programmes of Action (NAPAs). Some INDCs outlined actions or projects, which have been proposed in their NAPAs.

Box 2: Monitoring and evaluation framework in NAP processes (Example from Burkina Faso)

Burkina Faso and Cameroon were the very first countries to submit their National Adaptation Plan (NAPs) through the NAP Central. For instance, the monitoring and evaluation section in Burkina Faso's NAP provides tabular formats that outline how to monitor progress in activities to achieve their five priority strategies. The table about monitoring activities include information on:

- Planned activities;
- Implemented activities;
- Implementation rate (%);
- Activities not implemented and;
- Explanation of discrepancies.

Another table provides a format on monitoring of outcomes under the NAP, which includes:

- Outcomes;
- Name of indicator for each outcome;
- Unit of measurement for the indicator;
- Planned level and;
- Implemented level.

Burkina Faso's NAP establishes adaptation objectives and measures by the following sector, and applies different timeframes (i.e. short, medium or long-term) to each of the measures.

- Agriculture
- Livestock farming
- Forestry
- Energy
- Infrastructure
- Food and nutrition security
- Water resources and sanitation
- Disaster management
- Natural ecosystem protection
- Public health protection and improvement

Source: Ministry of Environment and Fishery Resources, Burkina Faso (2015), Burkina Faso National Climate Change Adaptation Plan

Need for support

Approximately 60% of INDCs containing information on adaptation indicate a need for international support to undertake the activities in the contribution. The needs for finance are quantified in some, but not all INDCs with adaptation information. Some of those INDCs with adaptation components that have quantified support needs contain tables that outline detailed action plans and list of necessary support, and information on financial need for each action and/or item of support. Lesotho's INDC, for instance, outlines specific barriers such as the lack of technology, datasets and research capacity; financial needs for adaptation technologies; and institutional arrangement that make choices of livelihood strategies.

While a few INDCs include detailed costing, some include only a headline figure (that may reflect total costs, rather than total incremental costs), without giving underlying assumptions or linking specific levels of support to specific adaptation aims or actions mentioned in the INDC. This means that it will not necessarily be straightforward to identify the specific level of adaptation to be achieved with a specific level of support.

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