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Reporting on capacity-building and technology support under the Paris Agreement: Issues and options for guidance

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Reporting on capacity-building and technology support under the Paris Agreement: Issues and options for guidance

The ideas expressed are those of the authors and do not necessarily represent views of the OECD, the IEA, or their member countries, or the endorsement of any approach described herein.

Justine Garrett (OECD) and Sara Moarif (IEA)
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.

Members of the CCXG are those countries who are OECD members and/or who are listed in Annex I of the UNFCCC (as amended by the Conference of the Parties in 1997 and 2010). The Annex I Parties or countries referred to in this document are: Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, the European Community, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, New Zealand, Norway, Poland, Portugal, Romania, the Russian Federation, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom of Great Britain and Northern Ireland, and the United States of America. Korea, Mexico, Chile and Israel are also members of the CCXG. Where this document refers to “countries” or “governments”, it is also intended to include “regional economic organisations”, if appropriate.

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All OECD and IEA information papers for the Climate Change Expert Group on the UNFCCC can be downloaded from: www.oecd.org/environment/cc/ccxg.htm
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<th>Full Form</th>
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<tr>
<td>APA</td>
<td>Ad Hoc Working Group on the Paris Agreement</td>
</tr>
<tr>
<td>AFOLU</td>
<td>Agriculture, forestry and land-use</td>
</tr>
<tr>
<td>BAEF</td>
<td>Barrier Analysis and Enabling Framework</td>
</tr>
<tr>
<td>BR</td>
<td>Biennial report under the UNFCCC</td>
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<tr>
<td>BTR</td>
<td>Biennial transparency report under the Paris Agreement</td>
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<tr>
<td>BUR</td>
<td>Biennial update report under the UNFCCC</td>
</tr>
<tr>
<td>CBIT</td>
<td>Capacity Building Initiative for Transparency, supported by the Global Environment Facility</td>
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<td>CCXG</td>
<td>OECD/IEA Climate Change Expert Group</td>
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<tr>
<td>CGE</td>
<td>Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention</td>
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<td>COP</td>
<td>Conference of the Parties to the UNFCCC</td>
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<tr>
<td>CTF</td>
<td>Common tabular format</td>
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<td>ETF</td>
<td>Enhanced transparency framework</td>
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<tr>
<td>GCF</td>
<td>Green Climate Fund</td>
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<tr>
<td>GEF</td>
<td>Global Environment Facility</td>
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<tr>
<td>GHG</td>
<td>Greenhouse gas</td>
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<tr>
<td>IEA</td>
<td>International Energy Agency</td>
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<tr>
<td>INDC</td>
<td>Intended Nationally Determined Contribution</td>
</tr>
<tr>
<td>MPGs</td>
<td>Modalities, procedures and guidelines</td>
</tr>
<tr>
<td>NDC</td>
<td>Nationally Determined Contribution</td>
</tr>
<tr>
<td>NC</td>
<td>National communication under the UNFCCC</td>
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<tr>
<td>NGO</td>
<td>Non-governmental organisation</td>
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<td>ODA</td>
<td>Official development assistance</td>
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<tr>
<td>PCCB</td>
<td>Paris Committee on Capacity-Building</td>
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<tr>
<td>TAP</td>
<td>Technology Action Plan</td>
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<tr>
<td>TNA</td>
<td>Technology Needs Assessments</td>
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<tr>
<td>UNFCCC</td>
<td>United Nations’ Framework Convention on Climate Change</td>
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Executive summary

The enhanced transparency framework (ETF) for climate action and support envisaged by Art. 13 of the Paris Agreement is to “build on and enhance” current transparency arrangements under the United Nations Framework Convention on Climate Change (UNFCCC) (Art. 13.3), including Annex I Party biennial reports (BRs) and non-Annex I biennial update reports (BURs). The ETF requires developed country Parties to report on financial, technology transfer and capacity-building support provided to developing country parties, and requests other Parties providing support to do the same (Art. 13.9). The ETF also requests developing country Parties to report on financial, technology transfer and capacity-building support needed and received on a voluntary basis (Art. 13.10).

Current guidance on how to report technology and capacity-building support is quite generic; to date both Annex I and non-Annex I countries have experienced challenges in reporting to the UNFCCC in this area. The development of modalities, procedures and guidelines (MPGs) under the ETF represents an opportunity to enhance guidance for reporting on technology and capacity-building support provided, received and needed in countries’ national reports to the UNFCCC. This is consistent with the aim of providing “clarity on support provided and received by relevant individual Parties in the context of climate change actions” (Art. 13.6).

This paper draws lessons from current reporting by Annex I and non-Annex I countries both within and outside the UNFCCC reporting framework, to provide options that might inform the development of MPGs for reporting of technology and capacity-building support under the Paris Agreement. The paper is intended to inform options to facilitate reporting by both developed and developing country parties, with an emphasis on the latter given the very limited nature of guidance available to these Parties to date. The voluntary nature of developing country reporting need not prevent developing country Parties from having access to useful guidance for reporting.

Experience from current reporting of technology transfer and capacity-building support provided, needed and received suggests that greater clarity on how to distinguish between different types of support in reporting would be useful to Parties, for example. More flexible reporting formats and user-friendly ways of accessing reported information such as through online interfaces would be helpful. There is also some scope to use other reporting processes – and potentially other entities, both inside and outside the UNFCCC – to streamline and optimise provision of information. Gaining an overview of support flows received and provided can be challenging without input from multilateral support channels, while technology and capacity-building bodies may play a greater role in information gathering and sharing. For support needed and received, further guidance to help clarify linkages with a Party’s nationally determined contributions (NDCs) and broader climate policies, in addition to support associated with fulfilling reporting requirements, could be beneficial to assist countries determine the scope of information to report.

The paper offers six options to inform development of MPGs for reporting of technology and capacity-building support, for consideration by Parties:

1. **Providing more guidance and choices to help Parties distinguish reporting of financial, technology and capacity-building support**, should Parties wish to pursue disaggregated reporting. Parties could consider tagging the use of climate
finance in support of technology transfer and capacity building, and including financial information relevant to technology transfer and capacity-building support alongside reporting of financial support provided, received and needed. Parties could continue to separately report qualitative, non-financial information on technology and capacity support provided, needed and received, including potentially via CTF tables and/or targeted case studies providing specific insights.

2. **Framing reporting of support needed and received in terms of their contribution to Parties’ climate actions**, primarily their nationally determined contributions (NDCs), for both financial and non-financial information. Alongside support needs and support received relating to preparing reports and participating in the transparency framework, a Party’s NDC and the policies it wishes to implement to achieve its NDC could help it identify relevant support needs and support received. A set of guiding questions in tabular form could potentially help countries frame reporting based on a given policy action (e.g. What do I want to do? What support do I need to achieve this? Which implementing entities need the support and in what time period?).

3. **Having more detailed guidance for both developed and developing country Party reporting of technology and capacity-building support**, including to facilitate a more consistent use of key terminology and clearer reporting. Parties could consider introducing CTF tables to support developing country reporting on qualitative aspects of technology and capacity-building support.

4. **Enabling more flexible reporting tools and more comprehensive and accessible online interfaces for technology and capacity-building support**, to facilitate reporting on support provided and received, along with access to this information. Parties could build on existing online platforms managed by the UNFCCC, such as the capacity-building portal, to host technology and capacity-building information.

5. **Examining the role of other bodies and entities in providing information that may complement what Parties can report under the UNFCCC**, including to facilitate collective assessment processes such as the global stocktake. The Paris Committee on Capacity-Building and Capacity Building Initiative for Transparency are two fora whose mandates may position them to play a role in reporting, and identifying other potentially relevant entities. For example, multilateral and bilateral support providers might be more actively encouraged to communicate to the UNFCCC on activity-level support provided to developing country Parties.

6. **Building on existing information-gathering exercises on capacity-building and needs assessment to facilitate reporting**, in a similar fashion to the development and evolution of the Technology Needs Assessment (TNA) and Technology Action Plan (TAP) processes. The TNA and TAP processes are of direct value to reporting under the UNFCCC in enabling countries to identify support needs related to technology. Conversely, the mechanisms in place under the Convention to enhance provision of capacity-building support have not traditionally resulted in the systematic, structured provision of information on capacity-building support needed that might support the ETF, beyond that provided in national reports.

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1 This option is linked to the option outlined immediately above, focusing on existing bodies and entities, and complementing the process-focused option outlined in point no.4.
1. Introduction

The enhanced transparency framework (ETF) for action and support envisaged by Art. 13 of the Paris Agreement requires developed country Parties to report on financial, technology transfer and capacity-building support provided to developing country parties, and requests other Parties providing support to do the same (Art. 13.9). The ETF also requests developing country Parties to report on financial, technology transfer and capacity-building support needed and received on a voluntary basis (Art. 13.10).

In addition to helping to “build mutual trust and confidence and promote effective implementation” (Art. 13.1), one purpose of the Paris Agreement’s enhanced framework for transparency is to “provide clarity on support provided and received by relevant individual Parties in the context of climate change actions” (Art. 13.6). Current guidance on how to report technology and capacity-building support provided, received and needed under countries’ national reports to the United Nations Framework Convention on Climate Change (UNFCCC) is quite generic. Reporting in these areas to date has proved challenging for both Annex I and non-Annex I countries. The development of modalities, procedures and guidelines (MPGs) under the Paris Agreement’s transparency framework provides an opportunity to enhance guidance in reporting on technology and capacity-building support provided, received and needed in countries’ national reports to the UNFCCC, in line with the aims specified in Art. 13.1.

The Paris Agreement’s framework is to “build on and enhance” current transparency arrangements under the Convention (Art. 13.3), including Annex I Party biennial reports (BRs) and non-Annex I biennial update reports (BURs). This paper draws lessons from current reporting both within and outside the UNFCCC reporting framework to provide options that might inform the development of MPGs for reporting of technology and capacity-building support under the Paris Agreement (Art. 13.9, 13.10, 10 and 11). The paper follows prior work by the Climate Change Expert Group (CCXG) on other aspects of the ETF, including reporting related to national inventory reports, tracking progress with nationally determined contributions, and finance provided, needed and received (see for example (Vallejo, Moarif and Halimanjaya, 2017[1]; Ellis and Moarif, 2015[2]).

The paper dedicates more space to exploring how future MPGs could facilitate voluntary reporting of support received and needed by developing country Parties, given very

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2 While other Parties that are not developed countries but that provide support to developing countries are encouraged to report on technology transfer and capacity-building support provided under Article 13.9, reporting arrangements for these countries will not be separately addressed in this paper. The assumption is that these Parties will be encouraged to use the MPGs prepared for developed countries, as they see fit. This assumption is reflected in the informal note prepared by the co-facilitators of the Ad Hoc Working Group on the Paris Agreement (APA) agenda item on the MPGs for the transparency framework for action and support at the 23rd Conference of the Parties to the UNFCCC (COP23) (see paragraphs E.7.2 and E.9.2) (APA agenda item 5 co-facilitators, 2017[42]).
limited guidance on this topic to date. In the spirit of the ETF’s emphasis on facilitating improvement and promoting effective implementation, continued voluntary reporting of this information by developing country Parties is compatible with having access to useful guidance for reporting. To date, reporting guidance has been less specific when dealing with information to be reported voluntarily.3 Improved reporting of capacity-building and technology transfer could have significant benefits for developing countries at the national level, for example by ensuring that appropriate support is targeted to priority actions, and by facilitating the planning, implementation and monitoring of domestic measures (Ellis and Moarif, 2015; Briner and Moarif, 2017).4 The potential benefits of enhanced transparency and improved reporting need to be balanced with avoiding placing an undue reporting burden on Parties and the need to recognise Parties’ different capacities, explicitly acknowledged in the Paris Agreement (Art. 13.1 and 13.3).

The paper starts by looking at existing arrangements for Annex I country reporting on technology and capacity-building support provided, and main lessons learnt (Section 2). Section 3 undertakes the same exercise with respect to voluntary reporting by developing country Parties of capacity-building and technology transfer support needed and received. Section 4 provides options for how reporting of technology and capacity-building support might be enhanced under the Paris Agreement. Section 5 concludes, summarising key issues related to the reporting of information on support for technology transfer and capacity building, and providing overarching options to inform development of the MPGs.

3 A number of developing country representatives at the March 2018 CCXG Global Forum on the Environment and Climate Change indicated a desire for further guidance for reporting on support received and needed, see www.oecd.org/environment/cc/ccxg-globalforum-march-2018.htm

4 Equally, improved tracking and reporting systems driven primarily by domestic considerations such as promoting alignment of policies, consolidating governance mechanisms for multi-sectoral action and driving cross-ministry understanding on international commitments, processes and definitions of support may have secondary benefits for the purposes of the Paris Agreement’s enhanced transparency system (Meza, 2018; Awad, 2018).
**Box 1. What are technology transfer and capacity-building?**

In the UNFCCC context, the term “technology transfer” encompasses the entire mix of networks, policies, institutions and capabilities that are a necessary part of developing and deploying technologies for climate change mitigation and adaptation.

According to the IPCC, technology transfer is a “broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change amongst different stakeholders” (IPCC, 2000[4]; IPCC, (n.d.)[5]). The term emphasises the notion of exchange (“diffusion of technologies and technology cooperation across and within countries”) and local capacity development (“the process of learning to understand, utilize and replicate the technology, including the capacity to choose and adapt to local conditions and integrate it with indigenous technologies”).

The IPCC definition includes both “hardware” (e.g. installations) and “software” (e.g. operational, manufacturing and innovation capabilities),\(^5\) to which innovation researchers add the category of “orgware” (institutional and policy capabilities) (De Coninck and Bhasin, 2015[6]), pointing to the necessarily integrated nature of capacity-building and technology transfer.

The IPCC definition is implicit in the manner the UNFCCC established the technology framework in 2001 (Decision 4/CP.7), outlining and defining a set of measures to enhance technology access and transfer (needs assessments, technology information, enabling environments, capacity-building, mechanisms). Parties further underscored technology development at COP13, adding four sub-themes to enhance implementation of the “mechanisms” theme (Decision 3/CP.13). Current BUR reporting guidance also request Parties to report on support used for endogenous technologies.

The UNFCCC BR guidelines frame capacity building as support responding to “existing and emerging capacity-building needs identified by non-Annex I Parties” (Decision 2/CP.17). The framing reflects that there is no clear definition of capacity building in the UNFCCC system, as well as the need for flexibility to respond to different country contexts. The capacity-building framework established by the Marrakesh Accords thus focuses on the aims of support: capacity-building should “assist developing countries to build, develop, strengthen, enhance, and improve their capabilities to achieve the objective of the Convention through the implementation of the provisions of the Convention” (Decision 2/CP.7).

Capacity building is generally accepted to refer to external intervention in support of capacity, as opposed internal processes (Ellis et al., 2015[7]) and can target a range of actors and systems (e.g. individuals, institutions, broader economic and regulatory capacity). OECD analysis in the context of the Organisation’s Development Assistance Committee refers to processes to “develop, enhance and organise…systems, resources and knowledge” (OECD, 2006[8]).

\(^5\) The IPCC cites “equipment to control, reduce or prevent anthropogenic emissions of greenhouse gases in the energy, transport, forestry, agriculture, and industry sectors, to enhance removals by sinks, and to facilitate adaptation” as examples of hard technologies. Examples of soft technologies include capacity-building, information sharing or training and research initiatives.
2. Learning from current experience with reporting: technology and capacity-building support provided

The Paris Agreement’s transparency framework is to explicitly “build on and enhance” current transparency arrangements under the Convention (Art. 13.3), including Annex I Party biennial reports (BRs). This section draws out relevant experience from current reporting to identify what practices or information could be “built on”, and what recurrent challenges may help identify areas that could be “enhanced” in future reporting.

2.1. Overview of current reporting requirements

Current requirements for provision of information relating to climate support under the United Nations Framework Convention on Climate Change (UNFCCC) differ between Annex II countries and the broader set of Annex I countries. Only the 23 Annex II countries and the European Union are required to report on technological support to non-Annex I countries. Reporting occurs through both national communications (NCs) and BRs.

The guidelines on reporting NCs and BRs require Annex II countries to provide information on new and additional measures implemented or planned since their last NC or BR to promote climate-friendly technology transfer, access and deployment, and to support non-Annex I Party endogenous capacities and technologies (Decision 4/CP.5; Decision 2/CP.17). The requirements reflect the technology transfer obligations of Annex II Parties under Art. 4.5 of the Convention. To the extent possible, Annex II Parties are to specify the “recipient country, the target area of mitigation and adaptation, the sector involved and the sources of technology transfer from the public or private sectors” (Decision 2/CP.17), and make the distinction between public and private sector activities. Decision 19/CP.18 sets out common tabular format (CTF) for BRs, including for reporting on provision of technology development and transfer support (CTF Table 8), that reflects these requirements. “Where feasible”, Annex II Parties shall report success and failure stories related to technology transfer.

In addition to information on technology transfer, the current UNFCCC reporting framework requests Annex II Parties to report “to the extent possible” on provision of capacity-building support to non-Annex I Parties relating to mitigation, adaptation, and technology development and transfer. Parties should provide information at the individual measure and activity level, including the programme or project title and a description (Decision 2/CP.17). CTF Table 9 is to be used for the purposes of reporting on capacity-building support.

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6 UNFCCC Annex II countries are Australia, Austria, Belgium, Canada, Denmark, European Union, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.
building support (Decision 19/CP.18). A number of other Decisions encourage Parties to report on support efforts, including in the context of the framework for capacity building in developing countries (e.g. Decision 2/CP.10). Table 1 provides an overview of reporting requirements on technology and capacity-building support provided to non-Annex I countries. See also Box 1, which addresses the use of the terms technology transfer and capacity building in the UNFCCC context (see Section 1), and Annex I, which provides an overview of Annex II country reporting in these areas to date.

Table 1. UNFCCC reporting requirements for technology transfer and capacity-building support provided

<table>
<thead>
<tr>
<th>Issue</th>
<th>Annex II BR</th>
<th>Annex II NC</th>
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<tbody>
<tr>
<td>Technology transfer</td>
<td>Annex II Parties shall provide information on measures to promote, facilitate and finance transfer of, access to and deployment of climate-friendly technologies</td>
<td>Annex II Parties shall report details of measures promoting, facilitating and financing transfer, distinguishing between public and private activities, and activities for financing technology access</td>
</tr>
<tr>
<td></td>
<td>Provision of information “to the extent possible” under CTF Table 8 on recipient country, target area of mitigation and adaptation, sector involved and sources of funding/ entity undertaking activity (public or private)</td>
<td>Reporting “where feasible” of activities including title and description, purpose, recipient country, sector, total funding, and success and failures, using Table 6</td>
</tr>
<tr>
<td>Capacity-building</td>
<td>Annex II Parties shall provide “to the extent possible” information on provision of capacity-building support responding to existing and emerging capacity-building needs</td>
<td>Annex II Parties shall report steps taken to support development and enhancement of endogenous capacities of developing countries</td>
</tr>
<tr>
<td></td>
<td>Reporting “to the extent possible” under CTF Table 9 on recipient country, target area of mitigation, adaptation and technology development and transfer, and programme or project title and description</td>
<td></td>
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</table>

Source: Adapted from (Ellis and Moarif, 2015[2]).

2.2. Lessons from current reporting experience under the UNFCCC

Article 13.13 of the Paris Agreement explicitly flags experience from transparency arrangements under the Convention as relevant to informing the development of modalities, procedures and guidelines (MPGs) for the transparency framework that will apply from 2020. While under existing arrangements Parties report on technology transfer and capacity-building support provided through both NCs and BRs, this paper will examine current experience based on biennial reporting. BR guidelines are more recent and specific, and reporting will continue to take place biennially under the Paris Agreement’s transparency framework. A number of challenges emerge from Annex II country biennial reporting on technology and capacity-building support, and the more limited reporting by Annex I Parties outside this group. Technical reviews of second BRs considered that less than half (11 of 24) of Annex II countries provided complete information on provision of support to developing country Parties.

Previous work by the CCXG has highlighted that reporting under current arrangements is often qualitative, as opposed to quantitative, and lacking in detail (Ellis and Moarif, 2015[2]).

7 There are no reporting requirements for Annex I Parties not listed in Annex II for either technology transfer or capacity-building support.
In their second BRs, Annex II Parties generally did not provide information on finance corresponding to capacity-building support reported, for example (UNFCCC, 2016\textsuperscript{[9]}); this trend has by and large continued in third BRs. One explanation could be the relatively generic and high-level nature of existing guidance. CTF Tables 8 and 9, on the provision of technology and capacity-building support respectively, do not explicitly request reporting of funding provided as part of measures listed. In addition, CTF Tables for reporting on financial support do not require indicating whether capacity-building or technology elements are included. Clear measurement and reporting guidance, underpinned by clear definitions and methods, can help boost transparency and completeness of reporting (Ellis and Moarif, 2015\textsuperscript{[2]}).

Enhancing transparency and completeness of information reported may require going beyond improved reporting guidance. A need for methodological improvements to help measure specific information, improved data collection and increased monitoring and evaluation capacity at the national level can all influence countries’ ability to report. “Nearly half” of Annex II Parties raised issues arising from reporting on technology transfer support in the context of second BRs, including absence of relevant “statistical markers” (UNFCCC, 2016\textsuperscript{[9]}). In addition, there are relatively few metrics to monitor technology development and diffusion, while metrics to assess capacity development are numerous and highly context specific (Ellis et al., 2015\textsuperscript{[7]}).

Country experience also demonstrates that it can be challenging to clearly distinguish technology and capacity-building support from provision of climate finance for the purposes of reporting, given that finance can be applied in the pursuit of both these ends (Corfee-Morlot, Guay and Larsen, 2009\textsuperscript{[10]}; Ellis et al., 2015\textsuperscript{[7]}). Indeed, technology and capacity-building support is sometimes reported in financial terms (Corfee-Morlot, Guay and Larsen, 2009\textsuperscript{[10]}). This is logical given that support for technology acquisition, for example, may often take the form of finance available for that acquisition. As an illustration, a GCF-funded adaptation project uses financial resources to cover costs of identifying criteria for a procurement process, acquiring and installing irrigation pumps, training people to operate and maintain them, and assessing energy savings from the use of the pumps (GCF, 2017\textsuperscript{[11]}).

Capacity-building can also play an integral role in effective financial and technology transfer support (Ellis et al., 2015\textsuperscript{[7]}). The UNFCCC’s compilation and synthesis of second BRs notes that some Parties provided information on capacity-building support as part of reporting in other areas rather than as an isolated activity, flagging difficulties arising from capacity-building’s “cross-cutting” nature (UNFCCC, 2016\textsuperscript{[9]}). Switzerland notes that most projects supporting developing countries contain both capacity-building and technology transfer elements and that it would not “do justice to the integrated approach underpinning Switzerland’s climate change interventions” to single out different components of support in reporting (Nauer, Blatter and Schwager, 2016\textsuperscript{[12]}; Blatter et al, 2018\textsuperscript{[13]}). Its biennial reports provide illustrative project examples rather than seeking to systematically dissect and report on capacity-building and technology transfer elements of projects. Switzerland does not complete either CTF Tables 8 or 9. Similarly Denmark in its third BR provides project examples demonstrating its “integrated approach” to capacity-building and technology transfer support “as part of its overall climate support portfolio” (Danish Ministry Of Energy, 2017\textsuperscript{[14]}).

The UNFCCC biennial reporting guidelines explicitly recognise the links between capacity-building support and support for technology development in requesting Annex II Parties to report on provision of capacity-building relating to technology development.
and transfer (UNFCCC, 2012[15]). Most of the elements the UNFCCC outlines as essential for effective technology transfer are fundamentally part of strengthening capacities for technology development and use (sharing information, creating enabling environments, and assessing needs). In addition, an important aspect of technology transfer involves transfer of knowledge and development of an institutional framework (the “software” and “orgware” dimensions of technology respectively, as outlined in Box 1). The overlap between capacity-building and technology transfer is particularly strong in the case of least developed countries and less developed countries, where technology development and transfer is best achieved through tackling broader issues related to absorptive capacity that are not necessarily climate focused (Dechezleprêtre, Glachant and Ménière, 2013[16]). From an institutional perspective, the UNFCCC system vacillates between treating finance, technology and capacity-building aspects of support in a distinct or integrated manner (Ellis et al., 2015[7]).

In addition to distinguishing between different forms of support, it can difficult for a Party to delimit technology and capacity-building activities that are relevant to climate from broader activities. In their second BRs, most Parties pointed to the important role of capacity-building in official development assistance (ODA). As ODA-supported activities potentially relevant to building capacity for climate change activities can be quite extensive, reporting in BRs may only present a partial picture of such support. Capacity-building support in adaptation is increasingly linked to support for broader development priorities, for example, recognising the need for enhanced capacities across a broad set of economic actors. Donors integrate capacity-building into all funding programmes as a matter of good development practice, making support for climate-related capacity-building more difficult to independently track and report (Ellis et al., 2015[7]). Germany notes in its third BR that “technology transfer and capacity-building are components of virtually all of the German government’s bilateral cooperation projects and cannot be categorised separately” (Federal Ministry for the Environment, Nature Conservation, 2017[17]).

The predominant role of the private sector in driving technology development and transfer can also complicate reporting, because governments may have only a partial view of relevant activity (Ellis et al., 2015[7]). Denmark raises this challenge in the context of its biennial reporting; its second BR does not distinguish between public and private sector activities (UNFCCC, 2016[18]). The country’s third BR reports on publically-financed projects only (Danish Ministry Of Energy, 2017[14]), following a recommendation in the report of the technical review of its second BR that Denmark should distinguish between public and private sector activities to the extent possible. The majority of Annex II Parties therefore report predominantly on activities wholly-funded by the public sector, with less than half providing information on private-sector projects and activities implemented jointly by the public and private sectors (UNFCCC, 2016[9]).

2.3. Implications for arrangements under the Paris Agreement

The Paris Agreement’s proposed enhanced transparency framework (ETF) expands the scope of Parties required to report on technology transfer and capacity-building support provided: Art. 13.9 mandates all developed country Parties to report, rather than Annex II countries only. “Other Parties” that provide support (i.e. countries that are not “developed”, but that may provide support to other developing countries) are also invited to provide information.
Parties are to continue to report at least biennially under the Paris Agreement’s reporting regime (Paras. 90 and 92e, Decision 1/CP.21), which is to supersede current reporting arrangements (Para. 98). Parties should maintain “at least” the quality of current reporting (Para. 92e), but the objective of building on and enhancing the transparency arrangements under the Convention (Art. 13.3) implies going beyond existing efforts. So too do the aims of providing clarity on support provided by Parties and informing the global stocktake under Art. 14 (Art. 13.6), promoting effective implementation and boosting mutual trust (Art. 13.1).

The extension of Parties required to report under the Paris Agreement should in itself help enhance completeness of information on support provided across Parties in the context of climate change actions (Art. 13.6). In addition, the lessons drawn from current experience with reporting have the following implications for the development of reporting MPGs under the Paris Agreement’s ETF, and how they might further increase transparency:

- Given the way support is delivered in the real world, it will continue to be challenging for Parties to differentiate technology and capacity-building support from climate finance in particular, but also as between each other. Nevertheless, more specific guidance may help Parties report technology and capacity-building support more completely and consistently.

- Parties may also need additional guidance to delimit the scope of the activities they include, given that distinguishing climate-related support from broader socio-economic or environmental initiatives will remain challenging. Further guidance may assist Parties avoid simply reporting a series of activities without a clear sense of how these facilitate implementation of climate-related objectives.8

- MPGs could facilitate greater reporting of quantitative (as opposed to qualitative) information, whether on relevant financial support or other specified indicators of technology transfer and capacity-building activities.

- There will likely be limitations on the information that can be reported under the Paris Agreement’s transparency framework, particularly for the purposes of informing the global stocktake. This is due to governments’ partial view of technology development and transfer activity, and lack of visibility on the use of multilateral funds to which they may contribute.

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8 Parties that report to the OECD DAC use the Rio marker system, which advises on “marking” official government flows to developing countries that are relevant for climate change. Many of these Parties use the information reported to the DAC as a basis for reporting to the UNFCCC. For Parties that do not report to the DAC (including voluntarily), a system to help identify climate-relevant support flows may be helpful, and could be reported on transparently. How Parties use the DAC marking systems for UNFCCC reporting does vary, and work is currently underway to improve transparency between Rio marker data and reporting to the UNFCCC. One proposal is to include additional columns in the reporting system to allow reports to indicate on a voluntary basis whether individual activities are included in reports to the UNFCCC, whether this is done at the commitment or disbursement level, and how much (Vallejo, Moarif and Halimanjaya, 2017(1)). The UNFCCC is also currently exploring ways that links could be created between climate finance reporting to the Convention and to other processes more broadly: see for example https:// unfccc.int/files/cooperation_and_support/financial_mechanism/standing_committee/application/pdf/draft_bn_on_mrv_scf14_2709.pdf.
3. Learning from current experience in reporting: technology and capacity-building support received and needed

The mandate of building on and enhancing current transparency arrangements under the Convention (Art. 13.3) also applies to information on support received, currently reported in both national communications (NCs) and biennial update reports (BURs). Guidance has been generic and inconsistent, and most non-Annex I Parties to date have less experience than Annex I Parties with reporting support-related information. This section examines what practices could be “built on” from current reporting under the UNFCCC, along with other related processes that may impact or facilitate the reporting of this information. The section ends with the implications that both sets of experience may have for understanding how reporting could be “enhanced” in the future.

3.1. Overview of current reporting requirements

The UNFCCC’s current guidelines for BURs and NCs request non-Annex I Parties to provide information on a voluntary basis on constraints and gaps, and related technical and capacity-building needs, in addition to financial needs (Decision 2/CP.17; Decision 17/CP.8). Non-Annex I Parties are requested to provide information on technology transfer, capacity-building and technical support received from Annex II and other developed country Parties, as well as the Global Environment Facility (GEF), the Green Climate Fund (GCF) and multilateral bodies. In addition, non-Annex I Parties are requested to report on nationally-determined technology needs and technology support received, and how assistance has been used to support endogenous technologies and capacity. The guidelines are intended to “facilitate the presentation of information on finance, technology and capacity-building support needed and received” (Decision 2/CP.17).

Recently-updated training materials prepared by the Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention (CGE) provide further guidance for non-Annex I Parties across each of the elements requested in the UNFCCC BUR and NC guidelines (UNFCC, 2017[19]), together with illustrative examples from submitted BURs. Table 2 provides an overview of the CGE guidance. The guidance builds on the UNFCCC Handbook on measurement, reporting and verification for developing country parties (UNFCC, 2014[20]).
Table 2. UNFCCC reporting requirements for technology transfer and capacity-building support received and needed and associated CGE guidance

<table>
<thead>
<tr>
<th>Reporting subject</th>
<th>Current UNFCCC guidelines</th>
<th>CGE training materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraints, gaps and related technical and capacity-building needs</td>
<td>Non-Annex I Parties to provide information on a voluntary basis</td>
<td>Provides examples of potential constraints and gaps (e.g. difficulties in accessing/mobilising support, constraints related to collecting information on available support, institutional challenges in coordinating support)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provides illustrative tables for reporting of technical and capacity-building support needs at activity level (status, overall support needed, support received, additional support needed)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sets out “useful questions” for preparing and reporting (e.g. are constraints, gaps and needs clearly related to national development priorities? Estimation methods and definitions of climate support included?)</td>
</tr>
<tr>
<td>Technology transfer, capacity-building and technical support received</td>
<td>Non-Annex I Parties to provide information on a voluntary basis</td>
<td>Suggested tables for reporting support from each of multilateral sources, Annex II and developed country Parties, and multilateral financial institutions Tables differentiate between support for preparing and implementing measures set out in BURs, and financial, capacity-building, technology and technology transfer support across each category</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Suggested table for support received to address technology needs Reporting categories across information and gaps identified in technology needs assessments, implementation status and progress in creating an enabling environment, and capacity-building needs and mechanisms for technology transfer, for both current and proposed projects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Includes series of “useful questions” (e.g. has Party “clearly defined the scope and boundaries” of climate support/ clearly distinguished between different elements of support? Has the Party specified methodologies used to track and report support received? Are links between support received and reported mitigation and adaptation action set out? Has private sector involvement been specified?)</td>
</tr>
<tr>
<td>Nationally-determined technology needs and support received, and contribution to endogenous technologies and capacities</td>
<td>Non-Annex I Parties to provide information on a voluntary basis</td>
<td>Suggested table for reporting at the activity level, covering status, support needed, support received and additional support needed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Series of detailed “useful questions” included (e.g. are the institutional framework and procedures used to determine needs identified? Are national development priorities identified? Does the party identify and prioritise technologies?)</td>
</tr>
</tbody>
</table>

Source: Decision 2/CP.17; Decision 17/CP.8; UNFCC, 2017[19].

The CGE guidance aims to unpack and build on the UNFCCC’s BUR and NC guidelines, but is complex. No non-Annex I countries have systematically adopted its recommendations in reporting on technology and capacity-building support received and needed in BURs. There are some areas of the CGE guidance that could potentially be improved on in any future update. For example, guidance on how to more clearly distinguish between technical, capacity-building and technology categories for the purposes of reporting on needs and support received would be useful given that Parties demonstrate difficulty in delineating between the categories in practice (see Section 2.2 and Section 4.1). The guidance on constraints and gaps appears to focus primarily on challenges associated with reporting itself, or with accessing support; additional focus on constraints and gaps associated with undertaking climate actions may facilitate more comprehensive reporting (Awad, 2018[21]). There is duplication of proposed reporting.
elements on technology transfer support received in the CGE guidance, covered in Tables 5-8 as well as Table 10. There is also duplication on capacity-building support received, which is addressed in both Table 3 and Tables 5-8 of the guidance.

3.2. Lessons from current reporting experience under the UNFCCC

By the start of April 2018, 40 non-Annex I countries (around 25%) had submitted at least one BUR and 15 had submitted two.9 Virtually all submitted BURs contain information on at least part of the reporting elements suggested by the UNFCCC BUR guidelines on technology transfer and capacity-building support, demonstrating that countries perceive value in reporting in this area.10 Table 3 provides an overview of the information contained in submitted BURs on technology transfer and capacity-building support received and needed.

Non-Annex I Parties have less experience reporting on technology transfer and capacity-building support than Annex II Parties, which have been reporting on financial and technology support provided since their second NCs. Reporting on support received and needed remains challenging. The aggregate information provided is patchy and of limited comparability, despite the UNFCCC guidelines for BURs and additional guidance provided by the CGE.11

The partial nature of the information communicated may to some extent reflect the lack of clarity of the reporting guidance available to non-Annex I countries. Some countries explicitly raise challenges arising from reporting guidance. The Summary report on the technical analysis of the first biennial update report of Brazil attributes Brazil’s failure to clearly disaggregate support needed and received into financial, technical and capacity-building components to a “lack of clarity and methodology in the UNFCCC reporting guidelines on BURs”, rather than any lack of capacity (UNFCCC, 2016[22]). Lebanon’s BUR flags capacity challenges in reporting “due to the fact that the BUR is a new requirement and the guidelines on its preparation are not very explicit” (MoE, UNDP and GEF, 2015[23]).

Table 3 illustrates the differences in coverage of reporting of technology transfer and capacity-building support received and needed across countries in their first BURs (BUR 1). Most countries provide information on constraints, gaps and associated technical and capacity-building needs. In general, the information provided is relatively detailed. Nevertheless, the UNFCCC Secretariat has flagged that “the lack of global or standard approaches and indicators makes it difficult to measure, monitor, and review the impact of capacity-building support” (UNFCCC, 2016[24]). It recommends that “information on capacity needs, gaps and priorities…contained in NCs and BURs submitted by non-

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9 Andorra, Argentina, Bosnia and Herzegovina, Brazil, Chile, Lebanon, Namibia, Republic of Korea, Singapore, South Africa, Thailand, Tunisia, Uruguay and Viet Nam.

10 Better funnelling of support to domestic priority actions, support for improved monitoring and management systems and better planning and implementation of climate measures are examples of possible benefits of reporting (Ellis and Moarif, 2015[23]). (Briner and Moarif, 2017[3]).

11 The legitimate expectation that countries will adapt reporting guidance to their individual country circumstances and needs may also play a role.
Annex I Parties” be assessed to identify causes of standard approaches and potential solutions (UNFCCC, 2016).

Table 3. Information on technology transfer and capacity-building support received and needed in non-Annex I Party BUR Is

<table>
<thead>
<tr>
<th>Reporting subject</th>
<th>Number of BURs providing information</th>
<th>Illustrations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraints and gaps</td>
<td>28</td>
<td>Georgia identifies a lack of well-defined strategies, expertise, and public awareness, and issues with national policymaking, data collection, and exchange of information, as major constraints and gaps. It also identifies sector-specific constraints and gaps in the energy, industrial processes, agriculture, LULUCF, transport and waste sectors.</td>
</tr>
<tr>
<td>Technical and capacity-building needs associated with constraints and gaps</td>
<td>31; an additional 3 Parties provide partial information</td>
<td>In addition to funding needs, Namibia reports technical support and capacity-building needs for the preparation of BURs and implementation of mitigation actions.</td>
</tr>
<tr>
<td>Support received: technology transfer</td>
<td>14; an additional 3 Parties provide partial information</td>
<td>Armenia reports information on support received from bilateral and multilateral sources in tabular format, disaggregated by type of support, with a description of the support provided along with the donor and implementing agency.</td>
</tr>
<tr>
<td>Support received: capacity-building</td>
<td>22; an additional 9 Parties provide partial information</td>
<td>Tunisia includes detailed information on capacity-building support received for “all activities relating to climate change, including for the preparation of the first BUR”.</td>
</tr>
<tr>
<td>Support received: technical support</td>
<td>24; an additional 8 Parties provide partial information</td>
<td>India reports on technical support received for a number of projects including increased efficiency in coal-fired power plants, shale gas, hydropower, nuclear power and rail transport projects.</td>
</tr>
<tr>
<td>Nationally-determined technology needs and support received</td>
<td>10; an additional 14 Parties provide partial information</td>
<td>Thailand reports that a 2012 TNA identified mitigation technology needs for energy efficiency and the renewable energy sector, and adaptation technology needs for agriculture, water resources management and modelling sectors. It is prioritising five technology options for mitigation in the energy sector (i) smart grid; (ii) waste-to-energy; (iii) advanced biofuels; (iv) high-efficiency boilers; and (v) carbon dioxide capture and storage) and adaptation technology needs in agriculture, water resource management and modelling. The country did not report on support received.</td>
</tr>
</tbody>
</table>

Notes: Countries are considered to have provided partial information if, for example, they have provided information related to BUR preparation only, or a single aspect of reporting requirements or single activity only (support from some donors only, support for preparation of GHG inventory only).

Source: Non-Annex I country BUR Is.

The majority of countries also report on capacity-building and technical support received. The number of countries providing information on technology transfer support received is more limited. This may partially reflect country reliance on Technology Needs Assessments (TNAs) in communicating information on technology transfer (e.g. Armenia...
and Brazil), but some countries continue to lack any kind of formal tracking system for technology support received (Pham Van, 2018[23]). Building on existing tracking systems, for example for support-related information more broadly, may be a good first step (Vallejo, Moarif and Halimanjaya, 2017[11]; Awad, 2018[21]).

For some non-Annex I countries, gaining a comprehensive overview of the international support landscape is in itself challenging. For example, Armenia flags difficulties in “coordinating and determining how the various international donor organizations provide support for the implementation of climate change activities” (Ministry of Nature Protection, 2016[26]). Ecuador notes that a more active role from donors in terms of providing information on capacity-building and technology transfer support mobilised to the country would “aid the consolidation of a database and the accomplishment of its transparency objectives” (UNFCCC, 2017[27]). Malaysia flags challenges associated with reporting support funnelled through different channels in its BUR: it reports sub-national support “to the extent possible” and does not report on financial support from private and non-government entities (Ministry of Natural Resources and Environment, 2015[28]).

Countries tend to report more comprehensively on finance received than capacity-building and technology transfer support received, but they also generally do not clearly demarcate between areas of support, so technology transfer and capacity-building support may in some instances be subsumed under the finance umbrella. Certain non-Annex I Parties specify projects incorporating technology transfer or capacity-building components in reporting on financial resources received (e.g. Armenia) (Ministry of Nature Protection, 2016[26]). Malaysia demarcates between types of report received for the energy sector only (Ministry of Natural Resources and Environment, 2015[28]). Some countries do clearly distinguish between types of support, including across sectors. For example, South Africa provided “clear and well-structured information on matters related to the support received to assist with its climate response and its financial, technical and capacity-building needs” in its first BUR, including “financial resources, technical cooperation and technology transfer at all levels, for adaptation and mitigation activities” (UNFCCC, 2015[29]).

The UNFCCC Secretariat has flagged the tendency of Parties to report capacity-building support in sections of national reports beyond those dedicated to reporting on capacity-building as an impediment to gaining a clear overview of progress (UNFCCC, 2016[24]). In addition, countries may also report on support needs in multiple other documents, including Nationally Determined Contributions (NDCs) (which are not actually a reporting tool). Using multiple fora for reporting on support needed could potentially act as an obstacle to transparency if information is not consolidated or cross-referenced in BURs.

Finally, some country reports (e.g. Ghana’s) focus predominantly on support received and needed for preparing BURs, as opposed to support for implementing the climate actions reported in the BURs (MESTI and EPA, 2015[30]). This focus may reflect the balance struck in the CGE guidance on some suggested reporting areas.

3.3. Lessons from reporting arrangements outside the UNFCCC transparency framework

Reporting arrangements and fora outside the current UNFCCC transparency framework generate information on technology transfer and capacity-building support for non-Annex I countries. These arrangements also provide insights that are potentially relevant to the
development of the Paris Agreement’s modalities, procedures and guidelines for reporting of technology and capacity-building support.

When it comes to reporting on technology needs, a well-developed process and series of reports exist within the UNFCCC framework, though outside the current MRV framework: Technology Needs Assessments (TNAs). TNAs comprise a three-step process that non-Annex I countries can follow:

- Identify a list of priority technologies needed to implement domestic climate and other sustainable development policy objectives. The process that a country has been through to identify and prioritise these technologies is presented in a TNA report, with countries generally identifying around 10-15 prioritised technologies across mitigation and adaptation.

- Assess the specific barriers to accessing, developing or deploying the technologies identified in the TNA report, and outlining what rules, regulations and incentives are required to overcome these barriers. This results in a Barrier Analysis and Enabling Framework (BAEF) report.

- Outline measures and actions, in the form of project ideas, with costs and potential funding schemes, which can be implemented to enable access, deployment or development of the prioritised technologies in view of the BAEF report. These projects are reported through a Technology Action Plan (TAP).

To date, 85 countries have completed the TNA process, though not all have moved on to develop specific TAPs. The TNA process is of direct value to reporting under the UNFCCC, as through the TNA exercise countries are able to identify support needs related to technology, though these could take various forms (including financial or capacity-building support). As part of the TAP process, Parties are expected to develop cost estimates for acquisition, development or deployment of technologies in their domestic context, leading to a concrete expression of technology related-needs that could then be more easily reported in the context of the transparency framework.

Another useful element of the TNA process is the guidance material available to Parties.12 These provide a framework for understanding what technology comprises, including “hardware”, “software” and “orgware”, and how to understand technology needs in the context of climate mitigation and adaptation policies a country wants to implement, including across different sectors. They also provide guidance on how to prioritise different technologies, and think about different timeframes of policy implementation and associated technology needs. Going through the TNA and TAP process could therefore also help a Party report on technology support received, since it can better identify where climate policy actions require technology support.

The UNFCCC Secretariat’s “ttclear” website also contains a platform that lists technology projects seeking support, drawn directly from TAPs. Information is currently very limited, covering only a few projects.13 Parties that have projects listed could also feasibly refer to the ttclear website in their reporting, though this platform is currently not

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12 A range of guidance materials are available at www.tech-action.org/Publications/TNA-Guidebooks, covering preparation of a technology action plan, undertaking multi-criteria analysis, mitigation and adaptation technology options in different sectors, and undertaking barrier analysis.

13 Available at http://unfccc.int/ttclear/projects
presented in a searchable database form, limiting how readily users can draw on or find specific information.

In addition to the information contained in TNAs and TAPs, approximately a third of Parties identify specific climate technology needs in their NDCs (UNFCCC, 2016[31]). For these Parties, NDCs could be a useful basis for reporting within the transparency framework, whether on technology needs (with more specificity) or on support received that falls within the scope of previously identified needs. For TNAs and TAPs to be relevant and actionable, they should relate to a country’s most relevant climate objectives, including NDCs and even long-term climate goals (UNFCCC, 2018[32]). In cases where Parties developed TNAs prior to the domestic process of establishing a NDC, these may need to be updated.14

The mechanisms in place under the Convention to enhance provision of capacity-building support have not traditionally resulted in the systematic, structured provision by non-Annex I Parties of information on capacity-building support received and needed beyond that provided in national reports. There is no direct equivalent of the TNA or TAP process, for example, that would enable countries to have specific information on capacity-building needs readily-available to feed into reporting. The capacity-building framework for non-Annex I countries established by Decision 2/CP.7 suggests Parties report on “specific needs and priorities” through national reports.15 The UNFCCC’s capacity-building portal is intended to provide an overview of capacity-building activities in support of non-Annex I countries (Decision 16/CP.22).16 However, Parties are not formally invited to contribute and the information available is relatively limited.

Similarly, non-Annex I Parties provide background inputs to the Durban Forum on Capacity-building in the form of submissions on Forum topics and in discussions, but the Forum does not generate country-specific information that might squarely support systematic and complete reporting by developing countries in the context of the Paris Agreement’s enhanced transparency framework. Information inputs for this annual Forum are primarily UNFCCC Secretariat driven17 and address a particular theme each year. For example, the 6th meeting of the Durban Forum held on 10 May 2017 focused on enhancing capacities for adaptation in the context of National Adaptation Plans and NDCs.

15 The Decision also raises the prospect of country submissions, but between 2015 and 2017 only one submission was made by non-Annex I countries in response to a call for submissions on capacity-building activities and associated needs and gaps: a 2015 submission by Angola on behalf of the group of the Least Developed Countries. The submission focusses on institutional arrangements to support capacity-building under the Convention and then-pending 2015 agreement (Angola, 2015[53]).
16 Available at http://unfccc.int/capacitybuilding/activities.html
17 Decision 2/CP.17 requests the Secretariat to compile and provide a synthesis of capacity-building aspects of reports prepared by relevant bodies set up under the UNFCCC since the previous Forum as input.
The Paris Agreement’s accompanying decision text (Decision 1/CP.21) provides for two principal institutional mechanisms that have the potential to impact transparency arrangements for capacity-building support: the Paris Committee on Capacity-Building (PCCB) and the Capacity Building Initiative for Transparency (CBIT). These dedicated channels for delivering capacity-building support could make it simpler for developing country Parties to identify and report on support they are receiving for capacity-building, whether for transparency or implementation of their NDCs. Implementation of both initiatives has already commenced.

Paragraph 71 of Decision 1/CP.21 established the PCCB to “address gaps and needs, both current and emerging, in implementing capacity-building in developing country Parties and further enhancing capacity-building efforts, including with regard to coherence and co-ordination in capacity-building activities under the Convention”. At COP22 Parties invited the PCCB to consider how reporting on capacity-building activities might be enhanced as it implements its 2016-2020 work plan (UNFCCC, n.d.[33]). The Committee is to take into account “all initiatives, actions and measures on capacity-building under the Convention and the Paris Agreement as well as existing reporting mandates”, with the objective of achieving coherence and co-ordination.

Under the PCCB’s rolling work plan for 2017-19, the Committee will consider ways to enhance reporting in 2018-19, and make relevant recommendations as appropriate in 2019 (UNFCCC, 2017[34]). The PCCB has outlined a number of broader, forthcoming initiatives relevant to enhancing transparency of capacity-building support under the Paris Agreement (UNFCCC, 2017[34]). Once actioned, these measures are likely to provide significant support to countries in reporting on capacity-building support received, and conducting assessment of and reporting on needs and gaps. The PCCB will aim to:

- “Take stock of all capacity-building activities undertaken for the implementation of NDCs and make that information available for Parties and non-Party stakeholders, …including by providing a mapping of various capacity needs, relevant stakeholders, best practices and lessons learned, for example by making use of the capacity-building portal”.
- “Provide an analysis of capacity-building needs and gaps in the context of NDC implementation and to possibly recommend guidelines on how to conduct capacity gaps and needs assessments…”.
- Further explore the need to provide “guidelines for reporting on capacity-building needs …”.

A focus on needs and gaps assessments, as well as emerging practices and methodologies for transparency (GEF, 2018[35]), is also foreseen as part of the CBIT “Global Coordination Platform” being established by the GEF.16 Similar to the measures proposed by the PCCB, the CBIT Global Coordination Platform has the potential to positively reinforce developing country reporting on capacity-building support received and needed under both current arrangements and the Paris Agreement, depending on how it is

18 The work plan is set out in para. 73 Decision 1/CP.21.

19 The Global Coordination Platform is meant to enable co-ordination across “national, multilateral, and bilaterally-supported capacity-building initiatives”, “maximize learning opportunities, and enable knowledge sharing to facilitate transparency enhancements” (GEF, 2018[35]).
implemented. It is not yet clear how the envisaged initiatives for the CBIT and PCCB respectively will interact or how complementarity and co-ordination of outputs will be assured. Participants at the March 2018 CCXG Global Forum on the Environment and Climate Change emphasised the importance of support for developing countries in articulating country-driven needs, including to help ensure that support can be effectively targeted. Determining capacity-building support needs can be challenging. Ethiopia is an example of a country that has been actively working to better identify capacity-building gaps and needs, at the individual, organisational and systems level.  

Requests to bilateral and multilateral support providers can provide insights into potential categories of information that may be of interest to Parties in the context of the Paris Agreement’s MPGs for reporting on capacity-building support. Table 4 provides an overview into the types of information collected by a select number of support providers. Parties that have requested capacity-building support could potentially draw on the information communicated in these contexts to report on capacity-building support needed (if the request is as yet unfulfilled) or received (if the support request has been approved). Guidance materials produced by bilateral and multilateral support providers are also potentially instructive. Germany’s GIZ, for example, has produced a BUR Template to assist non-Annex I countries prepare their BURs, which offers guidance on report structure and the presentation of information (GIZ, 2017[36]).


21 For support needed, GIZ’s guidance suggests non-Annex I countries specify at a minimum constraints and gaps and related technical and capacity-building needs. Should Parties wish to provide additional information, the guidance proposes setting out how the country defines relevant support and potentially reporting on support needs in tabular format. It suggests countries provide information under the following headings: need identified; support needed; when and how long support is needed for; and if financial support is needed, national budget available (USD) and financial support needed (USD). For support received, the guidance suggests countries report on “support received which was not received as financial support”, such as in the form of training, at a minimum. It proposes possible additional tables, including on capacity-building support received in the reporting timeframe. It includes the headings: type of support (e.g. capacity-building); support activity; year(s) received; status (ongoing, finalised); focus (mitigation, adaptation, unspecified); and source of support.
Table 4. Information collected as part of capacity-building support requests from selected institutions

<table>
<thead>
<tr>
<th>Information requested</th>
<th>Providers requesting information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project/ program name</td>
<td>ADB; CIF; JICA</td>
</tr>
<tr>
<td>Sector/ subsector</td>
<td>ADB; JICA</td>
</tr>
<tr>
<td>National implementing agency</td>
<td>CIF; JICA</td>
</tr>
<tr>
<td>Objective</td>
<td>CIF; GEF; JICA</td>
</tr>
<tr>
<td>Description</td>
<td>ADB; CIF; GEF; JICA</td>
</tr>
<tr>
<td>Proposed technical assistance</td>
<td>ADB; CIF; JICA (donor and recipient input summary)</td>
</tr>
<tr>
<td>Impact and outcome</td>
<td>ADB (Examples of impact: effective mainstreaming of adaptation in development planning and management, and increased government capacity for strengthening resilience) (Examples of outcome: institutionalisation of adaptation information, better knowledge management systems, and institutionalised links to development planning, or strengthened disaster risk management at regional government level)</td>
</tr>
<tr>
<td>Methodology and key activities</td>
<td>ADB (milestones, input actors, amounts); GEF (outcomes and outputs, target contributions to global environmental benefits); JICA (outputs)</td>
</tr>
<tr>
<td>Cost and financing</td>
<td>ADB; CIF (type of investment [public, private, mixed]; co-financing); GEF (financing type [investment, technical assistance], trust fund/ project financing, co-financing)</td>
</tr>
<tr>
<td>Implementation arrangements</td>
<td>ADB (performance targets and indicators with baselines, data sources and reporting mechanisms, assumptions and risks); CIF (core indicators and targets)</td>
</tr>
</tbody>
</table>

Source: ADB (based on Technical Assistance Reports for projects in Bangladesh, China and Myanmar on building capacity for climate resilience); CIF (Pilot Program for Climate Resilience) based on project “cover notes”); GEF (CBIT, based on PIF for medium-sized projects); JICA (based on project activity completion report).

3.4. Implications for arrangements under the Paris Agreement

Broadly, the Paris Agreement’s ETF envisages a continuation of current reporting arrangements on support received and needed. Developing country Parties should provide information on technology transfer and capacity-building support needed and received under Art. 13.10d. With the exception of least developed country (LDC) Parties and small island developing states (SIDS), developing country Parties are to report on a biennial basis (Para. 90, Decision 1/CP.21) and to maintain “at least the frequency and quality” of current reporting (Para. 92e). For capacity-building support, the Paris Committee’s forward work items on enhancing reporting of capacity-building activities may result in further guidance for country reporting in due course (UNFCCC, 2017[34]).

The lessons drawn from current reporting experience within and outside the context of the UNFCCC transparency framework have potential implications for development of reporting MPGs for the Paris Agreement’s ETF:

- Information reported as part of other processes and fora, and potentially by other entities, might be more systematically drawn on to enhance transparency and reduce duplication or redundancy in reporting. There is particular scope to facilitate developing country reporting on support received, where gaining an overview of support flows can itself be challenging for some Parties. The PCCB’s forthcoming stocktake of capacity-building activities and the capacity-building portal, and the CBIT “Global Coordination Platform”, which may serve as a “clearing house” for information on capacity-building support, both have potential
to support reporting in this area depending on how they are taken forward. Parties may consider a similar initiative in relation to support for technology transfer.

- Further support for reporting on constraints, gaps and associated needs would also be of benefit. The TNA and TAP processes are of direct value to reporting on technology needs for relevant countries, but there is currently no equivalent to support capacity-building needs assessment and reporting. Again, developments under the PCCB may be relevant.

- Like with developed country reporting, there is potential to provide more specific guidance to support developing country reporting, for example to distinguish between different types of support (technology, capacity-building and financial); encourage more quantified reporting; and improve consistency and comparability of information reported, through clearer structure and terminology. A clearer framework for the scope of information reported could also potentially help Parties determine what to report on, and better balance reporting on support for preparing reports and support relevant to implementing climate action.
4. Enhancing transparency of reporting of technology and capacity-building support provided, received and needed

Current experience in reporting on technology and capacity-building support provided, received and needed both within and outside the UNFCCC transparency framework demonstrates clear scope to enhance reporting arrangements under the Paris Agreement (Sections 2 and 3). This section draws on that experience to set out suggestions that could inform the development of modalities, procedures and guidelines (MPGs) under the Paris Agreement’s transparency framework, with a view to enhancing guidance for reporting on technology and capacity-building support (Art. 13.9, 13.10, 10 and 11). It considers how the lessons to be gleaned from collective experience might help fill gaps in information, address lack of clarity in existing guidance and drive efficiencies in information requested across sets of guidance or reporting entities, to ensure new guidance elements are as useful and facilitative as possible.

The Paris Agreement’s enhanced transparency framework (ETF) maintains the voluntary nature of developing country reporting on technology and capacity-building support received and needed (Section 3.3). However, voluntary reporting does not make instructive guidance for reporting by developing countries any less useful. MPGs under the ETF could better facilitate such reporting, consistent with the Paris Agreement’s focus on supporting improvement and effective implementation and in view of the potential benefits to Parties of reporting. The options outlined in this section are relevant to reporting on technology and capacity-building support provided, received and needed. However, the analysis places greater emphasis on guidance for developing country voluntary reporting on support received and needed, given it has been more limited to date.

The need to account for Parties’ different capacities and avoid undue burden (Art 13.1 and 13.3) may justify a focus on the purpose, value and uses of information requested in developing guidance for reporting. The technology and capacity-building frameworks and processes under the UNFCCC and the Paris Agreement are relevant in this regard. Information and knowledge sharing may develop and expand as part of these frameworks, potentially requiring Parties to consider how that information could facilitate reporting under the ETF, but also what sub-set of information is most relevant for Art. 13 reporting. For example, information reported under the ETF might provide assurance that developed country Parties are meeting specific obligations under the Paris Agreement, and developing country Parties receiving the support they need to fulfil their obligations. For information on technology transfer and capacity-building support specifically, reporting under the ETF could serve to: a) increase the visibility of this type of support within

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22 The Introduction sets out a number of potential benefits to developing countries. For developed countries, enhanced reporting can help improve understanding on how support is being used, and accountability to taxpayers accordingly, amongst other benefits (Elliott et al., 2017[56]).
broader financial support; b) indicate whether such support has helped Parties plan and implement climate actions; and c) signal areas where Parties will require additional capacity building and technology transfer to undertake climate actions.

The suggestions discussed in this section are based on: lessons from current experience, including the importance of facilitative and implementable guidance; the potential purposes of reporting capacity-building and technology transfer support under the ETF; the provisions of the Paris Agreement; and the particular context of Parties’ climate actions under the Paris Agreement being communicated via their NDCs. Six suggestions for how reporting on technology and capacity-building support might potentially be enhanced, further detailed below, are:

1. Provide more guidance and options to help Parties distinguish reporting of financial, technology and capacity-building support, should Parties wish to pursue disaggregated reporting. Parties could consider tagging the use of climate finance in support of technology transfer and capacity-building, and including financial information relevant to technology transfer and capacity-building support alongside reporting of financial support provided, received and needed. Parties could continue to separately report qualitative, non-financial information on technology and capacity support provided, needed and received, including potentially in form of CTF tables and/or targeted case studies providing specific insights. Using specific policy measures that a Party wants to undertake as a starting point may help guide reporting on support needs, which are reported ex ante and may be uncertain. It may be also useful to enable latitude on where and how capacity-building support is reported given its high level of integration with other types of support.

2. Frame the reporting of support needed and received in the context of Parties’ climate actions, primarily their nationally determined contributions (NDCs), for both financial and non-financial information. Alongside support needs and support received relating to preparing reports and participating in the transparency framework, a Party’s NDC and the policies it wishes to implement to achieve its NDC could help it identify relevant support needs and support received.

3. Have more detailed guidance for both developed and developing country Party reporting of technology and capacity-building support, including to facilitate a more consistent use of key terminology and clearer reporting. Parties could consider introducing CTF tables to support developing country reporting on qualitative aspects of technology and capacity-building support.

4. Enable more flexible reporting tools and comprehensive and accessible online interfaces for technology and capacity-building support, to facilitate reporting on support provided and received, along with access to this information. Parties could build on existing online platforms managed by the UNFCCC to host technology and capacity-building information.

5. Examine the role of other bodies and entities in providing information that may complement what Parties can report, including to facilitate collective assessment processes such as the global stocktake. For example, multilateral and bilateral support providers might be more actively encouraged to communicate to the UNFCCC on activity-level support provided to developing country Parties.

6. Build on existing information-gathering exercises on capacity-building and needs assessment processes to facilitate reporting, in a similar fashion to the
development and evolution of the Technology Needs Assessment (TNA) and Technology Action Plan (TAP) processes.

4.1. Guidance on distinguishing between types of support

Both developed and developing country Parties have pointed to the challenges in clearly distinguishing between financial, technology and capacity-building support in reporting, given that in practice the different types of climate support are largely integrated (Blatter et al, 2018[13]; UNFCCC, 2016[22]; Norway, 2017[37]). Nevertheless, recent Party submissions on the Paris Agreement’s ETF generally assume that the distinction will continue: they tend to separate reporting of support provided, received and needed across the three categories. Several submissions also suggest separate reporting of support received and needed for each of the categories (Brazil, Argentina and Uruguay, 2017[38]; Norway, 2017[37]; Japan, 2017[39]; EIG, 2017[40]; India, 2017[41]). Accordingly, headings and subheadings in the informal note prepared by the co-facilitators of the APA agenda item on the MPGs for the transparency framework for action and support at COP23 follow suit (APA agenda item 5 co-facilitators, 2017[42]).

Party submissions provide no clear consensus on how reporting of information on different types of support might be made more transparent against this backdrop. MPGs will likely require a degree of latitude, in the first instance to accommodate different approaches in reporting (impacted in turn by different approaches within domestic monitoring systems).

MPGs will also likely need to accommodate different reporting approaches in view of Parties’ expressed preference for retaining the distinction across support categories for reporting purposes, given that in practice support flows do not fit neatly into the three categories of financial, technology and capacity-building support. Where distinguishing between these categories within Parties’ domestic systems is very challenging, it may be overly burdensome for Parties to attempt to make these distinctions simply for the sake of UNFCCC reporting. As such, guidance could enable Parties to report certain types of support together where this makes most sense.

4.1.1. Financial and non-financial information

One option raised in Party submissions is to reduce emphasis on the distinctions between the three categories – without doing away with them – while emphasising the distinction between financial and non-financial information (Figure 1). For support received and needed, a joint submission by Brazil, Argentina and Uruguay suggests that reporting on technology and capacity-building support in the form of finance might be essentially subsumed within reporting on finance in general, to focus on qualitative aspects of support only under separate technology transfer and capacity-building reporting categories (Brazil, Argentina and Uruguay, 2017[38]).

Other Parties echo the potential to adopt a more qualitative lens to reporting on capacity-building and technology support. For example, Norway acknowledges that “it is difficult to estimate the exact amount that has been provided for technology transfer and capacity building” given the integral role that technology transfer and capacity-building plays in climate projects and programmes. It suggests that information on technology and capacity-building support provided be limited to “descriptive information”. For support received and needed, Norway proposes residual reporting for communication of additional information “as appropriate” (Norway, 2017[37]). In its second BR, Switzerland
sets out project examples of technology and capacity-building support only, noting that it is not possible to “single out the respective components” given the integrated nature of support (Nauser, Blatter and Schwager, 2016[12]).

**Figure 1. Potential types of support-related information**

<table>
<thead>
<tr>
<th>Type of support</th>
<th>Type of information</th>
<th>Support flow type</th>
<th>Support flow sub-category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance</td>
<td>Financial</td>
<td>Provided</td>
<td>For transparency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Received</td>
<td>For NDC implementation and achievement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Needed</td>
<td></td>
</tr>
<tr>
<td>Technology development and transfer (Tech)</td>
<td>Financial Including finance for tech and CB</td>
<td>Provided</td>
<td>For transparency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Received</td>
<td>For NDC implementation and achievement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Needed</td>
<td></td>
</tr>
<tr>
<td>Capacity building (CB)</td>
<td>Non-financial</td>
<td>Provided</td>
<td>For transparency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Received</td>
<td>For NDC implementation and achievement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quantitative information (indicators)</td>
<td>Provided</td>
<td>For transparency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Received</td>
<td>For NDC implementation and achievement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Qualitative information</td>
<td>Provided</td>
<td>For transparency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Received</td>
<td>For NDC implementation and achievement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Needed</td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors.

UNFCCC Lead Reviewers have also suggested that reporting on support provided for technology development and transfer and capacity building could potentially be more clearly integrated into financial reporting (UNFCCC, 2017[43]). Lead Reviewers observed that: “support for technology transfer is a subset of financial support, but…technology transfer can also take non-financial forms through promotion and facilitation. The capacity-building framework also considers the provision of financial resources as one of the elements in implementation. The technology and capacity frameworks suggest an integrated nature with finance. It can be argued that the non-financial support elements of technology and capacity-building support usually also require financial resources and would thus form a subset of finance” (UNFCCC, 2017[43]).

Distinguishing reporting of financial information from the headings of “technology transfer” and “capacity-building”, to focus reporting in those areas on qualitative, non-financial information, is one option that Parties may wish to consider as part of efforts to increase transparency on reporting of support. The APA agenda item 5 co-facilitators informal note reflects the option that Parties “integrate quantitative reporting of technology transfer and capacity-building into climate finance CTFs by adding dedicated columns’ as one possible approach in the discussion of support provided and mobilised (Section E) (APA agenda item 5 co-facilitators, 2017[42]).

**Financial information**

Table 5 presents options for incorporating financial information related to technology transfer and capacity-building support into climate finance reporting tables for finance provided or received. These options range from a simple indication (Y/N) to a more granular indication of share or amount; their principal aim is to increase the visibility of
technology and capacity-building support within overall financial flows. The level of detail or specificity that Parties can provide will depend on the feasibility of clearly demarcating types of support and distinguishing the share of a given finance flow aimed at different activities within their own internal monitoring systems. Different Parties generally have their own systems for classifying support as being relevant to climate mitigation and adaptation, and for identifying whether these include technology and capacity building. For example, in Lebanon, work is underway to encourage different parts of the government to track support flows; reporting tables aim to facilitate reporting by different Ministries, allow respondents to indicate more than one support flow (finance, technology transfer, capacity building), and indicate their share of total support as a percentage (Awad, 2018[21]). Parties could explain how they have determined the degree of capacity and technology support, by explaining how domestic monitoring systems identify or classify these activities. “Tagging” for these types of support nevertheless remains challenging and will likely evolve in line with overall improvements in tracking and reporting of climate finance flows. Currently, for countries that report to the OECD DAC, the only way for reporting climate-related development finance to the Secretariat is using Rio markers methodology. Further guidance in this area could be elaborated once specific reporting challenges emerge.

The co-facilitators’ note also reflects the caution made by some countries that it might be better to keep “quantitative and qualitative reporting in separate form” to avoid any overlapping or double-counting in reporting (APA agenda item 5 co-facilitators, 2017[42]), E.10). This caution was reiterated by some participants at the March 2018 CCXG Global Forum on the Environment and Climate Change (Blatter, 2018[44]). One way to address some of these concerns may also be to transparently indicate when qualitative and quantitative information, reported in separate tables for example, relate to the same activity (in full or in part). The Global Environment Facility (GEF), for example, provides information on funding provided for capacity building in its reports to the COP, though such reporting overlaps with overall reporting on financial support. This reporting is based on estimates of how different projects and their components are separated and is meant to give an indication of such support (Gonzalez Vasquez, 2018[45]).

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21 The country has also established an NDC working group that will be responsible for advancing tracking of support flows across Ministries, in addition to co-ordinating on implementation of the country’s NDC (Awad, 2018[21]).

24 One of the examples given is that of referring to qualitative reporting provided in another table, for example row 12 of CTF Table 8 on technology support provided. This cross-referencing could also occur within Table 8 containing qualitative information.
### Table 5. Options for referring to technology and capacity-building support within financial reporting tables

<table>
<thead>
<tr>
<th>Reporting options for columns added to finance reporting table</th>
<th>Technology support</th>
<th>Capacity-building support$^{25}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple indication of whether the finance flow listed will be used toward technology and/or capacity building$^{26}$</td>
<td>“Yes” / “No” / “Not estimated” / “Not known”</td>
<td>“Yes”; “No”; “Not estimated”, “Not known”</td>
</tr>
<tr>
<td></td>
<td>“Not estimated” would indicate the Party thinks it has information needed to estimate this, but was unable to do so. “Not known” means data is not gathered or available. If technology is not relevant to a given finance flow, then “N/A” could be an option.</td>
<td>Given the nature of climate finance, it may be unlikely that this column would ever say “no”, but it could be that the Party has insufficient information to provide a specific answer.</td>
</tr>
<tr>
<td>Approximate degree to which finance flow is used toward technology and/or capacity building</td>
<td>Party could indicate whether this was a principal or significant part of the finance. A simple guide could be that if approximately more than 50% of the flow targets technology or capacity-building, it would be a principal part of the finance. Further refinement could mean indicating whether one or both areas is a significant part of the finance, e.g. between 10% and 50%, or a minor part, e.g. less than 10%.$^{27}$</td>
<td>E.g. approximately 8% of the same project is specifically allocated for training activities. Also could be expressed as an amount, i.e. USD 2.6 million.</td>
</tr>
<tr>
<td>Share or amount of finance flow used toward technology and/or capacity building$^{28}$</td>
<td>E.g. 15% of a USD 34 million agriculture adaptation project is for integrating solar pumps. Alternatively, could be expressed in the USD amount e.g. USD 5.36 million</td>
<td></td>
</tr>
<tr>
<td>Description and/or cross reference</td>
<td>A very brief description of any technology or capacity-building component of the finance flow, e.g. procurement and acquisition of solar pumps for irrigation, development and delivery of training modules for engineers and farmers. Alternatively, in this column a Party could refer to qualitative information reported elsewhere, e.g. current CTF Table 8 (Provision of technology support) and Table 9 (Provision of capacity-building support), or last column of Table 10 in Section 4.3 of this paper (Support received table combining technology and capacity-building information).</td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors.

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$^{25}$ In practice, it is unlikely that climate finance flows would not include capacity-building components. If they do not, that may also be useful information.

$^{26}$ A simple “Yes/No” or “0/1” indication was also suggested during the March 2018 CCXG Global Forum (Blatter, 2018[44]).

$^{27}$ The OECD DAC Rio marker system differentiates between activities that include climate considerations as a “principal” or “significant” focus. Activities scored “principal” would not have been funded but for that policy objective; activities scored “significant” have other prime objectives but have been formulated or adjusted to help meet the policy objective (Vallejo, Moarif and Halimanjaya, 2017[1]). The system is designed to provide policy markers, rather than quantitative indicators.

$^{28}$ The feasibility of indicating shares or amounts of finance flows aimed at different activities will depend on countries’ internal monitoring systems. Currently, countries that report on climate finance to the OECD DAC system using Rio markers also use this information as a basis for reporting to the UNFCCC, and generally include all development assistance projects where climate change is a “principal” objective in their BRs. Where climate change is marked a “significant” objective, many countries use different reporting approaches to the UNFCCC and elsewhere, e.g. to OECD DAC. For example, some countries’ BR reporting applies a coefficient to calculate associated levels of climate finance for these projects. The OECD DAC is currently considering including additional columns in the reporting system inviting members to indicate on a voluntary basis whether individual activities are included in their reporting to the UNFCCC, whether this is done at the commitment or disbursement level, and how much: see footnote 8. In addition, multilateral providers are subject to different reporting requirements under the OECD DAC system and can report on climate-related development finance based on components, coefficients, or Rio marker methodologies.
Non-financial information

In terms of qualitative or other non-financial information to be reported in a distinct manner from financial information, Parties currently list a series of examples or indicative projects in the areas of capacity-building and technology development and transfer. It is generally not clear what criteria have been used to select these examples.

Some Party submissions suggest that there may be discrete sections in a future “biennial transparency report” (BTR) on non-financial support provided and/or received for technology and capacity-building; Parties may wish to consider how this information could be made most useful and what they could report. Some options are laid out in Table 6 below. 29 While most of the types of information outlined in Table 6 have to do with the actual support itself, one of the options is to provide information on the use of the support. This could be through case studies, or examples of technology transfer and capacity-building activities. This type of information involves some level of analysis and may therefore be more challenging for some Parties to prepare and communicate, though where feasible other Parties would likely appreciate such information.

Table 6. Options for reporting information in dedicated technology transfer and capacity-building support sections of a future biennial transparency report

<table>
<thead>
<tr>
<th>Potential information on technology and capacity-building support</th>
<th>Why</th>
<th>What</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description of support received in non-financial terms</strong></td>
<td>A Party receiving technology or capacity-building support may not know financial resources associated with providing it.</td>
<td>Party would report on the nature of support received, e.g. technology licenses, delivery of a feasibility study, an additional staff person for a given period.</td>
</tr>
<tr>
<td><strong>Specific financial support for technology or capacity-building; links between the descriptions of technology and capacity-building support and financial support</strong></td>
<td>From the perspective of a reader, it could be helpful to have all finance information in one place in the report. It could be equally helpful to have all technology or capacity-building information in one place, with reference to financial information as relevant. This could provide more detail or granularity on the technology and/or capacity-building aspects of the finance, while being transparent and not “double counting” this finance.</td>
<td>If the technology and/or capacity-building support described is delivered as part of a finance flow reported elsewhere (even if a small part of this flow), information on the technology or capacity-building support could cross reference information in the tables on finance provided and received as relevant. If feasible to identify specific finance flows for technology or capacity-building activities, financial information could be included in tables on technology and capacity-building support – while still cross referencing finance CTF as needed (clarify if that amount reported in two different places).</td>
</tr>
<tr>
<td><strong>Capacity-building aspects of support for technology development and transfer</strong></td>
<td>In practice, technology support includes a capacity-development component. It could be simpler to report on capacity-building together with technology support, where the former is in practice delivered or received in a combined way with the latter.</td>
<td>Table(s) for reporting on technology support could include a column for Parties to indicate the capacity-building aspects of the given support flow, whether financial, non-financial, or a specific example.</td>
</tr>
</tbody>
</table>

29 Section 4.2 provides further options for reporting focused on the use of support, i.e. what a Party wants to do or is doing, though in a less detailed format than a case study approach. Section 4.3 provides examples of information that could be included in tables on non-financial support for technology development and transfer and capacity building. Section 4.4 also explores how knowledge sharing on technology transfer and capacity building could also be pursued through other substantive information platforms or channels on technology and capacity-building, potentially beyond the scope of the ETF.
Table 6 (cont.). Options for reporting information in dedicated technology transfer and capacity-building support sections of a future biennial transparency report

<table>
<thead>
<tr>
<th>Potential information on technology and capacity-building support</th>
<th>Why</th>
<th>What</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combination of capacity-building and technology support received</td>
<td>In cases where support for technology development or transfer takes the form of developing absorptive capacities for technologies, often the case in LDCs, it may make more sense to report such support as capacity-building support received, as it targets capacities needed for technology development and transfer.</td>
<td>Rather than a separate table for technology support, it may be simpler for some Parties to integrate this information and include technology-relevant support within table(s) on capacity-building support received.</td>
</tr>
<tr>
<td>Example of capacity-building or technology-transfer activities that have been supported or received support</td>
<td>Interest from Parties on sharing and learning lessons on how support is used and what it has accomplished, expressed several times during the March 2018 CCXG Global Forum.</td>
<td>A limited selection of case studies, each providing more specific description of activities, purpose, and either expected impacts or actual results. The case study could provide specific insights and lessons, or be centred on key areas of interest for the Party.</td>
</tr>
</tbody>
</table>

Source: Authors.

4.1.2. Support needed

In reporting on support received or provided, a Party is reporting *ex post*, i.e. after the event. The support flow has already occurred, though it might be at different stages of disbursement. Domestic monitoring systems will vary; nevertheless, a Party can at least theoretically examine the type of support provided or received and, if needed, tease out the different components of this support. In reporting on support needed, a Party is reporting *ex ante*, or before the support flow has even materialised. It is estimating an overall amount or type of support it deems necessary to implementing and achieving a given policy action or objective. This estimate of support needs may have different components, and separating these out in different sections of the report – as suggested in several Party submissions – could make it more difficult to understand how each component will contribute to the action that the Party is seeking to implement and achieve.

Table 7 suggests reporting on support needs from the starting point of policy action that a Party wants to undertake, such as meeting its NDC objective (Section 4.2), or implementing its National Adaptation Plan of Action. Costa Rica, for example, prioritises the finance, technology and capacity-building needs for policies the country is looking to implement, in line with its NDC. The various types of support needed for a given policy action are identified and described in tabular format (Meza, 2018[46]). The level of detail and completeness of such a table could vary in line with the information a Party has been able to estimate. In some cases, this might be quite specific, e.g. if a Party has already submitted requests for finance, capacity-building or technology transfer from a support provider. In other cases, this assessment may be more tentative. The time period for the support need could also be more specific, focusing on the support the Party would like to obtain over a two- to five-year period, rather than the full NDC period as in the example below.

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30 See (Glachant and Dechezleprêtre, 2017[54]) and (Syam and Muñoz Tellez, 2016[58]).
Table 7. Example of reporting on support needs

<table>
<thead>
<tr>
<th>Guiding question</th>
<th>What do I want to do</th>
<th>What do I need in each of these three areas to achieve this</th>
<th>Who needs this support and in what time period</th>
<th>What is the basis for information on needs?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information category</td>
<td>Policy action</td>
<td>Framework</td>
<td>Finance</td>
<td>Technology</td>
</tr>
<tr>
<td>Example</td>
<td>Urban rapid mass transit system</td>
<td>NDC (action to deliver conditional 2030 BAU GHG target)</td>
<td>USD 2.7 billion</td>
<td>Procurement of hybrid buses; adapting light rail systems</td>
</tr>
</tbody>
</table>

Source: Authors.

Parties will only be able to report information that they are able to estimate, monitor and collect. Parties’ domestic tracking systems will differ, according to the climate actions they are implementing and specific outcomes they wish to achieve. A general understanding or sense of this domestic context and system, as well as methods used, could also help explain a Party’s reporting choices, and Parties’ have provided various suggestions on how to include this information in future MPGs (APA agenda item 5 co-facilitators, 2017[42]). While most of these suggestions apply more readily to financial support, it may be relevant to understanding what information a Party has or has not been able to report on technology transfer or capacity-building support. For example, a Party may have estimated a financial amount needed for technology deployment related to implementation of its NDC. It would be useful to refer to how this number was determined, as well as the entity or entities expected to receive this support, i.e. those that will be implementing the action the Party wishes to undertake.

4.2. Using NDCs to help frame reporting of support needs and support received

Current guidelines for non-Annex I Party reporting on “constraints, gaps and needs” to fulfilling obligations under the Convention do not provide any guidance on what might be communicated under this heading and generally focuses on gaps and needs associated with fulfilling international reporting obligations. While reporting on support needed for the purposes of fulfilling transparency requirements will remain important under the Paris Agreement, this has sometimes occurred at the expense of needs associated with implementing mitigation or adaptation measures (Section 3.1). The range of policy action a Party may consider relevant to climate change mitigation or adaptation may be very broad, making further guidance on the potential scope of such information beneficial. NDCs, and the measures Parties are implementing or plan to implement to achieve them, represent one option to both help identify and frame reporting of relevant support needs.

In their NDCs, the majority of Parties indicate that these will require financial, capacity-building and/or technology support. Reporting under the Paris Agreement could provide an opportunity for Parties to present more specific information on these needs, currently most often reported in an aggregate or overall manner, and use that scope in turn for reporting on support received going forward. For example, if a Party indicates that an important agricultural waste management programme will require a certain amount to implement in its first BTR, then subsequent BTUs could report support received for that
programme, potentially specifying any components relevant to technology transfer or capacity building. A Party’s NDC will likely be an important basis for framing the scope of information reported on technology and capacity-building support received, as it may well be the starting point for related domestic monitoring efforts.

Figure 2 presents an example of how a Party may start from a measure intended to achieve its NDC, and how breaking this down into concrete actions the Party is taking or wants to take can guide reporting on support received and needed. Parties could use mitigation and adaptation measures outlined in NDCs as a starting point to frame reporting, building on any initial assessments and estimates made in NDC communications. However, this does not preclude a Party taking a broad view of its climate-relevant activities and reporting information on support related to these. The process could simply be a useful starting place for a Party struggling to identify relevant support to report. In discussions at the March 2018 Global Forum on the Environment and Climate Change, one presenter highlighted that having a clear link to concrete actions and objectives can assist formulation of specific support needs, citing its use of IPCC guidelines to guide its development of a project proposal for the CBIT as an example (Awad, 2018[21]). In requesting support for climate action, including technology- and capacity-focused support, project documents often concretely lay out which policies the support will help the Party achieve, and refer to related policy actions also receiving support.31 Examples of how information on technology and capacity-building support received could be reported are presented in Section 4.3 below.

**Figure 2. Framing reporting of support needed and support received through an NDC**

![Figure 2: Framing reporting of support needed and support received through an NDC](image)

*Source: Authors.*

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31 There are several examples in the GEF projects database related to technology, such for efficiency and resource management in manufacturing industries in Cambodia and Nigeria, or use of heat generated from renewable energy sources, for use in small manufacturing facilities in Thailand.
4.3. Using terminology that is clearer, more consistent and useful

Party submissions propose many options for how to structure future guidance for reporting under the Paris Agreement’s ETF. Encouraging Parties to use clear, consistent terms, which could facilitate the communication of useful information and a common understanding of relevant terminology, could facilitate greater clarity in the reporting of information on technology and capacity-building support. The APA agenda item 5 co-facilitators’ informal note envisages both “clear definitions and enhanced guidance and methodologies for reporting processes” and the specification of “definitions and assumptions used to identify financial, technology transfer and capacity-building support” (APA agenda item 5 co-facilitators, 2017[42]). The use of documentation boxes in CTF tables, including any introduced for use by developing countries, would also enable Parties to provide greater clarity on terminology.

Tables 8 and 9 present some issues and challenges with how terms are currently used within BR and BUR guidelines. In terms of facilitating reporting on technology-related support, some options for dealing with the challenges outlined in Table 8 include:

- Using only the term “technology transfer” or “technology development and transfer” as per the Art. 10 technology framework, in its broad sense as defined by the IPCC, when referring to support provided or received (see Box 1). Guidance could help Parties determine what more specific categories might fall within technology transfer. For example:
  - access to technology (e.g. money to buy a piece of equipment);
  - deployment of technology (e.g. encouraging uptake by subsidising upfront costs and providing training materials), including “hardware” and “software” elements (see Box 1);
  - strengthening enabling environments (e.g. implementing a tariff, reforming pricing, creating markets), including “orgware” elements (see Box 1);
  - endogenous technology development and enhancement (e.g. through co-operative research, funding for prizes).

- The types of activities listed above could also be categorised within some of the key themes of the technology framework:
  - Innovation: including collaborative RD&D; policy environment and financing; and technology diffusion.32
  - Implementation: including TNAs, TAPs and associated project ideas; identifying and addressing barriers; and engaging the private sector.
  - Enabling environment and capacity-building: information sharing and developing networks; strengthening policies, laws and regulations; developing incentives for technology diffusion and uptake; increasing public awareness; developing endogenous capacity for technology development; enhancing national designated entities.
  - Collaboration and stakeholder engagement: engagement with communities and relevant stakeholders; strengthening private sector collaboration and public-private partnerships.

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32 Examples of multilateral initiatives that facilitate mitigation-relevant collaborative RD&D and innovation include the Clean Energy Ministerial, the IEA Technology Collaboration Programmes, the International Solar Alliance, and Mission Innovation.

Unclassified
To address the difficulty in separating technology and capacity-building support, as a general rule, integrating information on technology-related capacity-building support into technology-related support (provided or received), given it is an integrated part of technology transfer. In cases where most or all technology-related support a Party receives is aimed at capacity development, it may be simpler for the Party to report this together with capacity-building support (as outlined in Section 4.1). The MPGs could explicitly acknowledge that these distinctions may vary in line with country contexts.

- Not distinguishing technology-related capacity support from capacity support for adaptation and mitigation, given it is integrated within broader support activities.
- Linking information on technology transfer support received to previously assessed or reported technology needs, if this is feasible and useful (see also Section 4.6). In this case, the link with identified technology needs could be made within the relevant reporting tables.

<table>
<thead>
<tr>
<th>Current terms (Decision 2/CP.17)</th>
<th>Issues and challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology transfer, access and deployment (provided; BR)</td>
<td>Unclear distinction between terms, whereas “access” and “deployment” form part of technology transfer (see Box 1) Greater number of terms than listed in BUR</td>
</tr>
<tr>
<td>Support for endogenous capacities and technologies (support provided; BR)</td>
<td>Support for endogenous technology development is also part of technology transfer Support for endogenous capacities overlaps with other capacity-building reporting requests</td>
</tr>
<tr>
<td>Capacity-building support relating to technology development and transfer (support provided; BR)</td>
<td>Listed in section on capacity-building support as a distinct category, separate from mitigation and adaptation; overlap with requirement to report this information elsewhere in guidelines relating to technology support</td>
</tr>
<tr>
<td>Technology transfer support received (BUR)</td>
<td>Two different terms, “technology transfer” and “technology” used in different parts of the guidelines. Given the broad range of elements and activities that are part of technology transfer, the term “technology” may be less clear.</td>
</tr>
<tr>
<td>Technology needs and technology support received (BUR)</td>
<td>Unclear if Party to report separately on support received that corresponds specifically to certain technology needs, and separate from broader “technology transfer support” listed elsewhere in the guidelines.</td>
</tr>
</tbody>
</table>

Source: Authors.

For capacity-building support, the issues identified in Table 9 that may lead to reporting challenges could potentially be addressed through the following options:

- When it comes to communicating that capacity-building support responds to needs identified by developing country Parties, MPGs could recognise that these will likely be integrated within financial support flows. Parties could refer to any expressed needs on which the financial flows are based, such as overarching strategic engagement and county planning documents developed by and with developing country Partners.
- Rather than try and cover all relevant categories, reference to capacity-building support could refer to capacities for Parties to fully implement the Paris Agreement, covering not only NDCs, but also transparency requirements.
- As a general rule, parties could integrate capacity-building elements of technology transfer activities into reporting on technology-related support (as discussed above).
- Reference to “technical” needs and support may be confusing and less useful, particularly if the main area of interest is information on what the support is for,
and its impact and estimated results (Decision 1/CP.21 para. 94), rather than the specific form through which this support is delivered. Information on the form of the support (financial or non-financial, and further details on type of finance) could be indicated separately within reporting tables if of interest to Parties.

### Table 9. Issues and challenges with capacity-related terms used in reporting guidelines

<table>
<thead>
<tr>
<th>Current terms (Decision 2/CP.17)</th>
<th>Issues and challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity-building support that responds to identified existing and emerging capacity-building needs (provided; BR)</td>
<td>Unclear what information a Party is to report that would demonstrate this, nor what is to be used as a basis for identified capacity-building needs (what if a given developing country Party has not systematically identified such needs?).</td>
</tr>
<tr>
<td>Capacity-building for mitigation, adaptation, technology development and transfer (provided; BR)</td>
<td>Listing specific categories may mean Parties will want to add more categories to make sure all relevant activities can be covered. Overlap with technology transfer reporting requirements.</td>
</tr>
<tr>
<td>Technical and capacity-building needs related to constraints and gaps (BUR)</td>
<td>The term “technical needs” is not defined anywhere; unclear what it encompasses. It may refer to a specific need associated with implementing climate policy, such as undertaking a study, which may or may not be a request for capacity development. Unclear whether this is usefully reported as part of support for capacity building, or under a separate, general support received category.</td>
</tr>
<tr>
<td>Capacity-building and technical support received (BUR)</td>
<td>“Technical support” is not defined anywhere. It suggests reference to “technical assistance” or “technical co-operation” without being explicit. This type of support is not a term included in Annex II reporting on support provided. Technical assistance is a type of support, which may be financial or non-financial (from the recipient’s perspective), and may be used for capacity building or technology transfer, or not. It is therefore not descriptive and does not indicate the use or purpose of the support.</td>
</tr>
</tbody>
</table>

(Source: Authors.)

CTF tables are already used in the UNFCCC system to encourage clearer, more consistent and more comparable reporting of information by Parties. The informal note by the APA agenda item 5 co-facilitators includes a suggestion for developing CTF tables for reporting on financial support needed and received, to be adopted by the CMA (APA agenda item 5 co-facilitators, 2017[42]). Parties could consider extending possible developing country CTF reporting under the Paris Agreement to encompass qualitative reporting of technology and capacity-building support under separate tables. This would assure better symmetry with reporting on technology and capacity-building support provided. Where separating technology transfer and capacity-building support directed towards a given activity might be difficult, Parties could potentially also report these jointly in a single table.

Table 10 proposes possible elements for a CTF on technology and capacity-building support received under the Paris Agreement, drawing on the co-facilitators informal note, recent party submissions on the MPGs for the ETF and CTF Tables 8 and 9 currently proposed for Annex II country reporting on support provided in these areas (APA agenda.

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While “technical assistance” is often used for funding capacity-building activities, it is not exclusively used for this purpose, and capacity development can also be an important component within grant and loan funding. See for example (ADB, 2016[59]).

The co-facilitators note assumes CTF for developed country reporting will continue under the Paris Agreement’s transparency framework (APA agenda item 5 co-facilitators, 2017[42]), at E.6 and E.8.
item 5 co-facilitators, 2017). Decision 1/CP.21 also encourages reporting on the “use, impact and estimated results” of support received by developing country Parties in the context of the ETF (para. 94). In the proposed table, the starting point of reporting on support received is the use of the support, i.e. through the lens of action a Party is taking (in line with the discussion in Section 4.2 above), with reporting on results also encouraged. Nevertheless, reporting on impact and results can be challenging, particularly when it comes to capacity-building support, which may have implications for developing MPGs (Box 2).

Table 10 suggests that Parties frame non-financial reporting in terms of what the support is meant to help achieve, in what areas, and by whom it is received. It also suggests reporting where the support is coming from, along with more specific information on what form it is taking and its current status. The table suggests Parties be provided with more specific guidance on what to communicate regarding the status of the support, and limit reporting of support provided too long ago, and support which is likely to arrive too far into the future. When support is in the process of being received at the time the Party submits it report, this is an opportunity to provide some additional, specific information on what has actually been received to date. The table also suggests Parties provide an indication of key results, as well as lessons and insights. Some of this information may require more time and capacity to collect, and may also be detailed in the form of case studies (as suggested in Section 4.1) or communicated in the context of potentially more comprehensive knowledge-sharing platforms (as suggested in Section 4.4).
<table>
<thead>
<tr>
<th>Action and objective</th>
<th>Implemented by</th>
<th>Targeted area(s)</th>
<th>Targeted sector(s)</th>
<th>Form of support</th>
<th>Source of support</th>
<th>Status and time period</th>
<th>Key results</th>
<th>Cross reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information that could be included</td>
<td>Brief description of what the support was or is for including result or outcome the Party wants*</td>
<td>The body or bodies that will be: undertaking the action that uses technology transfer support or receiving the capacity-building support, e.g., those involved with implementing the action requiring capacity-building; Providing context for the action, the broader policy objective or framework. Could indicate mitigation, adaptation, mitigation and adaptation, transparency.</td>
<td>These would match sectors used for reporting on policies: energy, transport, industry, agriculture, other land-use, water and sanitation, etc. as well as transparency.</td>
<td>Brief description of non-financial support that was or is being received (if of interest, can indicate specific form e.g., technical assistance, investment, etc.).</td>
<td>Country, organisation or entity the non-financial support was received from.</td>
<td>Time period provided should indicate status of support received, whether completed (no longer received in reporting year), underway (with details) or beginning imminently (within next two years).</td>
<td>Indicate any impacts, estimated results, or co-benefits. Could also include major lessons, insights, success or failure stories, as relevant.</td>
<td>Include reference to where information on financial, capacity-building or technology transfer support, or climate policies also include this action.</td>
</tr>
<tr>
<td>Example: technology transfer</td>
<td>Accessing and using modelling tools to conduct projections for setting mitigation objective and tracking progress</td>
<td>Climate Change Office (Ministry of Environment); Energy Agency; Environment Agency; Research Institute</td>
<td>Transparency (to fulfil Paris Agreement requirements)</td>
<td>Mitigation</td>
<td>Germany International Modeling Forum</td>
<td>2017-2019</td>
<td>Underway</td>
<td>Improved modelling tool, 6 staff now trained</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>Example: capacity-building</td>
<td>Being able to assess deforestation levels in three key regions</td>
<td>Ministry of Environment; Forestry Research Institute</td>
<td>Mitigation and adaptation</td>
<td>Forestry (other land use)</td>
<td>Official seconded to Forestry Research Institute for six months</td>
<td>Canada</td>
<td>2018-2019 Planned</td>
<td>N/A (support to arrive in 9 months)</td>
</tr>
<tr>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

Note: Names of specific bodies and organisations are fictitious, and provided simply as an example. Text in *italics* refers to report elements that may be less essential. a) Level of granularity may vary e.g., broad policy or specific project; b) These may be governmental or non-governmental; c) There may be a mix of capacity-building elements included in with technology transfer; d) Some parameters may be helpful, e.g., include details of support being received; list only if support is to arrive before next reporting period (otherwise move to “needs”); list only if actions completed since the last report; e) For example, the support may correspond to a current policy measure, which may still require additional support, and may be part of a broader financial support flow.

Source: Authors.
Box 2. Communicating on the results and impacts of technology and capacity-building support received

In the context of support for climate action with a capacity building or technology transfer component, impacts and results may be determined in significantly varied ways. Climate finance projects with targeted technology components will generally list the results and impacts they would like to see. This can be for example an estimated GHG reduction amount (e.g. through renewable energy deployment), or electricity savings or water savings (e.g. through improved industrial efficiency). The results of support could include physical renewable energy plants built, electricity sales, and greater capacity to develop renewable energy projects, such as by training staff within banks (see (GCF, 2017[11]; GCF, 2016[47]) for examples).

The particular challenge of determining impacts and results from technology and capacity-building support is in part due to causal links that can be complex to determine, and the significant time lags between support provision and its effects. While outputs can be tracked more easily (e.g. number of people trained or analyses supported), actual results may only be known or measurable much later, especially for capacity development.

Reporting such information in the context of the enhanced transparency framework can be challenging for Parties receiving the support, in part because the national government of a Party may not be aware of all flows taking place (Ellis and Moarif 2016; Ellis et al. 2015). While acknowledging that any reporting might be partial, to deal with the time lag challenge, a Party could potentially report on results available mid-way through an NDC implementation period, and at the end of the period. Parties could also consider that tracking and reporting on the individual results of each support flow could be cumbersome, and potentially unnecessary in the context of the Paris Agreement’s transparency framework.

Rather than focus on specific results and impacts from particular support flows, one option could be for Parties to communicate more broadly on their ability to deliver on their NDC, and how this ability has increased (or not) over the course of the NDC implementation period. While this change in ability may not all be due to support received, it could be a simpler way of reporting on overall capacity improvements and deployment and diffusion of climate-related technologies, while recognising Parties’ efforts to achieve their policy objectives. Reporting could also acknowledge that capacity to implement NDCs may be challenging to clearly separate from capacity to implement other strategic policy objectives. In time, certain SDG indicators may be relevant to capturing such changes, such as technology and innovation-relevant indicators for SDG 9, or capacity-related improvements captured by SDG 17 indicators. In some cases, development of science, technology and innovation indicators more broadly could be relevant to climate-related technology development.  

35 There have been and are ongoing efforts to develop science, technology and innovation indicators that are more relevant to different developing country contexts, such as the “Bogota Manual” developed for the Latin American and Caribbean region, and work under a NEPAD initiative to develop African Science Technology and Innovation Indicators (ASTII).
4.4. Enabling more flexible reporting tools and more comprehensive and accessible online interfaces

Currently, developed country Parties tend to provide an indicative list of projects when reporting on capacity-building or technology support provided. Having long lists of non-exhaustive projects in individual country reports may not be particularly useful to Parties; these are difficult to search through, and provide only a partial view of support. As developing country Parties may also begin to report information on non-financial technology and capacity-building support received more systematically, this information is also likely to be limited and difficult to search through if communicated in national reports.

One option could be to allow Parties to report and present this information in online databases, perhaps managed under the UNFCCC technology and capacity-building platforms. Reporting Parties could then refer to their entries in this online platform rather than providing extensive tables in national reports themselves. This would also enable information to be updated more easily and frequently, benefitting subsequent reporting cycles, and could enable linking information on technology transfer, capacity-building and financial support.

Enabling more accessible and comprehensive online interfaces, including through data export and personalised searches, would allow developing country Parties to find examples of activities relevant to them, whether in certain sectors, for certain technologies, or for the development of certain capacities. Improving the accessibility of information on support provided and received, by enabling filtering and interpretation of data, also has potential benefits beyond supporting transparency and reporting. Submissions from Parties, including as reflected in the co-facilitators’ informal note, suggests there is interest in gleaning more practical lessons from this information. Examples include “success and failure” stories, information on how private sector

36 Part of the 2016-20 work programme of the Paris Committee on Capacity-building (PCCB) is to provide guidance to the UNFCCC secretariat on the “maintenance and further development of the web-based capacity-building portal” (Para. 71.i, Decision 1/CP.21). The PCCB has established an “open-ended task-based working group” on the issue. This mandate, combined with the direction given to the PCCB by Parties at COP22 to consider how reporting on capacity-building activities might be enhanced, provides an opportunity to optimise the portal to support the transparency of capacity-building support under the Paris Agreement. Adding a search function enabling users quick access to information on support, and including new types of information in the portal, are two suggestions that have been identified in response to a 2017 PCCB call for submissions on ways to further enhance the capacity-building portal (UNFCCC,(n.d.)[33]).

37 Previous CCXG work has suggested that information on finance provided and received could also more usefully be reported and presented in an online, searchable format (Ellis and Moarif, 2017[55]) (Vallejo, Moarif and Halimanjaya, 2017[1]).

38 Although it will remain difficult to reconcile reporting of support provided and support received for a number of reasons, for example because countries may adopt different definitions in reporting on support, or a time-lag between commitment, disbursement and receipt of support (Vallejo, Moarif and Halimanjaya, 2017[1]) (Ellis et al., 2015[7])
activities have been encouraged, and strategies and approaches to support technology development and transfer, including case studies.  

During the March 2018 CCXG Global Forum, participants expressed much interest in providing and accessing more granular information on capacity-building and technology development and transfer, beyond a listing of support provided or received. They also expressed interest in using more flexible and user-friendly online platforms for sharing such information. This suggests that Parties could explore establishing greater knowledge-sharing systems outside the direct reporting framework of Art. 13 of the Paris Agreement. Under the draft informal note on the technology framework alone, there are several references to information sharing activities, including on activities of international partnerships and initiatives, RD&D policies and activities, and knowledge that can help strengthen enabling environments (UNFCCC, 2018[32]).

Reflecting the bulk of country information on technology transfer and capacity-building activities, including support provided and received, on an online platform would enable Parties to consider what information might most usefully be retained in BTRs themselves. It is generally not clear what criteria Parties currently use to select projects highlighted in national reports. Listed projects could potentially be focused on key examples that are most relevant to NDC implementation (Section 4.2) or that provide specific insights (e.g. a particularly successful replication, performance or benefit; lessons from different means of supporting technology development; lessons regarding how capacities have been improved by a certain support activity) (see case study option presented in Section 4.1).

While there are clear advantages to providing information on technology and capacity-building support online, Parties need to consider that doing so may require more specific categories to facilitate searching. For technology transfer, this could follow the key themes of the technology framework, for consistency: innovation, implementation, enabling environment and capacity building, collaboration and stakeholder engagement, and support. Online information-sharing platforms may require further, more specific categorisation of technologies by sector and area. For example, the categorisation used in the development of a Technology Needs Database by the National Designated Entity of Germany (Hans et al., 2017[48]), or the categorisation used by the World Intellectual Property Organisation’s WIPO GREEN database, which connects green technology owners with those looking to access or distribute such technology.

4.5. Examining the role of other bodies and entities in providing information that may complement what Parties can report under the UNFCCC

Driving efficiencies in reporting under the ETF and filling gaps in information as currently reported is not simply a question of what and how Parties themselves might report. Other bodies and entities are potentially well-placed to help enhance transparency of technology transfer and capacity-building support. This is particularly the case if

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39 Other examples include information on the benefits, risks and consequences of technology transfer, ways and means of transfer, technology performance and sustainability, and replication.

40 Available at www3.wipo.int/wipogreen-database; it uses eight main categories (Buildings and construction; Chemicals and advanced materials; Energy; Farming and forestry; Green products; Pollution and waste; Transportation; Water) and several sub-categories. For example, under “green products” are “products that save water/energy”.

Unclassified
Parties are interested in moving towards knowledge sharing via more comprehensive and user-friendly online interfaces, as described in Section 4.4. Indeed, some developing country Parties with no domestic tracking system in place rely on information from funders and other support bodies to help understand support received (Section 3.2).

Taking stock of capacity-building activities undertaken to assist implementation of NDCs, mapping relevant stakeholders and making that information available for both Party and non-Party stakeholders, falls directly within the PCCB’s mandate to assess how reporting on capacity-building activities might be enhanced as part of its 2016-2020 work plan (UNFCCC, n.d.[33]). The PCCB’s broader mandate to drive coherence and co-ordination in capacity-building initiatives under the Convention is also relevant, as is its brief to provide an analysis of capacity-building needs and gaps in the context of NDC implementation. The PCCB’s work plan means that it will be directly positioned to both provide information to complement Party reporting itself and examine the role that other bodies and entities might also play. The aim of the Capacity Building Initiative for Transparency (CBIT)’s “Global Coordination Platform” to facilitate co-ordination of national, multilateral, and bilaterally-supported capacity-building initiatives and knowledge sharing for “transparency enhancements” (GEF, 2018[35]) makes the CBIT similarly well-positioned. The initial, informal draft of the technology framework also suggests that technology-related bodies, such as the Technology Executive Committee (TEC) and the Climate Technology Centre and Network (CTCN), could play an important role in information- and knowledge-sharing (UNFCCC, 2018[32]).

The TEC, PCCB and CBIT may wish to consider, together with Parties:

- Encouraging multilateral and bilateral support providers to more actively communicate activity-level support provided to developing country Parties to the UNFCCC or other relevant bodies. Collectively, these entities have a significant amount of information relevant to the UNFCCC’s support regime at their disposal. While mostly relevant to having a better picture of support provided, this information could also be useful for Parties receiving such support, to help improve their domestic monitoring systems and reporting.
- Expanding the information on the UNFCCC’s existing capacity-building and technology portals to serve as a central clearing house for information on capacity-building and technology support respectively. This could build on the current mandate of these portals to aid review of implementation of the capacity-building and technology transfer frameworks, and could potentially also facilitate information-sharing by Parties and support providers.
- Aligning the roles of the existing capacity-building portal, the proposed CBIT Global Coordination Platform, and broader co-ordination initiatives proposed under the PCCB and CBIT. Such alignment may better ensure that they make a maximum contribution to enhanced transparency on support and avoid duplication, including with other existing fora such as the Durban Forum on Capacity-building. Parties also envisage greater collaboration between the PCCB and technology bodies as part of the Paris Agreement’s technology framework; improved alignment could positively strengthen both capacity and technology development.

Information from other bodies and entities may also be potentially useful to complement information from Parties in the context of collective assessment processes. The global stocktake is particularly relevant in the context of the Paris Agreement’s transparency framework. While information from Parties will of course contribute to the stocktake, it is
likely to provide only a partial view of overall support flows without information from multilateral bodies and donors. Information from other entities could also potentially enhance other UNFCCC processes such as periodic Subsidiary Body for Implementation reviews of implementation of the framework for capacity-building in developing countries, and periodic assessment of the Technology Mechanism. Some Parties have proposed that under the Technology Framework, the TEC and CTCN prepare information on support for technology development and transfer provided to developing countries for the global stocktake; information from a broader set of actors would also facilitate this exercise (UNFCCC, 2018[22]).

4.6. Building on existing assessment processes to facilitate reporting

Some Parties are explicit in highlighting challenges associated with reporting on technology and capacity-building needs in BURs, including difficulties determining needs in the first place. Mexico has confirmed that it lacks a methodology to assess gaps, constraints and needs and would require capacity-building to undertake this assessment (UNFCCC, 2016[49]). Ecuador has established a national entity dedicated to collecting and analysing information on finance, technology and capacity-building constraints, gaps and needs to facilitate reporting (UNFCCC, 2017[27]). Other countries provide partial information. Lebanon reports on administrative, technical and institutional constraints and gaps, but does not translate these into associated financial or capacity-building support needs (MoE, UNDP and GEF, 2015[23]); Malaysia does so for the energy sector only and does not provide any information on technology needs (Ministry of Natural Resources and Environment, 2015[28]). This suggests scope to provide further support to developing country Parties in assessing gaps, constraints and associated needs for both technology and capacity-building; such efforts could potentially facilitate reporting in this area under the Paris Agreement.

For reporting on technology support needed, many developing country Parties have pertinent information available as part of existing TNA processes. Indeed, several non-Annex I Parties cross reference or rely on information included in TNAs under current reporting arrangements. Armenia, Brazil, Ecuador, Georgia and Jordan are examples. Parties could consider further supporting and encouraging developing countries to undertake TNAs to support identification of needs and facilitate reporting under the Paris Agreement. To aid transparency, future reporting guidance could explicitly encourage Parties to refer to any TNA reports, potentially reiterating principal findings, or to report on elements of the TNA process where final reports are not complete.41 Multiple TNA processes may be useful to inform ongoing reporting, including as country ambition accelerates in NDCs and to reflect long-term low-emissions development strategies. Vietnam undertook two TNA processes to support development of its first and second BURs respectively, for example (Pham Van, 2018[25]). Costa Rica is seeking a more “transformational” TNA, to reflect increasing levels of ambition in its climate goals (Meza, 2018[46]).

Technology Action Plans (TAPs) provide more specific information on costs of technologies, and therefore potential financial needs, in addition to information on the

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41 A number of summary reports on the technical analysis of BURs flag that transparency would be enhanced if Parties that omit information on technology needs because it is included in TNAs stated so clearly.
actual actions a government would need to take to enable technology deployment. More countries could be supported and encouraged to undertake this process also, to make it easier to identify and report on the different types of support needed.

Given the usefulness of the TNA and TAP processes for identifying and reporting on specific support needs, Parties could potentially envisage encouraging similar processes for capacity-related needs assessments, building on current efforts to support non-Annex I Parties in this area (Section 3). The Paris Committee on Capacity-Building (PCCB)’s mandate to potentially recommend guidelines for capacity gaps and needs assessments, and reporting on capacity-building needs in biennial update reports (Section 3.3), represents a potential opportunity in this context.

While not solely focused on climate, the Global Environmental Facility (GEF)’s National Capacity Self-Assessments (NCSA) represent a relevant precedent (GEF, 2018[50]). The NCSAs have supported developing country capacity to meet Rio Convention and multilateral environmental agreement commitments by helping countries identify weaknesses and address gaps in capacity development since 1999, with projects in over 153 countries. Most of these assessments were complete by the end of the GEF’s fifth funding period in June 2014. The GEF plans to update previous NCSAs and focus on building capacity to integrate environmental concerns into all relevant government activities during the GEF-6 (2014-2018) funding period.
5. Conclusions

Parties to the UNFCCC have been reporting information on technology and capacity-building support provided, received or needed for two decades. Initially reported in national communications (NCs), the provision of information on support has become more systematic in biennial reports (BRs) and biennial update reports (BURs) established under the Cancún Agreements of 2010.

Yet, many Parties continue to struggle to report in a transparent and consistent manner on support for technology transfer and capacity building. This is true both for reporting by developed countries of technology transfer and capacity-building support provided, as well as for developing country reporting of technology transfer and capacity-building support received and needed. These challenges are due in part to the difficulty in identifying and distinguishing technology and capacity-related support from financial support and from each other, as well as due to a lack of facilitative guidance as to what information to report, particularly for non-Annex I Parties. In addition, the emphasis placed on reporting of financial support has meant that reporting of other types of support has received less attention. The voluntary nature of reporting on support needs and support received – financial or otherwise – has also meant this area has not benefited from clear guidance.

Lessons from current reporting of technology transfer and capacity-building support both within and outside the UNFCCC transparency framework demonstrate clear scope to enhance reporting arrangements under the Paris Agreement. Guidance on future reporting under the enhanced transparency framework (ETF) could seek to:

- Provide clarity on how to report different types of support and distinguish them from each other, should this be how Parties choose to report. Given the difficulties Parties experience in distinguishing between types of support in practice, reporting guidance would need to accommodate different approaches to reporting in a distinct manner on financial, technology transfer and capacity-building support.
- Provide more specific guidance on what and how to report, in order to improve consistency and clarity of reporting.
- Encourage reporting formats that are more flexible and useful for both Parties and other stakeholders to facilitate access to information, potentially through the use of online interfaces.
- For support needed and received, ensure that reporting promotes better understanding of how the support needed and received relates to the climate policies a Party plans to or is implementing as part of its nationally determined contribution (NDC), alongside information on support needed and received to fulfil reporting requirements and fully participate in the ETF.
- Build on other reporting processes and entities where possible, both within and outside the UNFCCC, to streamline and optimise provision of information.
The Paris Agreement’s ETF, currently being negotiated, emphasises improvement and facilitation of implementation, as well as limiting the reporting burden on Parties. As such, future MPGs could usefully focus on the information Parties want to have from each other regarding technology and capacity-building support, i.e. information that has a clear benefit and value for the purposes of Art. 13 reporting. This could include, for example, information increasing the visibility of technology transfer or capacity-building support within broader financial support, or signalling where further support is required to enable developing countries to undertake climate actions.

Parties will need to be aware of the limitations of the information they have available, as this will impact on what can be reported, particularly for the purposes of informing the global stocktake. For example, governments are likely to have only a partial view of overall technology-related flows and activities, given the predominant role of the private sector in driving technology development and transfer. Similarly, governments will have limited visibility on how contributions to multilateral funds are used, i.e. for technology transfer, capacity-building support or simply for the provision of climate finance. Parties could consider how they might draw on other, potentially complementary sources of information.

This paper presents six main suggestions to guide future development of MPGs, which are further elaborated in Table 11 below:

1. **Provide more guidance and options to help Parties distinguish reporting of financial, technology and capacity-building support**, should Parties wish to pursue disaggregated reporting. Parties could consider “tagging” the use of finance in support of technology development and capacity building, and including financial information relevant to technology transfer and capacity-building support alongside reporting of financial support provided, received and needed. Parties could continue to report qualitative, non-financial information on technology and capacity support provided, needed and received, including potentially via CTF tables and/or targeted case studies providing specific insights. Using specific policy measures that a Party wants to undertake as a starting point may help guide reporting on support needs, which are reported ex ante and may be uncertain. It may be also useful to enable latitude on where and how capacity-building support is reported given its high level of integration with other types of support.

2. **Frame reporting of support needed and received in the context of actions to be taken under Parties’ nationally determined contributions** and broader climate policies, for both financial and non-financial information. Alongside support needed and received relating to preparing reports and participating in the ETF, a Party’s NDC and the policies it wishes to implement to achieve its NDC could help it identify relevant support needs and support received. Table 12 provides an example of how a country might report on support needs using a specific policy action as a reference point.

3. **Have more detailed guidance for both developed and developing country Party reporting of technology and capacity-building support**, including to facilitate a more consistent use of key terminology and clearer reporting. Parties could consider introducing CTF tables to support developing country reporting on qualitative aspects of technology and capacity-building support.

4. **Enable more flexible reporting tools and comprehensive and accessible online interfaces for technology and capacity-building support**, to facilitate reporting on support provided and received, and better access to this information.
Parties could build on existing online platforms managed by the UNFCCC to host technology and capacity-building information.

5. **Examine the role of other bodies and entities in providing information that may complement what Parties can report**, including to facilitate collective assessment processes such as the global stocktake. For example, multilateral and bilateral support providers might be more actively encouraged to communicate to the UNFCCC on activity-level support provided to developing country Parties.

6. **Build on existing information-gathering exercises on capacity-building and needs assessment** to facilitate reporting, in a similar fashion to how the development and evolution of the Technology Needs Assessment and Technology Action Plan processes have supported enhanced reporting on technology needs.
Table 11. Key issues and options for reporting technology transfer and capacity-related support

<table>
<thead>
<tr>
<th>Issue</th>
<th>Suggestion</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challenge in distinguishing between types of support</td>
<td>Improve guidance for Parties on how to distinguish between different types of support in their reporting</td>
<td>Ensure guidance accommodates different reporting approaches to recognising difficulties in distinguishing between types of support that arise from how support is delivered in practice, and the variety of country contexts and domestic tracking systems. Because “needs” are reported ex ante and uncertain, use proposed policy measures or other objectives (e.g. to meet NDC, fulfill reporting requirements) to guide reporting and report on needs in an integrated way (Table 12). Given integration of CB support with all other types of support, allow for flexibility on where and how this is reported (noting this may have implications for associated CTF tables). Cross-reference information in different support-related reporting tables to clarify links between different types of support. Report all financial information together, and enable varying degrees of specificity on the use of the finance flow toward technology development and transfer and capacity-building (e.g. simple “yes/no” indication, indication of share or amount of flow being used to these ends). Include explanation of how domestic monitoring systems enable tracking.</td>
</tr>
<tr>
<td>Challenge in determining scope of information to report</td>
<td>Frame reporting in terms of NDCs, relating support needed and received to policy objectives, in addition to reporting objectives</td>
<td>Cross-reference information in support-related tables to information in tables on mitigation and adaptation actions, as relevant. Build on initial indications of support needs expressed in NDC submissions to underpin formulation of specific support needs, where applicable. If challenging to delimit support-related information, base determination of support received on activities being implemented or planned for NDC achievement.</td>
</tr>
<tr>
<td>Challenge to date with clear guidance and consistent use of terms</td>
<td>Improve guidance to encourage clearer, more consistent use of terms and provision of information</td>
<td>Encourage use of a limited set of defined terms with examples to facilitate common understanding of terms. E.g. use “technology transfer” or “technology development and transfer” as an umbrella term, to subsume other technology terms currently used, potentially using key technology framework themes as a guide; clarify use of the term “technical support” and indicate separately within reporting tables if of specific interest to Parties to continue reporting under this heading. Provide clear parameters for information to report, in terms of objectives, time period and status, implementing body or bodies, and potentially key results/anticipated results.</td>
</tr>
<tr>
<td>Use and usability of information reported</td>
<td>Enable more flexible reporting tools and online interfaces</td>
<td>Encourage Parties to report support-related information using an online reporting tool, and have information available in an online, searchable database or platform to assist Parties' reports to move beyond simple, non-exhaustive listings of support provided or received. Existing online information platforms on technology needs and capacity-building support provided could potentially be enhanced for this purpose, and facilitate increased knowledge sharing even beyond the scope of the ETF.</td>
</tr>
<tr>
<td>Challenge with determining support needs</td>
<td>Use parallel needs assessment processes</td>
<td>Encourage Parties to undertake TNAs and especially TAPs where they have not already done so, or if additional TNA or TAP processes are needed to support increasing country ambition in NDCs/long-term low-emissions development strategies. Develop tools and processes for Parties to undertake capacity-building needs assessments, to facilitate reporting.</td>
</tr>
<tr>
<td>Difficulty getting comprehensive information that might inform the global stocktake</td>
<td>Examine the role of non-Party bodies and entities</td>
<td>To better capture the support flows Parties are not able to report, encourage a platform or other means for multilateral financial institutions and development agencies, along with other non-Party stakeholders facilitating support for developing countries (e.g. the Technology Executive Committee, Paris Committee on Capacity-Building and Capacity Building Initiative for Transparency), to report information on technology and capacity-related support activities. Such a platform is also likely to support enhanced knowledge sharing.</td>
</tr>
</tbody>
</table>

*Source: Authors.*
Table 12. Example of reporting on support needs

<table>
<thead>
<tr>
<th>Guiding question</th>
<th>What do I want to do?</th>
<th>What do I need in each of these three areas to achieve this?</th>
<th>Who needs this support and in what time period?</th>
<th>What is the basis for information on needs?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information</td>
<td>Policy action</td>
<td>Framework</td>
<td>Finance</td>
<td>Technology</td>
</tr>
<tr>
<td>Example</td>
<td>Urban rapid mass transit system</td>
<td>NDC (action to deliver conditional 2030 BAU GHG target)</td>
<td>USD 2.7 billion</td>
<td>Procurement of hybrid buses; adapting light rail systems</td>
</tr>
</tbody>
</table>

Source: Authors.

As Parties work to develop MPGs under the ETF, they have a wide range of options for determining how to report information. This paper suggests Parties be guided by the provisions of the Paris Agreement and their experience with reporting to date. It also suggests Parties acknowledge the unclear distinctions between types of support in practice, and focus on reporting information that is useful in the context of the Paris Agreement and the enhanced transparency framework. As such, Parties could potentially begin by considering the following questions, in the context of support for technology transfer and capacity-building:

- What information do Parties want from each other and why?
  o How do they want to use this information? Would having this information in a different format, i.e. an online searchable platform, be more or less useful?
- What information do Parties have available on support provided or received that they could report?
  o What information is currently gathered or monitored?
  o What additional information is accessible or could potentially be made available to the reporting Party?
- What further information would be useful to countries, but is currently not readily accessible, either because it is not currently gathered or monitored, or because it cannot be obtained?
- Do other bodies or organisations have the information that Parties would like?
  o If so, could relevant non-Party stakeholders be encouraged to report this information?
- What other processes and bodies related to technology transfer and capacity-building could Parties use to develop further, more specific guidance that could facilitate information gathering and reporting?
- How might Parties more clearly showcase and share “success and failure” stories for support provided, to share practical lessons from experience, support mutual learning and potentially support the global stocktake?
Annex: reporting on technology transfer and capacity-building support to date

Consistent with the UNFCCC’s Guidelines for the preparation of national communications by Parties included in Annex I to the Convention (UNFCCC, 2000[51]), Annex I Parties reported on the provision of both hard and soft technology support in second BRs (UNFCCC Secretariat, 2016[52]). Transfer of hard technologies was the most commonly-reported activity, particularly mature mitigation technologies in the energy sector. This focus aligns with an emphasis on the energy sector in non-Annex I country Technology Needs Assessments (TNAs). Countries also underscored the importance of development and transfer of climate technologies to non-Annex I countries, reporting on training and capacity-building measures and exchange with countries through bilateral, regional and multilateral co-operation initiatives (UNFCCC Secretariat, 2016[52]). It is less clear from reporting in second BRs whether Annex I Parties are effectively supporting endogenous capacity and technology development and the broader process of “learning to understand, utilize and replicate” technology and adapt to local conditions and indigenous activities (see Box 1, Section 1). This may reflect the focus in Annex I country reporting on demonstrating the provision of support, rather than use or impacts of support.

Like reporting on support for endogenous capacity and technology development, there are challenges in trying to draw clear insights from Annex I Party reporting to date on capacity-building. Amongst other reasons (Section 2.2), this is because reporting is focused on support provided rather than the ultimate outcomes of activities listed, while capacity-building is generally framed in the UNFCCC context in terms of support that responds to “existing and emerging capacity-building needs identified by non-Annex I Parties” and aids countries develop and enhance systems, resources and knowledge (UNFCCC, 2012[15]) (Box 1).42 Annex I countries reported on a broad spectrum of capacity-building activities in second BRs, including measures to support institutional and system capacity more broadly (UNFCCC Secretariat, 2016[52]). Reporting remains dominated by measures to boost the capacity of individuals, even as Parties increase calls for initiatives at the institutional or system level (as more likely to yield long-term results). Initiatives were undertaken through both bilateral and multilateral avenues. The majority focused on adaptation (166 projects described in second BRs, as opposed to 102 projects for mitigation) (UNFCCC Secretariat, 2016[52]).

42 UNFCCC Lead Reviewers guidance suggests that reference to needs assessments conducted by non-Annex I Parties and “country driven approaches” may suffice (UNFCCC, 2017[43]).
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