

SCALING UP AMBITION: LEVERAGING NATIONALLY DETERMINED CONTRIBUTIONS AND LONG-TERM STRATEGIES TO ACHIEVE THE PARIS AGREEMENT GOALS

INPUT DOCUMENT FOR THE G20 CLIMATE AND SUSTAINABILITY WORKING GROUP

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EXECUTIVE SUMMARY

Highlights

- G20 action over the next two years will determine whether the world sets off on a path toward strong, sustainable, balanced, and inclusive growth in time to achieve the goals laid out in the Paris Agreement and avoid the worst impacts of climate change. As the Intergovernmental Panel on Climate Change has noted, immediate transformation is necessary to halve global emissions by 2030 in line with the 1.5°C goal. Ambitious climate action also offers the promise of significant economic growth, job creation, and health benefits.
- Long-term strategies (LTSs) and nationally determined contributions (NDCs) are key components of G20 action because they articulate to the international community how each country will address climate change—and by extension, the extent to which the G20 is poised to deliver on the Paris Agreement temperature goals and reap the associated socioeconomic benefits. Due to the high relevance of NDCs and LTSs to each other and to national development priorities and plans, they can play a key role in driving national development agendas.
- This paper highlights the critical role of LTSs and NDCs in advancing the G20 goal of strong, sustainable, balanced, and inclusive growth. In addition, it argues that while LTSs and NDCs make distinct contributions to enhancing global climate action,

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they are also closely interlinked. Because of the interdependencies between near-, medium-, and long-term planning and policies, G20 countries can benefit from undertaking these processes in tandem.¹ They are related in the following ways:

- LTSs offer countries a long-term perspective to inform the design of development trajectories—and crucially, near-term decisions—that align with the Paris Agreement goals.
- Robust NDC implementation, in turn, can align near-term decisions with LTSs as well as sustainable development, inequality reduction, and growth objectives.
- Communicating new and updated, more ambitious NDCs by 2020 signals the ratcheting up of national ambition to align with global goals and deliver on the sustainable growth and development potential associated with climate action.
- G20 countries can play a major role in supporting non-G20 countries as they advance their LTSs and strengthen NDC implementation and enhancement.

Context

The benefits of ambitious climate action are staggering. Recent analysis finds that accelerating climate action—including through smarter urban development, a shift to clean energy, and sustainable land use, could generate US\$26 trillion in economic benefits between now and 2030—could also create 65 million new jobs in 2030 and avoid 700,000 premature deaths from air pollution (Global Commission on the Economy and Climate 2018). This builds on analysis for the G20 in 2017 by the Organisation for Economic Co-operation and Development, which also highlighted the economic benefits of enhanced climate action (OECD 2017). These numbers clearly illustrate the benefits of pursuing “strong, sustainable, balanced, and inclusive growth” via ambitious climate action.

G20 members have a compelling opportunity to strengthen their sustainable growth trajectories in an inclusive way by further advancing climate action. Delivering on the sustainable growth and development benefits associated with strong climate ambition will require a long-term vision translated into clear near-

and medium-term targets and implementation plans. It is essential that these are then embedded in economic development and infrastructure investment plans to maximize policy coherence and synergies.

The G20 has already started down the path toward advancing the necessary vision, targets, and plans to deliver that ambitious climate action. All G20 members have developed NDCs, and six have already communicated long-term low greenhouse gas emission development strategies (long-term strategies, or LTSs) (see Box 2).

Even greater ambition is urgently needed to achieve the goals set out in the Paris Agreement. Current climate action commitments fall well short of those needed to avoid the most dangerous climate impacts, and global warming is likely to reach 1.5°C between 2030 and 2052 at current rates and then continue to rise (Masson-Delmotte et al. 2018). In particular, the G20 countries will need to implement additional low-carbon policies to collectively reduce greenhouse gas emissions by a further 2.5 to 3.5 gigatons of carbon dioxide equivalent per year to achieve their conditional and unconditional NDCs, respectively (UNEP 2018).²

About This Paper

This paper highlights the critical role of NDCs and LTSs in advancing the G20 goal of strong, sustainable, balanced, and inclusive growth. It outlines the following four ways that G20 countries can advance NDCs and LTSs globally:

- Developing LTSs that set a vision for low-carbon, climate-resilient, and sustainable development pathways through mid-century
- Laying the groundwork to successfully and efficiently implement current NDCs
- Communicating new or updated NDCs by 2020, reflecting enhanced ambition and alignment with sustainable growth and development goals
- Supporting other countries in implementing and updating NDCs and developing LTSs

Conclusions and Recommendations

NDCs and LTSs can underpin strong, sustainable, and inclusive growth. Ambitious climate action can deliver a wide range of economic and development benefits, including strong growth in gross domestic product, new job opportunities, and improved health outcomes. It can also deliver substantial government savings or revenues (e.g., by phasing out distorting subsidies and using judicious carbon pricing), which can be used to balance fiscal deficits, invest in other public priorities, or offset reductions in other taxes. As such, LTSs and NDCs also have strong synergies with the United Nations 2030 Agenda for Sustainable Development (2030 Agenda) and its 17 Sustainable Development Goals. LTSs and NDCs contribute to the implementation of the G20 Action Plan on the 2030 Agenda through which G20 members agreed to align their policy actions and ensure “that their collective efforts make positive global impact towards effective implementation of the 2030 Agenda in all three dimensions of sustainable development in a balanced and integrated manner” (G20 2016a). LTSs and ambitious, fully implemented NDCs can support these outcomes by outlining a clear, long-term vision that aligns economic and climate goals, translates the long-term vision into ambitious near- and medium-term targets, and helps ensure their full implementation.

LTSs and NDCs make distinct contributions to enhancing global climate action, but are also closely linked with one another. In particular, the long-term perspective of an LTS is a valuable input to the implementation and update of NDCs, ensuring alignment with long-term goals and steering near-term actions away from locking in climate-incompatible infrastructure and land use. Robust NDC implementation can also open opportunities to reflect enhanced ambition in updated NDCs. NDC updates provide an opportunity to align near-term actions and medium-term 2030 targets with LTSs and with the global goals in the Paris Agreement.

LTSs offer countries a long-term perspective to inform the design of development trajectories—and crucially, near-term decisions—that align with the Paris Agreement goals. This long-term vision can translate into more effective near- and medium-term decisions in the following ways:

- Providing a systematic roadmap for action that avoids locking in carbon-intensive, maladaptive technology, land use, and infrastructure; avoids locking out future options; identifies and addresses technology gaps and needs; and engages coherently across all sectors
- Building an aspirational vision for the country’s future that focuses on a sustainable development trajectory
- Preparing for future risks and uncertainties and increasing the potential to attract private investment
- Guiding the design and implementation of more ambitious NDCs and integrating climate action with development priorities and plans and investment decisions
- Supporting just transitions, including by anticipating when and where they may need to occur and creating new employment opportunities for workers whose livelihoods are tied to high-emissions sectors of the economy

Robust NDC implementation, in turn, can align near-term decisions with long-term strategies as well as development and growth objectives. Several elements can advance NDC implementation planning across national contexts:

- Prioritization of policies and measures supporting NDC implementation based on the delivery of LTS targets
- A stable, efficient, and effective NDC governance framework that allows for greater political ownership, efficiency, and strengthened institutional knowledge for all relevant ministries
- Alignment of NDC implementation with LTSs and mid-century growth and development goals
- A strengthened enabling environment for the finance investment needed to deliver NDC actions that goes beyond near- and medium-term planning
- A system for sound and transparent integrated data management that considers factors such as improved data quality and access, incorporation into LTSs, collection protocols, laws and mandates, and stakeholder engagement

These elements can be advanced through a series of recommended steps, which can be incorporated into an NDC implementation plan in the following ways:

- Tracking progress made toward achieving NDC targets
- Reviewing and adjusting, as needed, the analysis that originally underpinned the NDC to potentially adjust targets, assumptions, and other factors
- Assessing the capacities, institutions, and regulatory frameworks required for NDC implementation and enhancing as needed
- Inclusively engaging stakeholders who can support delivery, including from the private sector and private finance

This process could also inform the updated NDCs to be communicated by 2020, as described below.

Communicating new and updated NDCs by 2020 is necessary to ratchet up national ambition to align with global goals and LTSs, and to deliver on the growth and development potential associated with climate action. The Paris Agreement requires parties to prepare and communicate a successive NDC every five years to reflect progress and increasing ambition. By 2020, parties are requested or urged (depending on the NDC timeframe) to communicate either an updated or a new NDC (UNFCCC 2016).

G20 countries can also play a major role in supporting non-G20 countries as they advance their LTSs and strengthen NDC implementation and enhancement. The general avenues of support required by partner countries in this area are to help address capacity gaps related to institutional capacity and governance; policy and planning processes, including prioritization of adaptation and turning NDCs into concrete implementation plans; and mobilization of financial and other resources to strengthen country efforts to implement the conditional components of the NDCs. In their support to non-G20 countries, G20 countries can also encourage recipients of this support to approach their LTSs and their NDCs in an integrated manner.

A great deal of support is already being provided, but gaps still remain, particularly related to mobilizing finance at the scale required to achieve the Paris Agreement. This reflects the G20 affirmation in the 2016 Hangzhou summit communiqué regarding “the importance of fulfilling the UNFCCC [United Nations Framework Convention on Climate Change] commitment by developed countries in providing means of implementation including financial resources to assist developing countries with respect to both mitigation and adaptation actions in line with Paris outcomes” (G20 2016b). The G20 support also reflects the 2016 findings of the G20 Climate Finance Study Group that highlights the importance of finance being client-driven and focused on helping countries achieve their NDCs (CFSG 2016). The G20 also plays an important role in providing bilateral development and climate funding and setting priorities in the financial sector.

The next two years are critical for setting the world on a path toward strong, sustainable, balanced, and inclusive growth that achieves the goals laid out in the Paris Agreement to avoid the worst impacts of climate change. The G20 countries are at the forefront of delivering this agenda. By developing LTSs, advancing implementation of current NDCs, communicating new or updated and more ambitious NDCs, and supporting non-G20 countries in their efforts to do the same, in particular achieving the conditional targets of their NDCs, G20 countries have the potential to make an outsized impact in securing a safe and healthy future for the global economy and the global climate alike.

1. INTRODUCTION

Framing Nationally Determined Contributions and Long-Term Strategies in the Context of the G20

In 2018, the G20 reaffirmed its commitment to strong and sustainable growth, and recognized that “a strong economy and a healthy planet are mutually reinforcing” (G20 2018). Ambitious climate action can help achieve these goals—for example, recent analysis from the Organisation for Economic Co-operation and Development (OECD) shows that the G20 can generate inclusive economic growth in the short term while making ambitious progress toward long-term climate objectives (OECD 2017). Research from New Climate Economy also shows that accelerating climate action, including through

Box 1 | Seizing Opportunities in the Energy Transition

One way governments are taking advantage of opportunities related to the energy transition is through carbon pricing in the form of carbon taxes or emissions trading systems as part of a broader policy package to tackle climate change. A number of governments have also begun efforts to phase out fossil fuel subsidies, including those in the European Union, India, Mexico, and Saudi Arabia. Modeling undertaken by New Climate Economy shows significant potential benefits from these approaches. Combined revenue and fossil fuel savings could reach \$2.8 trillion in 2030, which would be available to reinvest in public priorities in addition to generating other benefits such as net job growth, improved health outcomes, and an overall acceleration of economic activity. More carbon pricing and taxation policies are expected, such as those planned in G20 countries including Argentina, Canada, China, and South Africa.

The energy transition is directly linked to opportunities in other areas as well, such as transportation with the expansion of electric mobility. The transition of the transport sector through electrification, cleaner fuels and

Notes: Details drawn from NCE 2018; SLoCaT 2018; Climate Transparency 2018. See also the Carbon Pricing Leadership Coalition's Carbon Pricing Dashboard for an overview of all existing and emerging carbon pricing initiatives around the world: <https://www.carbonpricingleadership.org/news/2019/3/12/see-the-updated-carbon-pricing-dashboard>.

vehicles, more active transport (walking and cycling), and safer streets would yield significant, immediate public health benefits, and at the same time reduce the emissions impact from the sector. France, Japan, and the United Kingdom are frontrunners among the G20 countries on transitioning road transport, with phase-out plans for fossil fuels in all three countries. Other countries, including China, India, Italy, Russia, Saudi Arabia, and the Republic of Korea, have also recently initiated policies to reduce transport emissions or increase the use of electric vehicles. Although the transition to electric mobility poses a tremendous challenge by drastically increasing global power demand by the end of the century, meeting that demand through clean energy could yield tremendous benefits. For example, doubling global renewable energy capacity by 2030 (compared with current capacity) could save between \$1.2 and \$4.2 trillion each year, largely due to a reduction of costs incurred from pollution by nonrenewable sources.

smarter urban development, a shift to clean energy, and sustainable land use, could generate US\$26 trillion in global economic benefits between now and 2030. It could also create 65 million new jobs in 2030 and avoid 700,000 premature deaths from air pollution (Global Commission on the Economy and Climate 2018).

As global leaders with significant presence in the international economy, G20 countries are in a central position to lead this ambitious transition across all economic systems, and particularly the energy sector. For example, in 2015, G20 countries collectively accounted for 81 percent of energy-related carbon dioxide (CO₂) emissions and 77 percent of global energy consumption (IEA 2018). (See Box 1 for an example of how G20 countries are taking steps to seize opportunities in the energy transition.)

The G20 is already demonstrating climate leadership. For example, all G20 members have established nationally determined contributions (NDCs)—national climate action pledges to 2025 or 2030—and several G20 countries are already on a track toward achieving these objectives (see Box 2). Many G20 members are also developing long-term low greenhouse gas emission development strategies (long-term strategies, or LTSs), which map out countries' climate action strategies through mid-century. As of March 2019, six G20 members had communicated their

Box 2 | Snapshot Analysis of Nationally Determined Contributions and Long-Term Strategies in G20 Countries

The G20 has committed to strong and sustainable growth, and collectively accounts for 78 percent of global greenhouse gas (GHG) emissions. Both of these elements are critical in designing the global transition that is under way to a low-emissions and climate-resilient future. Table 1 presents a snapshot analysis of NDCs and LTSs in the G20. Collectively, G20 members are not yet on track to realizing their NDCs for 2030. The United Nations Environment Programme (UNEP) Emissions Gap Report 2018 estimates that the G20 will need to implement additional policies to collectively reduce GHG emissions by a further 2.5 gigatons of carbon dioxide equivalent per year (GtCO₂e/year) to achieve their unconditional NDCs and 3.5 GtCO₂e/year to achieve their conditional NDCs. In addition, only 6 G20 members have officially communicated LTSs to the United Nations Framework Convention on Climate Change.

Source: UNEP 2018.

LTSs to the United Nations Framework Convention on Climate Change (UNFCCC)—Canada, France, Germany, Mexico, the United Kingdom, and the United States (under a previous administration).

Table 1 | Snapshot Analysis of Nationally Determined Contributions and Long-Term Strategies in G20 Countries

FEATURE	ARGENTINA	AUSTRALIA	BRAZIL	CANADA	CHINA
Share of Global GHG Emissions in 2017	0.8%	1.2%	2.3%	1.6%	26.8%
Peaking Year of GHG Emissions	No indication of peak	2006	2004	2007	By 2030 (CO ₂ only)
Quantitative Unconditional GHG NDC Target	Not to exceed a net emission of 483 million tons of carbon dioxide equivalent (tCO ₂ e) by 2030	Reduce GHG emissions by 26–28% by 2030, relative to 2005 levels	Reduce GHG emissions by 37% by 2025, relative to 2005 levels, with an indicative goal to reduce GHG emissions by 43% by 2030, relative to 2005 levels	Reduce GHG emissions by 30% by 2030, relative to 2005 levels	Reduce CO ₂ emissions per unit of gross domestic product (GDP) by 60–65% by 2030, relative to 2005 levels
NDC Coverage	Economy-wide, including land use, land-use change, and forestry (LULUCF)	Economy-wide, including LULUCF	Economy-wide, including LULUCF	Economy-wide, including LULUCF	Economy-wide, including LULUCF
NDC Includes Adaptation?	Yes	Yes	Yes	No	Yes
On Track to Meet the Unconditional NDC with Current Policies?	No	No	Yes	No	Yes
LTS Communicated to UNFCCC?	No	No	No	Yes	No
Quantitative Vision for Emission Reductions in 2050	Not set	Not set	Not set	Net GHG emissions falling by 80% in 2050, relative to 2005 levels	Not set

Table 1 | Snapshot Analysis of Nationally Determined Contributions and Long-Term Strategies in G20 Countries (cont'd)

FEATURE	EUROPEAN UNION	INDIA	INDONESIA	JAPAN	MEXICO
Share of Global GHG Emissions in 2017	9.0%	7.0%	1.7%	3.0%	1.5%
Peaking Year of GHG Emissions	1990 or earlier	No indication of peak	No indication of peak	No indication of peak	By 2030
Quantitative Unconditional GHG NDC Target	Reduce GHG emissions by 40% by 2030, relative to 1990 levels	Reduce GHG emissions per unit of GDP by 33–35% by 2030, relative to 2005 levels	Reduce GHG emissions by 29% by 2030, relative to a business-as-usual scenario	Reduce GHG emissions by 26% by 2030, relative to 2013 levels	Reduce GHG emissions by 22% by 2030, relative to projected emissions
NDC Coverage	Economy-wide, including LULUCF	Not specified	Economy-wide, including LULUCF	Economy-wide, including LULUCF and overseas credits for 2030	Economy-wide, including LULUCF
NDC Includes Adaptation?	No	Yes	Yes	No	Yes
On Track to Meet the Unconditional NDC with Current Policies?	No	Yes	Uncertain ^a	Yes	Uncertain ^b
LTS Communicated to UNFCCC?	No	No	No	No	Yes
Quantitative Vision for Emission Reductions in 2050	Net zero GHG emissions by 2050	Not set	Not set	Reduce GHG emissions by 80% by 2050	Reduce GHG emissions by 50% by 2050, relative to 2000 levels

Table 1 | Snapshot Analysis of Nationally Determined Contributions and Long-Term Strategies in G20 Countries (cont'd)

FEATURE	REPUBLIC OF KOREA	RUSSIA	SAUDI ARABIA
Share of Global GHG Emissions in 2017	1.6%	4.6%	1.5%
Peaking Year of GHG Emissions	By 2020	1990 or earlier	No indication of peak
Quantitative Unconditional GHG NDC Target	Reduce GHG emissions by 37% by 2030, relative to projected emissions	Reduce GHG emissions by 25–30% by 2030, relative to 1990 levels	No GHG target
NDC Coverage	Economy-wide (including market mechanisms)	Economy-wide, including LULUCF	Individual measures
NDC Includes Adaptation?	Yes	No	Yes
On Track to Meet the Unconditional NDC with Current Policies?	No	Yes	No
LTS Communicated to UNFCCC?	No	No	No
Quantitative Vision for Emission Reductions in 2050	Not set	Not set	Not set

Table 1 | Snapshot Analysis of Nationally Determined Contributions and Long-Term Strategies in G20 Countries (cont'd)

FEATURE	SOUTH AFRICA	TURKEY	UNITED STATES
Share of Global GHG Emissions in 2017	1.1%	1.2%	13.1%
Peaking Year of GHG Emissions	Between 2020 and 2025	No commitment to peak	2007
Quantitative Unconditional GHG NDC Target	A target for GHG emissions to be in the range of 398 to 614 tCO ₂ e per year between 2025 and 2030	Reduce GHG emissions by up to 21% by 2030, relative to projected emissions	Reduce GHG emissions by 26–28% by 2025, relative to 2005 levels
NDC Coverage	Economy-wide, including LULUCF	Economy-wide, including LULUCF	Economy-wide, including LULUCF
NDC Includes Adaptation?	Yes	No	No
On Track to Meet the Unconditional NDC with Current Policies?	No	Yes	No
LTS Communicated to UNFCCC?	No	No	Yes
Quantitative Vision for Emission Reductions in 2050	Not set	Not set	Economy-wide net GHG emissions reduction of 80% or more below 2005 levels by 2050

Notes: a. Studies, including those recently published (Kitous et al. 2017; Kuramochi et al. 2017; CAT 2018) do not agree on whether the NDC targets are likely to be met under policies currently implemented. Two recent studies (Kitous et al. 2017; CAT 2018), both excluding LULUCF, suggest that the conditional NDC may be achieved, while Kuramochi et al. (2017) project that Indonesia will fall short of achieving its unconditional NDC target, partially due to large growth in emissions from LULUCF.

b. Studies disagree on whether Mexico is likely to meet its NDC targets under current policies (Kuramochi et al. 2017; CAT 2018).

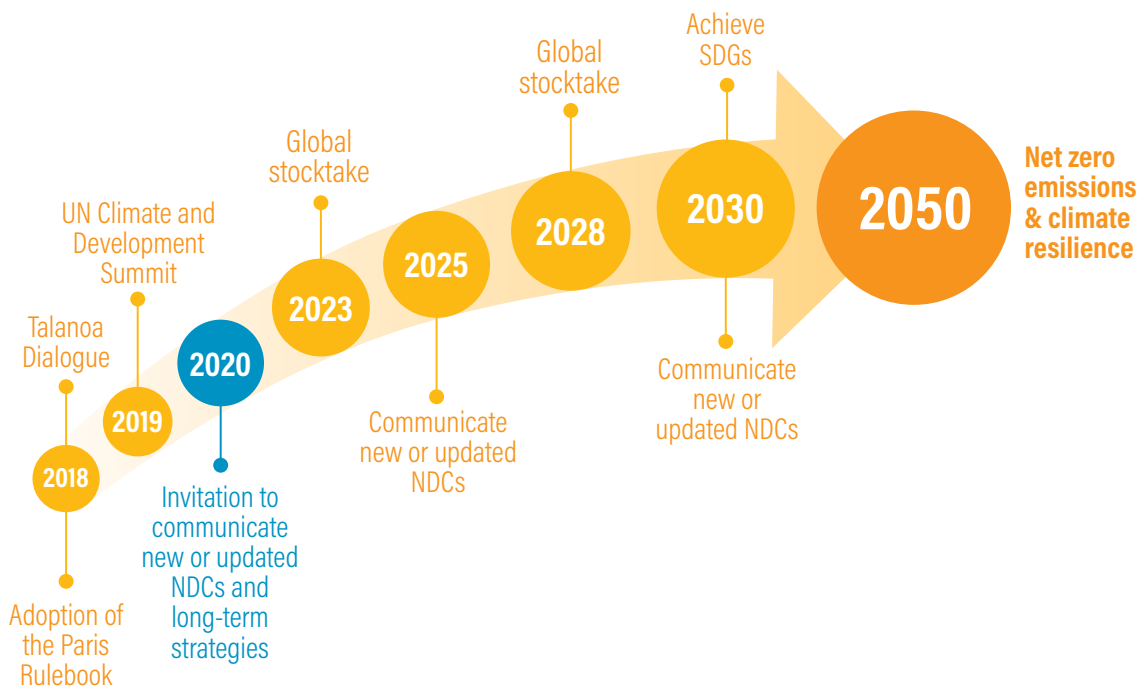
While all G20 countries are taking concrete actions to mitigate climate change, there is undoubtedly variation in countries' levels of ambition and progress. Collectively, there is an urgent need to raise ambition across the G20 countries, which together account for approximately 80 percent of global greenhouse gas (GHG) emissions.

The need for more ambition is a message underscored by the October 2018 Intergovernmental Panel on Climate Change (IPCC) report, *Global Warming of 1.5°C* (Masson-Delmotte et al. 2018). According to this report, pathways reflecting current NDCs will not limit global warming to 1.5°C above pre-industrial levels, even if supplemented by very challenging increases in the scale and ambition of emissions reductions after 2030. If this global temperature target is breached, there will be significant changes in the world's ecosystems, oceans, land temperatures, and water availability; existing stresses—such as food insecurity and population displacement—will be exacerbated; and human health will be negatively impacted. Limiting global warming to 1.5°C “would require rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems. . . . These systems transi-

tions . . . imply deep emissions reductions in all sectors, a wide portfolio of mitigation options and a significant upscaling of investments in those options” (Masson-Delmotte et al. 2018).

Accordingly, now is the time for action (Figure 1). Encouraged by the Talanoa Dialogue, which called for enhanced global ambition by 2020 (UNFCCC 2018a), and the adoption of the Katowice Climate Package (including the so-called Paris Agreement Rulebook) (UNFCCC 2018b), many countries will not only advance implementation of their current NDCs, but will also communicate new or updated and more ambitious NDCs and develop LTSs. The UN secretary-general's Climate Action Summit in 2019 is expected to serve as a key moment for world leaders to put forward ambitious climate actions prior to the invitation to communicate new and/or updated NDCs, as well as LTSs, by 2020. In addition, the first Sustainable Development Goals Summit will be convened back-to-back with the Climate Action Summit to strengthen synergies between climate action and sustainable development for all. In this context, G20 countries have an immediate opportunity to raise climate ambition while advancing

Figure 1 | **Ambition Mechanism in the Paris Agreement**



Source: Fransen et al. 2017.

strong, sustainable growth.

The G20 can provide a clear signal to the world that limiting warming to 1.5–2°C is achievable—and that major economies are committed to this vision—by increasing climate action in line with the Paris Agreement’s long-term goals.

The G20 can demonstrate this strong leadership under the Paris Agreement in four ways:

1. By 2020, finalizing and communicating LTSs to the UNFCCC that set a vision for low-carbon and climate-resilient development pathways through mid-century
2. Laying the groundwork or enhancing the momentum to implement current NDCs, and also embedding NDCs into national policy planning
3. By 2020, communicating new or updated NDCs with enhanced ambition
4. Supporting other countries in implementing and updating NDCs and developing LTSs

While these four pillars each make a unique contribution to enhancing global climate action, there are strong synergies among them, such that G20 countries can benefit from considering them in an integrated manner. In addition, LTSs can inform the implementation of current NDCs and the development of NDC updates, ensuring that both align with long-term goals. Robust NDC implementation can open opportunities to reflect enhanced ambition in updated NDCs. NDC updates support the alignment of near-term actions with LTSs. Ambitious action domestically can generate knowledge and capacity to be shared globally. Lastly, NDCs and LTSs are both highly relevant to national development priorities and plans and can play a key role in driving national development agendas.

About This Paper

This paper is structured in five parts:

First, the paper explains the role of NDCs and LTSs in supporting strong, sustainable, balanced, and inclusive growth while enhancing climate ambition.

Second, the paper highlights the benefits of LTSs and presents possible approaches for their design, building on

insights gleaned from the strategies already communicated by G20 countries. It also includes recommendations on how these strategies can help inform and strengthen the implementation and update of current NDCs, such that they are consistent and aligned with a long-term vision.

Third, the paper highlights some key success factors that G20 countries may consider to support ambitious NDC implementation.

Fourth, the paper describes the benefits of updating current NDCs by 2020, as well as possible approaches and opportunities to guide NDC updates generally and at the sector level.

Finally, the paper provides some ideas on how the G20 can help support other countries in advancing NDC implementation and updates, as well as LTSs, to help enhance international cooperation in implementing the NDCs and achieve the targets and goals of the Paris Agreement and United Nations 2030 Agenda for Sustainable Development (2030 Agenda).

The paper highlights some of the most important issues that warrant consideration by G20 members regarding NDC implementation, updates, and support, as well as the development of LTSs. The paper is detailed and covers several topics; however, its treatment of these issues is not comprehensive. Please see the references and end-notes for further reading.

This paper builds upon the 2018 paper focusing on long-term low greenhouse gas emission development strategies prepared by World Resources Institute (WRI) and United Nations Development Programme (UNDP) for the Argentine G20 presidency as a contribution to the Climate Sustainability Working Group (Levin et al. 2018).

Role of Nationally Determined Contributions and Long-Term Strategies in Supporting Strong, Sustainable, Balanced, and Inclusive Growth

The realization of NDC and LTS ambition to mitigate climate change and adapt to its effects provides an opportunity to align climate and sustainable development strategies in support of the Paris Agreement, the 2030 Agenda, and the G20 commitment to strong, sustainable, balanced, and inclusive growth.

A profound shift in the development paradigm is necessary to achieve a long-term vision for sustainable development that is aligned with the Paris Agreement and the 2030 Agenda (Comstock and Hackmann 2018). Limiting global warming to 1.5°C will require an unprecedented and immediate transformation in all aspects of society, across energy, land, industrial, urban, and other systems as well as across geographies (Masson-Delmotte et al. 2018). Behavior and technologies will need to shift, and substantial new investments in low-carbon technologies and efficiency will be necessary, with significant impacts on sustainable development pathways.

The 2030 Agenda and the Paris Agreement are two mutually reinforcing, universal, and transformative agendas. Priorities being selected at the national level to implement the Sustainable Development Goals (SDGs) will have implications for climate mitigation and adaptation. At the same time, climate action contributes to achieving the SDGs (Bouyé et al. 2018).³ The pledge to “leave no one behind”—which is central in the 2030 Agenda and requires prioritizing the poorest and most vulnerable so that they can progress faster than those who are better off—has strong implications for climate policy design. Underpinning the commitment to end extreme poverty and curb inequalities by 2030, the pledge also strongly aligns with adaptation goals and the commitment to ensure “just transitions” of the workforce. Climate action consistent with this objective should receive greater support from decision-makers and populations. Ensuring these processes are aligned at all levels is an important step to reducing duplication, identifying and resolving trade-offs, and leveraging existing resources and efforts.

NDCs and LTSs should align with both agendas and can guide countries through the dramatic transformations needed. LTSs can visualize the needed turning point in a country’s development patterns building on other national priorities (Bouyé et al. 2018) while NDCs provide a channel to concretize commitments.

At the international level, robust LTSs can reinforce responsible global leadership and contribute to implementing the G20 Action Plan on the 2030 Agenda (G20 2016a). G20 leaders agreed to ensure that their “collective efforts make positive global impact towards effective implementation of the 2030 Agenda in all three dimensions of sustainable development [economic,

environmental, and social] in a balanced and integrated manner.” They also recognized that “[w]ithin the overall sustainable development agenda, the G20’s comparative advantage lies in its convening power and its collective ability to adopt and support initiatives at the highest global level, including those that involve macro-economic framework, and to create the global enabling environment” (G20 2016a). As a complement to NDCs, LTSs foster credibility and certainty that the goals of the Paris Agreement can be achieved in line with national development priorities and are a helpful tool for governments to communicate their determination to address climate change over an extended period and across administrations (Espinosa 2018).

From a national perspective, long-term planning is fundamental to engaging society in crafting a collective vision that fosters mobilization of all members of society. LTSs can guide short-term political and economic cycles and provide certainty for key economic actors to take concrete action (Duarte 2018). These strategies can also highlight the financial and capacity-building needs of developing countries that require support in achieving their climate and sustainable development goals.

Taken together, NDCs and LTSs can guide national climate action in line with other national priorities. The numerous benefits for G20 countries in developing and implementing these domestic climate plans include the following:⁴

- Supporting countries to collectively get on track toward meeting the 1.5–2°C goal and showing that such a path is achievable
- Demonstrating political commitment and responsible global leadership, and that major economies are committed to achieving the goals of the Paris Agreement and the 2030 Agenda simultaneously
- Achieving economic and other sustainable development benefits associated with mitigating and adapting to climate change such as creating jobs and reducing urban air pollution
- Demonstrating that countries can simultaneously pursue ambitious growth development objectives and ambitious climate action while supporting policy integration of climate change into other national priorities

- Setting a longer-term vision and agenda to guide near- and medium-term actions and planning, avoiding locked-in and stranded assets
- Supporting just transitions for communities and sectors tied to high-emissions economies by identifying potential trade-offs for industries and employment and planning measures to accommodate the transitions
- Strengthening institutional arrangements and technical capacities for climate action
- Providing a common framework for inclusive citizen engagement
- Informing key stakeholders, including the private sector, and providing certainty for investments
- Securing a domestic budget and communicating any relevant support needs and domestic investment priorities

2. DEVELOPING LONG-TERM STRATEGIES

How Long-Term Strategies Can Help Deliver the Paris Agreement's Goals

Under the Paris Agreement's accompanying decision 1/CP.21, Parties were invited to develop mid-century LTSs by 2020. As of March 2019, 11 countries had done so, including 6 G20 countries (Canada, France, Germany, Mexico, the United Kingdom, and the United States⁵), and several others were in the process of preparing these strategies.

Similar to LTSs focusing on low-GHG emission development trajectories, long-term planning is not new to G20 countries. Several G20 countries have conducted long-term planning in the context of economic development and sectoral planning in an effort to inform near- and medium-term plans and policymaking. For example, China established an economic development plan for the periods 2020–35 and 2035–50; the European Union has a 2050 low-carbon economy roadmap; and Japan recently embarked on an effort to extend its Strategic Energy Plan from 2030 to 2050. These medium-to-long-term planning processes have established a far-sighted vision depicting where societies hope to be decades from now, and have accordingly shed light on the measures that should be taken today to realize such a vision. Long-term planning

in the context of low-carbon, climate-resilient development provides an opportunity for countries and their citizens to define a vision for the future in line with the achievement of the Paris Agreement's goals and in the context of national sustainable development priorities. G20 leadership on LTSs can help demonstrate commitment toward these societal goals and guide the world toward a more prosperous future.

LTSs are critical to the realization of the Paris Agreement's goals related to mitigation and adaptation, while ensuring they align with long-term national development priorities. LTSs typically include a long-term vision, which can include quantitative targets for emissions reductions and goals for adaptation and resilience. In addition, descriptions of sectoral pathways will inform the realization of these targets and goals.

Long-term strategies' support of the Paris Agreement's mitigation goals: The Paris Agreement has a long-term goal of limiting warming to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels. It also aims to achieve “a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty” (UNFCCC 2015). Given that the G20 accounts for the vast majority of global emissions, the long-term trajectories of G20 countries will largely determine whether these goals are achieved. Countries can embrace a variety of targets in their LTSs to help advance achievement of these goals, including targets related to the timing and level of emissions peaking, achievement of net zero GHG emissions, and rates of decarbonization, among others. Often a combination of goals, including coupled medium- and long-term emission reduction targets (e.g., for 2030 and 2050), is most helpful in guiding a decarbonization trajectory (Levin et al. 2018). For example, France's LTS presents indicative sectoral targets for 2028 and 2050 for all sectors of the economy, and Germany's strategy also presents quantitative sectoral targets for 2030 (Ross and Fransen 2017).

Long-term strategies' support of the Paris Agreement's adaptation goals: Countries may also choose to include adaptation in their LTSs, which can help advance the Paris Agreement's goal to increase the “ability to adapt to the adverse impacts of climate change

and foster climate resilience” (UNFCCC 2015). In doing so, they could choose to include goals related to resilience, reductions in vulnerability, enhanced adaptive capacity, or others. LTSs may also include descriptions related to vulnerable groups and sectors, future climate impacts, links to National Adaptation Plans (NAPs) and development goals, co-benefits from mitigation and adaptation responses, and other aspects. Countries may choose to build upon other adaptation planning efforts, including the National Adaptation Programmes of Action (NAPAs), NAPs, sectoral adaptation plans, and national and subnational plans (Levin et al. 2018). Among the LTSs submitted by G20 countries to date, all describe the risks associated with climate inaction, although the degree to which adaptation is addressed in countries’ strategies varies. Some countries, like Canada, France, Germany, and the United States, lightly touch on adaptation and refer to other national adaptation planning documents. Mexico fully includes adaptation in its LTS (Ross and Fransen 2017).

For mitigation, adaptation, and resilience goals, existing sectoral strategies can be incorporated into LTSs to inform the goals that are set. Doing so can help guide the design of related policies and investments. Vice versa, an economy-wide LTS can also help inform the design of new sectoral plans and policies.

Long-term strategies’ support of the realization of the 2030 Agenda: If done well, LTS preparation would go hand in hand with development planning to ensure that the LTS is not considered a new stand-alone strategy but rather the climate-related aspect of national development planning. An effective LTS will accordingly consider how SDGs, in addition to mitigation and adaptation, can be realized while phasing out GHG emissions and enhancing climate resilience. The strategy can include, for example, SDG-relevant goals for poverty and inequality reduction, provision of universal access to sustainable and affordable energy, ecosystem and biodiversity protection, sustainable management of natural resources and land restoration, and sustained and inclusive development, and require that the SDGs be taken into account in advancing decarbonization. Criteria related to social, economic, and environmental goals can also be used to inform the selection of long-term climate actions. For instance, Germany’s Climate Action Plan 2050 sets actions aligned with the criteria of social justice, affordability, economic efficiency, and citizen participation (BMU 2016). And the reverse is applicable as well, where the vision established in an LTS can helpfully

inform the development of national sustainable development strategies.

An effective LTS will also plan for how a just transition will be realized for workers whose livelihoods are tied to emissions-intensive industries. Achieving a zero-carbon, climate-resilient future will require significant transformations across all sectors of economies. However, for the most emissions-intensive businesses and sectors, new employment opportunities and transition plans will be needed to ease the transition and manage trade-offs, for example, between labor interests and other objectives. This includes creating new employment opportunities for workers whose livelihoods are tied to high-emission sectors of the economy. Just transitions can be achieved only through long-term planning. The elaboration of LTSs provides a significant opportunity to assess and anticipate the social and employment impacts of climate policies; build a common strategy with unions and business representatives through an inclusive social dialogue; plan for professional transitions over several years, including trainings for workers and the creation of quality jobs; and identify the most effective measures to protect workers’ livelihoods. Several countries have included these aspects of a vision in their LTSs by referencing new investments, for example, in clean technologies, job creation, and other benefits that may stem from long-term transitions (Ross and Fransen 2017).

Processes and Approaches for Long-Term Strategy Development

The steps a country may choose to take when developing an LTS include the following:

- Securing a political decision to initiate the process and establish institutional arrangements
- Defining the objectives of the strategy
- Selecting the elements to be included in the strategy
- Collecting inputs, including data, modeling, and scenarios, and complementary qualitative approaches
- Developing the strategy
- Providing for transparent communication
- Establishing review and revision processes

Countries need not start from scratch and should consider building off existing processes and institutional arrangements, as relevant, such as those related to the design of the NDCs. These steps, which are not necessarily sequential, are illustrated in Box 3. It will be critically important to engage relevant stakeholders throughout all of these steps to build consensus, address concerns, and ultimately strengthen the LTSs themselves.

How Long-Term Strategies Can Support Near-Term Planning

While planning for the mid-century may seem like a task that is distinct from everyday planning, if done well, the development of an LTS should inform current policies and plans while also setting the course for future action. For example, there are many ways in which long-term planning can support shorter-term decision-making, including the following:⁶

Box 3 | Steps in Developing a Long-Term Strategy

Securing a political decision to initiate the process and establish institutional arrangements	<p>Strong political support is important in initiating the LTS preparation process. It helps ensure that the exercise is not limited to a single ministry but involves a whole-of-government approach. The process could be initiated by a head of state, who would provide a mandate for its development, or by a ministry or department and then raised with the head of state to secure his or her support.</p> <p>After political support has been secured, it is critical to establish institutional arrangements, including which institution will lead the development and stakeholder engagement processes, and how coordination will occur across sectoral ministries, with local governments, and with other relevant actors.</p>
Defining the objectives of the strategy	<p>After the mandate to establish an LTS has been secured, it is useful to define the strategy's objectives and scope. Articles 2 and 4 of the Paris Agreement could serve as objectives of the strategy. The objectives could be elaborated to include a vision that includes social and economic objectives and considerations. Engaging the whole government and a broad range of stakeholders in defining these objectives is recommended to secure expert feedback and greater buy-in or support from sector ministries, local authorities, citizens, civil society, academia, and/or the private sector.</p>
Selecting the elements	<p>Decision-makers, with the support of technical experts and key stakeholders, should identify options for the design of the elements of the LTS and define the strategy's ambition and scope. The elements may include a long-term vision, development considerations, mitigation elements, adaptation elements, sectoral strategies, implementation approaches, monitoring plans, and revision processes. Engaging experts and the public in this step through a consultation process facilitates the strategy's implementation.</p>
Collecting inputs	<p>Relevant data and data analysis are the foundation of the LTS preparation and design process. Sources of data include information on national objectives and priorities, data relevant to growth strategies and Sustainable Development Goals, current and future greenhouse gas emissions and removals, historic trends, current mitigation activities, mitigation potential, future vulnerabilities across key sectors and geographies, and resource mobilization strategies.</p>
Developing the strategy	<p>After the elements have been selected and relevant inputs collected, the next step is to develop the strategy itself with the support of relevant decision-makers and stakeholders.</p>
Providing for transparent communication	<p>Clear and transparent communication of an LTS can help national and international stakeholders understand the goals of the strategy and its underlying assumptions, and learn from the strategy. It can help send clear signals to private sector actors, including investors and decision-makers at all levels of government, increase citizens' confidence in the future, and foster engagement and behavior changes.</p>
Establishing review and revision processes	<p>It is beneficial to lay out clear monitoring plans and revision processes from the start to enhance communication and collaboration while clarifying expectations. Given the long-term nature of the strategy, and the uncertainty related to long-term planning and technology pathways, periodically revising the strategy is essential to ensuring that it reflects the latest science, economic and social trends, and priorities.</p>

Source: Levin et al. 2018.

- **Providing a systematic roadmap that avoids lock-in:** LTSs typically have quantitative and qualitative goals that can help guide near- and medium-term policies and planning. Such goals can inform a trajectory of action and help ensure that shorter-term planning is consistent with a pathway to realizing a society's long-term vision. Establishing a long-term agenda can help decision-makers identify long-lasting technologies or behaviors that are compatible with desired transitions. Accordingly, long-term planning can help avoid locking in infrastructure and land use with long-term, high-emission implications and stranded assets, and lead to more informed, sustainable investments. For example, Germany's Energy Efficiency Strategy for Buildings considers the longevity of building materials and determines the types of investments in efficiency and renewable energy sources necessary to achieve a carbon neutral building stock by 2050.
- **Preparing for risks and uncertainties and encouraging investment:** The development of an LTS will necessitate considering the uncertainty and risks related to climate impacts, new technological developments, economic growth, and other factors. For example, Mexico's LTS includes the addition of climate change criteria into the planning and building of infrastructure, taking into account future climate scenarios. Such an exercise can help decision-makers assess the conditions and timeframes that necessitate certain types of action. Some interventions—no- or low-regret options—can be pursued right away regardless of risk and uncertainty. Others may be necessary but cannot be deployed until certain conditions have been met, while others may require dedicated actions today to keep options open in the future. Countries can accordingly combine and sequence those interventions and develop an adaptive pathway to prepare for changing conditions over time, which ultimately helps make the development pathway of a country more robust. Long-term planning can also reduce uncertainty for private actors, including investors, helping to incentivize their investment in climate action. Clear, confident signals from government can drive more ambitious climate action in the private sector.
- **Supporting just transitions:** The LTS can inform decision-makers about what measures need to be put in place in the short and medium terms to support

a just transition, especially with regard to successful professional transitions (e.g., through the provision of trainings and job creation) and the preparation of adequate financial measures and social protection schemes. Some LTSs also require frequent evaluation, which can enable governments to address potential trade-offs with adjustments and compensatory measures. For instance, Germany's LTS requires an assessment of sectoral targets at regular intervals to take into account economic and social impacts and other changes.

- **Identifying technology gaps and needs:** Long-term planning will require assessing what types of technology and innovation are needed in the future if a country's long-term vision is to be achieved. In doing so, a country can help prepare for such trends and design policies, implementation plans, and resource mobilization and investment plans in a way that is forward-looking. For example, Canada's LTS dedicates a section to exploring technology, including research, development, and deployment (RD&D) and innovation.
- **Fostering more informed investment decisions:** Long-term planning can help reveal the economic benefits and costs, as well as other impacts, of investing in long-term climate action. With this more complete information, decision-makers may consider low-carbon interventions differently.
- **Providing opportunities to engage all sectors:** LTSs could help break the silo of climate policy action that may exist in some countries by engaging sectors that have not necessarily been brought into the ambit of medium-term climate commitments, such as the NDC, and actions. The analysis that is the basis of the LTS can identify mitigation potential in all sectors and explore lock-in risks over time.

Accordingly, LTSs can help support the effective design of national development plans, sectoral development plans and actions, infrastructure investment plans, land-use planning, and innovation agendas, among other government activities. In fact, creating an LTS should not be seen as a separate exercise but one that is linked to existing development and sectoral plans and policies. This can help ensure policy coherence, optimize resources, and build buy-in from key institutions (Levin et al. 2018).

How Long-Term Strategies Can Be Designed to Help Deliver Current NDCs and Identify Areas for NDC Updates

If done well, implementation strategies and updates to NDCs and LTSs will be designed hand in hand to ensure coherence between the two. The steps countries take to develop an LTS (Box 3) can be undertaken to support NDC implementation (Section 3) and inform NDC updates over time (Section 4). The long-term vision, for example, can help guide the development of near- and medium-term milestones, which can then be embedded into implementation plan strategies and NDCs themselves. LTSs can also help identify priority measures that are either essential for realizing the long-term vision or should be avoided so that emissions-intensive infrastructure, land use and management, technologies, and behaviors are not locked in. For example, some technologies, policies, and investments—for example, RD&D into technological approaches to carbon removal—may not appear to be cost effective or necessary in the medium term (e.g., 10 years) but are critical for consideration if we are to keep our future options open to achieve net zero emissions by mid-century (Mulligan et al. 2018). LTSs can also help guide short- and medium-term measures to contend with the economic shifts and social disruptions that may result from such a transition. These measures can be considered in NDC implementation plans and NDC updates, discussed further in Sections 3 and 4, respectively. Additionally, means for managing long-term transitions in a just manner can be taken into account in NDC implementation plans.

Ideally, LTSs are embedded into existing policies and planning efforts, infrastructure development plans, and investment plans to ensure uptake. It will be important to consider how institutional arrangements and legal frameworks, as well as stakeholder consultation processes, are streamlined most effectively.

3. ADVANCING IMPLEMENTATION OF NATIONALLY DETERMINED CONTRIBUTIONS

Processes and Approaches for Implementing Nationally Determined Contributions

To signal their strong support for the Paris Agreement, G20 members submitted their first INDCs⁷ or NDCs in 2015 and 2016. Although global efforts are not collectively on track to sufficiently limit warming, the Paris Agreement's establishment of five-year cycles of communicating new NDCs provides opportunities for enhancing ambition

over time. The snapshot provided in Box 2 presents G20 country NDC targets. How the NDCs are implemented in each country will ultimately determine the degree to which Paris Agreement goals are achieved.

Although NDCs are inherently country-driven and location-specific, certain common factors govern the extent to which NDC strategies are designed to be successfully implemented. The following are strategies that may be beneficial for G20 members to successfully drive forward their NDC plans into concrete actions on the ground. This section highlights key issues that countries may consider to facilitate NDC implementation and achieve NDC targets, outlining the way forward post-2020. NDC implementation strategies discussed herein are based upon the forthcoming NDC implementation document developed by UNDP, UN Environment, UNEP DTU Partnership, UNFCCC, and World Resources Institute (UNDP et al. forthcoming).

Prioritization of Policies and Measures Supporting Nationally Determined Contribution Implementation

The foundation of a country's NDC implementation strategy will be the policies and measures that help it meet its NDC targets; that is, those that support GHG emission reductions and enhancement of removals by sinks, increased adaptation and resilience to climate change, and associated sustainable development benefits (e.g., poverty and inequality reduction, improved air quality, job creation). Defining and prioritizing these policies and measures is a critical step. A diverse array of criteria may be used to assess, compare, and prioritize policies and measures, including the following:

- GHG mitigation potential of sectors, policies, and measures as well as sources of GHG emission hotspots
- Timing and urgency for both adaptation and mitigation measures
- Costs and benefits of implementation (e.g., economic return, leveraged private sector investment)
- Feasibility—economic, social, technological, and environmental—such as whether the policy or measure can be implemented and enforced using the current legal, regulatory, institutional, social, and economic context and whether it has necessary support from key stakeholders

- Sustainable development benefits and impacts, especially for less climate resilient and more vulnerable populations, and strategic relevance to national sustainable development priorities (UNFCCC LDC Expert Group 2012; UNDP et al. 2016; UNDP et al. forthcoming)

The following may be prioritized as well according to the national context:

- Transformational, long-term impact on the economy and decarbonization goals
- Demonstrated success in similar areas in the country and globally
- The sectors focused upon are priority sectors (e.g., high-emitting, fast-growing)
- NDC action impacts will be results-oriented and transparently measurable
- Whether it is a no-regret policy or measure (i.e., it has a net positive benefit without factoring in climate or mitigation/adaptation benefits)
- Alignment with national long-term goals in the Paris Agreement and long-term low emission development pathways
- The policy or measure results in climate co-benefits; that is, it contributes to climate change adaptation and/or mitigation, even if not the main objective

Decision-support tools commonly used to assess sustainability of NDC climate actions include cost-benefit analysis, cost-effectiveness analysis, and multicriteria decision analysis (Dixit and Mcgray 2013; UNDP et al. forthcoming). Social and poverty impact assessment and distributional analysis are also essential in designing equitable climate actions. Specific consideration of the impacts of proposed climate actions on national priorities set to advance SDGs and the overarching objective of “leaving no one behind” also help ensure that the NDCs support other Sustainable Development Goals and benefit the most deprived and vulnerable populations. Environmental impact assessments provide details regarding environmental impacts.

In the context of selecting the portfolio of actions to implement the NDC, it is often preferable for policies and measures to advance NDC implementation so it is not undertaken in a silo but rather integrated across sectors and in collaboration with other related policies and programs. The formulation of the NDC also provides governance opportunities to emphasize cross-agency coordination and collaboration, accentuate strong leadership from the central government, further mainstream climate actions into national development plans and sectoral strategies, and consider long-term transitions in the NDC decision-making frameworks to meet Paris Agreement goals. Countries should not overlook prioritizing relatively small changes in policy settings and calibrations that can build up over time and result in meaningful, durable change rather than higher-profile but short-term impacts (Levin et al. 2012). Underlying models and assumptions that generate projections of policies and measures in support of NDC implementation should be revisited periodically as additional data become available, model innovations emerge, technology costs decline, and political priorities change.

A Stable and Efficient Nationally Determined Contribution Governance Framework

A sound institutional framework that governs overall NDC implementation and the implementation of individual policies and measures will strengthen the efficiency and capacity to deliver on climate- and/or development-related policies and measures. The structure may involve the following core elements:

- A national oversight body responsible for coordinating relevant actors and quality control⁸
- Independent regulators such as a nongovernmental body entrusted with oversight
- Executive and legislative bodies; for example, to design necessary policies and laws
- The set of laws and regulations to underpin policies and measures to meet NDC targets (Comstock and Hackmann 2018; UNDP et al. forthcoming)

The functionality of these elements will hinge upon considerations such as institutional capability, stakeholder engagement, the planning strategy, and existing policies, laws, and regulations.

The process developed for NDC governance should include a mechanism of inclusiveness to incorporate inputs from parties that may not have been sufficiently involved in the development of the NDC or LTS. To enhance inclusivity, the mechanism can include a technical working group of sectoral experts such as research organizations.

The effectiveness of NDC oversight hinges upon the capabilities of the national oversight body in technical expertise, ability to engage the whole government, and leadership where institutional anchorage is seen as independent from a certain political direction. The selected governance structure supports the mobilization of colleagues and expert peers, and raises awareness about NDC implementation priorities and processes. Strong political support is critical to strengthening buy-in to national NDC processes, and this can be particularly important in emphasizing how Paris Agreement targets do not just address highly technical climate change issues but also day-to-day national development and planning issues. Ensuring alignment and coordination with related programs, such as those to achieve SDGs and disaster risk reduction targets, is also a primary consideration and helps to bridge climate with other areas of national focus such as poverty, environment, health, and jobs. For example, Mexican institutions that oversee SDGs and the NDC meet regularly, synergize annual work plans, and set common strategies to mainstream SDG/NDC actions into planning and budgeting (Bouyé et al. 2018).

The preparation of an NDC implementation strategy is a good place to begin NDC coordination, and this can be in the form of an NDC implementation plan (elaborated later in this section). The reverse is true as well, whereby processes already in place—such as sectoral strategies—may be integrated into NDC implementation frameworks. Coordination responsibilities would also include tracking progress toward NDC goals, promoting transparency, attracting local buy-in among policymakers and international support if needed, establishing decision-making procedures, and establishing inclusive stakeholder engagement. Selecting the agencies or institutions that will play lead roles as central bodies that oversee elements of the NDC systems (e.g., vertical or horizontal coordination, data collection and tracking of progress, strategic planning) should take into account the implications of which agencies are chosen as leaders and which are not. Disseminating responsibilities across agencies

that reflect all key partners, such as high-emitting sectors, diversified political support, and key areas of expertise could support the leadership.

Stakeholder engagement for individual NDC policies and measures and the holistic NDC process is critical to ensuring an effective flow of information, maximization of local expertise, added credibility, enhanced climate awareness, and a clearer picture of the distribution of costs and benefits (Levin et al. 2018). Collaboration with key actors should include a broad constituency, including finance and technical experts, research organizations, universities, civil society, vulnerable populations, and youth, minority, and gender groups. Local stakeholders should be engaged early in the NDC planning process to secure their contributions and better inform the planning process and strengthen partnerships.

Mapping in-country expertise and charting roles and responsibilities to implement the NDC while strengthening national capacity are critical to facilitating long-term sustainability and sustainable development pathways. In many cases, this can be built off capacity assessments already conducted such as those for REDD+ (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries) and Nationally Appropriate Mitigation Actions (NAMAs). A human capacity assessment for NDC implementation would help pinpoint the availability of relevant skill sets in government agencies, finance required to access these resources, and institutional arrangements to facilitate using that expertise (UNDP et al. forthcoming). An analysis related to the capacity of national data systems would be well-placed in the NDC implementation planning process and would help assess data quality and availability, efficiency of data flow processes and overall system efficiency, sources of information, and the capability of systems to be expanded to include NDC implementation. The informational capacity analysis will inform the ability of data systems to track NDC progress such as GHG emission reductions and non-GHG impacts such as the implementation of SDG targets, enable transparency and accountability, and monitor progress toward mainstreaming NDC processes into related national policies such as sectoral strategies (e.g., tracking review and validation of updated sectoral strategies that reflect the NDC).

An examination of laws and regulations that directly and indirectly affect NDC governance frameworks to support mitigation and adaptation goals (e.g., permitting, land management, corporate accountability, government procurement) can be advantageous in providing a measure of constraints to NDC implementation and identifying circumstances that could potentially undermine the ability to achieve the NDC targets. The legal basis of systems related to NDC implementation such as binding mandates can clarify roles and responsibilities, reduce miscommunication, and strengthen the understanding that NDC implementation is sustainable in the medium and long terms. These legal and regulatory instruments may include empowering entities with appropriate legal status; establishing mechanisms to strengthen coordination across line ministries; enabling public participation in the decision-making process, such as with a mandatory public review period; allowing open access to climate change information and data; and making budget allocations for climate priorities. Such laws and regulations may be in place or pending, and the examination can consider the extent to which they are being effectively enforced and implemented.

Alignment of Nationally Determined Contribution Implementation Strategies and Development Objectives

The NDC implementation approach should closely align with national growth and sustainable development priorities and objectives. This results in greater coherence and mutual benefits that minimize policy conflicts, duplication, and fragmentation of resources, and that also encourage a less siloed approach where information, capacity, and technical expertise are more efficiently shared.

While progress in embedding climate actions in development policy planning and budgeting has been slow in past decades, country experiences show that formulating NDC targets with planning and sector ministries helps build awareness and capacities of non-climate experts to incorporate those targets into national and sector development plans. Opportunities for aligning NDCs and the Paris Agreement with national planning processes are extensive due to the significant cross-sectoral impacts of climate change policies and measures. In particular, NDC long-term sustainability and the degree to which it is embedded into national planning processes have the potential to offer synergy with key aspects of the following: national development plans; sectoral plans/strategies,

actions, and investment plans; green growth development strategies; NAMAs; low emission development strategies; NAPs; NAPAs; sectoral adaptation plans; National Biodiversity Strategies and Action Plans; and technology needs assessments. In addition, approaches for aligning national Sendai Framework for Disaster Risk Reduction policies and measures with those related to policies and

Box 4 | Policy Integration with the Sendai Framework for Disaster Risk Reduction 2015-2030

In 2018, natural catastrophes such as extreme storms, wildfires, and droughts claimed the lives of 10,400 people and resulted in economic losses of \$160 billion. In 2015, the global urgency placed upon disaster risk reduction (DRR) was highlighted through the Sendai Framework, and the interconnectedness of the Sendai Framework, Paris Agreement, and 2030 Agenda for Sustainable Development is clear. As noted in the Sendai Framework, disasters have become more frequent and intense, many are exacerbated by climate change, and they are significantly impeding progress toward sustainable development.

Despite growing awareness, exposure of persons and assets to disaster risk worldwide has increased faster than vulnerability has decreased. As a consequence, strengthening avenues to achieve the four Sendai Framework priorities for action is a development priority. This falls under the general paradigm shift away from managing disasters as they occur to managing risk and building resilience beforehand. Due to significant overlap between the 2015 agendas, the United Nations Framework Convention on Climate Change recently charted a course to achieve “partial but robust policy integration” to enhance coherence, efficiency, and effectiveness.⁹ Integrating DRR into investment and policy decisions enables cost-effective risk reduction and is therefore a precondition for sustainable development in a changing climate.

Note: a. UNFCCC 2018c.

measures that implement the NDC are discussed in Box 4 (UNFCCC 2018c; CRED and UNISDR 2018). Growing numbers of countries are adopting a more integrated approach to NDC and SDG mainstreaming in policy design. Such an approach enables countries to address strong linkages and synergies between the NDC policies and measures and SDG targets. Although SDG 13 emphasizes taking urgent action to combat climate change and its impacts, climate change has been mainstreamed throughout the 2030 Agenda. Forty-nine targets across 13 SDGs can provide direct mitigation and adaptation outcomes (Bouyé et al. 2018). Furthermore, a 2016

study (Northrop et al. 2016) showed that climate actions embedded in 92 INDCs are relevant for the clear majority of all SDG targets (154 of 169) across the 17 SDGs, suggesting substantial potential for mutually supportive implementation strategies.

To support the NDC/SDG alignment decision-making process, UNDP identified entry points organized around three categories as critical for fostering greater complementarity between NDCs and SDGs:

- Establishing an enabling environment (e.g., institutional arrangements, data management, policy coherence)
- Planning and delivering on commitments (e.g., targets and timing of commitments, financing opportunities such as measures to encourage private sector investment)
- Tracking progress, reporting, and NDC revisions (UNDP 2017)

For existing NDC/SDG linkages, governments can refer to the ClimateWatch portal, which identifies potential alignment between targets, actions, policies, and needs in NDCs and SDGs.

A Strengthened Landscape for Nationally Determined Contribution Finance

Being able to deliver on the Paris Agreement requires implementing economic-transformation and national-development strategies that embody sustainable, low-carbon, and robust growth (Stern 2016). In support of this mandate, approaches to mobilize NDC finance should be consistent with national growth and sustainable development priorities and plans. As part of the process to carry forward an NDC from planning to implementation, countries may take a similar approach in identifying options to fund policies and measures that support implementation of the NDC. Early activities include the following four strategies:

- Mapping NDC needs and priorities such as by tracking public and private climate expenditures and investments to realign expenditures to where they matter most

- Determining the costs of NDC actions (e.g., upfront capital, ongoing maintenance, capacity building, human resources for implementation)
- Seeking avenues to scale up collaboration with and regulation of the private sector to encourage investment and mobilize new resources
- Developing financing strategies for specific priority interventions, such as financial mechanisms at the project level, to better align public and private capital with NDC goals (UNDP et al. forthcoming)

Crowding in private capital to catalyze private investment that might not otherwise occur is critical to making system transitions consistent with a 1.5°C warming limit (UNEP 2018). To demonstrate the market potential, over 90 percent of renewable energy investment in 2016 was financed from private sources (IRENA and CPI 2018). As an example, to increase private sector engagement in NDC implementation, countries in association with Green Climate Fund Readiness have conducted studies on the state of the financial sector, access to finance, risks for project developers, and recommendations to improve regulatory frameworks and modernize business legislation. Elaborating options for risk-sharing financial instruments and target areas for climate finance training are areas of focus as well. For example, Nepal developed a strategic investment framework considering private sector engagement in the course of investigating approaches to access the Green Climate Fund (GCF 2017).

LTSs can serve as a roadmap on climate- and development-related NDC policies and measures that will be prioritized with government support such as scaling up private investment in targeted sectors. Long-term signals from governments can contribute to sectoral stability or credibility and provide added value and market signals as national budgets are relatively short term compared with LTSs.

Strategic blending of catalytic capital from public and philanthropic sources can play an important role in mobilizing private sector investment. Establishing enabling frameworks at the national level can underpin efforts to scale up market transformation while decreasing fragmented approaches in implementation (Convergence 2018). The OECD, World Bank, and UN Environment highlighted these six transformative areas to align financial flows with climate action and development goals:

1. Plan infrastructure for a low-emission and resilient future: Long-term planning of sustainable infrastructure projects is needed to align a pipeline of projects with long-term climate and development objectives.
2. Unleash innovation to accelerate the transition: Scaling up climate solutions should include accelerating the deployment of existing technologies, models, and services, and moving to the next generation of climate solutions.
3. Ensure fiscal sustainability for a low-emission, resilient future: Public budgets channeled toward climate objectives would signal stability and momentum toward a low-emission, resilient economic future.
4. Reset the financial system in line with long-term climate risks and opportunities: Improve climate risk management strategies, incentivize risk disclosure, and support a supervisory authority.
5. Rethink development finance for climate: Financial institutions should better integrate climate into development objectives and better align portfolios with the Paris Agreement.
6. Empower city governments to build low-emission and resilient urban societies: Ensuring urban resilience requires that national and local governments work together on land-use and transport strategies, align multilevel strategies, build city project finance capacity, and prioritize social and economic benefits of low-emission, resilient planning (OECD et al. 2018).

Governments play a key role in enabling these six transformative areas, for example, by empowering local authorities and scaling up local access to national budgets to develop and implement NDC policies and measures. Countries have multiple tools at their disposal to encourage the scaling up of finance for NDC implementation, notably, regulatory and institutional arrangements to incentivize investment, minimize inefficiency, and create a more effective flow of finance across sectors and between national and subnational levels. The India Energy Efficiency Scale-Up Program and U.S. Environmental Protection Agency Energy Star program are two such examples.

Modeling and scenario analyses of NDC policies and measures can quantify added value, benefits, sensitivity to inputs, and risks in terms of GHG emission reductions. This analysis can help maximize NDC expenditures and identify de-risking measures to most cost-effectively promote private sector investment in targeted sectors (UNDP 2018). In addition to scenario analysis, another example of mapping the course toward sustainable investment and inclusive growth is the European Union strategy for sustainable finance, which considers better integrating sustainability in credit ratings and market research (European Commission 2018).

Climate budget analysis and management has an extensive track record in identifying gaps in investment and opportunities for attracting climate investment. For example, Indonesia used a climate budget tagging process to assess the effectiveness and efficiency of climate change spending, and this contributed to project evaluation and selection to create a project pipeline for investing proceeds from the country's \$1.25 billion sovereign Green Sukuk bonds (Indonesia Ministry of Finance 2014). In addition, more than 15 countries have employed Climate Public Expenditure and Institutional Reviews to provide climate information on public financial flows, and another 15 have conducted Investment and Financial Flows Assessments to evaluate the investments needed to mitigate GHG emissions and adapt to climate change in key sectors (UNDP 2009; UNDP 2015). Furthermore, efforts to align and tag budgets on NDC implementation and related platforms such as SDGs and sustainable development create greater opportunities for consistency.

As an example of NDC/SDG alignment, Uganda conducts assessments of NDC/SDG annual budget goal consistency and expenditures with national development plans (Bouyé et al. 2018). This assessment is presented annually to the parliament through a Certificate of Compliance report released ahead of the budgetary debate. These reports and related briefs raise attention to the extent to which priority climate and SDG targets have been adequately funded in the previous year—the data and recommendations inform parliamentary and government discussions on the annual budget and encourage earmarking higher budget allocations to climate and SDG targets that have not been adequately funded. The government of Uganda is also working to develop a climate change budget tagging system with support from the World Bank.

NDC investment and finance strategies should identify potential public sources of national and international funding (such as the Green Climate Fund where applicable) as well as private sector finance. Support or buy-in particularly from the ministries of finance, planning, or economy can help raise credibility in mobilizing resources as well as inject national finance expertise and incorporate NDC policies and measures into the public budget formulation and execution process. Framing and financing NDC implementation in terms of financing national development might enhance government buy-in.

Sound and Transparent Data Management

Tracking performance data is central to ensuring NDC system implementation is functioning effectively, efficiently, and as planned. Integrated data management between NDC implementation and, for example, SDG tracking, could strengthen these opportunities for efficiency and data availability. Establishing a measurement, reporting, and verification (MRV) system fulfills Paris Agreement provisions on accounting and transparency (Articles 4 and 13, respectively) and informs the global stocktake on national GHG emission levels and country progress toward achieving NDCs, climate and adaptation impacts and adaptation, sustainable development efforts, financial support, technology transfer, and capacity building.

The Paris Agreement implementation guidelines newly agreed at the 24th Conference of the Parties (COP24) to the UNFCCC address NDC tracking and note that Parties shall submit their first biennial transparency reports (BTRs) to inform tracking of NDC progress and achievements and their national inventory reports by December 31, 2024 (UNDP et al. forthcoming). Data management systems associated with the MRV system contribute toward these upcoming reporting efforts. Guidance on NDC monitoring plans will be issued by the Subsidiary Body for Scientific and Technological Advice by November 2020 and will be discussed in the upcoming NDC guidance document (UNDP et al. forthcoming).

The data management or MRV system will play a lead role in achieving the following objectives:

- Creating qualitative indicators and quantitative measures of achievement and progress toward the NDC targets and SDGs
- Tracking efforts and identifying actions that are still needed
- Assessing effectiveness of actions in terms of, e.g., achievement of targets, speed of implementation, budgetary requirements, partnerships secured
- Transparently reporting progress to domestic and international audiences
- Compiling data for reporting (e.g., NDCs, national communications, NAPs, SDGs, and BTRs)
- Informing policymaking (e.g., whether to continue, discontinue, enhance, or begin new policies and measures)

An analysis of an MRV system's effectiveness should consider the following:

- Data collection protocols and analysis tools
- Reporting procedures and report templates
- Verification procedures
- Institutional coordination and clarity of roles and responsibilities
- Laws and mandates such as mandates to conduct monitoring and justification to collect data from the private sector
- Stakeholder engagement

Existing structures established to generate National Communications, Biennial Update Reports, GHG inventories, NAP monitoring and evaluation systems, and system methodologies established for the Clean Development Mechanism and national forest monitoring systems for REDD+ can be helpful starting points for the MRV.

Nationally Determined Contribution Implementation Plan

Preparing for NDC implementation includes several steps such as taking stock of the current NDC; reviewing the analysis that originally underpinned the NDC; prioritizing policies and measures; assessing capacities, institutions involved, and regulatory frameworks required for NDC implementation; and engaging stakeholders. NDC implementation plans (or roadmaps or strategies) can support NDC coordination and transparency as clarity of global expectations improves and the upcoming deadlines for NDC updates approach. To date, countries including Fiji, Ghana, Lebanon, Tanzania, Trinidad and Tobago, and Vanuatu have made early strides in drafting these plans.

NDC implementation planning reflects short-, medium-, and long-term policies and measures, which must be taken into account in the first NDC timeframes that extend to 2025 or 2030, national development plans that extend five years for many countries, and LTSs extending to 2050. NDC implementation plans can be a stand-alone strategy or integrated throughout other relevant strategies and plans. NDC implementation plan timeframes should consider national and international budgetary cycles to maximize opportunities for securing NDC resources. For example, the Canada LTS (Government of Canada 2016) emphasizes supporting low-carbon technologies by improving access to climate finance investments by Canadian companies. A review of NDC planning and status would begin with an analysis of the NDC implementation plan, which will vary in content by country but can include the following components:

Section 1: Information on the Nationally Determined Contribution

- NDC implementation period
- Summary of NDC mitigation goals
- Summary of NDC adaptation goals
- Summary of SDGs and other sustainable development benefits
- Responsible body or bodies for overall NDC implementation oversight and coordination
- Key institutional arrangements for overall NDC implementation

Section 2: Information on the mitigation policies and measures and, where included, adaptation measures

- Description of policies and measures to achieve the NDC targets and measures
- Key activities related to their implementation
- Identification of specific projects that can deliver on these policies
- Responsible entity for implementation of policy, action, or measure
- Key stakeholders and institutional arrangements
- Total costs and breakdown of financing sources for each policy and measure, including strategies for using market mechanisms
- Implementation period and milestones for policies and measures
- Mitigation and/or adaptation impacts and contribution to the SDGs
- Expected outcomes and relationships to the NDC goals
- Risks related to failure of achieving the targeted impacts and risk mitigation strategies

Note: Section 2 would be repeated for each policy or measure intended to contribute to a country's NDC goals.

Section 3: Monitoring progress of Nationally Determined Contribution implementation and achievement of Nationally Determined Contribution goals

- Responsible entity for overall NDC monitoring
- List of key indicators and parameters for monitoring progress in NDC implementation (including definition of the indicators and parameters for GHG impacts and SDGs, frequency of measurement, responsible entity for data collection, sources of information, and link-ages with national development and SDG indicators)
- Description of the institutional arrangements for monitoring and reporting
- Data archiving policy (UNDP et al. forthcoming)

For a discussion on key performance indicators (e.g., types of indicators, examples of data to be monitored), the Greenhouse Gas Protocol Policy and Action Standard is a useful resource (Greenhouse Gas Protocol 2014). Where possible, there should be clarity on the sequencing of policies and climate actions, including key milestones to track progress and support reporting obligations. Detailed project-level information on individual actions can be provided separately. Further, public engagement will be crucial throughout the process and can include a series of workshops convened by the NDC coordination body to discuss the NDC process and information needed to build the NDC implementation plan.

How to Align Nationally Determined Contribution Implementation with Long-Term Strategies

The attributes and prioritization of the NDC implementation strategy policies and measures discussed in this section reflect on the capacity to deliver on LTSs, and ideally form five-year stepping stones toward an LTS vision (see Section 2 for a discussion of how LTS design can help deliver NDCs). The NDC implementation plan should be designed to align with the LTS as well. NDC implementation alignment can consider the following:

- Policies and measures should be selected on the basis of their ability to deliver LTS targets (and avoid locking in emissions-intensive and unresilient infrastructure and land use) for GHG mitigation, support climate resilience and adaptation, and create sustainable development co-benefits such as those underpinning SDG targets.
- Clearly defined NDC processes, including the roles and responsibilities attached to NDC implementation, allow for greater political ownership, efficiency, and strengthened institutional knowledge across agencies. Over time, continuity in the system will facilitate greater understanding of capacity gaps and opportunities among laws, regulations, and implementing agencies and help provide greater long-term certainty.
- To maximize the cross-sectoral nature, national ownership, and efficiency of NDC implementation, an integrated approach that aligns the NDC to related priorities such as the 2030 Agenda is advised, and similar alignment structures are recommended for the LTS to encourage consistency and awareness.

- Facilitating NDC finance goes beyond short- and medium-term planning as catalyzing private investment and access to national budgets should be approached with consistent policy, regulatory, and market signals that exhibit stability and political support progressing from the short to long term. Capacity building for local partners to ensure informational symmetry is critical as well.
- Integrated data management between NDC and priority targets such as SDGs strengthens opportunities for efficiency and improved data quality and access, and such cross-sectoral linkages require long-term planning and incorporation in LTSs.

Due to the need for coherence and overlapping content, LTS and NDC implementation strategies should inform one another. As LTSs and NDCs are organic documents that change over time, mechanisms for LTS and NDC strategic planning should take into account potential changes in priorities and approaches. This would help secure political support and buy-in to the process and potential access to finance while remaining focused on delivering practical outputs on the ground. Embedding the aforementioned aspects of NDC implementation (policies and measures, institutional arrangements, policy alignment, finance, MRV, and an official strategy) in LTSs will help ensure uptake and positioning as a national priority.

4. COMMUNICATING NEW AND UPDATED NATIONALLY DETERMINED CONTRIBUTIONS

How New and Updated Nationally Determined Contributions Can Help Deliver the Paris Agreement's Goals

Building on the initial NDCs, and in the context of its long-term goal, the Paris Agreement established a mechanism for enhancing the ambition of climate action over time. Article 4 requires each Party to prepare and communicate a successive NDC every five years, each of which will reflect progression beyond the Party's existing NDC, represent its highest possible ambition, and reflect "its common but differentiated responsibilities and respective capabilities in the light of different national circumstances" (UNFCCC 2015).

In addition, the Paris decision text requested that by 2020, Parties whose NDC included a 2025 target communicate a new NDC and that Parties with a 2030

target either communicate or update their existing NDC. The 2018 decision at COP24 in Katowice, Poland, reiterated this request (UNFCCC 2018b). The Talanoa Dialogue, concluded in 2018, was intended to inform NDC preparation.

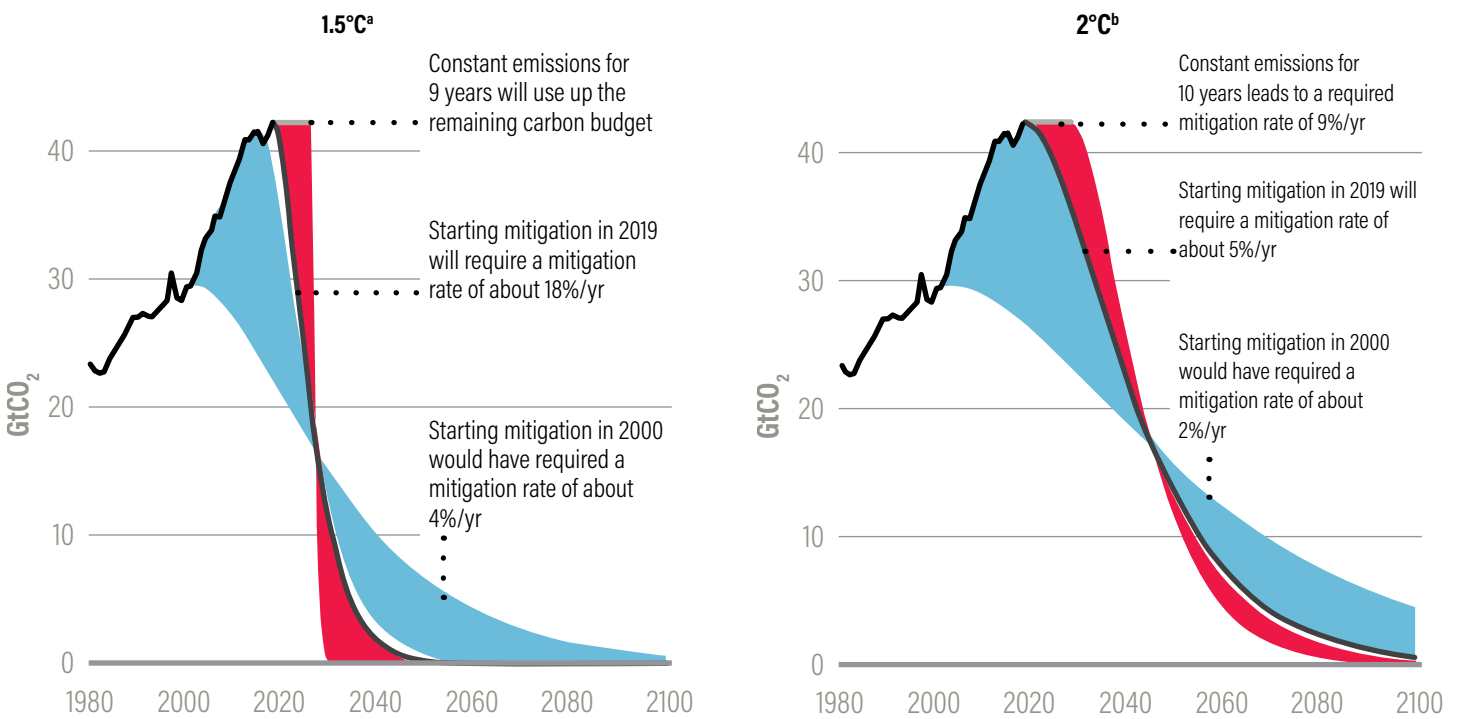
Several recent studies underscore the importance of the 2020 timeframe for updating NDCs, the need to enhance mitigation ambition, and the relationship between commitments in the 2030 timeframe and the long-term trajectories addressed in LTSs. The IPCC’s 2018 report *Global Warming of 1.5°C* underscored that major, immediate transformation is required to achieve the Paris goals (Masson-Delmotte et al. 2018). In particular, the report found that global GHG emissions in 2030—the target year for most NDCs—must be halved relative to current projections. Likewise, the UN Environment *Emissions Gap Report 2018* found that under the current NDCs, 2030 emissions would be approximately 36 percent higher than the level consistent with limiting warming to 2°C, and more than double the level needed to limit it to 1.5°C (UNEP 2018). Moreover, global emissions are not

expected to peak by 2030 even under the current NDCs. The longer the global peak is delayed, the more radical future emissions reductions will need to be to achieve the Paris Agreement’s goals (Figure 2).

Delaying action can lock in future emissions from infrastructure with long lifespans, such as buildings and power plants, making steep emissions reductions more expensive and technically difficult to achieve. This relationship between current ambition and future options highlights the importance of developing LTSs that can inform decisions around 2020 NDC updates.

Since the initial NDCs were developed, key factors have changed—in international climate policy, domestic policies and plans, technology, and our understanding of the relationship between climate action and economic development—in ways that can provide Parties with increased confidence for enhanced ambition. On the international level, the Paris Agreement is now in force, with major components of its modalities and guidance governing NDCs now finalized, and the Kigali Amendment

Figure 2 | Carbon Dioxide (CO₂) Mitigation Curves Associated with 2°C and 1.5°C



Notes: a. For a >66% chance of staying below 1.5°C, remaining budget: 420 GtCO₂.

b. For a 66% chance of staying below 2°C, remaining budget: 1170 GtCO₂.

Source: Adapted from CICERO Center for International Climate Research 2018. Mitigation curves after Raupach et al. 2014.

to the Montreal Protocol has entered into force, laying out a schedule for phasing down hydrofluorocarbon (HFC) emissions. At the national level, many countries have made significant progress implementing their NDCs, and some are already on track to exceed the targets in their existing NDCs. This progress reflects in part the advances in institutions, partnerships, and data collection achieved since 2015.

In parallel, a growing number of countries have developed LTSs, which serve as an important benchmark against which Parties can compare their NDCs and align them as needed. In terms of technology, the cost of renewable energy has declined significantly since the initial NDCs were developed, and technological innovation has continued to progress. The modeling assumptions on which initial NDCs were based are therefore, in many cases, outdated and do not reflect the full, current potential of such technologies. Finally, as noted in Section 1, our understanding of the socioeconomic benefits of climate action has expanded—it is now estimated that ambitious climate action could generate \$26 trillion in economic benefits between now and 2030, create 65 million jobs in 2030, and avoid 700,000 premature deaths from air pollution (Global Commission on the Economy and Climate 2018).

Finally, Parties may also wish to consider the opportunities presented by an NDC enhancement process: rallying stakeholders around climate action and enhancing stake-

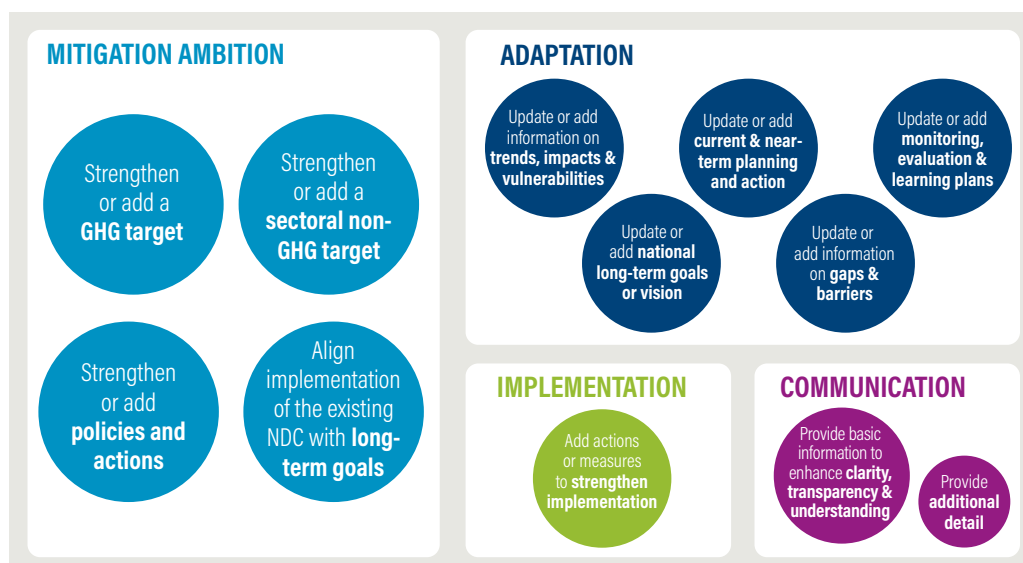
holder buy-in to implementation, sending long-term signals to the private/investment sector and development partners to inform investment decisions, and kick-starting the Paris “ambition mechanism,” helping to induce greater ambition from additional Parties.

Processes and Approaches for Nationally Determined Contribution Enhancement

When weighing options for communicating new and updated NDCs, Parties can consider various factors, including updated technical information, such as GHG inventories, emission scenarios, and assessments of abatement potential and cost. Additionally, new developments in national policies and plans, such as climate policies, long-term climate strategies, development plans, and synergies with the Sustainable Development Goals, may be relevant. This is not an exhaustive list. UNDP, UN Environment, UNEP DTU Partnership, UNFCCC, and WRI are in the process of developing more detailed guidance to assist countries in developing enhanced NDCs; the forthcoming guidance will address these and other factors in greater detail (UNDP et al. forthcoming).

A number of options are available to express enhanced ambition, adaptation, implementation, and communication in a new or updated NDC, as shown in Figure 3.

Figure 3 | Menu of Options for Enhancing Nationally Determined Contributions



Source: Fransen et al. 2017.

Nationally Determined Contribution Enhancement Opportunities by Sector

Opportunities for NDC enhancement vary significantly by national context, but a number of promising possibilities are outlined in Table 2. These can be reflected through strengthened or enhanced GHG targets, non-GHG targets, and/or policies and actions that align with long-term goals.

Some of these opportunities strongly align with SDG targets, as indicated in parentheses in the table. Several global SDG targets with strong mitigation and adaptation potential, such as the targets to halt deforestation by 2020 and halve food loss and waste by 2030, have not been fully reflected in the first iteration of NDCs. In many countries, the domestication of global SDG targets after 2015 led to the adoption of mitigation and adaptation targets that could be incorporated in new or updated NDCs (Northrop et al. 2016).

Table 2 | Examples of Sectoral Content for New or Updated Nationally Determined Contributions

SECTOR	GREENHOUSE GAS TARGETS	NON-GREENHOUSE GAS TARGETS	POLICIES
Buildings	Establish or strengthen an existing GHG reduction target for energy efficiency in the building sector, or specifically for building or appliance efficiency (SDG 7.2)	Establish or strengthen an existing quantitative non-GHG target for sector-wide efficiency and/or building/appliance efficiency	<ul style="list-style-type: none"> ■ Increase building energy performance as well as the uptake of efficient, low-carbon appliances and equipment in buildings ■ Provide incentives for companies and consumers to replace high global warming potential (GWP) HFC commercial equipment or appliances with low GWP alternatives ■ Replace high GWP HFCs with low-impact alternatives in specific classes of appliances and equipment, such as using R-290 instead of HFC-410a in room air conditioners ■ Introduce a policy requiring all new high-efficiency cooling equipment to use either a low GWP HFC or an HFC alternative
Energy	Establish or strengthen a GHG reduction target for the energy sector	<ul style="list-style-type: none"> ■ Establish or strengthen quantitative targets to increase the capacity/and or generation of renewable energy ■ Establish or strengthen quantitative targets for energy storage capacity linked to renewable energy sources ■ Establish or strengthen quantitative targets to increase energy access through the use of renewable energy 	<ul style="list-style-type: none"> ■ Support an increase in the share of renewable energy in the national energy mix (SDG. 7.1) ■ Incorporate policies to improve grid integration of renewable energy ■ Pursue policies to de-risk private investment in renewable energy ■ Promote policies to reduce fugitive emissions during energy production
Food and agriculture	Establish or strengthen a GHG reduction target for rice production; establish or strengthen a GHG reduction target for livestock production (SDG 2.4)	Establish a national non-GHG reduction target to reduce food waste and loss, including post-harvest loss, by 50% by 2030	<ul style="list-style-type: none"> ■ Promote the intermittent aeration of continuously flooded rice paddies ■ Promote the reduction of enteric fermentation in livestock through dietary supplements and shifts (e.g., from a cellulosic- to a starch-based diet) ■ Support farmers in implementing livestock anaerobic digestion projects ■ Review national dietary guidelines to promote the consumption of less meat and more plant protein ■ Ban open field burning of agricultural waste

Table 2 | Examples of Sectoral Content for New or Updated Nationally Determined Contributions (cont'd)

SECTOR	GREENHOUSE GAS TARGETS	NON-GREENHOUSE GAS TARGETS	POLICIES
Nature-based solutions	<ul style="list-style-type: none"> Establish or strengthen a GHG reduction target to reduce emissions from deforestation or forest degradation Establish or strengthen an existing GHG reduction target for coastal ecosystems 	<ul style="list-style-type: none"> Establish or strengthen an existing quantitative non-GHG target for the protection or restoration of forests (SDG 15.2) Establish or strengthen an existing quantitative non-GHG target for protection or restoration of coastal ecosystems (SDG 14.2) 	<ul style="list-style-type: none"> Capture the carbon sequestration potential and climate resilience benefits of protecting forest ecosystems (e.g., fiscal policy reforms, landscape approach to limit leakage, biodiverse restoration, community forest restoration) Capture the carbon sequestration potential and climate resilience benefits of blue carbon ecosystems
Transport	Establish or strengthen an existing GHG (and/or black carbon) reduction target for the transport sector	Establish or strengthen an existing quantitative non-GHG target for the transport sector (e.g., electric vehicle target, modal share target) (SDG 11.2)	<ul style="list-style-type: none"> Reduce emissions from and improve the resilience of the transport sector (e.g., fuel economy standards, improved urban planning) Develop electromobility strategies and/or introduce a policy or legal framework (and associated incentives) to replace internal combustion engine vehicles with electric vehicles Eliminate high-emitting vehicles from road and off-road transport and/or public transportation Develop an integrated and sustainable strategy for transport modes and/or expand toward a greener and more sustainable public transport system

Notes: While many of the interventions described in this table offer adaptation co-benefits, options for adaptation enhancement by sector have not yet been fully detailed. The table therefore focuses on mitigation-related interventions. Some of these opportunities strongly align with SDG targets, as indicated within parentheses in the table.

Source: Adapted from Northrop et al. 2018 and Ross et al. 2018.

5. SUPPORTING CLIMATE ACTION IN DEVELOPING COUNTRIES

Beyond advancing LTSs and NDCs domestically, G20 countries also play a major role in supporting non-G20 countries as they advance their LTSs and strengthen NDC implementation and enhancement. Given the challenges that many countries face in advancing this work, particularly developing countries (including both G20 and non-G20 members), G20 members have the opportunity to provide the necessary capacity and resources to support these countries in advancing LTS and NDC implementation and enhancement. This can be done, for example, by sharing experiences and expertise and by providing technical or financial support or human resources.

This commitment, in part, has been grounded in existing G20 agreements, as further elaborated below. At the same time, all countries can also learn from each other in terms of efforts for implementing mitigation and adaptation policies and measures under their NDCs and designing and putting in place LTSs. This is an important part of strengthening the international cooperation required to address the complex, multidimensional issue of climate change. In addition, cooperation can extend beyond finance and technical support to address, for example, joint RD&D on technology for hard-to-abate sectors.

This section reviews the overarching role of the G20 in supporting cooperation, including priority areas where G20 support is already and can be further prioritized to maximize added value. It then outlines the specific challenges that developing countries face as well as strategies and examples of existing support being provided.

The Role of the G20 in Supporting Cooperation with Developing Countries

Under the Chinese presidency of the G20 in 2016, several agreements and communications from G20 countries reflected the importance of G20 countries in leveraging international cooperation to advance both the 2030 Agenda and Paris Agreement. Specifically, in the Hangzhou communiqué, G20 members affirmed “the importance of fulfilling the UNFCCC commitment by developed countries in providing means of implementation including financial resources to assist developing countries with respect to both mitigation and adaptation actions in line with Paris outcomes” (G20 2016). In addition, the G20 Action Plan on the 2030 Agenda (G20 Action Plan 2016), also adopted in 2016, supports the efforts of G20 countries to work cooperatively to implement the SDGs. The Action Plan references SDG13 with some linkages between climate change and other SDGs, and also focuses on the importance of climate finance and green finance as contributors to achieving both the Paris Agreement and 2030 Agenda.

The G20 Climate Finance Study Group, in consideration of how to provide and mobilize public and private financial resources for both adaptation and mitigation, developed a report in 2016 on “mainstreaming climate change considerations in development assistance and climate finance programmes” (CFSG 2016). The report provided some

general guidance on how the G20 can support developing countries in achieving the Paris Agreement goals in a way that is aligned with sustainable development efforts and SDG achievement (see Box 5). Many of these principles align with those to be discussed further in this section. Further, in the context of support for non-G20 countries, existing platforms such as the NDC Partnership and 2050 Pathways Platform can also be leveraged by G20 partners to advance this cooperation.

Climate change is a crosscutting, multifaceted challenge that does not stop at borders. International cooperation has already been demonstrated under the UNFCCC and is being applied through numerous partnerships and engagements. Nonetheless, scaling this up by sharing experiences and expertise, identifying integrated and collaborative solutions, including with the private sector, and providing technical, financial, and human resources is an effective and cost-efficient way to tackle the urgent global issue of a changing climate at scale in such a small window of time.

Challenges for Advancing Nationally Determined Contributions and Long-Term Strategies in Developing Countries

Across developing countries, there are a wide range of climate change impacts, national development priorities, and NDC and LTS implementation strategies under

Box 5 | Key Issues and Recommendations Examined in the 2016 G20 Climate Finance Study Group Report

The aim of the *G20 Outlook on Mainstreaming Climate Change Considerations into Development Assistance and Climate Finance Programs*, a report prepared by the Climate Finance Study Group (CFSG) of the G20 in June 2016, was to provide recommendations for how to maximize sustainable development and climate co-benefits (CFSG 2016). The CFSG identified the following key issues, which were further examined throughout the report in terms of suggestions on how they can be pursued:

- Climate action should align with development priorities consistent with the SDGs and NDCs
- Support should be client-driven and focused on helping countries achieve their NDCs
- Provision and mobilization of concessional resources is necessary—the Green Climate Fund, Global Environment Facility, and other funds, such as Climate Investment Funds, play a key role in bridging the viability gap, supporting innovative approaches, and scaling up nascent technologies
- The contexts and scopes of operation of institutions should be taken into account; mainstreaming climate change into national planning processes should respect the mandate of each institution and how it contributes to the institution’s core objectives
- Relevant experiences should be acknowledged and analyzed to evaluate the impacts on operations and gather lessons learned
- There is a need for clear strategies and plans to address climate change that provide transparency in the provision and mobilization of climate finance for stakeholders and a mandate for management
- Climate risks should be managed, and in a way that considers appropriate measures to build resilience to climate change, thereby contributing to poverty reduction

way both at national and subnational levels. Further, the challenges encountered in advancing NDCs and LTSs will ultimately be determined by country-specific conditions including capacity, economic drivers, systems and market trends, stakeholder groups and sectors impacted by climate change, political priorities, and the level of civil society engagement. Support to developing countries will therefore look different depending on the country.

In terms of general trends seen across all countries, a survey was conducted in August and September 2018 as part of the NewClimate Institute's NDC Update Report *Ambition: Taking a Long-Term Perspective* (van Tilburg et al. 2018). This survey analyzed 78 responses from national and sector-level experts from across 78 countries, a majority of which were developing countries (15 were considered "high-income" countries). Overall, the survey confirmed the results from previous surveys conducted in 2017, which demonstrated that countries are generally confident in their own progress on national climate action but showed that there is pessimism about mobilizing investments and securing sufficient political support from the private sector.

In addition, the survey asked respondents about the progress their governments had made in developing LTSs. Out of the 78 respondents, 15 respondents (19 percent) stated that their governments had an officially approved strategy, 30 (39 percent) answered that their governments were working on it, and 29 (37 percent) indicated that their countries had not begun to develop an LTS but expected to start soon. Only 5 percent said that their countries had no plans to initiate an LTS. This demonstrates an opportunity for strengthening support in this area to help accelerate progress. Finally, 57 percent of respondents confirmed that their governments planned to increase their ambitions in the context of NDC updates. Forty percent said they did not know whether they planned to, and 3 percent said their governments did not plan to increase their ambitions (van Tilburg et al. 2018).

Information has also been gathered on developing countries' challenges through a series of 20 NDC Regional Dialogues and three global NDC Dialogues coordinated by UNDP and the UNFCCC secretariat between 2014 and 2019. These events engaged over 2,300 participants from 152 developing countries to share experiences, challenges, and lessons learned on NDC design and implementation. The insights gained from these dialogues are further

reinforced by information gathered from the NDC Partnership (see Box 6) and direct bilateral support to countries. All of this evidence has shown that there are several common characteristics across developing countries with regard to the types of challenges being faced. These can be organized into three broad categories: capacity and coordination gaps; prioritization of adaptation; and financing needs.

Capacity and Coordination Gaps: Many developing countries have limited capacities to advance their efforts to implement the Paris Agreement. Understanding the specific nature of these gaps can help further direct and prioritize support. Many developing countries are still in the early stages of NDC implementation, prioritizing development of NDC implementation plans, and strengthening the institutions to underpin these plans. According to a recent report by the NDC Partnership, in the context of requests for support from partnership member developing countries, "more than half of all requests for support relate to cross-ministry coordination and multi-sector policies to deliver holistic climate action" (NDC Partnership 2018). In addition, one of the top five requests from countries has been to strengthen the linkages between the 2030 Agenda and Paris Agreement (or NDC and SDG implementation). This report highlights key challenges that NDC Partnership member developing countries face, highlighting limited capacities for mainstreaming NDCs into national and sectoral development plans and mobilizing sufficient finance. Building policy, legal, and institutional foundations to facilitate the mainstreaming of climate change into national planning processes was also noted by the NDC Partnership to be an area generally requiring considerable assistance as countries transition from planning to implementing climate action. In fact, many members have explicitly requested support to simultaneously integrate targets from other global and regional agendas alongside NDCs, including SDGs, the Sendai Framework for Disaster Risk Reduction, and, where relevant, the African Union's Agenda 2063.

These findings were reiterated during the series of NDC Regional Dialogues referenced above. Of the main gaps and needs discussed during the dialogues, two primary areas were highlighted. The first area of focus was on strengthening institutional arrangements and coordination for NDC implementation, including both horizontal coordination, across ministries and segments of society, and vertical coordination, across national,

subnational, and local levels. The importance of engaging nongovernment stakeholders—including the private sector, donors, civil society, and women’s groups—was also a strong focus of the dialogues. The second area of focus was on identifying the best methodologies and approaches for linking NDCs with key national planning processes and sectoral plans. This reflects a trend seen in NDC Partnership member requests that demonstrates a strong demand for tools that support integrated planning, that is, considering all targets, goals, and objectives in an integrated way to build on linkages.

In terms of LTSs, similar capacity needs affect the ability of many countries to pursue this process. While engaging in LTS processes could contribute to strengthening capacity on NDC implementation, with additional data generation and a vision by which NDCs could provide valuable benchmarks, in many cases finite resources means there can sometimes be a trade-off between the two. For LTSs, additional capacity challenges relate to the need for further evidence for longer timeframes, which may not already be available, and methodologies and approaches for planning processes that may go beyond current development planning cycles. These challenges make it even clearer that greater support is needed to strengthen efforts on NDC implementation and LTSs simultaneously, leveraging their coordination and linkages.

Prioritization of Adaptation: While the emphasis around NDCs has primarily been on reducing emissions to meet the Paris Agreement global targets on warming, Parties have consistently highlighted the importance of adaptation, which is also a key part of the Paris Agreement. This came out clearly in the NDC Regional Dialogues as well as through direct bilateral support to countries. Prioritizing adaptation is essential because many of these developing countries are already experiencing intense impacts caused by climate change, from droughts and floods to more intensive storms and rising sea levels. Some countries are in particularly vulnerable situations, such as Small Island Developing States (SIDS) whose entire existences are threatened by climate change, and least-developed countries, which are dependent on agricultural livelihoods devastated by changing rainfall patterns and temperature rise. At the same time, many of these countries have limited public resources and capacities to address these impacts, even as impacts become more dire. Prioritizing adaptation as part of sustainable development efforts is a trend seen in many

developing countries as they seek international support from partner countries and organizations to help meet their needs.

While many of these countries are also working on NAP processes, strengthening the adaptation components of NDCs could help link NDCs to NAPs and other adaptation and development planning processes, raise the profile of these needs, and demonstrate linkages between adaptation and mitigation targets as well as SDGs. For this reason, developing countries (particularly SIDS) are now strengthening the adaptation components of their current NDCs.

Support to developing countries to implement adaptation activities could include such measures as strengthening climate data and information systems; conducting vulnerability and risk assessments in key sectors; raising awareness on potential climate impacts and adaptation approaches; mainstreaming adaptation into national and sectoral policies, plans, and budgets; strengthening institutional coordination mechanisms to strengthen adaptive planning; and drafting laws and regulations to enhance both adaptation and disaster preparedness to improve resilience.

Access to Finance: It is no secret that developing countries often lack the financing needed to advance NDCs and LTSs to their full potential. Most developing countries have specified conditional and unconditional targets in their NDCs and continue to look for inter-national sources, including vertical funds, to support their climate efforts and fund their conditional targets. It is also clear through the analyses on country needs emerging from the NDC Partnership and through the NDC Dialogues that mobilizing resources to support NDC implementation is the overriding priority for most developing countries. This is evidenced in part by the large number of conditional targets identified in the NDCs, as well as other finance-related priorities countries are establishing, including aligning country budgets to NDC targets and assessing private sector investment needs and opportunities. There is also a strong interest among countries to strengthen innovative financing mechanisms, engage the private sector, and maximize blended finance to de-risk private sector investments.

While this need for financing is clear, there are several challenges to successfully accessing and mobilizing these funds. For example, international public climate finance is

difficult for many countries to access due to the complex application processes; the need for detailed evidence and support documentation, which often requires some additional investment; and the high level of scrutiny. At the same time, review times for many funds, such as international vertical funds, are very long, making it difficult for many countries requiring urgent action. In addition, several middle-income countries have difficulty accessing public climate finance when they are “competing” with countries with less capacity and fewer resources. Non-grant instruments are also a challenge for many countries that face fiscal deficits. Accessing private sector finance can also be a challenge. Unique technical capacity is required to frame needs in a way that attracts investment. There are also many policy and regulation obstacles that can get in the way, and countries are not always able to assess risks and find opportunities for shifting these policies and regulations to allow for greater private investment. Many private sector partners are also unfamiliar with climate risks and opportunities, making it difficult to make the case for their engagement.

Existing Support for Developing Countries

Support is currently being provided to developing countries to help advance NDCs and LTSs. In the context of NDCs, current support crosses all stages of NDC implementation, from developing an NDC implementation

plan after initial consultations to providing assistance to attract and access public and private finance to implement these plans, and establishing monitoring and reporting systems to track progress. Support is also being provided to address institutional capacity needs through strengthening arrangements and coordination mechanisms. Beyond current NDC implementation, support is also beginning to emerge for NDC updates, including strengthening information and data to underpin NDC targets, updating to incorporate recent developments in knowledge and evidence, and encouraging greater ambition, for example, by highlighting sectors that may not be considered in some NDCs. NDC update support is still in its initial stages given the recent COP24 agreement on NDC implementation guidelines and the upcoming deadline of 2020.

One of the primary mechanisms for coordinating and advancing this support to countries is through the NDC Partnership, which is elaborated in Box 6. This global network of country and institutional partners supports NDC advancement through peer-to-peer learning, while providing a network of knowledge and resources to support climate action in-country. Several major programs are specifically aligned with the NDC Partnership, including the UNDP NDC Support Programme, the World Bank NDC Support Facility, NDC Assist led by the German

Box 6 | NDC Partnership

The NDC Partnership was launched at the 22nd Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in Marrakesh, Morocco, as a platform for countries to access technical knowledge and financial support to help meet their climate and sustainable development targets. As of January 2019, the partnership is made up of 91 developing and developed countries as well as 21 international and 9 associate organizations, and its Support Unit is hosted by WRI and the UNFCCC secretariat. The partnership aims to do three things:

- 1) **Facilitate technical assistance and knowledge sharing**, which advances NDC implementation and facilitates greater collaboration across sectors
- 2) **Create and disseminate knowledge products** to raise awareness of and enhance access to climate support initiatives, recommended practices, tools, and resources that address NDC implementation
- 3) **Promote enhanced financial support for NDC implementation** to work with governments to understand and address constraints to accessing bilateral and international support programs, while aligning development finance initiatives with NDC implementation

Notes: a. See NDC Partnership 2019; b. See Climate Watch 2019.

To meet these aims, the NDC Partnership supports a country-driven model through two areas of support. The first is in-country engagement, where the partnership engages directly with ministries and other stakeholders to assess needs and identify opportunities for collaboration across sectors, regions, and international partners. Partnership Plans are developed on the basis of consultations with local governments on their needs and priorities with regard to NDC implementation to map existing and planned support and leverage existing skills and resources from partners toward the common, government-driven objective. Secondly, the NDC Partnership develops global knowledge products to help countries access information, address gaps, and establish a community of learning and practice to share experiences. Two online navigators provide searchable databases of financial and technical assistance programs, tools, and resources. The Climate Finance Explorer^a is an interactive database that includes information on funds and support mechanisms for adaptation and mitigation activities. Climate Watch offers comprehensive information on climate and NDC-related data.^b

government, and the Inter-American Development Bank's NDC Invest. All of these programs provide direct support to address specific needs identified by countries to accelerate NDC implementation and updates.

In addition to existing support on NDCs, there is also increasing support to developing countries on their LTSs. While not all countries have elected to initiate an LTS process, the benefits of these strategies are clear, and resources are emerging to support those interested in embarking on the process. Specifically, a WRI-UNDP initiative on LTSs, in cooperation with UNFCCC, has developed a suite of resources to help policymakers integrate long-term climate strategies into national policymaking, including expert perspectives (WRI 2019). The initiative is undertaken in collaboration with the NDC Partnership and contributes to the 2050 Pathways Platform. The 2050 Pathways Platform is also a valuable mechanism for supporting countries as they plan for mid-century as well as LTS processes. This platform provides a series of resources, learning opportunities, and support to countries to address the issue of planning for the 2050 horizon.

This being said, the current support being provided to countries is not sufficient to meet the needs and challenges identified in the section above. Support for NDC implementation and LTSs is evolving as new experiences and lessons emerge, and as the details under the Paris Agreement become further defined and refined. As such, there are several strategies that can be explored to further strengthen the support needed in meeting countries' needs. The following section outlines some of these strategies and provides examples of where countries have managed to apply these strategies successfully with international support.

Strategies and Examples of Support for Advancing Nationally Determined Contributions and Long-Term Strategies

Diving a bit deeper into the specific types of climate assistance available, there is a broad range of support being provided to developing countries through over 100 funds, programs, and mechanisms. As discussed, while this support is broad it is not fully sufficient to meet the needs of developing countries. The strategies outlined in this section, therefore, provide ideas and examples of where further support can be strengthened

and focused. At the same time, the examples included refer to experiences in developing countries where international support has successfully applied these strategies to advance NDC implementation and LTSs. This directly aligns with the approaches discussed in Section 3.

These strategies and examples can be divided into three categories: institutional capacity, coordination, and governance; policy and planning; and financing.

Institutional capacity, coordination, and governance: This category of support focuses on addressing the underlying capacities, systems, and structures that help govern the planning and implementation of NDCs and LTSs. The strategies to advance this support relate to addressing many of the capacity gaps highlighted above. Specifically, this includes strengthening leadership and engagement on climate change through advocacy and facilitating stakeholder involvement. Efforts also support strengthened coordination across government institutions, given the crosscutting nature of climate-related planning and implementation. This relates to setting up coordination bodies and processes, climate change committees within the government, and information sharing across ministries and other agencies. In addition, a large area of support is focused on establishing or strengthening systems for monitoring and reporting climate change actions, including MRV systems related to both mitigation, adaptation, SDGs, and finance.

For example, in Zambia, through direct country support funded by international grants, the government has developed a draft NDC implementation framework. This framework aims to strengthen the institutional arrangements defined by the National Climate Change Policy and build national capacity for NDC planning, design, and implementation. This framework will be incorporated into the existing climate change structure. At the same time, a comprehensive mainstreaming process has been supported through separate funding, which looks to integrate NDC targets linked to the implementation framework and SDG targets (along with reference to the Sendai Framework for Action and the African Union's Agenda 2063) into national development planning.

Policy and planning: A core strategy for implementing NDCs and LTSs is integrating the pledges, targets, and priorities into national and sectoral development policy, planning, and budgeting. This is done in many

countries by first translating LTS and NDC contributions into concrete actions, which can begin by developing NDC implementation plans as described in Section 3. These plans define specific actions, which can be integrated into existing development and sectoral plans, contribute to climate change mainstreaming, and forge synergies between climate and development outcomes. For example, through international support Trinidad and Tobago was able to develop an NDC implementation plan using a combination of qualitative and quantitative approaches for data collection and analysis (Schulz 2017). The primary components of the NDC implementation plan were recommendations made to strengthen institutional arrangements and capacity, and to mainstream climate change issues into existing policy and legislative frameworks to create the enabling environment for NDC implementation. Also included were sectoral plans for three target sectors, a Climate Finance Plan, and a Capacity Building Action Plan.

Financing: One of the critical challenges faced by many developing countries is accessing and mobilizing the finance needed to deliver on LTS visions and NDC targets. Strategies to address this challenge draw upon some of the approaches discussed in the previous section on strengthening the landscape for NDC finance. Specifically, in terms of public finance, domestic public finance is limited in many developing countries, but can play a key role in integrating climate action into national and subnational land sectoral development planning, as well as in de-risking private sector finance, blending finance, and showing potential financiers that there is significant government buy-in to support and implement climate actions. Strategies have been put in place to help countries better assess their current public expenditures, inflows, and budget revenues where they are related to climate change finance, while also identifying additional funding requirements and financing gaps. This in turn helps countries make effective planning and budgeting decisions related to climate finance, identify national resources while better tracking public climate finance, and attract international investment through better budgeting and greater transparency.⁹

In Bhutan, for example, international assistance has been used to undertake a Climate Public Expenditure and Institutional Review, contributing to the review of eight policies and 16 laws. These reviews will provide a breakdown of expenditures related to climate and biodi-

versity and help the country develop climate and biodiversity investment plans. These efforts will lead to a new policy approach that guides implementation for biodiversity, climate, and poverty reduction with a focus on NDC implementation.

At the same time, G20 countries are helping developing countries access international public funds, including vertical funds such as the Green Climate Fund and Global Environment Facility, to finance mitigation and adaptation actions that help meet NDC targets. Many of these funds involve complex project development and application procedures that require extensive technical, human, and financial capacity to undertake. In many developing countries, support is also needed to design and deliver these funds to take concrete adaptation and mitigation actions. The design stage generally includes the policy/planning process and mobilization of resources, while project implementation considers technical support, expertise, and fund management and oversight. Some multilateral organizations, for instance, support large-scale procurement processes. In other cases, international experts implement certain elements of projects to deliver the mobilized funds.

Finally, given that public finance for climate change is relatively limited compared with the scale needed to fully implement NDCs and meet the Paris Agreement goals, private sector sources will need to be scaled up to meet this need. Strategies for supporting increased access to scaled up private sector investment can focus on increasing engagement of and collaboration with private sector partners by governments and establishing public-private partnerships for climate actions. This also includes setting up the right public policies and conditions to de-risk and further incentivize private investment. For example, in Ghana, an initiative supported by the Foundation for Climate Protection and Carbon Offset KliK has used innovative financing mechanisms under Article 6 of the Paris Agreement to strengthen clean energy access to households and businesses, a focus of the NDCs. This mechanism allows banks to provide affordable credit to consumers to fund installations of solar home systems and improved cooking systems across the country. This finance mechanism is dependent on the availability of carbon finance through the international cooperation mechanisms under Article 6, another opportunity for partnership between G20 and developing countries. In this case, the mechanism further enables engagement of private local banks to support climate action.

6. CONCLUSION

Climate action guided by ambitious NDCs and LTSs offers an unprecedented opportunity to reduce GHG emissions, enhance GHG removal by sinks, increase adaptation and resilience to climate change, and strengthen sustainable development benefits in sync with growing national and global economies. This paper has highlighted some key considerations for G20 members when pursuing LTSs, NDC implementation, and NDC updates, as well as the provision of support for non-G20 and developing countries. It is clear that the G20 stands as a critical forum that can be leveraged to help advance LTSs and NDCs and achieve the goals of the Paris Agreement. This applies to strengthening G20 countries' domestic actions, enhancing G20 cooperation with low-income and developing countries, and advancing cooperation among G20 members themselves.

In line with existing G20 agreements and ongoing efforts, the G20 forum can be further leveraged to help increase cooperation, provide direct bilateral support, facilitate learning, and share expertise on NDCs and LTSs. The

Hangzhou summit communiqué reiterates the belief of G20 countries that “closer partnership and joint action by G20 members will boost confidence in, foster driving forces for and intensify cooperation on global economic growth, contributing to shared prosperity and better well-being of the world” (G20 2016b). This is already being demonstrated in the context of the 2030 Agenda, with an intent to “make use of the comparative advantage of the G20 as a global economic forum” to advance the SDGs (G20 2016a). Ambitious climate action can also be further advanced through this forum, building on the work being done on the 2030 Agenda. Designing long-term economic development visions that align with the Paris Agreement, and reflecting these in LTSs and enhanced NDCs by 2020, is a particularly critical focus. Whether it is through coordinating climate and development plans; sharing experiences that help advance NDC planning, implementation, and updates; or designing and supporting new, bold, and innovative ideas that could help trigger the economic transformation needed within and across sectors, the G20 is a powerful forum that can strengthen international cooperation in the fight against climate change.

ENDNOTES

1. For the purposes of this paper, “near term” and “short term” are within approximately the next five years; “medium term” is through approximately 2030, including current and future NDCs; and “long term” is approximately mid-century and beyond.
2. A conditional NDC is a contribution that a country can undertake if international support is provided or other conditions are met. An unconditional NDC is a contribution that a country can undertake without any conditions and on the basis of their own resources and capabilities.
3. Visit Climate Watch to explore the alignment between the NDCs and SDGs. <https://www.climatewatchdata.org/ndcs-sdg>.
4. Drawn from Levin et al. 2015 and Levin et al. 2018.
5. The United States submitted a mid-century strategy in 2016 that included modeling scenarios with technology and implications for policy through mid-century and communicated this product to the UNFCCC. This submission does not reflect the current U.S. administration’s approach to climate action.
6. Informed by Levin et al. 2018.
7. A country’s INDC, or intended nationally determined contribution, is automatically converted into its first NDC when it ratifies the Paris Agreement unless the country communicates a revised first NDC at the time of ratification.
8. The national oversight body does not need to be a new body, but rather could be integrated into existing coordination bodies.
9. More information about UNDP’s work related to climate fiscal frameworks and climate governance can be found at <https://climatefinance-developmenteffectiveness.org/>.

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