

Facilitating Global Transition: The Role of Nationally Determined Contributions in Meeting the Long-Term Temperature Goal of the Paris Agreement

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The (I)NDCs, prepared and submitted in record time involving high-level attention in many governments, were a successful instrument in pushing forward the adoption of the Paris Agreement at COP21. However, when stacked against the Paris Agreement's collective long-term temperature goal of holding warming well below 2° and limiting it to 1.5°C, they do not yet deliver the required level of emissions reductions.

The current set of NDCs, if fully implemented, are estimated to lead to global warming of about 2.8°C above pre-industrial levels by 2100 (Climate Action Tracker, 2016a).¹ Current national policies, which in many cases have not yet caught up to the NDC ambitions, are also a long way from meeting individual NDC objectives, and are projected to result in a warming of about 3.5°C, unless action is taken quickly (Ibid).

The NDCs are intended to be dynamic, with countries regularly updating them and advancing the level of ambition, reflecting advancing science and implementation experience, to meet the long-term temperature goal in the Paris Agreement. Scientific literature shows large benefits in terms of avoided climate damages entailed in holding warming to well below 2°C and limiting it to 1.5°C, and hence all countries would benefit from a collective increase in the ambition of NDCs (Schleussner et al., 2016). The UNDP and Climate Vulnerable Forum in the *2016 Low Carbon Monitor* found that “limiting warming to 1.5°C will bring increased safety for people and the environment, and an improved economic outlook of at least 10 percent higher levels of global GDP by 2050” (UNDP, 2016).

This expert perspective is part of a series that invites internationally recognized experts to explore key issues countries face as they implement their Nationally Determined Contributions (NDCs) under the Paris Agreement on climate change. The views expressed are the authors' own, and do not necessarily represent the views of the NDC Partnership Support Unit, its member countries or organizations. Read the series at www.ndcpartnership.org/perspectives

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In the short run, emission pathways consistent with meeting the Paris Agreement long-term temperature goal mean that global greenhouse gas emissions need to peak around 2020 ([M2020, 2017](#)). This means that the increased actions governments can take in the next few years can do a lot to ensure global emissions do peak around 2020, with large long-term benefits for sustainable development and the fulfilment of the Paris Agreement. Globally, carbon dioxide emissions have flat lined over the last few years, showing the potential of action notably in China and other countries impact on the global situation.

Fortunately, the rapidly decreasing costs of renewable energy systems and growing knowledge of the co-benefits of climate action provide an opportunity for many countries to move forward quickly on increasing the level of ambition reflected in their NDCs. The energy sector decarbonization leads to improvements in air quality, job creation and increasing independence from energy imports. And the collective benefit of increasing NDC ambition, along with faster and stronger mitigation action, is decreasing the long-term costs of adaptation to climate change and climate damages ([UNDP, 2016](#)).

The decision that adopted the Paris Agreement agreed to convene the Facilitative Dialogue in 2018, supported by [the forthcoming IPCC Special Report](#) on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways. The 2018 Facilitative Dialogue is to evaluate collective progress towards meeting the Paris Agreement goals, thereby providing guidance to governments as they update their NDCs before 2020, and prepare their low-carbon development strategies. The global stocktake in 2023 under the Paris Agreement will examine similar issues to those envisaged for the 2018 Facilitative Dialogue in relation to collective progress on meeting the objectives of the Paris Agreement.

With this as framing, it is clear that action on NDCs is not just about implementing them as written. It is about working out how to increase their level of ambition, while at the same time increasing the level

of policy action undertaken by governments to reflect each country's fair share of efforts to meet the Paris Agreement.

Argentina is one of the few countries which has presented [an improved NDC](#) as of end of April 2017 ([República Argentina, 2017](#)). It has revised [its 2015 INDC](#) presented from an unconditional 2030 target of 570 metric tons of carbon dioxide equivalent (MtCO₂e) to 483 MtCO₂e, representing a reduction in the growth of emissions from 60 percent to 22 percent above 2010 levels. ([Government of Argentina, 2016](#)).

[Morocco](#) has also increased its NDC ambition. It has increased its unconditional target of reducing emissions below projected business as usual (BAU) levels in 2030 from 13 percent in [the initial INDC](#) to 17 percent in its first NDC submitted in September 2016 ([Government of Morocco, 2015, 2016](#)). This will allow it to increase its energy independence and provide investors with a clear signal to develop solar photovoltaic (PV) manufacturing facilities and thus create new jobs in the country.

Encouraging investors to produce solar PV technology domestically, rather than importing it, has also played an important role in India, which has doubled its solar energy target to 40 GW by 2020 ([Enerdata, 2017](#)) and released a new national electricity plan that indicates it will not need any additional coal-fired energy capacity in the next decade ([ABC News, 2016](#)).

In the meantime, China has increased its solar capacity by 80 percent in 2016, making it the global leader in terms of installed capacity. Even though the installed capacity of coal-fired power plants has increased by 48 GW, their average utilization rate decreased ([CEE News, 2017](#)). Importantly, China's National Energy Administration recently announced the suspension of 104 coal power projects, either under construction or planned, with a total capacity of 120 GW ([Reuters, 2017](#)). In addition to climate change mitigation, all of those actions are to a large degree driven by an attempt to decrease air pollution ([Grantham Research Institute, 2015](#)). Implementation in both India and China appears

to be running ahead and exceeding their present NDC targets.

These developments are fundamentally strengthened by the rapidly decreasing costs of renewables in the power sector. The benefits of scale and increasing experience of investors with auctioning in different countries have led to record low prices, e.g. 2.42 U.S. cents per kilowatt hour (kWh) for PV plant in Abu Dhabi ([Bloomberg, 2016](#)) or 4.99 US cents per kWh for offshore wind in Denmark ([Danish Ministry of Energy Utilities and Climate, 2016](#)). Such prices show not only the increasing competitiveness of renewables, but also contribute to establishing them as mainstream energy sources.

The latter has an important impact on the strategies of different countries that increasingly start to compete for leadership in the development of renewable energy industries. As the benefits of scale cannot be reached without large domestic markets, raising ambition sends a signal to investors of long-term demand for their products. This should provide an incentive to investing in manufacturing and innovation in the respective countries. Due to the attention they have received, NDCs could become an important platform to express such ambitions.

Bringing about a rapid energy transformation is no mean feat, particularly in countries where energy use is still growing, and major sustainable development challenges dominate policy. As a consequence, countries face many challenges in closing the implementation gap and increasing the ambition of the NDCs for 2025 and 2030 by 2020. Nevertheless it is clear that many measures required to increase ambition and action produce large sustainable development benefits beyond climate action, such as reduction in air pollution, job creation or enhancing energy security ([UNDP, 2016](#)). By increasing ambition levels, governments are also decreasing the risk of an expensive lock-in of carbon-intensive infrastructure. Much of the existing and planned infrastructure focuses on fossil fuels, and continuation of this trend would lead to significant stranded assets in the future.

To materialize these benefits, governments need to adopt a number of measures to facilitate the global economy decarbonization process, such as:

- **Removing fossil fuels subsidies and moving towards placing a price on carbon.** Accurately valuing carbon will have large benefits both economically and in reducing CO₂ and related air pollution emissions. Cancelling all planned and announced coal-fired power plants—and replacing production with zero-carbon technology or reduction in electricity consumption through efficiency measures—could narrow the emissions gap between NDCs and current policies by up to an estimated 1.9 to 2.3 GtCO₂e, or by 40 to 65 percent. ([Climate Action Tracker, 2015](#)). It would also send a strong signal not to invest in carbon-intensive infrastructure and thus reduce the risk of stranded carbon-intensive assets.
- **Adopting fair policies that facilitate a just transition.** As policy shifts towards low-carbon choices, communities specialized in carbon-intensive activities will be visibly affected, with immediate political implications. The preamble to the Paris Agreement states that parties take into account “[...] the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities [...]”. This highlights the importance of a “just transition” to a low-carbon economy, especially for regions and workers dependent on fossil fuel industries. Such policies can be linked to and financed by revenue from carbon pricing instruments, which can be designed to ensure fair distributional effects. A just transition is necessary to avoid backlash against climate action and to increase acceptance for the necessary technological and social changes resulting from a low-carbon economic transition. Such approaches can provide sustainable employment opportunities and all of the social and economic benefits this entails. The IMF has indicated that appropriately structured policies addressing distributional and equity issues result in better social and economic outcomes ([IMF, 2015](#)).

- **Shifting investments from fossil fuels to renewables.** Continued investments in carbon-intensive energy sources result partly from the influential role of the fossil fuel industry at different levels of governance, but also how familiar policymakers are with established technologies. The indirect costs of fossil fuels, termed externalities—such as air pollution or climate damages—are often not included in policies evaluating these investments. Including these factors would often, if not always, swing the balance away from fossil-intensive to low- and zero-carbon energy options. Shifting investments away from fossil fuels will require building the right international enabling environment, which will result from phasing out damaging subsidies that the G20 committed to address almost a decade ago, climate-proofing of all development aid, including accelerating the achievement of climate finance targets by development banks, whose climate strategies need to become compatible with the objectives of the Paris Agreement.
- **Adopting new policy tools suitable for rolling out renewable energy.** Renewable energy at scale will often require different policies, grids, and markets compared to large, centralised power plants. Many countries lack experience with policies necessary to transform their energy sector. Stepping up capacity building to develop national enabling environments and regulatory frameworks will be critical. In developing countries mainstreaming NDC/climate measures into SDG implementation is key to avoiding competition for resources between conflicting development priorities and maximising synergies and co-benefits.
- **Taking advantage of the decarbonisation of the power sector by decarbonising other sectors.** Decarbonising the power sector is crucial, but replacing fossil fuels with low-carbon alternatives in other sectors, especially heating, as well as electrification of transport, is also of great importance.
- **Taking advantage of new opportunities to integrate renewables.** While intermittency of the fastest developing renewables, such as wind and solar energy, has been perceived as a challenge, solutions to deal with this are gaining momentum. The range of solutions includes—but is not limited to—energy storage, demand management, utilization of flexible renewables, and taking advantage of the opportunities offered by integration with other sectors. While implementing their NDCs, governments should design the most cost-competitive mix of these solutions.
- **Facilitating the decarbonisation of the transport sector by phasing out the sale of new internal combustion engines before 2035 and mode shifting.** A number of fossil fuel alternatives in the transport sector already exist, with electric-mobility gaining importance in the recent years. The positive impact of electrification of the transport sector is of course dependent on the simultaneous decarbonisation of the power sector. A transition away from individual modes of transport towards low-carbon public transport (e.g. subways, trains) would also bring significant benefits not only in terms of reducing emissions but also reduction in air, noise pollution, infrastructure, and safety. Replacement of fossil fuels in aviation would most likely need to rely upon the deployment of bio-jet fuel in the period to 2050, which could yield 50-95 percent emissions reductions ([IRENA, 2017](#)). For shipping, a wide range of options exist for clean propulsion systems to reduce both CO₂ and air pollution ([IRENA, 2015](#)). Such approaches could also be reflected in the NDCs ([Climate Action Tracker, 2016](#)).
- **Facilitating deployment of zero-energy buildings.** While emissions from the building sector continue to increase, significant progress in energy efficiency and expansion of distributed renewable energy sources allow construction of zero-energy and—in many regions—net-energy producing buildings. However, the uptake of zero-energy building practices has been nowhere fast enough to make this sector compatible with the 1.5°C pathway, which would require all buildings constructed after 2020 to be zero-energy, and the rate of renovation of existing buildings would have to increase from 1 percent in the EU to between 3 percent in developing and 5 percent in developed countries ([Climate Action Tracker, 2016a](#)). In addition to climate change mitigation, this would improve living comfort and reduce energy costs for their inhabitants.

- **Facilitating deployment of low-carbon technologies in energy-intensive sectors.** Energy-intensive sectors, especially steel, cement, and chemicals, are among the most challenging to fully decarbonise. Nonetheless, numerous technologies already exist that could significantly reduce emissions from these sectors (Neuhoff et al., 2014). NDCs should also include contributions to increased financing for research and development in low- or zero-carbon alternatives to existing industrial processes.
- **Stopping deforestation and adopting sustainable agricultural practices.** In addition to decreasing emissions from this sector, both these elements would also have significant benefits in the form of saving ecosystem services, supporting rural economic development, increasing food security and protecting 2,000 indigenous cultures (UN, 2017).
- **Improving access to capital.** Even if energy sector decarbonization and energy efficiency improvements lead to long-term savings, the need for significant upfront capital is often a major obstacle in developing countries. With limited fiscal space to finance mitigation, many developing countries, especially the most vulnerable, have to rely on external funding to implement all major climate change-relevant projects they need in the coming decades. Most developing countries anticipate meeting the costs of implementing their NDCs through access to multilateral and bilateral support, including through the Green Climate Fund (GCF), multilateral agencies and bilateral arrangements with development partners.

Countries are starting to learn from each other. This is clearly visible in the spread and harmonisation of policies, such as auctioning for renewable energies. This allows investors to facilitate their business plans and thus lower investment costs. But while technological improvements are of great importance, mutual learning from the mistakes and successes in terms of policy developments will allow countries to decrease the costs and increase the benefits of meeting the goals of the Paris Agreement. A successful transformation in some countries will facilitate an increase in ambition before

2020 for many others—not only for the sake of climate protection but also economic development.

A full decarbonisation of the global economy requires changing established development patterns, which have relied mostly on fossil fuels over the last two centuries. Although challenging, this change comes with significant co-benefits that a growing number of countries starts to realise (UNDP, 2016). While developed countries need to transition away from fossil fuels, many developing countries can skip the fossil fuel age altogether and increase their energy security, create new jobs and improve air quality by developing renewable energy sources (UNDP, 2016).

Depending on their stage of development, developing countries typically pose many broad economic challenges to private investors, including unattractive investment environments, under-developed and non-competitive markets for goods and services, non-existent or shallow capital markets with limited private participation, and weak regulatory and legal regimes. These challenges are generic in nature and can only be addressed through broad economic reform and economic development. Removing these barriers is critical to facilitating private sector investments in renewable energy projects in developing countries, but can also be perceived as limitations to country ownership. It is therefore necessary to improve access to capital markets for public and private sector and non-state actors, especially in developing countries.

The NDC Partnership can be instrumental in facilitating the transformation to a low- and zero-carbon economy in both developed and developing countries by contributing to increasing NDC ambition and action. It could facilitate a rapid transition away from fossil fuels by increasing the transparency of climate action in different countries, promoting best examples and sharing lessons and knowledge. It could also support different countries in implementing their NDCs by providing information about financial and technological resources necessary to achieve their targets.

ENDNOTES

- 1 This is the result of a substantial ambition emission gap, of around 14–17 GtCO₂e by 2025 and 21–24 GtCO₂e by 2030, between NDC emissions targets and the benchmark emissions pathway consistent with the Paris Agreement's long-term temperature goal (Climate Action Tracker, 2016b).

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