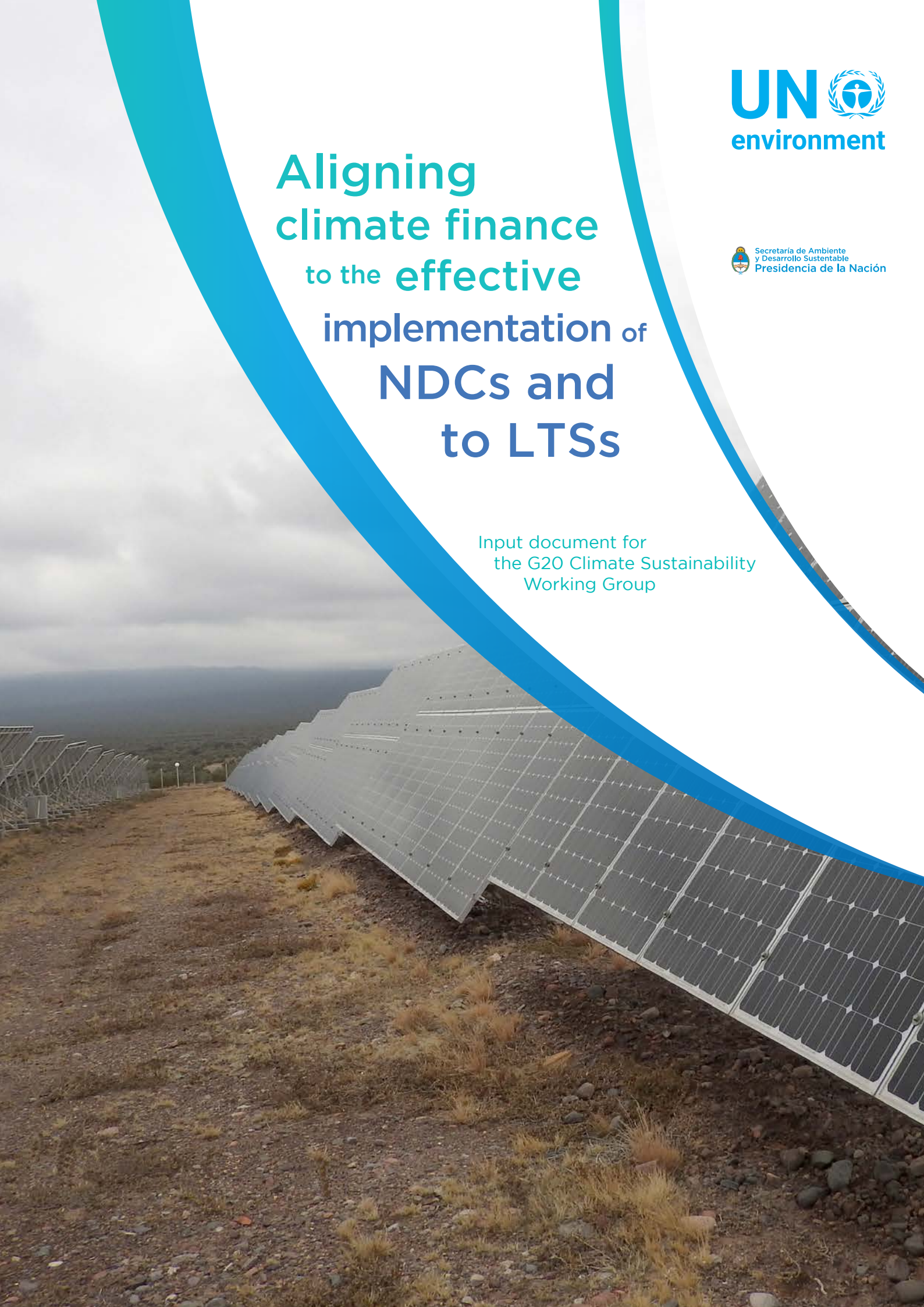


# Aligning climate finance to the effective implementation of NDCs and to LTSs

Input document for  
the G20 Climate Sustainability  
Working Group



## The UN Environment Inquiry

The Inquiry into the Design of a Sustainable Financial System has been initiated by the United Nations Environment Programme (UN Environment) to advance policy options to improve the financial system's effectiveness in mobilizing capital towards a green and inclusive economy—in other words, sustainable development. Established in January 2014, it published the first edition of 'The Financial System We Need' in October 2015, with the second edition launched in October 2016. The Inquiry has worked in 20 countries and produced a wide array of briefings and reports on sustainable finance.

More information on the Inquiry is at: [www.unepinquiry.org](http://www.unepinquiry.org) or from: Ms. Mahenau Agha, Director of Outreach [mahenau.gha@un.org](mailto:mahenau.gha@un.org).

### About this report

Both the authors and the G20 Argentine presidency kindly thank the G20 members for their valuable feedback and inputs provided to enrich this report.

The opinions expressed and arguments employed in this paper are the sole responsibility of the authors and do not necessarily represent those of the G20 members.

Juan E. Chebly, Ph.D. (Senior researcher, UN Environment Inquiry) is the lead author of this paper, with contributions from Marcos Mancini, Iain Henderson and Simon Zadek.

**Comments are welcome and should be sent to** [cheblyj@un.org](mailto:cheblyj@un.org) **and** [mahenau.gha@un.org](mailto:mahenau.gha@un.org).

### G20 Presidency

The following people provided excellent discussions, information and advice during the writing of the report: Soledad Aguilar, National Director of Climate Change (Argentina), Jorgelina Salvo, Climate Finance Coordinator (Argentina), Alejandra Camara, Santiago Rojas, Estefania Luraschi, Mariana Trinidad Corvaro, Filippo Berdes and Matías Lynch (Argentina G20 Climate Sustainability Working Group team).

### National Authorities

President

Eng. Mauricio Macri

Secretary-General

Lic. Fernando De Andreis

Government Secretary of Environment and Sustainable Development

Rabbi Sergio Bergman

Secretary of State for Climate Change and Sustainable Development

Eng. Carlos Bruno Gentile

National Director of Climate Change

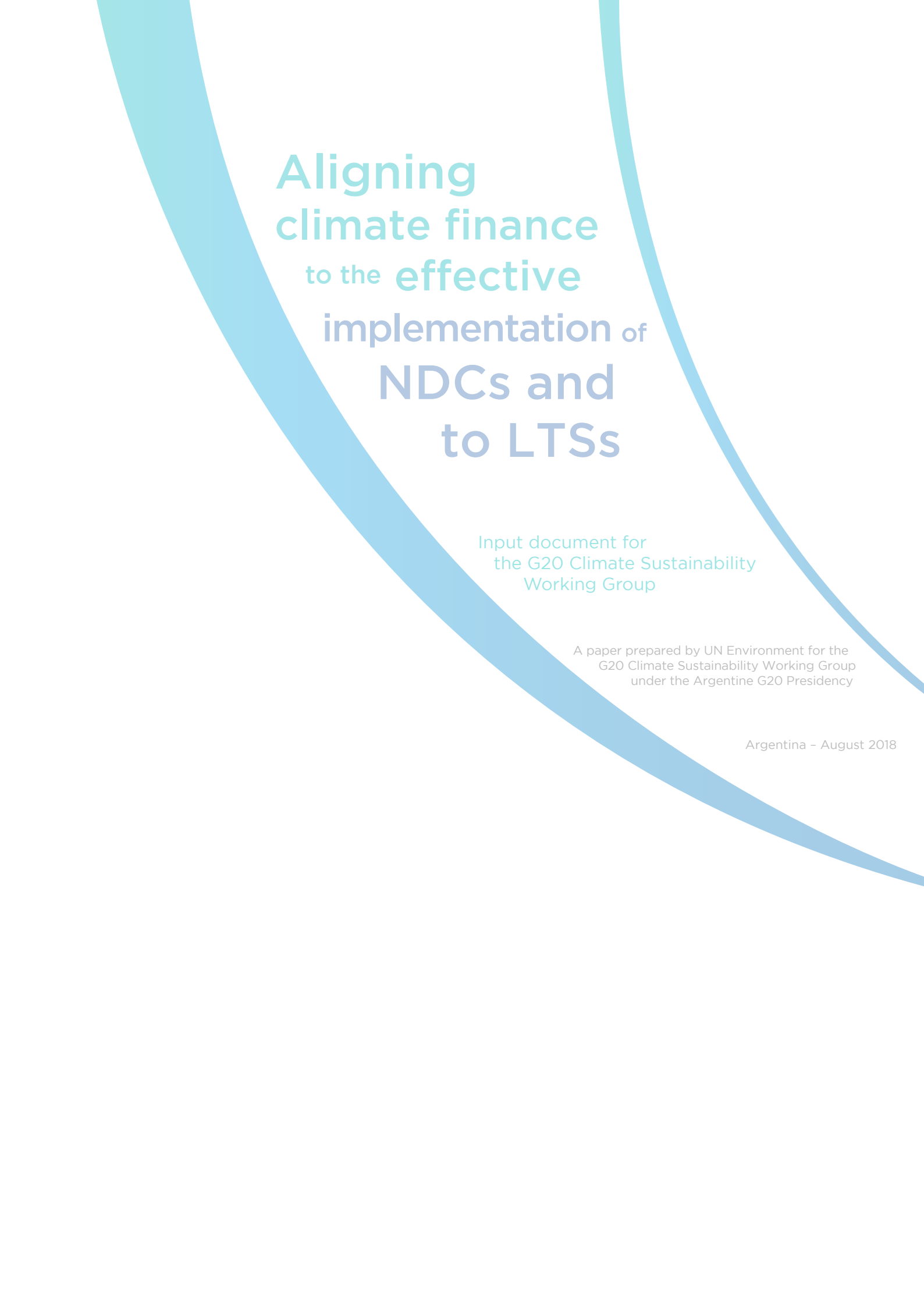
Dra. Soledad Aguilar

Climate Finance Coordinator

Lic. Jorgelina Salvo

Copyright © United Nations Environment Programme, 2018

*Disclaimer:* The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the United Nations Environment Programme concerning the legal status of any country, territory, city or area or of its authorities, or concerning delimitation of its frontiers or boundaries. Moreover, the views expressed do not necessarily represent the decision or the stated policy of the United Nations Environment Programme, nor does citing of trade names or commercial processes constitute endorsement.



# Aligning climate finance to the effective implementation of NDCs and to LTSs

Input document for  
the G20 Climate Sustainability  
Working Group

A paper prepared by UN Environment for the  
G20 Climate Sustainability Working Group  
under the Argentine G20 Presidency

Argentina – August 2018

## ACKNOWLEDGEMENTS

UN Environment would like to thank the German Federal Ministry for Economic Cooperation and Development (BMZ) for its financial support and strategic partnership.

Special thanks go to our knowledge partners - the United Nations Economic Commission for Latin America and the Caribbean (ECLAC), the Inter-American Development Bank (IDB), the Organisation for Economic Co-operation and Development (OECD), the World Bank Group (WBG), and the World Resources Institute (WRI) - as well as: Amal-Lee Amin (IDB), Prajwal Baral (WBG), Fiona Bayat-Renoux (Sustainable Digital Finance Alliance), Clara Brandi (German Development Institute), Ana Bucher (WBG), John M. Christensen (UN Environment), Naeeda Crishna Morgado (OECD), Adis Dzebo (German Development Institute), Remco Fischer (UN Environment Finance Initiative), Norbert Gorißen (German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety), Iain Henderson (UN Environment Inquiry), Ingrid-Gabriela Hoven (BMZ), Hannah Janetschek (German Development Institute), Claudia Keller (German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety), Philipp Knill (BMZ), Sung-Ah Kyun (European Bank for Reconstruction and Development), Gaia Larsen (WRI), Bérénice Lasfargues (OECD), Olivier Lavagne d'Ortigue (UN Environment Inquiry), Ma Jun (Tsinghua), Marcos Mancini (UN Environment Inquiry), Leonardo Martinez-Diaz (WRI), Damien Navizet (Agence Française de Développement), Ligia Norohna (UN Environment), Pádraig Oliver (Climate Policy Initiative), Felicity Perry (UN Environment Inquiry), Mark Radka (UN Environment), John Roome (WBG), Jose Luis Samaniego (ECLAC), Guido Schmidt-Traub (UN Sustainable Development Solutions Network), Heloisa Schneider (ECLAC), Jens Sedemund (OECD), Daisy Streatfeild (IDB), Djaheezah Subratty (UN Environment), Eric Usher (UN Environment Finance Initiative), Merlyn Van Voore (UN), Charlene Watson (Overseas Development Institute), Vikram Widge (International Finance Corporation) and Simon Zadek (UN Environment Inquiry).



# CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>9</b>
<b>INTRODUCTION: THE ROLE OF NDCs IN FINANCING SUSTAINABLE DEVELOPMENT</b>	<b>10</b>
<b>1 ASSESSING NDC COMPOSITION IN THE CONTEXT OF COUNTRIES' LTS</b>	<b>15</b>
1.1 NDC ANALYSIS AND BARRIERS	16
1.2 SOLUTIONS TOWARDS IMPROVING NDC AND LTS ECOSYSTEMS	21
1.3 ILLUSTRATIVE EXAMPLES OF CLIMATE FINANCE STRATEGIES	26
<b>2 THE CURRENT STATE OF DFIs' ALIGNMENT TO NDCs AND LTSS</b>	<b>29</b>
2.1 TRENDS AND CHALLENGES FOR DFI ALIGNMENT TO NDCS AND LTSS	29
2.2 DFI INNOVATION AND SOLUTIONS TO OVERCOMING BARRIERS TO NDC ALIGNMENT	31
<b>3 NDC AND CLIMATE FINANCE TRACKING FOR IMPROVED TRANSPARENCY AND ACCOUNTABILITY</b>	<b>35</b>
3.1 CLIMATE TRACKING FRAMEWORKS THAT ALIGN TO NDCS	36
3.2 CLIMATE FINANCE TRACKING IN FINE-TUNING NDCS	39
<b>4 CONCLUSION AND RECOMMENDATIONS</b>	<b>45</b>

## FIGURES

Figure 1: Number of Countries with Adaptation/Mitigation Components in NDCs	11
Figure 2: Number of Countries with NDCs Submitted by Region	12
Figure 3: Countries with Adaptation Components in NDCs	13
Figure 4: Countries with Economy-wide Cost Estimates	16
Figure 5: NDC-SDG Connections: Connecting Global Climate Action to the Sustainable Development Goals	19
Figure 6: Sectors Included in NDCs in MDB Country Strategies Finalized 2016-2017	22
Figure 7: NDCs in MDB Country Strategies	22
Figure 8: Percentage of Country Strategies Finalized in 2016-2017 that Mention NDCs	23
Figure 9: Steps to Formulate a Climate Finance Strategy	23
Figure 10: NDC Partnership: Working Together to Achieve Ambitious Climate Action While Enhancing Sustainable Development	25
Figure 11: MDB Joint Climate Adaptation Finance by Sector	32
Figure 12: NDC Invest Clusters	33
Figure 13: Reported MDB Climate Finance Commitments, 2011-2016	35
Figure 14: Developing Countries Requests for Mitigation and Adaptation Finance by Region	37
Figure 15: UNEP DTU Recommendations for NDC Tracking Standards	38
Figure 16: A Virtuous Cycle of Transparency: Tracking Climate Finance	41
Figure 17: Climate Budget Tagging in Asia	42
Figure 18: Kick-starting a Virtuous Cycle for Climate Finance	44

## TABLES AND BOXES

Table 1: G20 Efforts Towards NDC Implementation and SDG Impact	17
Box 1: European Union Efforts Towards NDC Implementation	20
Box 2: Governance and the Climate Finance Alignment Process: Argentina's Experience in Aligning Climate Finance with NDCs	21
Box 3: The Climate Finance Accelerator	25
Box 4: Steps and Considerations for a Potential Climate Finance Strategy for Chile by E3G	26
Box 5: India's National Action Plan On Climate Change	27
Box 6: The Green Climate Fund (GCF)	31
Box 7: Tracking Domestic Climate Finance	40
Box 8: Digital Technologies' Potential to Improve Tracking of NDC-aligned Climate Finance	43

## ACRONYMS

ADB	Asian Development Bank
AFD	Agence Française de Development
AfDB	African Development Bank Group
BMU	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (Germany)
CBT	Climate Budget Tagging
CIFF	Children's Investment Fund Foundation
CO <sub>2</sub>	Carbon dioxide
CPEIR	Climate Public Expenditures and Institutional Review
CSWG	Climate Sustainability Working Group
DAC	Development Assistance Committee
DFI	Development Finance Institution
DIE	German Development Institute
EBRD	European Bank for Reconstruction and Development
ECLAC	United Nations Economic Commission for Latin America and the Caribbean
EIB	European Investment Bank
EU	European Union
GCF	Green Climate Fund
GDP	Gross Domestic Product
GHG	Greenhouse gas
GIZ	German Corporation for International Cooperation
IDB	Inter-American Development Bank
IDFC	International Development Finance Club
IFC	International Finance Corporation
INDC	Intended Nationally Determined Contribution
IPCC	International Panel on Climate Change
LTS	Long-term low greenhouse gas emission development strategy
MDB	Multilateral Development Bank
NDC	Nationally Determined Contribution
ODI	Overseas Development Institute
OECD	Organisation for Economic Co-operation and Development
PEER	Public Environment Expenditure Review
PEI	Poverty-Environment Initiative
SDGs	Sustainable Development Goals
SEI	Stockholm Environment Institute
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
WBG	World Bank Group
WRI	World Resources Institute





## EXECUTIVE SUMMARY

The purpose of this paper is to propose mechanisms to improve the alignment of international climate finance with national priorities for the implementation of the Paris Agreement Nationally Determined Contributions (NDCs), by mapping practice and identifying barriers to the alignment of finance by Development Finance Institutions (DFIs) – which include Multilateral Development Banks (MDBs) and Bilateral Development Banks (BDBs) – to NDCs and possible solutions to overcome these barriers.

The research involved three dimensions. Firstly, a survey of the NDCs presented by the G20 countries analysed their configuration in order to identify certain elements that could help to enhance and attract climate finance. Secondly, multilateral, regional, and bilateral DFIs were interviewed to understand their policies, methodologies, and practice with regards to climate finance. Lastly, research that included consultations with thought leaders across academia and civil society aimed to surface and map best practices regarding NDC-aligned finance, especially climate finance tracking based on public finance.

The findings of this study show that NDCs are not inherently designed as portfolios of bankable investment projects. They are rather designed primarily to identify and quantify national climate priorities. This suggests a great need for developing finance plans that can translate NDCs into bankable projects. Secondly, DFI policies and methodologies tend to prioritize achievement of end outcomes – *i.e.* a global temperature increase of less than 2°C. In enabling the achievement of these outcomes, DFI policies need to focus more on country-specific priorities. Lastly, the lack of tracking standards for NDC progress makes it difficult for DFIs to consider NDCs specifically when allocating funds. This raises a need to create standard mechanisms for tracking NDC progress. This paper explores these needs and innovative solutions to address them.

Our study of barriers and solutions has several implications for countries and DFIs. A multitude of innovative NDC-aligned finance strategies can be scaled and standardized across institutions; these strategies could reshape DFI policies and methodologies, and become common practice for financial institutions in general. Mainstreaming NDC-aligned finance into global financial systems can align to both countries' priorities and the Paris Agreement goals. As a result, when financial systems align to the Paris Agreement, they can inherently also align to the 2030 Agenda, and promote sustainable development. A certain degree of systemic change across stakeholder approaches would be needed however for these solutions to become prevalent.

# INTRODUCTION: THE ROLE OF NDCs IN FINANCING SUSTAINABLE DEVELOPMENT

In December 2015, 195 countries committed to achieving unprecedented global goals for climate sustainability and averting an average global temperature increase of more than 2°C. These goals are pursued to a large extent at (but not limited to) the national level, as expressed by Intended Nationally Determined Contributions (INDCs) submitted by countries in the run up to the Paris Climate Change Conference. When ratified, INDCs become NDCs. While diverse in their methodology, composition, and metrics, NDCs represent countries' commitments to the achievement of the Paris Agreement. NDCs also represent targets for domestic strategic priorities for climate sustainability in the broader context of national long-term strategies, strategic plans, the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs). Hence, the concept of 'NDC-aligned finance' is more clearly demarcated than that of 'climate finance' in the context of sustainable development. NDC-aligned finance ensures support to the implementation of country commitments to the Paris Agreement and therefore countries' strategic priorities on climate action.

The Paris Agreement has been a key milestone in guiding global climate sustainability efforts. It entered into force on 4 November 2016, and as of June 2018, 178 of 197 Parties to the United Nations Framework Convention on Climate Change (UNFCCC) have ratified it.<sup>1</sup> The Agreement is informed by international scientific consensus harnessed by the International Panel on Climate Change (IPCC).<sup>2</sup> Article 2.1 (a) of the Agreement sets a clear global objective of "holding the increase in the global average temperature 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."<sup>3</sup>

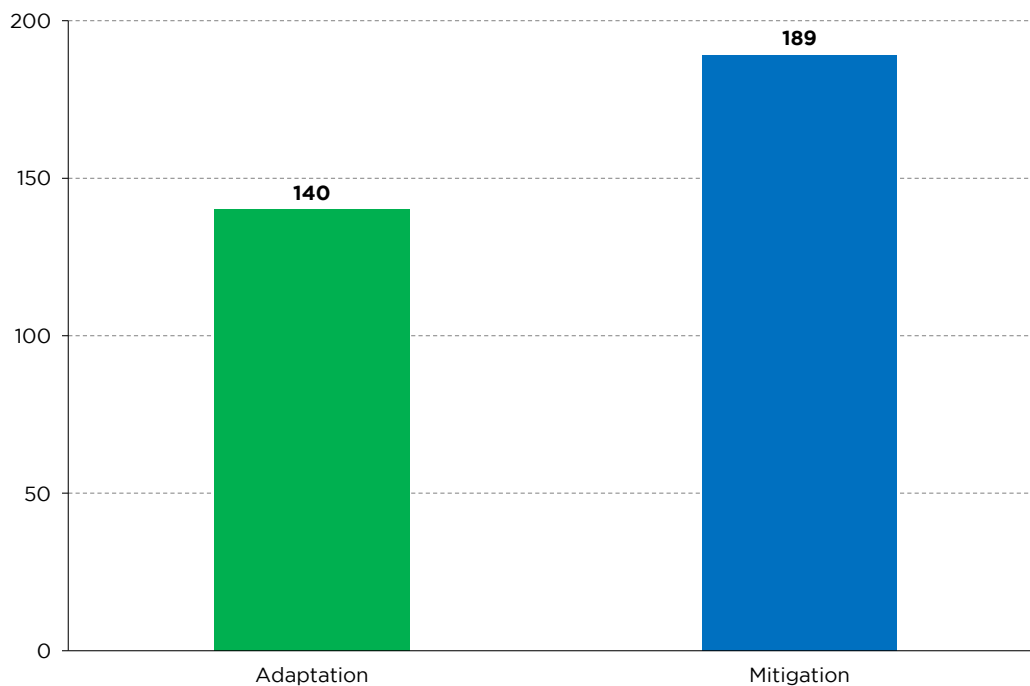
The definition of climate sustainability in this paper, while tied to this objective, is broader. Specific objectives for adaptation and resilience and aligning finance flows to pathways towards low greenhouse gas (GHG) emissions and climate-resilient development are respectively identified in Articles 2.1 (b) and 2.1 (c) "making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development". These specific objectives describe an overall general goal "to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty."<sup>4</sup>

Climate sustainability in its broad sense was first addressed by the G20 in presidential communiqués in 2008. It was integrated into the formal work of the Sustainability Working Group under the 2017 German Presidency. In 2018, the Argentinian Presidency has continued this work comprehensively within the G20 structure. This includes the Finance Track (sustainable finance developing specific finance mechanisms to accelerate sustainable development investments), the Climate Sustainability Working Group, and the engagement groups of the G20: Business (B20), Civil Society (C20), Labour (L20), Science (S20), Think Tanks (T20), Women (W20) and Youth (Y20).<sup>5</sup> The Argentinian Presidency commissioned this paper under the Climate Sustainability Working Group with the goal of determining how

international climate finance flows align to the effective implementation of NDCs and to national long-term low greenhouse gas emission development strategies (LTSS).

The specific goals identified in Article 2 of the Paris Agreement are pursued to a large extent at the national level as expressed by NDCs submitted by countries to the Paris Agreement (see Figures 1 and 2). NDCs highlight domestic priorities primarily for climate change mitigation, and in some cases climate change adaptation, all with the backdrop of national strategic plans, the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (see Figures 1 and 3). This is key in understanding that beyond Article 2.1 (a), NDCs take into consideration the broad general objectives of the Paris Agreement, including the context of sustainable development and efforts to eradicate poverty. Furthermore, Article 4.19 encourages countries to formulate and communicate LTSS. This study focuses on NDC alignment, as the study of LTSS is the topic of a dedicated work stream of the G20 Climate Sustainability Working Group. In addition, so far only Benin, Canada, the Czech Republic, France, Germany, Mexico, the UK, Ukraine and the US have submitted LTSS to the UNFCCC.<sup>6</sup> This is not to say that LTS are not considered. On the contrary, NDCs and long-term strategies strengthen each other, as NDCs are revised periodically and can be strengthened according to a long-term strategy.

**FIGURE 1: NUMBER OF COUNTRIES WITH ADAPTATION/MITIGATION COMPONENTS IN NDCs**



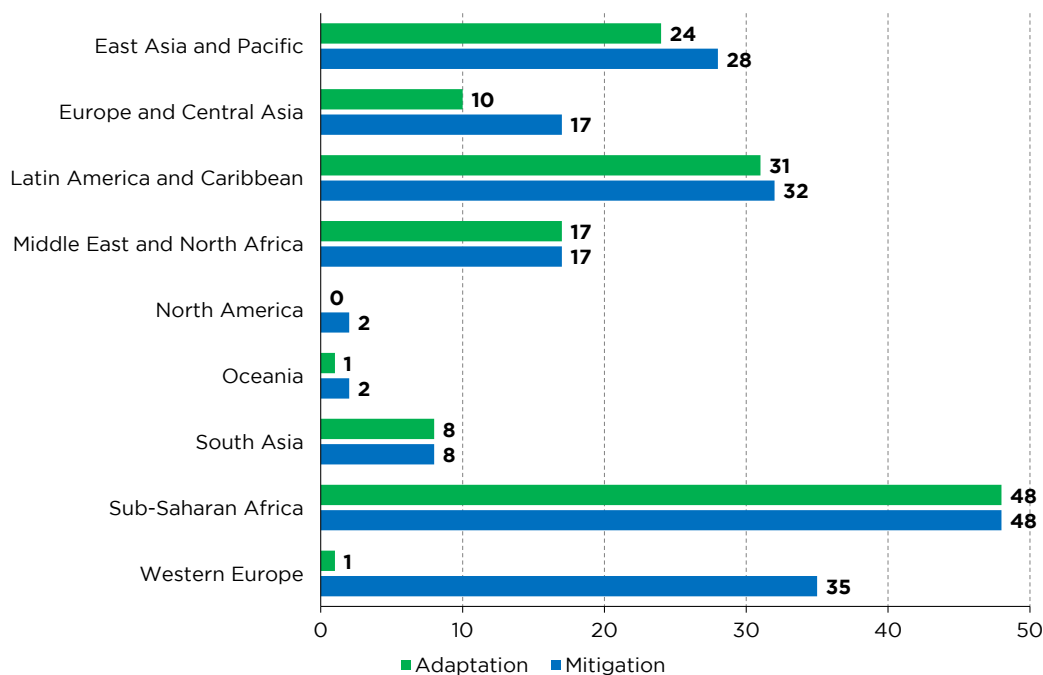
Source: *The World Bank*<sup>7</sup>

The UNFCCC's Standing Committee on Finance has identified the need to align considerable amounts of financial resources to climate sustainability in order to achieve the domestic goals laid out by NDCs. Financing gaps have been estimated to be in the trillions of dollars globally,<sup>8</sup> but tracking progress on this front is made more complicated without a global standardized framework.<sup>9</sup>

While there is no overall accurate estimate of how much it will cost to achieve NDCs, infrastructure financing gaps to achieve the Paris Agreement have been estimated in trillions of dollars.<sup>10</sup> Previous work commissioned for the G20 provides broad

information on this topic. The most recent report by the OECD, titled “Investing in Climate, Investing in Growth”,<sup>11</sup> is a good starting point and a reference to this work, which shows how current trends of climate finance flows are insufficient, dispersed and, in many cases, not fully aligned to the priorities that countries highlighted in their respective NDCs. “While recognizing that there are some contested issues regarding the inclusion of financial issues in NDCs, the lack of coherent information on the mobilization and utilization of resources undermines their effectiveness.”<sup>12</sup> Hence, to address the global challenge of properly financing NDCs, DFIs are working with national governments towards improving overall ecosystems of NDCs, LTSs, and overall broader financial flows that may include domestic and private resources. This study is a logical continuation to the work on climate finance carried out by DFIs in their efforts to better serve member states and their respective climate sustainability priorities in the context of the G20.

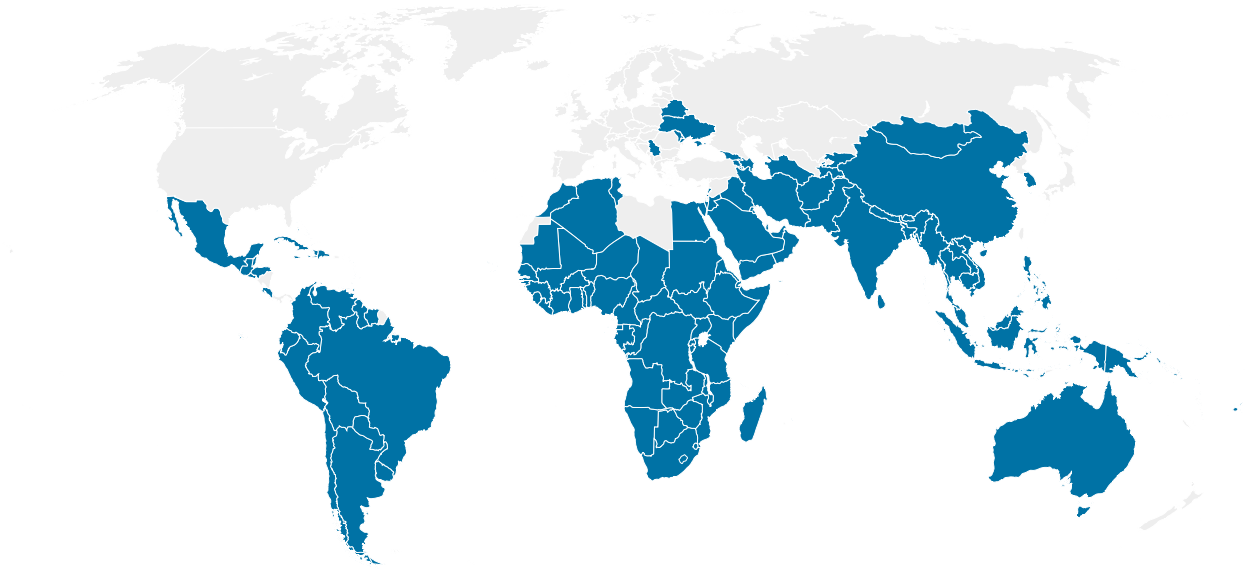
**FIGURE 2: NUMBER OF COUNTRIES WITH NDCs SUBMITTED BY REGION**



Source: *The World Bank*<sup>13</sup>

Section 1 of this paper starts by assessing NDC ecosystems and implementation efforts in the context of the G20. This section identifies, in a visual way, key components that are already proving useful to DFIs in aligning financial flows to NDCs and LTSs. Furthermore, it also illustrates examples of work geared towards improving NDC and LTS ecosystems. Section 2 identifies barriers and respective solutions to NDC alignment across three dimensions of DFI finance allocation – policy, methodology, and practice. Finally, Section 3 concludes by highlighting the role of climate finance tracking for increased transparency in improving NDC alignment and potentially allowing for NDC fine-tuning.

**FIGURE 3: COUNTRIES WITH ADAPTATION COMPONENTS IN NDCs**



Source: *The World Bank*<sup>14</sup>



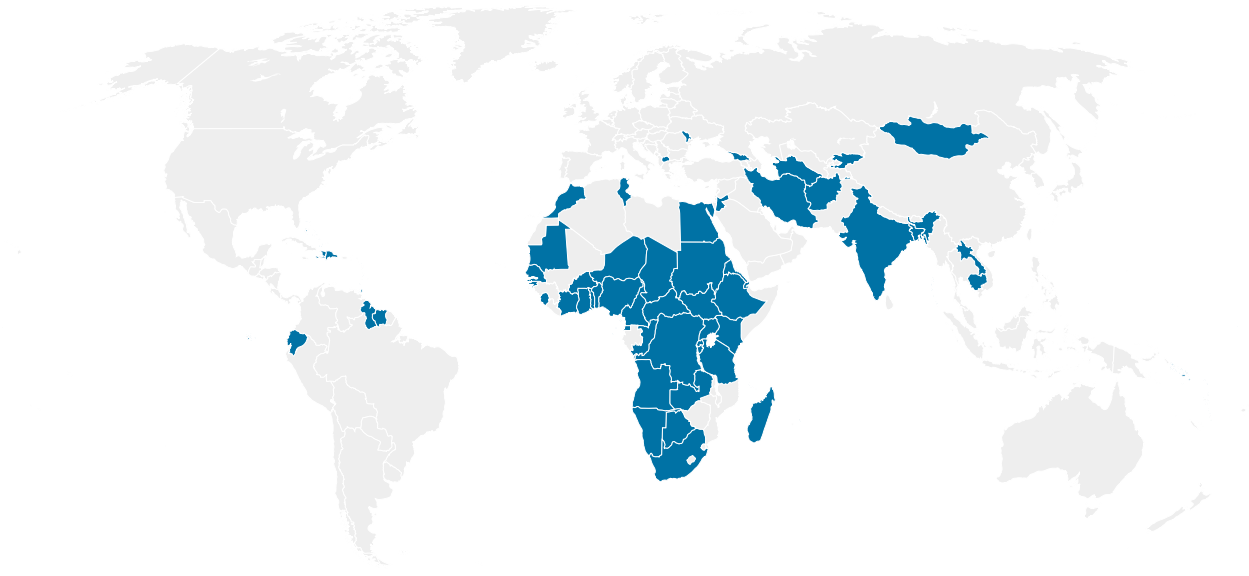
# 1 ASSESSING NDC COMPOSITION IN THE CONTEXT OF COUNTRIES' LTS

This section describes NDC ecosystems (NDCs and supporting frameworks for implementation) of G20 countries. It identifies in a visual way key components of NDC ecosystems that are already proving useful to DFIs in aligning financial flows to NDCs and LTSs. This section also illustrates examples of work geared towards improving NDC and LTS ecosystems for more effective implementation.

As countries' LTSs represent pathways for low-emission and climate-resilient developments into the second half of the century, NDCs might represent the first step towards their success. While the Paris Agreement focuses primarily on mitigation and greenhouse gas emissions, NDCs and their respective ecosystems are broader and more nuanced than overall mitigation commitments by countries. NDCs themselves may include pathways for adaptation and sustainable development.<sup>15</sup> As described by the IPCC, “adaptation and mitigation are complementary strategies for reducing and managing the risks of climate change. Substantial emissions reductions over the next few decades can reduce climate risks in the 21st century and beyond, increase prospects for effective adaptation, reduce the costs and challenges of mitigation in the longer term and contribute to climate-resilient pathways for sustainable development.”<sup>16</sup> Since NDCs are meant to align with countries' LTSs, they identify areas and priorities that may present investment potential in line with countries' medium and long-term priorities. For example, Argentina, Brazil, Colombia, and Mexico have an estimated NDC-aligned investment potential in transport and mobility of about US\$2.6 trillion.<sup>17</sup> Moreover, 28 African countries have indicated in their NDCs a commitment to renewable energy generation of around 102 GW, representing an investment opportunity of more than US\$241 billion.<sup>18</sup> Many countries' NDCs have estimated costs and levels of required support, e.g. Ghana, India, Kenya, Mexico, Morocco, and Tunisia (see Table 1). Other countries have referred to the need for further research to estimate the amounts required. However, the methodological challenges associated with the economic assessment of adaptation, including uncertainty, are well documented.<sup>19</sup>

NDCs cost estimation and sectoral projections have been generally built upon linear projections of past financial infrastructure trends that do not account for uncertainties tied to potential technological disruption and new and emerging business models.<sup>20</sup> Digital technology, beyond a source of uncertainty, can also be a positive factor with regards to climate action. The costing of climate priorities and the development of a concrete roadmap or investment plan to accompany a country's given NDC and its alignment with financing resources is essential to translate commitments into actions and bona fide investments. Private capital and institutional investors such as pension funds and insurance companies, representing trillions in financial assets, can be tapped to fill a large part of the investment shortfall. A good catalyst to private finance flows can be blended finance. The International Finance Corporation (IFC), for example, has a proven track record of helping unlock private finance through the use of the blended finance approach.

**FIGURE 4: COUNTRIES WITH ECONOMY-WIDE COST ESTIMATES**



Source: *The World Bank*<sup>21</sup>

However, to promote a greater role for private capital in low-carbon projects, policymakers need to craft a policy framework for investing in NDC priorities tailored to investors' needs and place the investment into the broader context of the 2030 agenda. As shown in many studies, the fulfilment of NDC targets and the achievement of the SDGs is not as much a dilemma of capital generation but rather of redirection of existing and planned capital flows into low-carbon and SDG-aligned sectors.

Nevertheless, current priorities expressed in NDCs are in some cases too broad and difficult to meaningfully guide project lending by themselves and the reason why, in many cases, NDCs lack the qualities of investment-grade projects. This could be mainly due to a shortage of technical capacity in the financial sector of what an NDC is, and a lack of climate experts with knowledge on financial aspects. Generally, NDCs are being designed without consideration to financial aspects. In these cases, countries may consider fine-tuning their NDCs or developing their NDC ecosystem by drawing up more specific investment plans and project pipelines based on NDC objectives, and formulating complementary climate finance strategies (see Boxes 1-3). Creating an enabling environment to accommodate for NDC-aligned finance could also take the shape of national and fiscal policy. The benefit of approaching the entire spectrum of the NDC ecosystem is the potential leveraging effect on domestic and international private capital that comes from aligning domestic policies and funds.<sup>22</sup> Simultaneously, NDC-aligned finance can also bring about increased ambition in future NDC iterations and fine-tuning, hence constituting a positive feedback loop or virtuous cycle similar to Figure 16.

## 1.1 NDC ANALYSIS AND BARRIERS

Understanding the nuances of G20 countries' NDC ecosystems with regards to clear and specific goals, methodology, financial projections, and development impact can prove to be a useful exercise to member countries. This exercise showcases barriers and identifies key components that are already proving useful to DFIs in aligning financial flows to NDCs and LTSs. Intuitively, we can foreshadow potential benefits



from the specificity of NDCs, including financial projections and even project-level information. Countries' work in translating NDCs into bankable investment projects is also worth highlighting. Table 1 also incorporates analysis of the broader impact of NDCs on the SDGs by the German Development Institute and the Stockholm Environment Institute.<sup>23</sup> This analysis is further reviewed in Figure 5. The following table is an illustration of NDC implementation efforts, and a good start to understanding overarching barriers and solutions to NDC alignment.

**TABLE 1: G20 EFFORTS TOWARDS NDC IMPLEMENTATION AND SDG IMPACT**

Country	Financial Projections	Adaptation Strategy	SDG Impact <sup>24</sup>
<b>Argentina</b>	N/A	The National Adaptation Plan (PNA), projected for 2019, will include subnational and Sectoral chapters, focusing on policies of adaptation on a local, provincial and national level.	SDGs: 1, 2, 3, 4, 9, 11, 13, 15, and 17.
<b>Australia</b>	Not stated. The first auction under the Fund was held in April 2015, and successfully purchased over 47 million tonnes of abatement at an average price of AU\$13.95.	National Climate Resilience and Adaptation Strategy not specified.	SDGs: 7, 8, and 11.
<b>Brazil</b>	N/A	The National Adaptation Plan (NAP) factors risk areas, housing, basic infrastructure, especially in the areas of health, sanitation and transportation, as key areas for adaptation policies.	SDGs: 1, 2, 3, 5, 6, 7, 8, 9, 11, 13, 15, and 17.
<b>Canada</b>	N/A	No adaptation strategy provided in NDC.	SDGs: 7, 8, 11, and 13.
<b>China</b>	N/A	The National Strategy for Climate Adaptation focuses on risks in key areas such as agriculture, forestry and water resources, as well as in cities, coastal and ecologically vulnerable areas and to progressively strengthen early warning and emergency response systems and disaster prevention and reduction mechanisms.	SDGs: 1, 2, 3, 4, 6, 7, 8, 9, 11, 12, 13, 14, 15, and 17.
<b>France</b>	N/A	No adaptation strategy provided in NDC.	SDGs: 15
<b>Germany</b>	N/A	No adaptation strategy provided in NDC.	SDGs: 15
<b>India</b>	Adaptation: US\$206 billion Mitigation: US\$834 billion	National Missions on Climate Change focus on adaptation in sectors like agriculture, water, Himalayan ecosystems, forestry, capacity-building and knowledge management.	SDGs: 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, and 17.

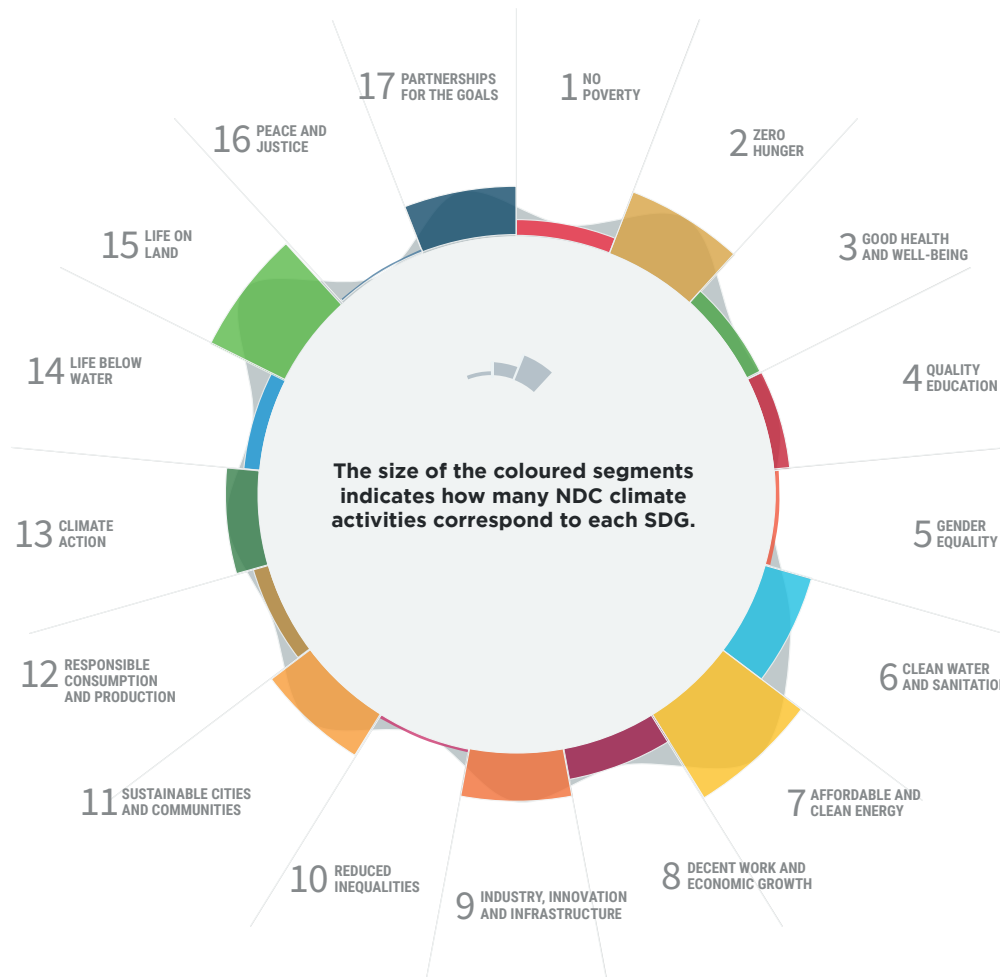
**TABLE 1: G20 EFFORTS TOWARDS NDC IMPLEMENTATION AND SDG IMPACT (CONTINUED)**

Country	Financial Projections	Adaptation Strategy	SDG Impact <sup>24</sup>
<b>Indonesia</b>	N/A	Measures to reduce risk nationwide implemented through the National Action Plan on Climate Change Adaptation (RAN-API).	SDGs: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 17.
<b>Italy</b>	N/A	No adaptation strategy provided in NDC.	SDGs: 15
<b>Japan</b>	N/A	No adaptation strategy provided in NDC.	SDGs: 7, 8, 9, 11, 12, 14, and 15.
<b>Mexico</b>	N/A	Adaptation Actions include: (a) adaptation to climate change for the social sector; (b) ecosystem-based adaptation; and (c) adaptation of strategic infrastructure and productive systems.	SDGs: 2, 3, 5, 6, 8, 9, 10, 11, 13, 14, 15, and 17.
<b>Russian Federation</b>	N/A	National Adaptation Plan is under development. Government Resolution N° 2344-r has to be adopted by the end of 2018.	SDGs: 6, 8, 9, 11, and 13
<b>Saudi Arabia</b>	N/A	Adaptation strategies are divided into (a) measures with mitigation co-benefits, and (b) measures aimed at adaptation and raising resilience.	SDGs: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, and 17.
<b>South Africa</b>	Adaptation: US\$308 billion Mitigation: US\$1,380 billion	Adaptation strategy guided by six goals underpinned by key elements of adaptation planning, costing of adaptation investment requirements, equity, and means of implementation	SDGs: 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 15, and 17.
<b>Republic of Korea</b>	N/A	The National Climate Change Adaptation Plan, adopted firstly in 2010 and revised in 2015, mandates the subnational and local governments to develop their own action plans tailored to the local contexts. <sup>25</sup>	SDGs: 3, 4, 6, 7, 9, 11, 13, and 15.
<b>Turkey<sup>26</sup></b>	N/A	National Climate Change Adaptation Strategy and Action Plan for 2011-2023. <sup>27</sup>	SDGs: 2, 7, 9, 11, 12, 15, and 17.
<b>United Kingdom</b>	N/A	No adaptation strategy provided in NDC.	N/A
<b>United States<sup>28</sup></b>	N/A	No adaptation strategy provided in NDC.	SDGs: 8, 9, and 11.
<b>European Union</b>	The financing gap for the total investment needs over 2020-2030 to fulfil EU's climate and energy objectives are estimated to EUR178 billion per year (difference between business-as-usual and NDC scenarios). <sup>29</sup>	No adaptation strategy provided EU adaptation strategy adopted in 2013 and currently under review. <sup>30</sup> While the EU NDC does not include an adaptation component, EU adaptation undertakings were separately communicated in June 2015, in accordance with the Lima call for climate action (§12 of Decision 1/CP.20). <sup>31</sup>	SDGs: 15

Source: Author with data from UNFCCC,<sup>32</sup> DIE and SEI<sup>33</sup>

Table 1 shows that NDCs priorities and potential outcomes have wide-ranging impacts on the broader 2030 Agenda for Sustainable Development. This explicit alignment can prove beneficial in finding synergies in the context of the ‘UN Financing for Development’, the Addis Ababa Action Agenda and overall efforts to align international finance flows and financial systems to achieving the UN Sustainable Development Goals (See Figure 5).

**FIGURE 5: NDC-SDG CONNECTIONS: CONNECTING GLOBAL CLIMATE ACTION TO THE SUSTAINABLE DEVELOPMENT GOALS**



Source: DIE, SEI<sup>34</sup>

Identifying G20 progress on the implementation of NDCs in Table 1 can be a useful exercise because it can help DFIs to better identify examples and opportunities for NDC implementation. For example, information submitted by countries on their most recent efforts in NDC implementation can provide DFIs with short- and medium-term examples of what can be done to implement NDCs across countries. Identifying SDG impacts aims to help situate climate action and NDCs in the broader context of the 2030 Agenda by identifying links to the SDGs that can further unlock synergies beyond climate finance. A transformational approach will be needed across economies and financial systems if we are to achieve sustainable development globally. However, identifying hints of systemic change that exist but are not prevalent can help catalyse climate action that goes beyond incrementalism.

## Box 1: EUROPEAN UNION EFFORTS TOWARDS NDC IMPLEMENTATION

- **Reform of the EU Emission Trading System for 2021-2030** including rules to prevent risks of carbon leakage and support mechanisms to promote innovation and modernization in the industrial and energy sectors. A Market Stability Reserve will take effect from January 2019 to address the current surplus of allowances and make the system more resilient to future shocks by adjusting the supply of allowances to be auctioned. Adopted 27 February 2018.
- Effort sharing **regulation setting out binding annual greenhouse gas emission targets for Member States for the period 2021-2030**, for sectors outside the scope of the Emissions Trading System. The proposal breaks down the EU-level target, recognizing the different capacities of Member States to take action by differentiating targets according to GDP per capita and cost-effectiveness. Adopted 15 May 2018.
- **Accounting for carbon stocks in forests and farmland** (LULUCF: land-use, land-use change and forestry), integrating greenhouse gas emissions and removals from land use, land use change and forestry into the 2030 climate and energy framework. It has a 'no-debit rule' whereby all Member States guarantee that their total CO<sub>2</sub> emissions from land use sectors are balanced by removals. A new process was also devised for the determination of national forest management reference levels. Regulation adopted 15 May 2018.
- **Clean energy for all Europeans** package of measures with the goals of putting energy efficiency first, achieving global leadership in renewable energies, and developing an electricity market that gives consumers a fair deal. Member States to present Integrated National Energy and Climate Plans that streamline existing climate and energy planning, reporting and monitoring obligations, ensure coherence and reduce administrative burden by January 2019 covering the 2021-2030 period. Proposed 30 November 2016, under consideration in EU Parliament and Council.
- **Low emissions mobility strategy** aims to increase the efficiency of the transport system, develop low-emission alternative energy for transport and move towards zero-emission vehicles. Adopted July 2016. Europe on the Move is the first installment and includes a proposal on the monitoring and reporting of CO<sub>2</sub> emissions and fuel consumption from new heavy-duty vehicles. Delivered 31 May 2017. Clean Mobility Package I includes: revised CO<sub>2</sub> standards for cars and vans for the post-2020 period, a Clean Vehicles Directive, an action plan for the trans-European deployment of alternative fuels infrastructure, a revised Combined Transport Directive, a Directive on Passenger Coach Services, and a battery initiative. Proposed 8 November 2017. Clean Mobility Package II presents CO<sub>2</sub> standards for heavy-duty vehicles. Proposed 17 May 2018.
- **Circular Economy Action Plan** including legislative proposals on waste management, with common EU targets for recycling 65% of municipal waste and 75% of packaging waste by 2030. Presented December 2015. Circular Economy Package includes a strategy for plastics, communication chemicals and waste legislation, a monitoring framework and a report on critical raw materials. Presented 16 January 2018.
- **Research and innovation:** 35 % of the funding for the Horizon 2020 programme is to be allocated to climate-related research and innovation in the 2014-2020 period and a new focus area 'Building a low-carbon, climate-resilient future' was established to support the implementation of the Paris Agreement with EUR3.3 billion for 2018-2020.

Source: European Union (n.d.)<sup>35</sup>

## **Box 2: GOVERNANCE AND THE CLIMATE FINANCE ALIGNMENT PROCESS: ARGENTINA'S EXPERIENCE IN ALIGNING CLIMATE FINANCE WITH NDCs**

### **Sectoral Plans**

Argentina's national climate change policy is comprised of sectoral plans and specific measures, previously disaggregated from the NDC and categorized as mitigation and adaptation measures, formulated through the National Climate Change Cabinet. This Cabinet, created in 2016, is comprised of Ministries that are part of the government's executive branch and presided over by the Chief of Cabinet of Ministers; it formulates climate change policy through thematic working groups referred to as round tables. The Ministry of Environment and Sustainable Development, through its Secretary of Climate Change and Sustainable Development, acts as the technical coordinator of the Cabinet, obtaining international financing, formulating the national climate change strategy, and coordinating NDC planning and implementation. The sectoral climate change policies designed through this process and currently in effect, in the form of National Climate Change Action Plans, include the transport, forest, and energy sectors. In 2018, Argentina expects to conclude sectoral climate change plans in industry, agriculture and infrastructure. Additionally, in the works are the National Mitigation Plan and the National Adaptation Plan, both of which will form the basis of the National Climate Change Response Plan to be launched in 2019.

### **Roadmaps**

On the basis of sectoral plans, the Cabinet defines roadmaps that describe possible ways each mitigation or adaptation measure can be implemented, including the regulatory and economic instruments that currently or potentially enable implementation. They also enable the identification of costs and investment requirements, the variables for monitoring the fulfilment of the quantitative objectives, tools for implementation, and possible needs and barriers, thus paving the road for more specific and better-informed actions to be taken in the future.

### **Project assessment and prioritization**

Argentina's experience in aligning climate finance with the country's NDCs lies in the government's prioritization process that determines whether or not a given climate change-related project requiring international funding is, in fact, aligned with Argentina's NDCs, sectoral plans, roadmaps, and mitigation and adaptation measures. Within the National Climate Change Cabinet, the Finance Roundtable carries out the assessment, whereby each project is analysed and endorsed through a "no objection" process.

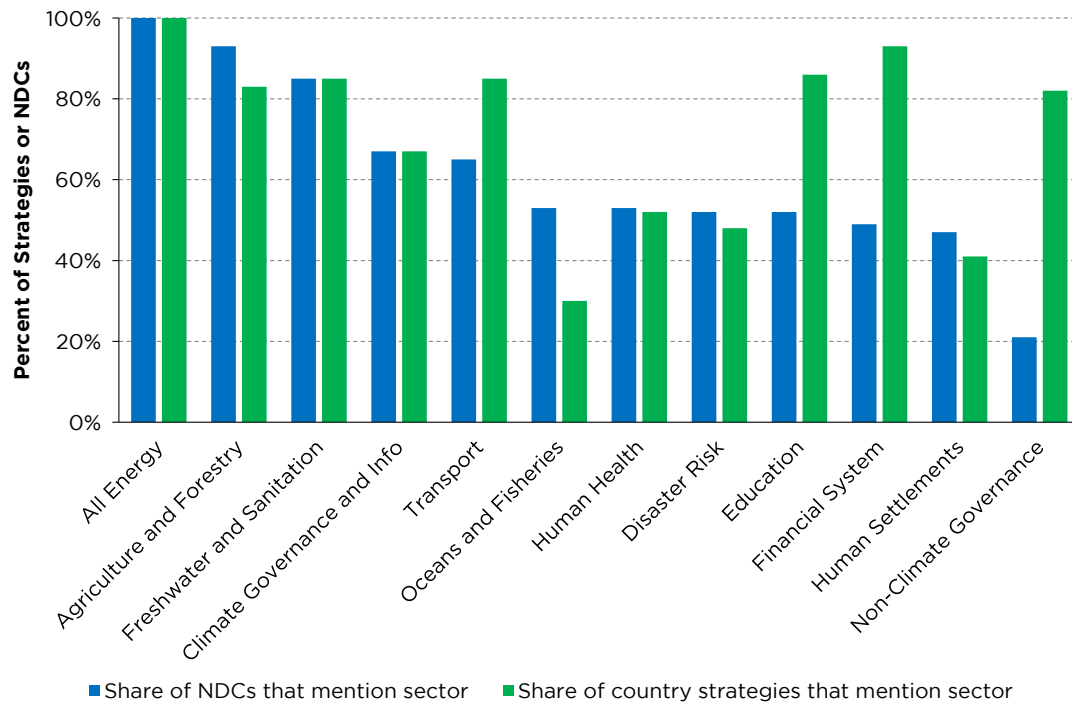
*Source: Ministry of Environment and Sustainable Development of Argentina*

## **1.2 SOLUTIONS TOWARDS IMPROVING NDC AND LTS ECOSYSTEMS**

Given a common understanding of the barriers linked to NDC composition and calibre, countries and DFIs are striving to develop appropriate investment frameworks and translate NDCs into bankable investment plans. There are several examples of this work by regional, multilateral, and bilateral development finance institutions.

MDBs can be well placed to support clients with financing to enable countries to reach and exceed their NDC commitments. Ongoing research by the World Resources Institute (WRI), Germanwatch, the New Climate Institute and Fundacion Avina indicates broad alignment between the priorities identified in the NDCs and those identified in the country strategies published by the MDBs since Paris, at least at the sector level (see Figure 6). This underscores that the MDBs have the experience and knowledge to execute bankable projects within the subsectors prioritized in the NDCs.

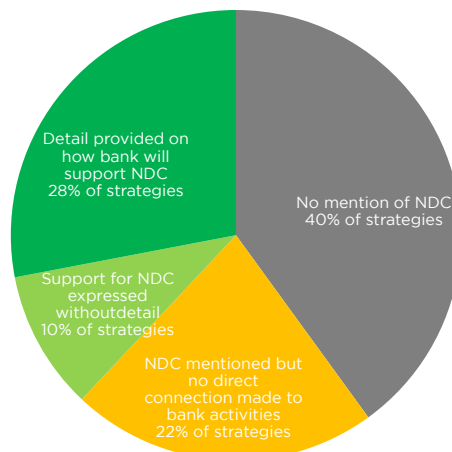
**FIGURE 6: SECTORS INCLUDED IN NDCs IN MDB COUNTRY STRATEGIES FINALIZED 2016-2017**



Source: WRI<sup>36</sup>

One way MDBs assist countries with their NDCs is by including a discussion of the NDC in strategic dialogues with client countries. Many MDBs outline country priorities in country strategy documents drafted in partnership with government counterparts. To get a snapshot of how governments and MDBs are integrating NDCs into these planning processes, WRI analysed the role of NDCs in 92 country strategies finalized by five major MDBs (ADB, AfDB, EBRD, IDB and WBG) since the adoption of the Paris Agreement. They found that 60 per cent of these MDB country strategies mention NDCs. Around 28 per cent do so by linking the banks’ planned activities to the contents of the country’s NDC, while another 22 per cent mention NDCs as background without spelling out a direct connection to the relevant MDB’s programming (see Figure 7).

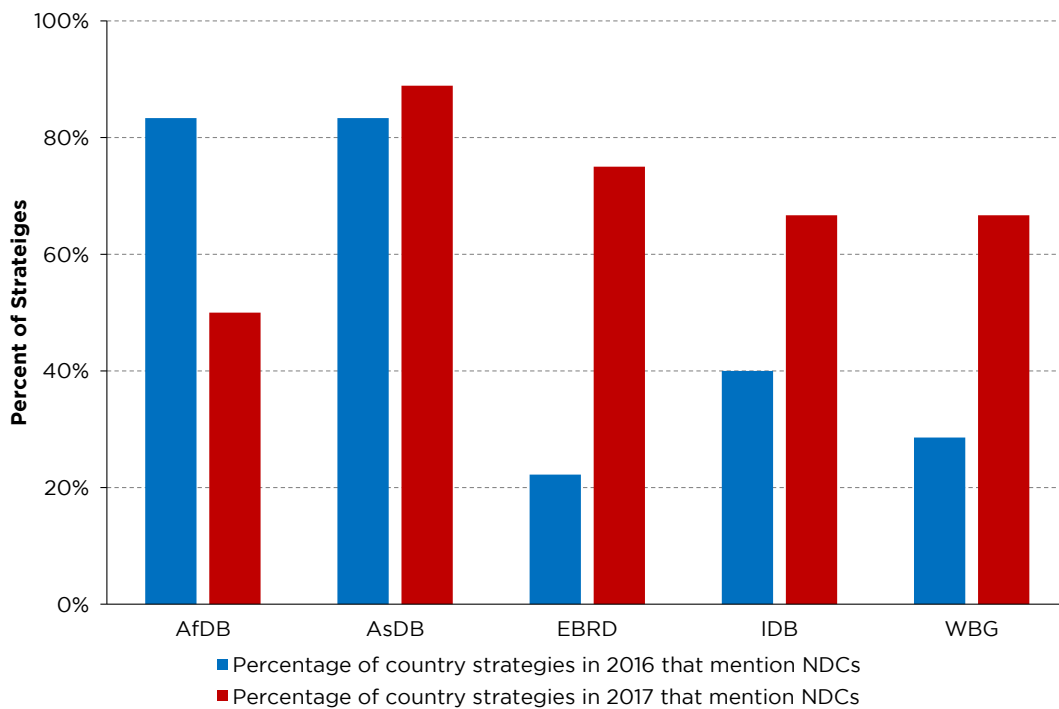
**FIGURE 7: NDCs IN MDB COUNTRY STRATEGIES**



Source: WRI<sup>37</sup>

While the MDBs appear to be integrating NDCs into upstream planning at slightly different speeds, there is generally a greater mention of NDCs in strategies launched in 2017 than in 2016 (see Figure 8).

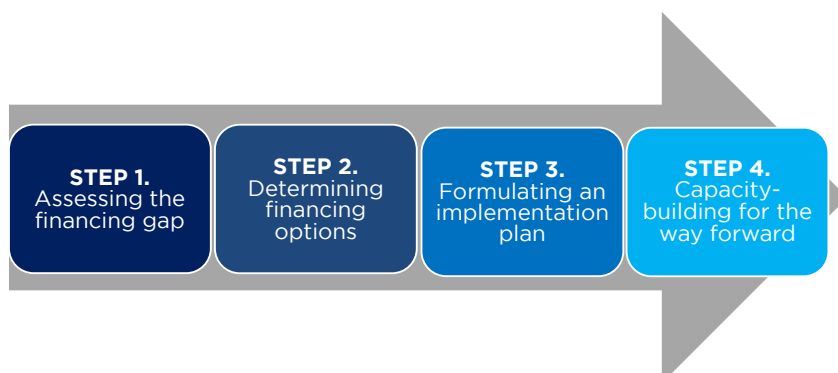
**FIGURE 8: PERCENTAGE OF COUNTRY STRATEGIES FINALIZED IN 2016-2017 THAT MENTION NDCs**



Source: WRJ<sup>38</sup>

A targeted example of how DFIs are working to support NDC implementation is through the development of climate finance strategies that may complement country strategies and NDC implementation roadmaps. Climate finance strategies can serve as “a national coordinated approach for the identification of financing options for climate change adaptation, mitigation and cross-cutting projects and programmes that together serve to achieve the national climate policy goals”.<sup>39</sup> Given that the NDCs are typically informed by different national policies and vice versa, the strategy will relate directly to the financing of the national contributions and may even provide the direct link from policy to NDC implementation.<sup>40</sup> The main steps to formulate a climate finance strategy are the assessment of the financing gap, determining financing options, formulating an implementation plan, and capacity-building for the way forward (see Figure 9).

**FIGURE 9: STEPS TO FORMULATE A CLIMATE FINANCE STRATEGY**



Source: GIZ<sup>41</sup>

In some cases, this information (or parts of it) might be already embedded in NDCs, and a climate finance strategy might not be necessary. However, if these steps were absent, then support programmes through technical assistance like the *Climate Finance Readiness Programme*, commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by KfW Development Bank and GIZ, are useful in identifying key components and indicators required for mobilizing NDC-aligned finance. These components and steps are common to typical bankable project formulation. For example, proper cost estimation and financial forecasts, implementation plans, and capacity-building for success are vital requirements for projects subject to external financing. In fact, the Climate Finance Readiness Programme recommends the engagement of private sector stakeholders at all stages of the planning in order to highlight opportunities for engagement, including capacity-building support as required. Here, we see evident synergies and the potential for public planning and finance to crowd in private capital. One cannot help but stress the centrality of catalysing private financial flows through proper alignment of public capital. Private capital will be the main engine that can drive climate-smart infrastructure needed for a carbon-neutral world.

Hence, and considering the overall financing gap estimates<sup>42</sup> versus the amount of international public finance flows reported by DFIs,<sup>43</sup> private sector investments, including domestic resources will prove essential to achieving countries' NDCs. A reasonable supporting global financing framework under Article 9 of the Paris Agreement will also be helpful. Efforts to improve the national strategic ecosystem towards climate sustainability can yield positive results across all sectors. Considering that the largest investment needs will need to come from private sector financing, it would be wise to consider the role of NDC-aligned finance in crowding in domestic and international private capital. For instance, DFI finance can pave the way and leverage private capital for NDC implementation, including through innovative ways that can include blended finance opportunities. The relevance of this relationship in fact merits a dedicated focus. Work done by the OECD<sup>44</sup> in the context of its Development Assistance Committee is a good reference as it measures amounts mobilized for climate action from the private sector and on blended finance. A relevant study by the OECD, UN Environment, and the World Bank is utilizing strategic foresight to propose a new way of looking at financing of climate smart infrastructure. Coping with uncertainties will be key to unlocking private capital.<sup>45</sup>

Another example of solutions aimed to improve NDC ecosystems is the *NDC Partnership*. “Launched at COP22 in Marrakesh, the NDC Partnership aims to enhance cooperation so that countries have access to the technical knowledge and financial support they need to achieve large-scale climate and sustainable development targets as quickly and effectively as possible.”<sup>46</sup> This is a great example of international cooperation and in-country engagement around NDCs. This programme’s mission reinforces the wider consideration of sustainable development when approaching NDC implementation. For example, “The NDC Partnership builds in-country capacity and increases knowledge sharing so that climate policies have meaningful and enduring impacts, and drive increasing global ambition over time” while enhancing sustainable development.<sup>47</sup> The NDC Partnership aims to achieve these goals by facilitating technical assistance and knowledge-sharing, creating and disseminating knowledge products to fill information gaps, and promoting enhanced financial support for NDC implementation (see Figure 10). Furthermore, similarly to DIE and SEI, the NDC Partnership has also developed a visualization that identifies NDC links to SDGs (see Figure 5).<sup>48</sup>

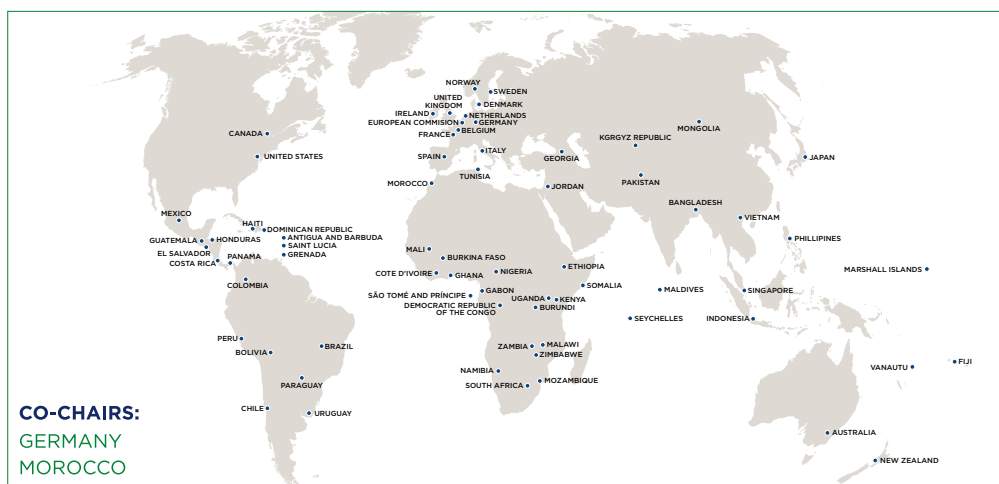


The Climate Finance Accelerator (CFA) is another example of governments, MDBs, and civil society coming together for NDC implementation (see Box 3). Its first workshop round was hosted in September 2017 by the UK Government, the City of London’s Green Finance Initiative and the Moroccan Presidency of COP22 and funded by the UK Government’s Department for Business, Energy and Industrial Strategy, the Children’s Investment Fund Foundation (CIFF) and the Hewlett Foundation via the European Climate Foundation, the ClimateWorks Foundation, the Climate and Development Knowledge Network (CDKN), and the Inter-American Development Bank (IDB).

**FIGURE 10: NDC PARTNERSHIP: WORKING TOGETHER TO ACHIEVE AMBITIOUS CLIMATE ACTION WHILE ENHANCING SUSTAINABLE DEVELOPMENT**



The Partnership is open to all countries and international institutions that are committed to ambitious NDC implementation. Partners as of April 2018 include 71 countries and thirteen international institutions.



Source: NDC Partnership<sup>49</sup>

**Box 3: THE CLIMATE FINANCE ACCELERATOR**

The Climate Finance Accelerator (CFA) seeks to fast track the linking of both public and private sources of climate finance funding to projects and sectors self-identified from countries’ NDCs. The CFA delivers a country-specific, transaction-oriented platform that brought together participant country policymakers with local and international private sector financiers to identify and prioritize financing propositions for projects that align with NDC needs, specifically matching government, finance and capital market players from participant countries with project and green finance experts from the City of London. Participating countries included Colombia, Mexico, Nigeria and Vietnam. Efforts to expand this initiative into an ongoing intervention are being pursued by the CFA consortium and the funding partners with the identification of relevant projects and participant countries being prioritized to assess demand for this focus on demand-led action.

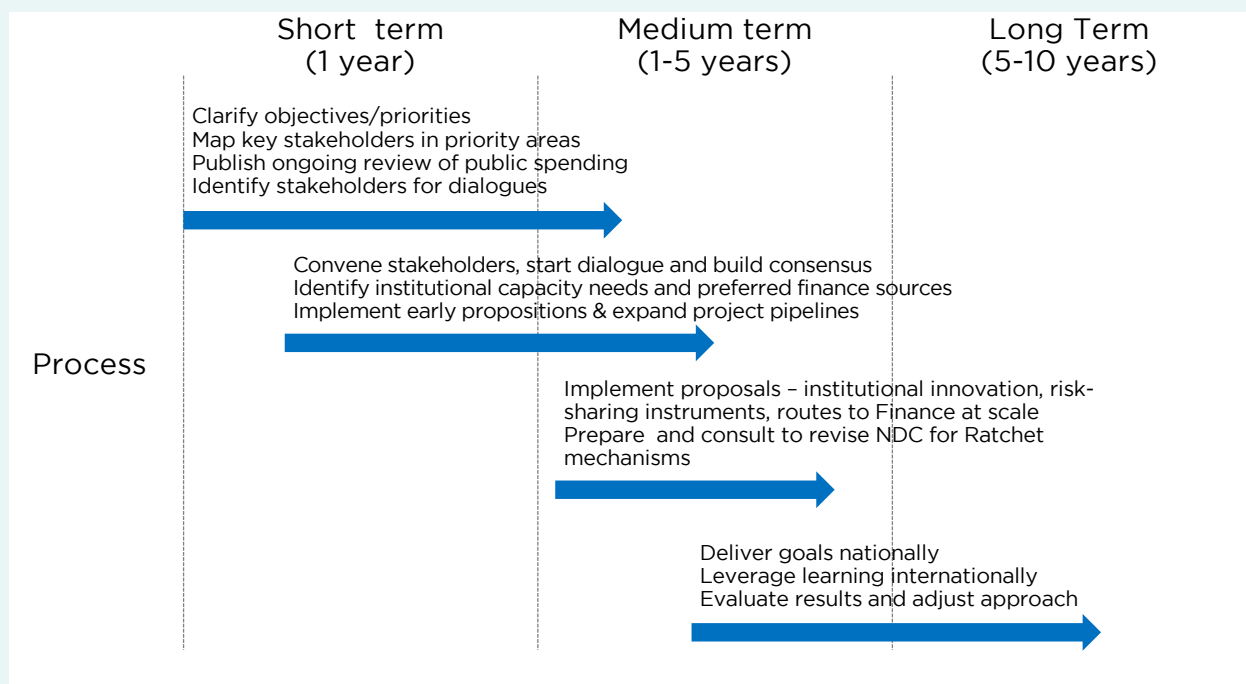
Source: Ricardo Energy & Environment, PwC and climate finance specialists and concept originators Ian Callaghan and Tessa Tennant<sup>50</sup>

### 1.3 ILLUSTRATIVE EXAMPLES OF CLIMATE FINANCE STRATEGIES

The aim of studying this type of efforts is to relate experiences across designing and implementing climate finance strategies for effective and efficient NDC implementation. The following illustrative examples show cases where innovative and comprehensive solutions are applied to improving NDC ecosystems: Box 4 shows an example of a potential process to formulate a climate finance strategy for Chile. Box 5 shows India's National Action Plan on Climate Change and components. Similar country examples of climate finance strategies developed with assistance from the Climate Readiness Programme are also available online.<sup>51</sup>

#### **Box 4: STEPS AND CONSIDERATIONS FOR A POTENTIAL CLIMATE FINANCE STRATEGY FOR CHILE BY E3G<sup>52</sup>**

- 1 Identify sectoral priorities and facilitate institutional coordination**
  - Priority area 1: Energy
  - Priority area 2: Climate resilience for agriculture and infrastructure
  - Priority area 3: Getting to scale on finance
- 2 Identify and set up working groups for priority areas** (private sector is involved)
- 3 Develop and then test core propositions around key priority areas to build the National Finance Strategy (NFS)**
- 4 Seek wider feedback on emerging policy propositions** (stakeholder consultations)
- 5 Finalize policy proposals, draw together in a single document setting out the NFS plan and develop legislation as needed**



Source: E3G<sup>53</sup>

## Box 5: INDIA'S NATIONAL ACTION PLAN ON CLIMATE CHANGE

*India's National Action Plan on Climate Change (NAPCC)* establishes eight national "missions":

**National Solar Mission** (coordinated by the Ministry of Renewable Energy, allocated ₹8795 crore or approximately US\$1.4 billion for the Twelfth Five-Year Plan period). This Mission aims to make solar electricity cost competitive compared to coal power and increase the share of solar energy in the total energy mix through the development of photovoltaic and solar thermal technologies. It recommends implementation in three stages leading up to an installed capacity of 20,000 MW by the end of the Thirteenth Five-Year Plan in 2022.

**National Mission for Enhanced Energy Efficiency** (Ministry of Power, allocated ₹190 crore or approximately US\$30 million for the Twelfth Five-Year Plan period). This Mission includes four initiatives: Perform, Achieve and Trade (PAT); Market Transformation for Energy Efficiency (MTEE); Energy Efficiency Financing Platform (EEFP); and Framework for Energy Efficient Economic Development (FEEED). It aims to achieve 23 million tonnes of oil equivalent of fuel saving by 2015, with an avoided capacity addition of over 19,000 MW.

**National Mission for Sustainable Habitat** (Ministry of Urban Development, budget of ₹950 crore or approximately US\$151 million for the Twelfth Five-Year Plan period, to be met from the existing budget of the Jawaharlal Nehru National Urban Renewable Mission). This Mission promotes energy efficiency in buildings, solid waste management, and public transport.

**National Water Mission** (Ministry of Water Resources, allocated ₹196 crore or US\$31 million for the Twelfth Five-Year Plan period). This Mission focuses on rainwater harvesting, groundwater charging, and increasing water use efficiency at least by 20% by 2012.

**National Mission for Sustaining the Himalayan Ecosystem** (Ministry of Science and Technology, allocated ₹500 crore or US\$76 million for the Twelfth Five-Year Plan period). This Mission is focused on: Himalayan glaciers and the associated hydrological consequences; biodiversity conservation and protection; wildlife conservation and protection; and traditional knowledge of societies and their livelihood.

**National Mission for a Green India** (Ministry of Environment and Forests, allocated ₹13,000 crore or approximately US\$2 billion for the Twelfth Five-Year Plan period). This Mission will focus on enhancing ecosystem services and carbon sinks through afforestation on over 10 million hectares of degraded forestland over a ten-year period.

**National Mission for Sustainable Agriculture** (Ministry of Agriculture, allocated ₹13,034 crore or approximately US\$2 billion for the Twelfth Five-Year Plan period). This Mission aims to make Indian agriculture more resilient to climate change by developing new varieties of climate-stress resistant crops, new credit and insurance mechanisms, and improving productivity of rain-fed agriculture. The focus is on physical interventions – the funds will be primarily spent on technology, products and practices (60%); infrastructure (29%); R&D (6%); and capacity building (5%).

**National Mission on Strategic Knowledge on Climate Change** (Ministry of Science and Technology, expenditure of ₹2,500 crore or approximately US\$397 million over Twelfth Five-Year Plan to be met from existing allocation to the ministry). This Mission focuses on identifying the challenges of, and the responses to, climate change through research and technology development, and ensuring funding of high quality and focused research into various aspects of climate change

*Source: European Capacity Building Initiative<sup>54</sup>*



## 2 THE CURRENT STATE OF DFIs' ALIGNMENT TO NDCs AND LTSs

This part of the study identifies voluntary alignment of DFIs to NDCs and LTS implementation to highlight best practice and describe solutions. Specifically, the focus is on international DFIs because of their relevance in mobilizing financial resources. For further research, domestic NDC and LTS finance (national budgets and national development banks) and private sector involvement in NDC finance could be considered.

### 2.1 TRENDS AND CHALLENGES FOR DFI ALIGNMENT TO NDCs AND LTSs

When looking at how DFI flows align to NDCs, many factors explain the lack of alignment reported in our survey. One evident factor is the fact that NDCs are fairly recent, considering country strategies for DFIs are usually revised at a quadrennial basis, as is the case of the World Bank for example. Key barriers can be seen across policy directives of financing institutions, methodologies used to allocate financial flows, and the practice of assigning and tracking climate finance. In a context where DFIs are increasingly reporting bigger percentages of their lending portfolios as climate finance, aligning DFI flows to NDCs becomes even more pressing. Directing DFI flows towards NDCs is a cornerstone to unlocking flows from other financial institutions as they can help to mitigate a first-mover risk related to NDC-aligned priorities. Moreover, aligning DFI flows to NDCs is of key importance considering that at least 80% of NDC commitments are subject to conditional international financial support, and considering the interdependence between NDCs, LTSs, and national strategic plans.

There are multiple barriers to policy-level alignment to NDCs. Several are wide-ranging and beyond the scope of this paper, however NDC composition and calibre are significant ones that are cited by some DFIs as a challenge for aligning finance flows. The main cross-cutting policy directive of DFIs regarding climate sustainability – the 2°C goal in overall terms – is not sufficiently explicit about the alignment to NDCs as established by the Paris Agreement. In summary, policy directives are unique to each DFI and tend to converge around the common objective of averting climate change, but are rarely consciously aligned to NDCs and LTSs. For example, at the policy level, the World Bank Group (WBG) has made a commitment to increase its share of climate lending from 21% of total volume of lending to 28% by 2020,<sup>55</sup> which increases the total amount of climate-sensitive lending. The World Bank has also ended financial support to coal projects and decided to end financial support for oil and gas extraction after 2019.<sup>56</sup> While this commitment aligns with a general 2°C scenario, it does not explicitly consider NDC priorities that vary from country to country. However, it is difficult to make tailor-made country-specific commitments at the overall institutional level. Furthermore, in many cases DFIs are compelled to balance financial performance goals and developing impact objectives. Since market forces are also intervening in DFIs, the goal is to achieve impact objectives with financial sustainability. In other words, DFIs not only aim for development impact investments but they also have to be financially efficient in the allocation of their resources.

Methodologically, DFIs' unique governance structures determine institutionally distinctive and overall wide-ranging climate finance allocation structures.<sup>57</sup> This situation presents a diverse set of methodologies generally focusing on climate sustainability through the decarbonization of lending portfolios. While MDBs have shown “incremental improvements in efforts to harmonize climate finance to match the methodology of the International Development Finance Club (IDFC)”,<sup>58</sup> this focus in and of itself is not sufficient to achieve NDC alignment since its main focus has been standardization and not alignment. However, this work can facilitate NDC alignment that can also be standardized. Coordination among DFIs is also key to ensure alignment and impact in climate financial flows. In addition, many NDCs highlight the complementarities between adaptation and mitigation priorities, which DFIs' methodologies often overlook. For example, MDBs and the IDFC agreed on initial principles for tracking adaptation finance that “might not capture activities that may contribute significantly to resilience.”<sup>59</sup> However, this is not an issue for DFIs to resolve as foregoing progress from both DFIs and countries on NDC alignment may be needed to overcome methodological barriers. This progress would necessarily come at both the DFIs' policy dimension and at the NDC ecosystem level. This two-pronged approach is also inclusive of country-specific risks that may affect DFI and commercial finance flows.

In practice, DFIs demonstrate commitment to climate sustainability. Nevertheless, some countries' NDCs and their respective ecosystems are quite often not enticing financial flows. In some cases, appealing climate-sensitive bankable projects, while not being necessarily aligned with NDC identified priorities, may still receive funds from DFIs. Hence, a general lack of NDC-aligned bankable projects pipeline has been reported as a significant barrier to better alignment. However, NDCs are a relatively recent concept. Given the length of project cycles and the multi-year nature of DFIs' country strategies, we can expect to see increasing alignment as country strategies are revised and NDCs objectives can be integrated into the planning of new project pipelines. The Joint Report on Multilateral Development Banks' Climate Finance<sup>60</sup> has been published annually since 2010. These efforts precede the Paris Agreement, but have successfully incorporated adjustments and fine-tuning of tracking methodologies year after year. The gradual improvement by MDBs and the IDFC in harmonizing climate finance tracking is a good example of progress that may help foster NDC alignment in practice. Improved methodologies by MDBs and the IDFC can provide a more comprehensive view of financial flows towards NDCs and therefore allow for a better assessment of financial opportunities. For example, improved tracking of adaptation finance, while still in the works, is of clear benefit towards tracking NDC-aligned finance.

Increased partnership and collaboration for NDC implementation can only benefit from working closely with DFIs (multilateral, bilateral, and regional development institutions) to understand barriers to NDC alignment on a case-by-case basis. This can allow for collectively building on existing standards and mainstreaming solutions that can help overcome said barriers. These efforts would prove useful for the achievement of G20 NDCs, and the Paris Agreement goal of averting a global temperature increase of more than 2°C.

## 2.2 DFI INNOVATION AND SOLUTIONS TO OVERCOMING BARRIERS TO NDC ALIGNMENT

In December 2017, the IDFC members and MDBs committed to mainstreaming sustainable development and climate agendas across all sectors, in accordance with their mandates.<sup>61</sup> This commitment represents a holistic approach to climate finance that is much broader than merely decarbonizing lending. While there is little evidence of ex ante voluntary alignment of financial allocations to NDCs so far with regards to climate finance, DFIs are starting to consider ex post facto contributions of climate-sensitive projects to NDCs. For example, IFC has reported ex post facto analysis of project lending to identify NDC contributions. In some cases, DFIs are also considering NDCs and LTSs when assigning finance to projects that are not considered climate-sensitive, but relevant to a transition to low-carbon growth.

### **Box 6: THE GREEN CLIMATE FUND (GCF)**

Established by the United Nations Framework Convention on Climate Change as part of the Convention's financial mechanism, GCF serves as an enabler of the Paris Agreement on Climate Change, channelling significant and transformative financial resources in line with the NDCs and Long-Term Strategies. GCF's role in translating NDC priorities into bankable projects is a benchmark to this study and can help inspire broader DFI action.

While GCF may not be considered a conventional MDB, its role in climate finance is substantial as emphasized by multiple G20 representatives and organizations during CSWG discussions. In particular, recent work by the UN Economic Commission for Latin America and the Caribbean (ECLAC) for CSWG showcases that the most significant source of climate finance in Latin America is GCF. Furthermore, GCF's finance has particular significance in climate finance because of GCF's higher level of risk appetite compared to other DFIs and its country-driven character. By investing in areas of higher risk where conventional DFIs may not be investing actively, GCF unlocks new areas of investments, opening markets for private sector, advancing NDC implementation, showing potential for replicability and further scaling. This catalytic and transformative nature of GCF's investments makes GCF unique and game-changing.

GCF offers tools through readiness as well as project funding to create alignment between NDCs and climate finance. GCF achieves this through country programming, which is GCF's version of a financing strategy to internalize NDCs into national planning, and develop bankable projects. GCF works through a country-driven approach to: (i) build readiness and cross-government coordination to integrate NDC implementation into national planning; (ii) translate NDCs into transformative projects and programmes; (iii) identify the role that GCF financing can play, alongside other sources of finance, to unlock broader shifts in investment. In this regard, GCF represents a benchmark example of NDC-aligned finance as it is positioned to play a catalytic role, bridge between traditional 'aid', MDB finance and private sector investment. GCF efforts are found in over 100 countries that are accessing GCF resources through readiness and US\$3.7 billion in project funding.

*Source: GCF*

Considerable efforts have been made by DFIs to identify climate vulnerabilities and adaptation financing opportunities. DFIs are subject to multi-year country strategy cycles and project development cycles, which means that, as NDCs have only been in place for 18 months, only a limited number of countries will have had the opportunity to incorporate NDCs into their agreed strategies with MDBs. For example, IDB is using NDCs as an input to any new country strategy development process since the adoption

of the Paris Agreement. However, the overall amount of climate adaptation finance is far from mitigation allocations considering the ratios observed in NDCs (see Figure 11).

**FIGURE 11: MDB JOINT CLIMATE ADAPTATION FINANCE BY SECTOR**

Project Subsector	Climate Vulnerabilities	Adaptation Investment
<b>Hydropower</b>	Increased flows leading to flooding	Investments in additional turbines or spill ways
<b>Thermal power</b>	Increased seasonality of rainfall leading to low river flows	Investments in thermal power generators with minimal cooling water requirements
<b>Agribusiness</b>	Increasing drought and shorter rainy season	Investments in supplemental irrigation, multi-cropping systems, drip irrigation, levelling, and other approaches and technologies that reduce risk of large crop failures
<b>Agribusiness</b>	Increased variability in crop productivity	Investments in research and development of crops that are more resilient to climate extremes and change
<b>Food processing &amp; beverages</b>	Diminishing water resources	Investments in water-efficient technologies
<b>Mining</b>	Increased precipitation intensity causing floods in open-pit mines	Improvements in design and construction of tailings
<b>Construction &amp; real estate</b>	Increased frequency of heatwaves	Improvements through additional insulation design
<b>Transport</b>	Sea level rise and increased precipitation intensity increasing risk of flooding	Changes in level of roads or materials
<b>Forestry</b>	Increase in number of drought days	Investments in resilient hybrid crops and improved water management
<b>Commercial banking</b>	Inadequate small and medium enterprise access to adaptation finance	Development of financial instruments to support climate related adaptation
<b>Insurance</b>	Increased negative effects of extreme weather events and payout	Changes in structuring of index-based insurance products
<b>Technology</b>	Lack of relevant climate data to respond adequately to climate hazards	Provision of financing for early warning systems

Source: IFC (2017)<sup>62</sup>

There are, however, efforts to increase alignment of climate finance towards adaptation. The Agence Française de Développement (AFD) has developed a targeted initiative to align climate finance lending to adaptation projects: “The *Adapt’Action* program aims to bring about climate projects that can be financed by AFD and international climate finance. Priority is given to adaptation to the impacts of climate change, a field for which the most vulnerable countries have expressed a specific need for assistance.”<sup>63</sup> This programme has started work in 16 countries such as the Comoros, the Dominican Republic, Madagascar, Mauritius, Niger, and Tunisia and aims to strengthen climate governance to ensure the successful implementation of NDCs;



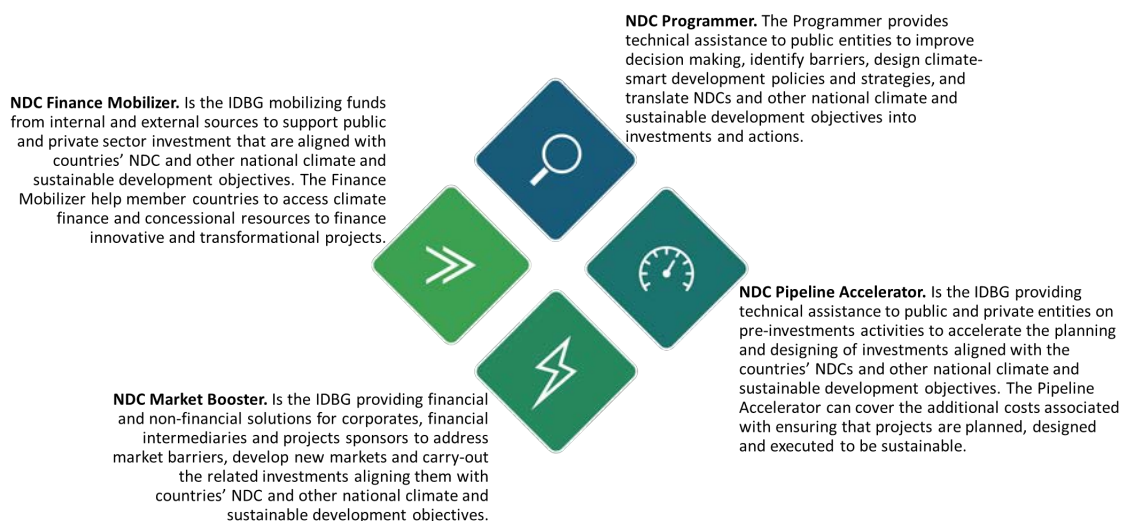
translating NDCs into sectoral public policies, combined with concrete action plans for the most vulnerable sectors to climate change (water resources management and securing supply, agriculture and biodiversity, risk reduction for extreme climate events, etc.); designing transformational climate programmes and projects, with a priority focus on adaptation to climate change.<sup>64</sup>

DFIs are setting goals to increase the percentage of climate sustainability projects as a part of total lending. Simultaneously, they have also established core benefit assessments, climate-related risks assessments, and gross emissions and carbon pricing for projects. While this is a positive development towards aligning development finance to climate sustainability, and while these financial flows are indeed climate-sensitive, in many cases they are not necessarily aligned with countries' NDCs and respective strategic priorities due to challenges mentioned in Section 3.1.

While it is hard to make a quantitative estimate of how much of the climate reported finance is aligned to NDC priorities and projects, there is a general sense by DFIs that the imperative is to align to the broad Paris Agreement 2°C target. This type of approach can risk delaying progress in fine-tuning NDCs and achieving NDC alignment. Some DFIs, specifically regional and national development banks, due to their inherent characteristics, are well positioned to assist countries in innovating towards better NDC alignment.

The Inter-American Development Bank Group for example has set up NDC Invest, a platform designed to support the implementation of the Paris Agreement and to assist countries in the design and implementation of their climate change-related policies, goals and commitments as articulated under their NDCs and beyond. The platform acts as a one-stop shop that offers a comprehensive package of technical and financial assistance delivered through its four operational components: the NDC programmer, NDC pipeline Accelerator, NDC Market Booster and NDC Finance Mobilizer (see Figure 12). "Together, the components aim to enable progress towards both the NDC and IDB lending objectives, as well as towards achievement of the UN Sustainable Development Goals."<sup>65</sup> This is a clear example of how NDCs are seen as the main priority guiding climate action and how DFIs can align their activities to facilitate NDC-aligned financial flows.

**FIGURE 12: NDC INVEST CLUSTERS**



Source: IDB

The African Development Bank Group (AfDB) has launched *Africa NDC Hub* to serve as a resource pool for regional member countries and to allow coordination of efforts toward NDC implementation. The Africa NDC Hub aims to foster long-term climate action by helping countries align country NDCs with national development agendas and “to explore options to raise ambition necessary for low carbon and climate resilience growth on a long-term trajectory.”<sup>66</sup> With regards to mobilizing means for NDC implementation, Africa NDC Hub looks to engage with global climate funds and the private sector in search of NDC-aligned climate finance and support. The Hub was launched with support of the African Union Commission (AUC), the United Nations Economic Commission for Africa (UNECA), the NEPAD Planning and Coordination Agency, the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme (UNDP), UN Environment, the Economic Community of West African States (ECOWAS), the World Wildlife Fund (WWF), the International Institute for the Environment and Development (IIED) and the secretariat of the UNFCCC.<sup>67</sup>

Another illustrative example of DFI innovations to help support NDC implementation is the World Bank’s efforts via the *NDC Support Facility* (NDC-SF). An emphasis is made on stakeholder coordination that can be key to unlocking targeted investments that can be aligned with NDC priorities. NDC-SF funds 23 activities in 19 countries. “These activities leverage larger investment programmes and enable a larger diversification of the World Bank’s portfolio on NDC issues. The World Bank has more than 300 initiatives related to NDC implementation, with investments of more than US\$14 billion across sectors.”<sup>68</sup> The European Bank for Reconstruction and Development (EBRD) has a similar NDC support programme that is specifically focused on translating NDCs into adaptation and mitigation investments while enabling policies and regulations necessary for NDC implementation. The EBRD also supports the strengthening of monitoring and verification mechanisms that are crucial to enable proper NDC-aligned finance impact. The focus on the communication of NDC results and a broad NDC narrative at the country level are also valuable innovations that can prove crucial for better alignment of DFI flows to NDC priorities in the future.

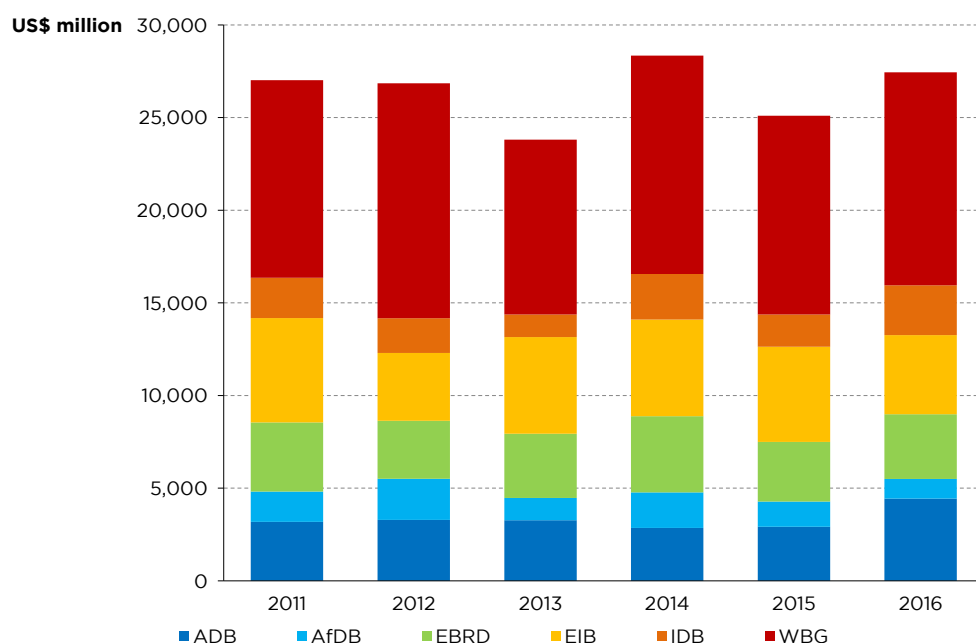
The illustrative examples are meant to show available tools and innovations that can improve countries’ NDC ecosystems by translating NDCs into bankable projects attractive to DFIs, and also be able to crowd in private international and domestic finance. Further investigative work that can look beyond DFIs and consider innovations in support of private capital alignment to NDCs for example would be needed. Emphasising the focus on NDC alignment is once again explained largely bearing in mind that these instruments are designed primarily to identify and quantify national climate priorities.

### 3 NDC AND CLIMATE FINANCE TRACKING FOR IMPROVED TRANSPARENCY AND ACCOUNTABILITY

This section highlights the role of climate finance tracking for increased transparency in improving NDC alignment and potentially allowing for NDC fine-tuning. NDC-aligned finance tracking will be of key importance to overcoming methodological and practical barriers.

Significant progress has been made in climate tracking, e.g. methodologies exist for bilateral climate-related development finance and multilateral related development finance. However, the lack of a global standard for climate finance tracking is a main barrier to assessing NDC-aligned finance in practice. Important gaps remain in understanding how climate finance can be streamlined to enhance accountability and comparability of climate finance aspects of NDCs. Transparency in measuring NDC progress can be improved towards NDC-aligned finance and efficient distribution of international funding. At the moment, this aspect is insufficient in most of the funding institutions and recipients. Understanding best practices related with NDC and long-term strategies finance tracking can also help foster a desired alignment of DFI flows to NDCs by identifying commonalities, indicators, and viable methodologies. There has been some progress on this front by DFIs. The Joint Report on MDB Climate Finance is a step forward in harmonizing DFIs climate finance tracking. This report is issued every year by a group of MDBs composed of the AfDB, the Asian Development Bank (ADB), the EBRD, the European Investment Bank (EIB), the IDB and the WBG.

**FIGURE 13: REPORTED MDB CLIMATE FINANCE COMMITMENTS. 2011-2016**



Source: AfDB, ADB, EBRD, EIB, IDB and WBG<sup>69</sup>

While the “*Joint Methodology for Tracking Climate Mitigation Finance*” recognizes the importance of long-term structural changes, such as the shift in energy production to renewable energy technologies, and the modal shift to low-carbon modes of transport”,<sup>70</sup> NDC priorities are not mentioned. Some DFIs are still generally relying on the Rio markers. For example, the OECD Development Assistance Committee (DAC) measures “development finance flows targeting the objectives of the Rio Conventions on biodiversity, climate change and desertification through the CRS using the so-called “Rio markers”. The Rio markers were originally designed to help members with the preparation of their National Communications or National Reports to the Rio Conventions, by identifying activities that mainstream the Conventions’ objectives into development co-operation”.<sup>71</sup> While the Rio Markers cover a concept of sustainability broader than decarbonization, they precede the NDCs and the SDGs. Hence, further steps are needed for joint methodologies to consider NDCs and their impact on the broader SDGs. For example, the OECD DAC has put forth a proposal to include reporting on development assistance in support of the SDGs. Properly assessing and tracking NDC-aligned finance can also translate to SDG finance tracking (see Figure 5) and constitute a significant step forward in accurately measuring progress towards global development agendas.

Progress on climate finance tracking could also enhance accuracy by helping avoid double-counting or other inaccuracies that are reported to be prevalent. Currently, we have a scenario where multiple implementing agencies may all account the same finance flows allocated by DFI into a specific project, which would yield an inflated and inaccurate figure of climate-sensitive flows. Hence, when multiple providers of climate finance report on a project, care should be taken to avoid double counting. Furthermore, fractional accounting methodologies for projects such as hydropower or energy efficiency are defined by DFIs, are quite diverse, and may not be necessarily in line with the recipient countries’ NDC investment priorities or planning. These situations create discrepancies that make it quite hard to assess finance directed towards NDCs.

### 3.1 CLIMATE TRACKING FRAMEWORKS THAT ALIGN TO NDCs

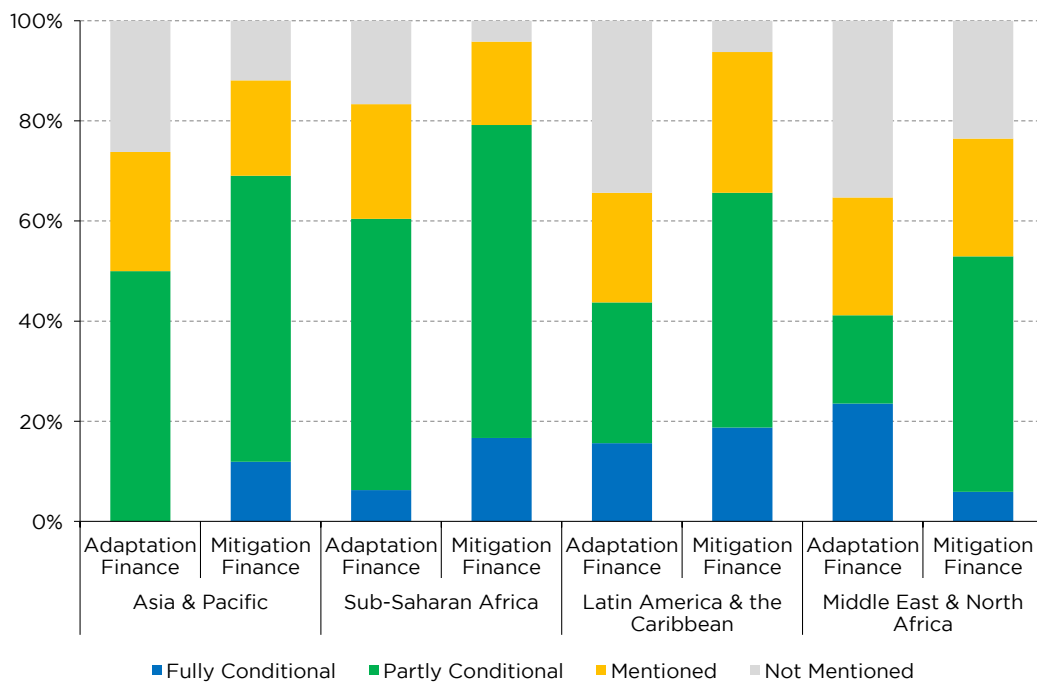
The largest portion of developing countries’ NDCs has been submitted to the Paris Agreement with conditional targets. Most countries express conditionality of NDC targets subject to international support that ranges from specific amounts of financing to technology transfer, to capacity-building.<sup>72</sup> Given the conditional nature of a large amount of NDC targets, countries could benefit from specifying progress-tracking frameworks. Improved transparency of progress tracking towards NDC priorities and goals can be mainstreamed and scaled. This could in turn help DFIs and other financial institutions to better assess new and ongoing investment opportunities, and determine their level of NDC alignment.

The ideal scenario is a standard finance tracking methodology that aligns or considers NDC priorities and progress. However, such a climate finance tracking framework will be hard to devise when NDC progress standards are not agreed. Different types of projects, particularly for adaptation, energy efficiency, and urban infrastructure projects are of relevance in tracking progress.

Parties to the UNFCCC, as part of the Paris Agreement, agreed to establish a *Capacity-Building Initiative for Transparency* (CBIT). “The goal of the CBIT is to strengthen the institutional and technical capacities of developing countries to meet

the enhanced transparency requirements of the Paris Agreement. These enhanced transparency requirements are defined in Article 13 of the Paris Agreement.”<sup>73</sup> Transparency of action mainly refers to measuring and reporting progress towards the implementation of NDCs. This framework, supported by the Global Environment Facility (GEF) requires countries to provide information tracking progress towards the implementation of their NDCs, including information regarding climate impacts and adaptation. “Transparency of support refers to clarity on support provided and received for mitigation, adaptation, finance, technology development and transfer, and capacity-building. Under this framework, developed countries should provide information on the support they have provided; meanwhile, developing countries should provide information on support needed and received.”<sup>74</sup>

**FIGURE 14: DEVELOPING COUNTRIES REQUESTS FOR MITIGATION AND ADAPTATION FINANCE BY REGION**



Source: UNEP DTU<sup>75</sup>

Several frameworks are designed to standardize and improve transparency in measuring, reporting, and verification (MRV) of NDC progress. Examples include:

- The *Initiative for Climate Action Transparency* (ICAT) “is designed to finance activities at the country, regional and global levels to drive immediate and long-term impacts that will result in sustained improvements to the administrative, legislative and institutional transparency infrastructure within countries.”<sup>76</sup> This initiative is hosted by the United Nations Office for Project Services (UNOPS) and funded by the CIFF, the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), the Italian Ministry of the Environment and the ClimateWorks Foundation.
- The *UNEP DTU Partnership* (formerly UNEP Risø Centre (URC)) provides research and advisory services on energy, climate and sustainable development. “Through in-depth research, policy analysis, and capacity building activities, the Partnership assists developing countries in a transition towards more low carbon development paths, and supports integration of climate-resilience in national development”.<sup>77</sup> Some of its most recent work has focused on assessing

developing countries' NDCs in order to better provide capacity-building. This research is fundamentally anchored on identifying reporting requirements for an 'Enhanced Transparency Framework' for the Paris Agreement's 'rulebook' and Talanoa dialogue.<sup>78</sup>

- The *Project for Advancing Climate Transparency* (PACT) at WRI provides research, analysis and creative thinking to encourage the design of an effective international transparency system to support the Paris Agreement. "Through this project, WRI and its partners are releasing two complementary papers on two core aspects of the transparency framework: reporting and review under the Paris Agreement."<sup>79</sup>

While these examples are valuable harmonization toolkits for developing country parties, donor support and engagement of stakeholders, none of them are meant to be a universal standard for tracking climate finance. These types of efforts are primarily aimed at improving outcomes related to the Paris Agreement, and are rarely focused on improving climate finance alignment to NDCs. However, intuitively and logically, this work will prove central to the design of standards for climate finance tracking that are compatible with the Paris Agreement overall objectives and specific NDCs.

#### **FIGURE 15: UNEP DTU RECOMMENDATIONS FOR NDC TRACKING STANDARDS**

- 1 In the NDCs, all countries should be required to present quantitative GHG emissions estimates. The NDC should include projections with a base year corresponding to the start year of the NDC accounting period under implementation. The end year should at the minimum be the end year of the NDC accounting period for which the NDC is being submitted. For example, the time period for the GHG projections included in the NDC submitted for the 2031–2035 accounting period should be 2021–2035. The projections should cover two scenarios:
  - a the [Business as usual] scenario for the NDC, which corresponds to the [With Measures] scenario, incorporating the mitigation measures being implemented for the current NDC accounting period and the planned measures for the next NDC accounting period. Thus in the above example, the [Business as usual] scenario would include the mitigation measures being implemented during the 2021–2025 accounting period and the planned mitigation measures for 2026–2030.
  - b the NDC mitigation scenario, which corresponds to the [With Additional Measures] scenario, incorporating anticipated mitigation measures to be adopted for the accounting period of the NDC being submitted. Thus, in the above example, the NDC mitigation scenario should include anticipated mitigation measures for the 2031–2035 period.
- 2 For the base year, national GHG emissions should be the estimated national GHG inventory for that year. In the case of the above example, 2021 GHG emissions should be the same as the estimated national GHG inventory for 2021. Given the current guidelines for [National Communication] and [Biennial Update Report], all countries are expected to have this information available.
- 3 The projections made in the NDCs should cover all sectors and all gases in order to be able to aggregate GHG emissions across countries and to compare the aggregate values with the global GHG emissions pathways required to meet the aims of the Paris Agreement.

Source: UN Environment<sup>80</sup>

### 3.2 CLIMATE FINANCE TRACKING IN FINE-TUNING NDCs

This sub-section highlights domestic climate budgeting and review methodologies that have been applied with success and will explore the potential for digital technologies that can be mainstreamed or scaled to track NDC-aligned finance globally. Improved NDC progress and finance tracking can foster transparency and be beneficial to NDC ecosystems that can be fine-tuned as described in Section 2. Interesting lessons can be drawn from methodologies that are able to track positive impact of NDC-aligned finance. A sensible way to approach the issue in the absence of an appropriate NDC-aligned tracking standard, and given the challenges in tracking NDC progress, is to look at domestic finance tracking methodologies. The main reason is that domestic priorities concerned with the climate finance tracking examples presented would naturally match NDC priorities (in many cases NDCs were generally being drafted simultaneously).

The *Climate Public Expenditures and Institutional Review* (CPEIR) “is a systematic qualitative and quantitative analysis of a country’s public expenditures and how they relate to climate change”. CPEIR is a tool that presents evidence on public expenditures across all ministries using a methodology that “also reviews its climate change plans and policies, institutional framework and public finance architecture in order to make recommendations to strengthen them.”<sup>81</sup> Indeed, this approach looks at climate change-related expenditures from each country’s perspective, which is in turn based on a consultative process that takes into account its national priorities (this is as close as we can get to NDC-alignment). However, the weighting criteria set by the methodology are often adapted by each country, limiting the possibility for comparative analysis among countries. This tool has been implemented since 2011 in Asia-Pacific with technical assistance by UNDP and funding by UK Aid and Sweden. Some countries that have successfully implemented CPEIR include Bangladesh, Cambodia, Indonesia, Nepal, the Philippines, Samoa, Thailand, and Viet Nam. This tool can be useful “for national planning and budgeting, especially in terms of identifying and tracking budget allocations that respond to climate change challenges.”<sup>82</sup> UNDP has since published a methodological guidebook in 2015 based on experiences and lessons learned from existing CPEIRs implemented by UNDP, the World Bank, the Overseas Development Institute (ODI), and independent CPEIR practitioners.<sup>83</sup>

Another example of national climate finance tracking is *Climate Budget Tagging* (CBT), a “tool for monitoring and tracking of climate-related expenditures in the national budget system. It provides comprehensive data on climate change relevant spending, enabling government to make informed decisions and prioritize climate investments.”<sup>84</sup> This approach allows for the proper identification of climate investments within national priorities, therefore enabling transparency on government and donor’s spending towards NDC progress. “CBT is also part of the wider efforts contributing to country readiness for new climate finance such as the Green Climate Fund (GCF).”<sup>85</sup> Creating enabling conditions and readiness at country level will prove essential. “Joint leadership between finance, planning and environment: buy-in and leadership from finance and planning ministries with technical support from environment ministry” can allow for NDC fine-tuning in the process of improving climate finance tracking.<sup>86</sup> This methodology also highlights the importance of “capacity-building through clear tools and guidance to line ministries and relevant agencies for success.” “Also, training on climate tagging should be considered in the context of broader capacity building efforts from raising awareness on climate change to integrating climate change into the budget process.”<sup>87</sup>

## Box 7: TRACKING DOMESTIC CLIMATE FINANCE

**Bangladesh:** The results of the CPEIR<sup>88</sup> in Bangladesh, undertaken with support from the ODI, revealed that the vast majority of climate funding is embedded within multi-dimensional programmes across numerous government departments. Taken together, Bangladesh currently spends US\$1 billion a year, equivalent to 6-7% of its annual budget, on climate change adaptation. This represents nearly a fifth of the World Bank's recent estimation for expenditure needs by 2050 a year already, three quarters of which comes directly from the government. Household spending on climate change adaptation for the extreme poor and landless households often exceeds their income, some by more than double the amount.

Bangladesh's Minister for the Environment has used the findings in statements in Parliament and in international climate change negotiations to support a stronger negotiating position at the global level to leverage the kinds of funds required to fill the development gap as a result of climate change. The Ministry of Finance is developing a sophisticated climate change accounting system ('Climate Change Fiscal Framework') that goes beyond physical capital investment to cover social protection as a result of climate change. Lastly, in the 2013 budget, the government has introduced a climate budget code, with indicators, so that it can track spending on a more continuous basis across all government departments and draw a much clearer picture of how local authorities are grappling with the practical dimensions of protecting communities and livelihoods.

**Bhutan:** PEI supported the Gross Happiness Commission to undertake a Public Environment Expenditure Review (PEER) with an aim of informing the 9<sup>th</sup> Economic Development Plan (Analysis of Public Environment Expenditure of the Royal Government of Bhutan for the 9<sup>th</sup> plan (2009)<sup>89</sup> and 10<sup>th</sup> plan (2011).<sup>90</sup> The PEER pioneered by PEI has been institutionalized as reflected by the decision of the Government to repeat the PEER in 2010 and 2011. The PEER has also influenced the government's interest to initiate a greener inclusive economy process. The repeated PEERs have revealed that local government in Bhutan have recorded increased expenditure for sustainable development during the first two years of the 11<sup>th</sup> National Development Plan.

**Nepal:** PEI supported the Nepalese Government to undertake a CPEIR<sup>91</sup> in 2010. Based on the findings and recommendations of the study, the Parliament of Nepal approved the creation of a climate change budget code in the 2012 national budget with an aim of tracking climate related expenditure and results over time. There has also been an increased budget allocation to environment and climate related institutions in 2012.

**Mozambique:** The yearly economic loss due to environmental degradation and the inefficient use of natural resources represents 17% of GDP. This is specifically affecting vulnerable groups that are directly dependent on natural resources (crops, fish, forest, etc.) for their livelihood, and the achievement of the Millennium Development Goals. 9% of GDP is the estimated cost to remediate these damages, and yet only 1.4% of GDP was the average environmental expenditure for the period 2007-2010. This was demonstrated when the Ministry of Environment, with support from PEI, carried out a PEER in 2012.

Following the strategic dissemination of the results, the Ministry of Finance for the first time appointed two environmental focal points within the Ministry to actively follow up on one of the key recommendations from the PEER; to enhance the system and use of environment and climate codes in budget processes. For the 2014 budget processes, the Ministry of Finance has opened up a new budget classification code related to climate change and the Ministry of Environment has decided to test the feasibility to use a wider range of the available ones, including codes related to land management and physical and environment planning in order to facilitate measuring the progress towards the achievement of development goals.

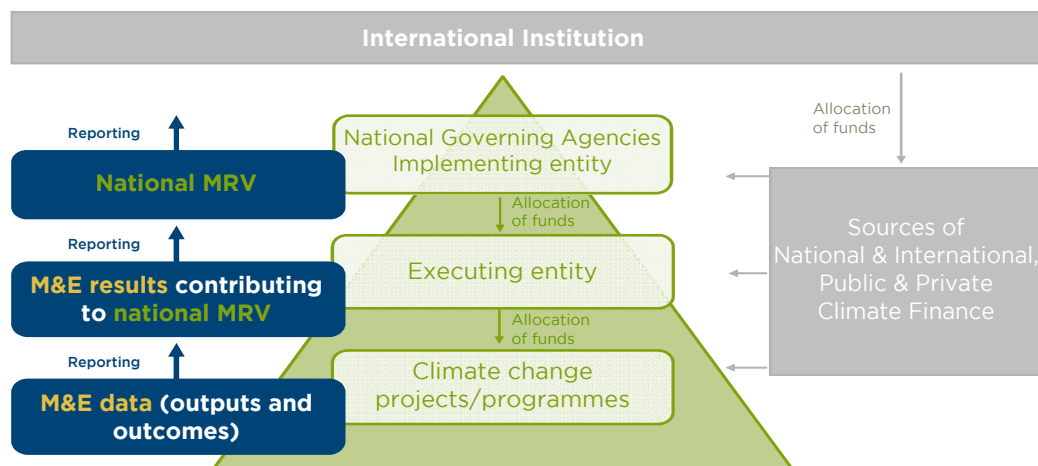
Source: UNDP-UNEP PEI (n.d.)<sup>92</sup>



Both the CPEIR and CBT are meant to be considered and implemented in the context of a broader *Climate Change Financing Framework* (CCFF). “A comprehensive CCFF framework can be understood as a whole-of-government approach that broadly engages all relevant stakeholders toward the mobilization, management, and targeting of climate change finance.”<sup>93</sup> The ideal outcome of improving climate finance tracking towards NDC alignment would be one where increased transparency and clarity can bring overall improvements in NDC ecosystems, heighten commitment to achieve the Paris Agreement, and allow for better assessment of progress. This iterative process could be fuelled by a positive feedback loop as seen on Figure 16 below.

**FIGURE 16: A VIRTUOUS CYCLE OF TRANSPARENCY: TRACKING CLIMATE FINANCE**

Important levels of M&E and MRV of support (in a simplified manner)



Source: Frankfurt School<sup>94</sup>

The advent of *digital finance technology (fintech)* can also enable and accelerate progress towards NDC alignment. Research done by the Sustainable Digital Finance Alliance in the context of the G20’s Sustainable Finance Study Group has identified various examples of how digital finance technology can help mainstream climate sustainability. In particular, digital technologies could prove vital in climate finance tracking. Examples of how technology can enhance NDC alignment are developed in Box 8.

The illustrative examples are presented as good practice that can be learned from. However, overall introduction, harmonization and mainstreaming of NDC progress tracking methodologies can enhance NDC-aligned finance tracking beyond national budgeting. Transparency and accountability are not the only benefits of improving NDC progress tracking. Efficiencies and increased international collaboration can arise from information-sharing. This in turn can drive down implementation costs, especially those related to capacity-building. This approach could constitute a lesser burden on donors and at the same time empower countries at large. Furthermore, emerging financial digital technologies can serve as potential tools for improved tracking and provide opportunities to increase DFI alignment to NDCs.

**FIGURE 17: CLIMATE BUDGET TAGGING IN ASIA**

	Philippines	Indonesia	Nepal	Bangladesh
<b>Definition and criteria of climate-related expenditure</b>	<ul style="list-style-type: none"> <li>- Adaptation and mitigation definitions</li> <li>- Use of policy areas in NCCAP in definitions to guide screening climate related expenditures</li> </ul>	<ul style="list-style-type: none"> <li>- Mitigation only: direct and indirect actions</li> <li>- Use of RAN-GRK priority areas as the basis but also recognize non-RAN-GRK areas</li> </ul>	<ul style="list-style-type: none"> <li>- Not split between mitigation and adaptation</li> <li>- Based on a short-list of climate-related thematic areas, covering all economic sectors</li> </ul>	<ul style="list-style-type: none"> <li>- Adaptation and mitigation based on OECD Rio Markers definitions</li> </ul>
<b>Classification/ climate change typology</b>	<ul style="list-style-type: none"> <li>- Typology based on NCCAP eight priority areas</li> <li>- four-level typology covering: NCCAP priority area, sector, sub-sector to activity level</li> </ul>	<ul style="list-style-type: none"> <li>- There is no explicit typology. Climate-related expenditure is tagged by themes.</li> </ul>	<ul style="list-style-type: none"> <li>- There is no typology.</li> </ul>	<ul style="list-style-type: none"> <li>- Use of six thematic areas in BCCSAP in tagging.</li> </ul>
<b>Weighing climate relevance</b>	<ul style="list-style-type: none"> <li>- The proportion of the expenditure that is climate relevant is subjectively estimated by policy managers.</li> </ul>	<ul style="list-style-type: none"> <li>- The scoring system has not yet been developed.</li> </ul>	<ul style="list-style-type: none"> <li>- Adopting a criteria system: <ul style="list-style-type: none"> <li>o Highly Relevant: above 60% of expenditures allocated to climate activities</li> <li>o Relevant: 20-60%</li> <li>o Neutral: below 20%</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- The climate proportion is determined based on CPEIR-relevance index approach but assigning more specific percentages.</li> </ul>
<b>Design of the tagging procedure</b>				
<b>Entry point</b>	<ul style="list-style-type: none"> <li>- Budget proposal</li> </ul>	<ul style="list-style-type: none"> <li>- Budget proposal</li> </ul>	<ul style="list-style-type: none"> <li>- Budget proposal</li> </ul>	<ul style="list-style-type: none"> <li>- Budget proposal</li> </ul>
<b>Level of information to be tagged</b>	<ul style="list-style-type: none"> <li>- Tag at activity level</li> <li>- Tagging across economic classification also</li> </ul>	<ul style="list-style-type: none"> <li>- Tag at activity level</li> </ul>	<ul style="list-style-type: none"> <li>- Tag at programme level</li> </ul>	<ul style="list-style-type: none"> <li>- Tag at operational unit level and across economic classification</li> </ul>
<b>Budget information system</b>	<ul style="list-style-type: none"> <li>- Fully online and computerised</li> <li>- Integrated to the existing information system which already incorporates other tags</li> </ul>	<ul style="list-style-type: none"> <li>- Partly integrated computer-based and partly manually tagged by MoF</li> <li>- Retrofitted to the existing information system (use of the existing field to add climate change themes)</li> </ul>	<ul style="list-style-type: none"> <li>- Initially manually done</li> <li>- Incorporated climate tag to the budget information system</li> <li>- Limited to budget allocations only (no information on actual expenditures)</li> </ul>	<ul style="list-style-type: none"> <li>- A parallel module linked to an integrated budget information system</li> </ul>
<b>Lead institutions</b>	<ul style="list-style-type: none"> <li>- Both Department of Budget Management (DBM) and Climate Change Commission (CCC).</li> </ul>	<ul style="list-style-type: none"> <li>- Fiscal Policy Agency (MoF)</li> </ul>	<ul style="list-style-type: none"> <li>- National Planning Commission</li> </ul>	<ul style="list-style-type: none"> <li>- Finance Division, Ministry of Finance</li> </ul>

Source: UNDP (2016)<sup>95</sup>

## Box 8: Digital Technologies' Potential to Improve Tracking of NDC-Aligned Climate Finance

Digital technologies are transforming financial flows, powering economic growth, and creating new solutions for addressing climate sustainability at scale. PwC estimates that artificial intelligence alone could contribute up to US\$15.7 trillion to the global economy by 2030. In the energy sector, digital technologies are set to make energy systems more connected, intelligent, efficient, reliable and sustainable. Advances in the way data is generated, analysed, recorded and shared have unlocked a range of applications improving capital deployment, financial information tracking, as well as monitoring, reporting and verification processes.

Two technologies in particular have the potential to promote alignment and improve tracking of climate finance for NDCs. The distributed ledger technology (DLT), or blockchain, is a shared database that uses algorithms to record and confirm transactions across peer-to-peer networks. Records are shared and validated between many parties, and information once entered cannot be altered. Every core transaction can be processed only once, which avoids double-counting and reduces redundancies. These characteristics make recorded information immutable, verifiable, traceable, reliable, and transparent. This in turn makes blockchain technology a potentially powerful tool to transparently record, track, and report on climate finance as well as to foster collaborative and transparent governance. At the same time, DLT is nascent. While new solutions are emerging, DLT typically has a large energy footprint, and throughput capacity is also quite limited (10 transactions per second versus Visa's 40,000 transactions per second).

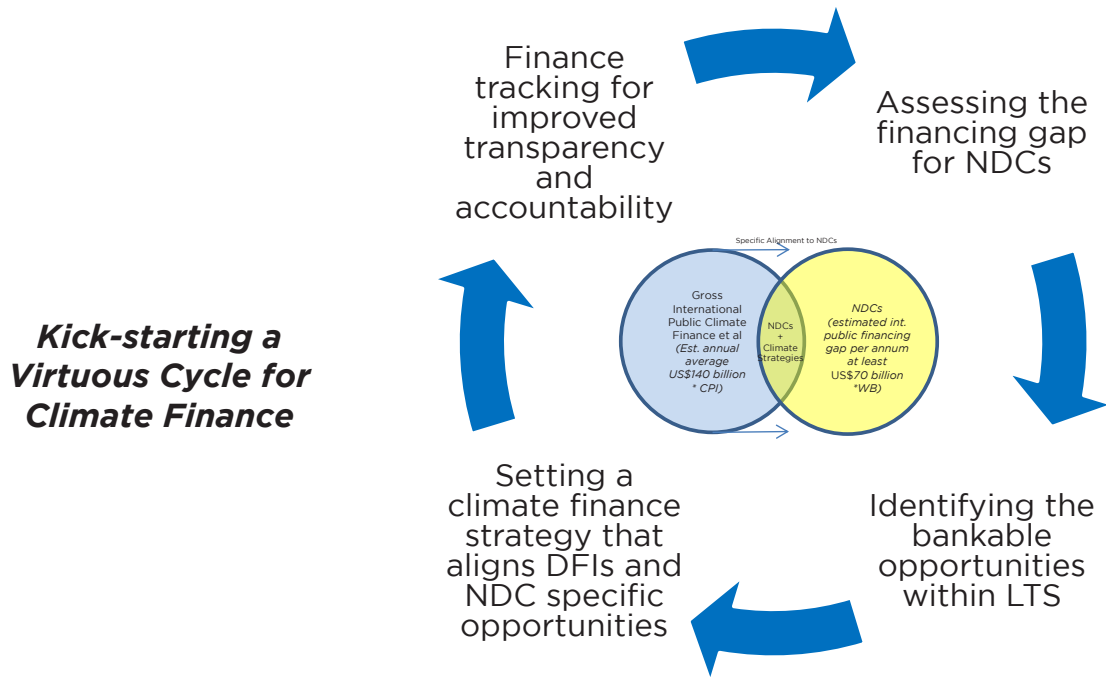
'Climate Chain', an open, French-based public research initiative, is exploring and mobilizing the potential of blockchain to better serve the implementation of the Paris Agreement for various purposes, including carbon registries, NDCs and domestic projects. It focuses on understanding how blockchain can deliver an efficient, reliable and scalable infrastructure to various existing and future mechanisms related to climate change and climate finance. It has designed a French Carbon Registry pilot, where the national registry of carbon in France is replicated on the blockchain to study the advantages and disadvantages of building a blockchain infrastructure for managing monitoring, reporting and verification processes at sovereign levels and valuing avoided emissions. Climate Chain is also carrying out research on 'responsible blockchain' to mitigate the carbon intensity of the blockchain through alternative protocols.

The second technology is the Internet of Things (IoT), which can collect and exchange data, automate discoveries, and enable remote monitoring and control through low-cost connected sensors and computing capabilities. IHS Markit estimates that the average annual number of connected IoT devices worldwide will reach 125 billion by 2030. Often combined with mobile technology facilitating easy payments, with or without traditional bank accounts, digital technologies unlock innovative business models for climate finance investment. Mobile payment platforms and digitally enabled solar assets are making the deployment of capital into off-grid companies serving excluded communities commercially viable. Examples include Simpa Networks in India, M-Kopa Solar in Kenya and Quetsol in Guatemala.

According to the World Economic Forum (2018), the IoT has a significant impact on achievement of the SDGs, particularly with respect to better financing climate-smart and resilient infrastructure. For example, the Smart Green Infrastructure Monitoring project developed by City Digital in Chicago, combines sensors and cloud-based analytics to evaluate the performance of sustainable storm water management techniques. Data from four green infrastructure sites helps reduce urban flooding and prevents property damage by enabling better informed capital planning for infrastructure investments. This has supported a US\$50 million allocation for green storm water management by the City of Chicago, demonstrating the potential for the IoT to help unlock climate financing for NDCs. Similar to blockchain, the IoT is still largely in the proof-of-concept stage, with risks around interoperability and cyber security.

*Source: Contribution by the Sustainable Digital Finance Alliance with data by PwC,<sup>96</sup> IEA,<sup>97</sup> Institut Louis Bachelier,<sup>98</sup> The Climate Chain,<sup>99</sup> CGAP,<sup>100</sup> and WEF<sup>101</sup>*

**FIGURE 18: KICK-STARTING A VIRTUOUS CYCLE FOR CLIMATE FINANCE**



Source: Author

## 4 CONCLUSION AND RECOMMENDATIONS

Aligning DFI flows to NDCs is an important step to ensure climate sustainability, and hence is an ongoing effort by countries and DFIs. NDCs are the cornerstone of the Paris Agreement, and their success, for many countries, is conditional to international public climate finance. After all, the climate challenge is first and foremost a global challenge. DFI finance for NDC implementation can help unlock further NDC-aligned flows by financing institutions, including private sector institutions. However, NDC ecosystems would benefit from further harmonization and specificity regarding financial forecasts among other things. The diversity of the investment ecosystem calls for enhanced transparency and the need to disaggregate priorities by the type of investor to be targeted as well as instruments. If low-carbon pathways and climate-resilient societies are to be financed, investors need streamlined asset-level operational and financial performance benchmarks and information. Infrastructure assets can be structured in different ways with varying risk and return parameters based on the specific characteristics of each underlying opportunity.

Furthermore, public authorities can encourage investment in infrastructure by sharing risk through mechanisms such as credit enhancement mechanisms, co-investment in either equity or subordinated debt among others. The Climate Finance Readiness Programme, and the global NDC Partnership are illustrative examples highlighted in this paper, but there are many more. Some countries have identified the need to draft complementary climate finance strategies at the national, state, and municipal levels. Common approaches, steps and components of climate finance strategies can be useful in identifying further solutions to implementing NDCs. DFI innovations in support of ongoing national efforts towards climate sustainability can yield positive results by helping translate NDCs into bankable investments. A dedicated Climate Finance Strategy and other innovations are presented as solutions to translating NDC priorities into bankable projects capable of attracting DFI finance, and private investments. Furthermore, interesting lessons can be drawn from methodologies that are able to track positive impact of NDC-aligned finance beyond climate sustainability in the context of the 2030 Agenda for Sustainable Development and be of great value to G20 members.

Regional MDBs like ADB, AfDB, EBRD, and IDB are working with countries to identify opportunities to develop new NDC-aligned climate finance instruments. DFIs are finding innovative ways to foster both domestic and international climate finance flows via concessional and grant financing, while building the technical capacities of countries. Illustrative examples mentioned are Adapt'Action by AFD, NDC Invest by IDB, the World Bank's NDC Support Facility, and EBRD's NDC support programme. These efforts can be scaled and standardized in order to maximize positive outcomes.

To improve NDC-aligned finance and efficient distribution of international funding, transparency can also be improved. At the moment, this aspect is insufficient in most of the funding institutions and recipients. Understanding and scaling best practices related with NDC progress tracking and finance tracking can also help

foster a desired alignment of DFI flows to NDCs. UNFCCC's Capacity-Building Initiative for Transparency, the Initiative for Climate Action Transparency, the UNEP DTU Partnership, and the Project for Advancing Climate Transparency are illustrative examples of NDC-aligned progress tracking. The Climate Public Expenditures and Institutional Review, Climate Budget Tagging (CBT), and the overall Climate Change Financing Framework are illustrative methodologies useful for NDC-aligned finance tracking shown. Finally, the advent and mainstreaming of digital finance for sustainable development is analysed by the Sustainable Digital Finance Alliance and provides meaningful and efficient tools that can help kick-start a much needed virtuous cycle of climate action and sustainable development progress.

## Recommendations for Policymakers

- Consider tools and innovations that can improve NDC ecosystems by translating NDCs into bankable projects attractive not only to DFIs, but also able to crowd in private international and domestic finance.
- Consider that countries that have NDC costs estimates are the ones receiving most of the DFI finance available.
- Consider further investigative work that can go beyond what was possible in this paper in looking beyond DFIs and at tracking private capital alignment to NDCs.
- Underline the need to build the enabling conditions that will foster the investments required for NDC implementation.
- Work closely with DFIs, multilateral, bilateral, and regional development institutions to understand barriers to NDC alignment, and build on existing standards and mainstream solutions that can help overcome said barriers. These efforts would prove useful for the achievement of not only G20 NDCs, but to the achievement of the Paris Agreement goal of averting a global temperature increase of more than 2°C.
- Promote the introduction, harmonization and mainstreaming of NDC progress tracking methodologies that can enhance NDC-aligned finance tracking beyond national budgeting. Transparency and accountability are not the only benefits of improving NDC progress tracking. Efficiencies and increased international collaboration can arise from information-sharing, and this in turn can drive down implementation costs, especially those related to capacity-building. This approach could constitute a lesser burden on donors and at the same time empower countries at large.
- Consider emerging financial digital technologies as potential tools and opportunities to increase DFI alignment to NDCs.
- Foster a framework for sustainable infrastructure since infrastructure investments will cover most of the financial flows required by NDCs.
- Contextualize climate action and NDCs in the broader context of the 2030 Agenda for Sustainable Development by identifying links to the SDGs that can further unlock synergies beyond climate finance.



## ENDNOTES

- 1 UNFCCC (n.d.). The Paris Agreement Portal. [http://unfccc.int/paris\\_agreement/items/9485.php](http://unfccc.int/paris_agreement/items/9485.php). Accessed on February 2018.
- 2 IPCC (2014). Climate Change Synthesis Report (AR5). [http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR\\_AR5\\_FINAL\\_full\\_wcover.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf)
- 3 United Nations (2015). The Paris Agreement. [http://unfccc.int/files/essential\\_background/convention/application/pdf/english\\_paris\\_agreement.pdf](http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf)
- 4 *Ibid.*
- 5 G20 Argentina (2018). How does the G20 work? <https://www.g20.org/en/g20/how-it-works>
- 6 UNFCCC (2018). Communication of long-term strategies. [http://unfccc.int/focus/long-term\\_strategies/items/9971.php](http://unfccc.int/focus/long-term_strategies/items/9971.php)
- 7 World Bank (n.d.). Intended Nationally Determined Contributions (INDCs) - Interactive Map. <http://spappssecext.worldbank.org/sites/indc/Pages/INDCHome.aspx>. Accessed on February 2018.
- 8 World Bank (n.d.). Climate Finance Overview. <http://www.worldbank.org/en/topic/climatefinance>. Accessed February 2018.
- 9 Climate Home News (2018). Why is tiny Nauru getting \$26.9m in climate finance to build a port?. <http://www.climatechangenews.com/2018/02/20/tiny-nauru-getting-26-9m-climate-finance-build-port/>
- 10 World Bank (n.d.). Climate Finance Overview. <http://www.worldbank.org/en/topic/climatefinance>. Accessed February 2018.
- 11 OECD (2017). Investing in Climate, Investing in Growth. <http://dx.doi.org/10.1787/9789264273528-en>
- 12 ODI (2015). Finance and Intended Nationally Determined Contributions (INDCs): Enabling implementation. <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9909.pdf>
- 13 World Bank (n.d.). Intended Nationally Determined Contributions (INDCs) - Interactive Map. <http://spappssecext.worldbank.org/sites/indc/Pages/INDCHome.aspx>. Accessed on February 2018.
- 14 *Ibid.*
- 15 IPCC (2014). F., T.J.Wilbanks, A.C. Abeysinghe, I. Burton, Q. Gao, M.C. Lemos, T. Masui, K.L. O'Brien, and K.Warner, 2014: Climate-resilient pathways: adaptation, mitigation, and sustainable development. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L.White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1101-1131.
- 16 IPCC (2014). Climate Change Synthesis Report (AR5). [http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR\\_AR5\\_FINAL\\_full\\_wcover.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf)
- 17 IFC (2016). Climate Investment Opportunities in Emerging Markets. [http://www.ifc.org/wps/wcm/connect/51183b2d-c82e-443e-bb9b-68d9572dd48d/3503-IFC-Climate\\_Investment\\_Opportunity-Report-Dec-FINAL.pdf?MOD=AJPERES](http://www.ifc.org/wps/wcm/connect/51183b2d-c82e-443e-bb9b-68d9572dd48d/3503-IFC-Climate_Investment_Opportunity-Report-Dec-FINAL.pdf?MOD=AJPERES)
- 18 Global Economic Governance Initiative (2016). Renewable Energy Investment in Africa and Nationally Determined Contributions (NDCs). [https://www.bu.edu/pardeeschool/files/2016/11/RE-NDC-Africa\\_Final.pdf.pdf](https://www.bu.edu/pardeeschool/files/2016/11/RE-NDC-Africa_Final.pdf.pdf)
- 19 ODI (2015). Finance and Intended Nationally Determined Contributions (INDCs): Enabling implementation. <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9909.pdf>
- 20 McKinsey Quarterly (2018). Why digital strategies fail. <https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/why-digital-strategies-fail?cid=other-eml-alt-mkq-mck-oth-1801&hlkid=febfc56fabd543da93a4ef0cf3beb341&hctky=2329392&hdpid=e70307fb-9793-4b95-940b-39c37a611815>
- 21 World Bank (n.d.). Intended Nationally Determined Contributions (INDCs) - Interactive Map. <http://spappssecext.worldbank.org/sites/indc/Pages/INDCHome.aspx>. Accessed on February 2018.
- 22 ODI (2011). Leveraging private investment: the role of public sector climate finance. <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/7082.pdf>
- 23 DIE, SEI (n.d.). NDC-SDG Connections. <https://klimalog.die-gdi.de/ndc-sdg/>. Accessed on February 2018
- 24 *Ibid.*
- 25 Republic of Korea, Ministry of Environment (2011). Korea's Adaptation Policy Bulletin. <https://bit.ly/2NaUys2>
- 26 Turkey is not a Party to Paris Agreement. Therefore Turkey has an INDC instead of an NDC. However, Turkey has National Climate Change Adaptation Strategy and Action Plan for 2011-2023.
- 27 Turkey's Ministry of Environment and Urbanisation (2012). Turkey's National Climate Change Adaptation Strategy and Action Plan 2011-2023. [http://webdosya.csb.gov.tr/db/iklim/editordosya/uyum\\_stratejisi\\_eylem\\_plani\\_EN\(2\).pdf](http://webdosya.csb.gov.tr/db/iklim/editordosya/uyum_stratejisi_eylem_plani_EN(2).pdf)
- 28 The US President has indicated the withdrawal of the United States of America from the Paris Agreement.
- 29 European Union (n.d.). Clean Energy for All Europeans. <https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/clean-energy-all-europeans>





- 30 [https://ec.europa.eu/clima/policies/adaptation/what\\_en](https://ec.europa.eu/clima/policies/adaptation/what_en)
- 31 [https://unfccc.int/files/focus/adaptation/undertakings\\_in\\_adaptation\\_planning/application/pdf/20150602\\_eu.pdf](https://unfccc.int/files/focus/adaptation/undertakings_in_adaptation_planning/application/pdf/20150602_eu.pdf)
- 32 UNFCCC (n.d.) NDC Registry. <http://www4.unfccc.int/ndcregistry/Pages/All.aspx>. Accessed on February 2018.
- 33 DIE, SEI (n.d.). NDC-SDG Connections. <https://klimalog.die-gdi.de/ndc-sdg/>. Accessed on February 2018
- 34 *Ibid.*
- 35 European Union (n.d.) Climate strategies & targets [https://ec.europa.eu/clima/policies/strategies\\_en](https://ec.europa.eu/clima/policies/strategies_en)
- 36 World Resources Institute, Germanwatch, NewClimate Institute, Fundacion Avina (forthcoming 2018). Report on MDBs and the Paris Agreement.
- 37 *Ibid.*
- 38 *Ibid.*
- 39 GIZ (2017). Financing Strategies: A missing link to translate NDCs into action. <https://www.giz.de/en/downloads/giz2017-en-climate-finance-strategies-ndcs.pdf>
- 40 *Ibid.*
- 41 GIZ (n.d.). Climate Finance Readiness Programme (CF Ready). <https://www.giz.de/expertise/html/19694.html>. Accessed on February 2018.
- 42 World Bank (n.d.). Climate Finance Overview. <http://www.worldbank.org/en/topic/climatefinance>. Accessed February 2018.
- 43 Climate Policy Institute (n.d.). Global investment to address climate change reached a record high in 2015. <http://www.climatefinancelandscape.org/#/>
- 44 OECD (2016). Amounts mobilised from the private sector for development. <http://www.oecd.org/development/stats/mobilisation.htm>
- 45 OECD, UN Environment, World Bank (forthcoming). Financing Climate Futures.
- 46 NDC Partnership (n.d.). About NDC Partnership. <https://ndcpartnership.org/about-ndc-partnership>. Accessed on March 2018.
- 47 *Ibid.*
- 48 NDC Partnership (n.d.). NDC-SDG Linkages. <https://ndcpartnership.org/climate-watch/ndcs-sdg>
- 49 NDC Partnership (n.d.). About NDC Partnership. <https://ndcpartnership.org/about-ndc-partnership>. Accessed on March 2018.
- 50 <https://ee.ricardo.com/downloads/climate-change/climate-finance-accelerator-london-2017-summary>
- 51 GCF Climate Readiness Programme (n.d.). <http://www.gcfreadinessprogramme.org/>
- 52 Chile did not approve E3G's paper and is now developing its Financial Strategy with the IDB; the methodology has been shared for public consultation.
- 53 E3G (2016). Considerations for a Climate Finance Strategy in Chile. [https://www.e3g.org/docs/Considerations\\_for\\_a\\_Climate\\_Finance\\_Strategy\\_in\\_Chile%2C\\_E3G.pdf](https://www.e3g.org/docs/Considerations_for_a_Climate_Finance_Strategy_in_Chile%2C_E3G.pdf)
- 54 European Capacity Building Initiative (2015). Consolidation and devolution of national climate finance. The case of India. [http://www.eurocapacity.org/downloads/Consolidation\\_and\\_Devolution\\_final.pdf](http://www.eurocapacity.org/downloads/Consolidation_and_Devolution_final.pdf)
- 55 World Bank Group (2015). World Bank Group Pledges One-Third Increase in Climate Financing. <http://www.worldbank.org/en/news/press-release/2015/10/09/world-bank-group-pledges-one-third-increase-climate-financing>
- 56 The Guardian (2017). World Bank to end financial support for oil and gas extraction. <https://www.theguardian.com/business/2017/dec/12/uk-banks-join-multinationals-pledge-come-clean-climate-change-risks-mark-carney>
- 57 ODI, HBF (2014). The Global Climate Finance Architecture. <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9312.pdf>
- 58 AfDB, ADB, EBRD, EIB, IDBG and WBG (2016). Joint Report on Multilateral Development Banks' Climate Finance. [https://reliefweb.int/sites/reliefweb.int/files/resources/2016\\_joint\\_report\\_on\\_mdbs\\_climate\\_finance.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/2016_joint_report_on_mdbs_climate_finance.pdf)
- 59 *Ibid.*
- 60 The 2016 edition is available at: <https://publications.iadb.org/handle/11319/8505>
- 61 World Bank Group (2017). Together Major Development Finance Institutions Align Financial Flows with the Paris Agreement. <http://www.worldbank.org/en/news/statement/2017/12/12/together-major-development-finance-institutions-align-financial-flows-with-the-paris-agreement>
- 62 IFC (2017). IFC's Definitions and Metrics for Climate-Related Activities. <http://www.ifc.org/wps/wcm/connect/8ea3b242-c6bb-4132-82b1-ee4bd7007567/IFC+Climate+Definitions+v3.1+.pdf?MOD=AJPERES>
- 63 AFD (n.d.). Adapt'action: Working Together to Tackle Climate Change. <http://www.afd.fr/en/adaptaction-working-together-tackle-climate-change>
- 64 *Ibid.*
- 65 IDB (2016). IDB presents NDC Invest, a comprehensive platform to support climate commitment implementation. <https://www.iadb.org/en/news/news-releases/2016-10-06/ndc-invest-platform-for-climate-finance%2C11586.html>
- 66 AfDB (n.d.). Highlights on the AfDB's Africa NDC Hub. <https://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/africa-ndc-hub/>. Accessed on March 2018.



- 67 AfDB (2017). Fighting climate change in Africa: AfDB launches Africa NDC Hub with 10 partners. <https://www.afdb.org/en/news-and-events/fighting-climate-change-in-africa-afdb-launches-africa-ndc-hub-with-10-partners-17560/>.
- 68 NDC Partnership (2017). Partnership in Action: One Year on. [https://ndcpartnership.org/sites/all/themes/ndcp\\_v2/docs/country-engagement/NDCP\\_PiA\\_LR.pdf](https://ndcpartnership.org/sites/all/themes/ndcp_v2/docs/country-engagement/NDCP_PiA_LR.pdf)
- 69 AfDB, ADB, EBRD, EIB, IDBG and WBG (2016). Joint Report on Multilateral Development Banks' Climate Finance. [https://reliefweb.int/sites/reliefweb.int/files/resources/2016\\_joint\\_report\\_on\\_mdbs\\_climate\\_finance.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/2016_joint_report_on_mdbs_climate_finance.pdf)
- 70 *Ibid.*
- 71 OECD (2014). OECD DAC Rio Markers for Climate Handbook. [https://www.oecd.org/dac/environment-development/Revised%20climate%20marker%20handbook\\_FINAL.pdf](https://www.oecd.org/dac/environment-development/Revised%20climate%20marker%20handbook_FINAL.pdf)
- 72 Climate Observer (n.d.). INDCs. <http://climateobserver.org/open-and-shut/indc>. Accessed on February 2018.
- 73 GEF (n.d.). Capacity Building Initiative for Transparency (CBIT). <http://www.thegef.org/topics/capacity-building-initiative-transparency-cbit>
- 74 *Ibid.*
- 75 UNEP DTU (2017). Taking stock of the (I)NDCs of developing countries: regional (I)NDC coverage of mitigation sectors and measures. [http://www.unepdtu.org/-/media/Sites/Unepdtu/Publications%20\(Pdfs\)/NDC-Analysis-2017.ashx?la=da](http://www.unepdtu.org/-/media/Sites/Unepdtu/Publications%20(Pdfs)/NDC-Analysis-2017.ashx?la=da)
- 76 Initiative for Climate Action Transparency (2016). Overview - Initiative for Climate Action Transparency. <http://www.climateactiontransparency.org/wp-content/uploads/2016/05/ICAT-Initiative-Overview.pdf>
- 77 UNEP DTU (n.d.). Who We Are. <http://www.unepdtu.org/Who-We-Are>
- 78 Carbon Brief (2017). COP23: Key outcomes agreed at the UN climate talks in Bonn. <https://www.carbonbrief.org/cop23-key-outcomes-agreed-un-climate-talks-bonn>
- 79 WRI (2017). Designing the Paris Agreement's Transparency Framework. <http://www.wri.org/blog/2017/11/insider-designing-paris-agreements-transparency-framework>
- 80 UN Environment (2016). Understanding the Paris agreement: analysing the reporting requirements under the enhanced transparency framework. [http://www.unepdtu.org/-/media/Sites/INDC\\_support/2017\\_03-Understanding-Paris\\_05.ashx?la=da](http://www.unepdtu.org/-/media/Sites/INDC_support/2017_03-Understanding-Paris_05.ashx?la=da)
- 81 UNDP (n.d.). Governance of Climate Change Finance for Asia-Pacific. <https://www.climatefinance-developmenteffectiveness.org/about/what-cpeir>. Accessed on March 2018.
- 82 *Ibid.*
- 83 UNDP (2015). A Methodological Guidebook: Climate Public Expenditure and Institutional Review (CPEIR). [http://www.asia-pacific.undp.org/content/rbap/en/home/library/democratic\\_governance/cpeir-methodological-guidebook.html](http://www.asia-pacific.undp.org/content/rbap/en/home/library/democratic_governance/cpeir-methodological-guidebook.html)
- 84 UNDP (n.d.). What is CBT and How Useful It is? <https://www.climatefinance-developmenteffectiveness.org/topic/climate-budget-tagging-cbt>. Accessed on March 2018.
- 85 *Ibid.*
- 86 *Ibid.*
- 87 *Ibid.*
- 88 [http://www.unpei.org/sites/default/files/e\\_library\\_documents/Bangladesh\\_Climate\\_Public\\_Expenditure\\_and\\_Institutional\\_Review\\_2012\\_0.pdf](http://www.unpei.org/sites/default/files/e_library_documents/Bangladesh_Climate_Public_Expenditure_and_Institutional_Review_2012_0.pdf)
- 89 [http://www.unpei.org/sites/default/files/e\\_library\\_documents/Public%20Expenditure%20on%20Environment\\_Analysis%20Report%202009.pdf](http://www.unpei.org/sites/default/files/e_library_documents/Public%20Expenditure%20on%20Environment_Analysis%20Report%202009.pdf)
- 90 [http://www.unpei.org/sites/default/files/dmdocuments/Bhutan\\_PEEE\\_10th-YrPlan\\_Finaldraft2011.pdf](http://www.unpei.org/sites/default/files/dmdocuments/Bhutan_PEEE_10th-YrPlan_Finaldraft2011.pdf)
- 91 [http://www.unpei.org/sites/default/files/dmdocuments/Nepal\\_CPEIR\\_Report\\_2011.pdf](http://www.unpei.org/sites/default/files/dmdocuments/Nepal_CPEIR_Report_2011.pdf)
- 92 <http://www.unpei.org/public-expenditure-reviews-%E2%80%93-understanding-the-contribution-of-the-environment-to-pro-poor-development-objectives>
- 93 UNDP (n.d.). Climate Change Financing Frameworks (CCFF). <https://www.climatefinance-developmenteffectiveness.org/topic/climate-change-financing-frameworks-ccff>. Accessed on March 2018
- 94 Frankfurt School (2013). How monitoring climate finance can really help. <http://fs-unep-centre.org/sites/default/files/publications/policybriefmrvmefinal20131231.pdf>
- 95 UNDP (2016). Regional Peer Learning Network Issue 1: Climate Budget Tagging: Experience From The Asia. <https://www.climatefinance-developmenteffectiveness.org/sites/default/files/climateBudgetTagging.pdf>
- 96 PwC (2017). Sizing the prize. <https://www.pwc.com/gx/en/issues/analytics/assets/pwc-ai-analysis-sizing-the-prize-report.pdf>
- 97 IEA (2017). Digitalization and Energy 2017.
- 98 Institut Louis Bachelier (n.d.). <https://www.institutlouisbachelier.org/en/news/the-climate-chain-2/>
- 99 <http://www.theclimatechain.org/>
- 100 CGAP (2014). Access to Energy via Digital Finance: Overview of Models and Prospects for Innovation. <http://www.cgap.org/publications/access-energy-digital-finance-models-innovation>
- 101 World Economic Forum (n.d.). IoT for Sustainable Development Project. <http://widgets.weforum.org/iot4d/>. Accessed February 2018.



