ASSESSING THE INTENDED NATIONALLY DETERMINED CONTRIBUTIONS OF ADB DEVELOPING MEMBERS

Janet Arlene Amponin and James Warren Evans

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ADB recognizes "China" as the People's Republic of China, "Vietnam" as Viet Nam, "Kyrgyzstan" as the Kyrgyz Republic, and "Laos" as the Lao People's Democratic Republic.

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ABBREVIATIONS

ADB	Asian Development Bank
BAU	business-as-usual
CAT	Climate Action Tracker
CCAP	Center for Clean Air Policy
CIP	climate investment plan
PRC	(the) People's Republic of China
CO_2	carbon dioxide
COP21	21st Session of the Conference of the Parties
DMC	developing member country
GCF	Green Climate Fund
GDP	gross domestic product
GEF	Global Environment Facility
GHG	greenhouse gas
IGES	Institute for Global Environmental Strategies
INDC	intended nationally determined contributions
LMB	Lower Mekong River Basin
LULUCF	land use, land-use change and forestry
MDB	multilateral development bank
NAMA	Nationally Appropriate Mitigation Action
NAPA	National Adaptation Programme of Action
NDC	nationally determined contributions
PPP	public–private partnership
PV	photovoltaic
REDD+	reducing emissions from deforestation and forest degradation plus
SDCD	Climate Change and Disaster Risk Management Division
SDG	Sustainable Development Goals
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WRI	World Resources Institute

WEIGHTS AND MEASURES

°C	degree Celsius
CO_2e	carbon dioxide equivalent
Gg	gigagram
Gt	gigaton
GW	gigawatt
ha	hectare
km	kilometer
kWp	kilowatt-peak
mt	metric ton
MW	megawatt
tCO_2e	ton of carbon dioxide equivalent
Wp	watt-peak

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EXECUTIVE SUMMARY

At the United Nations Climate Change Conference, 21st Session of the Conference of the Parties (COP21) in Paris in December 2015, 195 countries adopted the first universal and binding global climate deal, which sets out a global action plan to avoid dangerous climate change by limiting global warming well below 2°C and, if possible, below 1.5°C. The urgency of the challenge is amplified by the fact that the world could hit the 1.5°C increase this year.

The Paris Agreement on global climate change action is largely anchored on the implementation between 2020 and 2030 of Nationally Determined Contributions (NDCs). In support of reaching an international agreement on climate change, countries were invited to submit their Intended NDCs (INDC) to the United Nations Framework Convention on Climate Change (UNFCCC) ahead of or at COP21. INDCs outline the countries' post-2020 climate actions to contribute toward the 2°C global warming limit. The INDCs are voluntary, but they become firm commitments as NDCs once the Paris Agreement is ratified and comes into effect. For the Paris Agreement to enter into force, 55 Parties, representing at least 55% of global emissions, must join.

By the end of 2015, all but two developing member countries (DMCs) receiving assistance from the Asian Development Bank (ADB) submitted an INDC indicating their commitments for adapting to climate change impacts and reducing greenhouse gas (GHG) emissions starting in 2020 (in most cases effective until 2030). The DMC NDCs should eventually serve as country-driven road maps for climate action, which ADB and other sources of climate/development finance and technical assistance will utilize to identify the sectors and locations for which they provide climate change-related support.

The NDCs present an opportunity for multilateral development banks (MDBs) to strategically mobilize public and private sector finance to support DMCs' transition to climate-resilient, low-carbon economies. Most MDBs committed to scale up climate financing prior to COP21: for example, ADB committed to doubling climate finance to $6 billion by 2020. The NDCs should help MDBs strategically program the scaled-up climate finance.

This working paper outlines the preliminary review of the DMC INDCs to contribute to the refinement of ADB's strategic approach to support DMC climate action and remain attuned with DMC needs and priorities. ADB recognizes the important opportunity that adoption of INDCs provides in terms of guiding future ADB operations. The review of each DMC commitment is intended to determine the extent to which ADB's current country program/pipeline is aligned with the stated priorities of the DMC with regard to climate action and consider if and how ADB might scale up support. Understanding the ADB program alignment with INDCs should facilitate discussion between ADB and each DMC as to whether and how the country would expect additional or different forms of support on climate actions from ADB.

ADB is currently defining its long-term climate change strategic directions through 2030. The first phase is intended to facilitate a strategically oriented program of activities by ADB to meet its $6 billion climate finance target and mobilize other financial and technical assistance resources to complement and support ADB actions. The climate change strategic directions will enable ADB to shift from an opportunity-based approach to funding climate action in DMCs and at the subregional and regional levels to a much more strategic, tactical approach based on countries' NDCs.

The review of the DMC INDCs shows that there is a large range of details presented by each country with regard to the actions and their estimated costs, as well as the need for external financial and technical support. None of the INDCs would match a "sector investment plan" in terms of technical, spatial, temporal, and financial details which ADB operational departments are accustomed to relying on for country operational planning. However, a few DMC INDCs are adequately detailed so that they can be readily translated into climate action plans that are similar in planning detail to sector plans. Many of the more detailed INDCs are summaries of more detailed national climate action plans and other sector plans—these can be readily built upon to translate them into climate investment plans or road maps. Well-developed NDCs will be useful in facilitating a country dialogue with ADB and other sources of financial and technical assistance. Currently, less detailed INDCs indicate a need for support

from institutions such as ADB to define objectives and outline actions that will help a country meet its objectives and commitments and then set priorities for investments in the form of climate investment plans. ADB will work with other international and bilateral development assistance partners at the regional and DMC levels to agree on how the development assistance community can most effectively and efficiently (avoiding duplication) support DMCs to improve the clarity and detail of NDCs, and subsequently support their implementation.

I. INTRODUCTION/BACKGROUND

A. What COP21 and the Paris Agreement Mean to Multilateral Development Banks

The 2015 United Nations Climate Change Conference, the 21st session of the Conference of the Parties (COP21) held in Paris, France, from 30 November to 12 December 2015, 195 countries adopted the first universal and binding global climate deal, the Paris Agreement[1], which sets out a global action plan to avoid dangerous climate change by limiting global warming well below 2°C and, if possible, below 1.5°C.[2] The COP21 achieved significant progress in that most developed and developing countries made emission reduction and adaptation commitments in the form of intended nationally determined contributions (INDCs)[3]. INDCs outline the countries' post-2020 climate actions to contribute toward the 2°C global warming limit. For most countries, they cover greenhouse gas (GHG) emission reduction targets in energy, industry, agriculture, waste, land use and forestry, and transport—the sectoral focus varies from country to country. Several countries also outlined their adaptation plans and financing needs, but these tend to be very general. In addition, among other accomplishments, the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) (negotiating countries) agreed on a new sustainable development mechanism that will strengthen the linkage of climate action with the achievement of the Sustainable Development Goals (SDGs).

The INDCs are voluntary, but they become firm commitments as nationally determined contributions (NDCs) once the Paris Agreement is ratified and comes into effect. For the Paris Agreement to enter into force, 55 Parties, representing at least 55% of global emissions, must join.[4] The Paris Agreement also calls for a review of the NDCs every 5 years as part of a "global stocktake", to track progress against the target and allow countries to make new and more ambitious pledges. A facilitative dialogue to review progress is scheduled in 2018, with the first global stocktake set in 2023.

The INDC GHG reduction commitments are insufficient to meet the agreed 2°C maximum target increase in mean temperature above pre-industrial levels. Nevertheless, potential progress in this regard is significant in that business-as-usual (BAU) emissions would lead to a 4°C–5°C increase by 2100, while the current INDC emission reduction pledges would lead to a 2.7°C–3.7°C increase by 2100.[5] The new commitments are sufficient to bend the curve of emissions growth but will not reverse it.

The COP21 was not very successful in securing adequate, long-term financial support for climate action. The current funding for a low-carbon transition is inadequate to meet the commitments of the developing countries, many of which have set a two-stage emission reduction target—one utilizing domestic resources and the other higher commitment dependent upon access to climate finance. In this regard, many of the mitigation actions proposed in the INDCs of several developing member countries (DMCs) are conditional upon access to additional and concessional finance. The Paris Agreement on NDCs presents an opportunity for multilateral development banks (MDBs) to strategically mobilize public sector and private sector finance to support DMCs' transition to low-carbon economies. Most MDBs committed to scale up climate financing prior to COP21. For example, the Asian Development Bank (ADB) has committed to doubling climate finance to $6 billion by 2020. The NDCs should help MDBs strategically program the scaled-up climate finance. It is expected that the technology and financial risks will decline over time as the investments in low-carbon development, particularly new technologies, snowball in a few years.

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[1] United Nationas Framework Convention and Climate Change (UNFCCC). Adoption of the Paris Agreement. http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf.

[2] UNFCCC. UN Climate Change Newsroom. http://newsroom.unfccc.int/unfccc-newsroom/finale-cop21/

[3] UNFCCC. INDCs as Communicated by Parties. http://www4.unfccc.int/Submissions/INDC/Submission%

[4] Footnote 1; World Resources Institute. After COP21: What Needs to Happen for the Paris Agreement to Take Effect? http://www.wri.org/blog/2016/01/after-cop21-what-needs-happen-paris-agreement-take-effect

[5] World Resources Institute. INSIDER: Why Are INDC Studies Reaching Different Temperature Estimates? http://www.wri.org/blog/2015/11/insider-why-are-indc-studies-reaching-different-temperature-estimates

Over the coming year, it is expected that ADB will refine its strategic approach to supporting low-carbon actions in DMCs, based on demand, both for public and private sector investments as well as public–private partnerships (PPPs). In parallel, it is likely that MDBs, such as ADB, will play an important role in providing technical assistance to DMCs to refine their NDCs so that they are translated into prioritized low-carbon and climate-resilient investment plans.

B. Purpose/Limitations

This working paper provides a preliminary review of the INDCs of ADB's DMCs, following the adoption of the Paris Agreement, to support the refinement of ADB's strategic approach, and remain attuned with DMCs' needs and priorities. Of the 40 DMCs receiving ADB assistance, 38 have submitted an INDC to the UNFCCC and all are covered in this analysis.[6]

The analysis focuses on three key elements of the INDCs: i) contributions to GHG emission reduction; (ii) sector climate actions/priorities; (iii) and support requirements, with a focus on financing. The review of DMCs' commitments and climate action priorities is particularly useful to facilitate ADB strategic planning on regional and country operations, for enhancing climate investments, in support of ADB's $6 billion climate finance institutional target. Eventually, it is expected that NDCs will be refined and, for several DMCs, will become investment plans that ADB can use in its programming. An initial review of the alignment of the current ADB public sector pipeline with the INDCs shows that the ADB programs are broadly aligned.

C. Outline

An overview of efforts to analyze and interpret INDCs is provided in Section 2. Section 3 highlights the climate change vulnerability of the Asia and Pacific region. Section 4 presents an assessment of the INDCs submitted by ADB's DMCs. The assessment specifies the intended mitigation contributions, and summarizes and highlights the key priority measures of DMCs across key sectors as well as the expected financing requirements (i.e., estimated costs and source/s) to support the implementation of the INDCs. Section 5 suggests a strategic approach for ADB to support its DMCs in implementing their respective INDCs. Section 6 concludes with key observations.

[6] Timor-Leste and Uzbekistan have not submitted their INDCs.

II. OVERVIEW ON CURRENT INDC LITERATURE

A number of international organizations initiated reviews and assessments of INDCs leading up to and following the COP21. The leading work is the synthesis report prepared by the UNFCCC Secretariat, initially released in October 2015 and updated in May 2016. The synthesis report compiles and presents the aggregated information of 161 INDCs from 189 countries, in particular, the aggregate GHG emission levels in 2025 and 2030 resulting from the implementation of the INDCs, which are compared with emission levels in 1990, 2000, and 2010, and with emission trajectories.[7] The report noted that the implementation of the communicated INDCs would lead to sizable lower aggregate global emission levels than in pre-INDC trajectories; however, they do not fall within the scope of least-cost 2°C scenarios by 2025 and 2030. It also provided synthesized information on the INDCs: for example, how much of the INDCs (i) are national in scope; (ii) have conditional and unconditional mitigation targets; (iii) are supported by existing national laws; (iv) highlight support from actors such as the private sector, academia, and civil society; (v) provide information on their support needs; and (vi) communicate information on domestic measures to support INDC implementation.

Other efforts for better understanding of the INDCs include interpreting INDC transparency (i.e., completeness and clarity) in reducing GHG emissions, assessing whether countries are on track to meet the intended contributions given currently implemented policies, and/or analyzing level of ambition by comparing INDCs with current climate policies and BAU development, and collating and summarizing key information (e.g., mitigation or GHG emission reduction contributions, market mechanisms, etc.).

Appendix 1 contains a brief and early review of analyses made on INDCs of four DMCs, i.e., the People's Republic of China (PRC), India, Indonesia, and the Philippines. A preliminary review of literature was undertaken by ADB as an initial effort to understand the scope and depth of DMC INDCS as they might relate to ADB technical and financial assistance planning. The review mainly covers i) the working paper prepared by the World Resources Institute (WRI) that evaluates the transparency of the GHG emissions targets presented in selected INDCs and presents the GHG emissions trajectories of eight top emitting Parties—which includes the PRC, India, and Indonesia;[8] ii) the assessments made by the Climate Action Tracker (CAT) on whether countries are on track to meet the pledges, given currently implemented policies, and rated their pledges against the range of emission levels they should aim for in the framework of a 2°C global pathway;[9] and iii) the assessment prepared by the PBL Netherlands Environmental Assessment Agency, which provides an overview of the INDCs submitted and analyses on their level of ambition.[10] These documents were supplemented with other INDC-related documents available online.

The WRI working paper presented key messages on the INDCs analyzed. Among others, it highlighted that transparency gaps remain for all Parties, affecting the understanding of proposed GHG emissions targets, and the degree that transparency is associated with targets, i.e., absolute/base-year GHG emissions targets tend to have been presented more transparently than other target types. On the other hand, the CAT has assessed the intended mitigation contributions of ADB's DMCs as mostly of "medium" rating, which indicates that the commitments are not consistent with limiting warming below 2°C, and greater effort or deeper reductions from other countries are required (Box 1). Further, the CAT has noted that overall climate pledges, if met by all governments, would result in about 2.7°C of warming by 2100.[11] The gap may be substantially reduced if government conditions are met, allowing them to enhance climate actions to achieve conditional targets in the INDCs.

[7] UNFCCC. 2016. *Aggregate Effect of the Intended Nationally Determined Contributions: An Update. Synthesis Report by the Secretariat*. http://unfccc.int/resource/docs/2016/cop22/eng/02.pdf

[8] T. Damassa et al. 2015. Interpreting INDCs: *Assessing Transparency of Post-2020 Greenhouse Gas Emissions Targets for 8 Top Emitting Economies. Working Paper*. Washington DC: World Resources Institute. http://www.wri.org/sites/default/files/WRI_WP_InterpretingINDCs.pdf

[9] The "Climate Action Tracker" is an independent science-based assessment, which tracks the emission commitments and actions of countries. The website provides an up-to-date assessment of individual national pledges, targets, and INDCs, and currently implemented policy to reduce their GHG emissions. http://climateactiontracker.org

[10] A. Admiraal et. al. 2015. *Assessing Intended Nationally Determined Contributions to the Paris Climate Agreement – What Are the Projected Global and National Emission Levels for 2025–2030?* The Hague. PBL Netherlands Environmental Assessment Agency. http://www.pbl.nl/sites/default/files/cms/publicaties/pbl-2015-assessing-intended-nationally-determined-contributions-to-the-paris-climate-agreement_1879.pdf

[11] Based on 158 climate pledges submitted to the UNFCCC in December 2015, accounting for 94% of global emissions. Climate Action Tracker. Climate pledges will bring 2.7°C of warming, potential for more action. http://climateactiontracker.org/news/253/Climate-pledges-will-bring-2.7C-of-warming-potential-for-more-action.html

Box 1: Are the Climate Pledges of ADB Developing Member Countries Consistent with the 2°C Global Temperature Limit?

The **Climate Action Tracker (CAT)**[a] has assessed the fair sharing of the proposed contributions of selected countries on efforts to move global emissions downward through 2030. It provided ratings on intended nationally determined contributions (INDCs), pledges, and current policies, specifically on whether they are consistent with a country's fair share effort to holding warming to below 2°C.[b] The assessment included six developing member countries of ADB: Bhutan, India, the People's Republic of China, Kazakhstan, the Philippines, and Nepal. The summary of the assessments is as follows:

- **Bhutan's** pledge was rated "sufficient" for 2025, and it is the only country ever rated "Role Model." This rating is based on emissions excluding land use, land-use change, and forestry (LULUCF) and takes into consideration that, as a developing country with currently very low emissions per capita, Bhutan's emissions are expected to grow over this time period. Gradual reductions will be needed afterward.
- **India**'s pledges were rated "medium." The pledges are in line with effort sharing approaches that focus on equal cumulative per capita emissions. Approaches that focus on historical responsibility and capability would require more stringent emission reductions. Current policy projections for 2030 are in line with fair shares based on converging per capita emissions for all countries to the same level (equality), and staged approaches. The "medium" rating indicates that India's climate commitments are at the least ambitious end of what would be a fair contribution. This means it is not consistent with limiting warming to below 2°C unless other countries make much deeper reductions and comparably greater effort.
- The emission levels estimated for the **People's Republic of China** for 2025 and 2030 resulting from all aspects of the INDC, except the carbon intensity target, are rated "medium." However, the emissions resulting from the 2030 carbon intensity target, if taken in isolation, are significantly higher and would be rated as "inadequate." The CAT analysis shows that intensity target would only be reached at the expense of the INDC goal of peaking CO_2 emissions by 2030 or earlier, and at the expense of important national policies and actions, including policies targeting air pollution, which is judged as unlikely.
- **Kazakhstan**'s unconditional INDC target is rated "medium." This rating indicates that Kazakhstan's climate plans are at the least ambitious end of what would be a fair contribution. This means it is not consistent with limiting warming to below 2°C unless other countries make much deeper reductions and comparably greater effort.
- **The Philippines'** climate commitments are rated "medium" as it is at the least ambitious end of what would be a fair contribution. Both implemented and planned policies are not sufficient to achieve the INDC target. It is not consistent with limiting warming to below 2°C unless other countries make much deeper reductions and comparably greater effort. Emissions growth will be predominantly driven by increased emissions from transport and coal-fired electricity generation. Without the renewable energy and energy efficiency targets, emissions under current policies (excluding LULUCF) are expected to increase. If all coal power plants that were announced are constructed, total emissions will likely evolve in line with the high end of current policy projections.
- **Nepal** has not made any emissions reduction pledge, hence no rating was provided. Its own emissions make up less than 0.1% of global emissions. With its current policies, Nepal's greenhouse gas emissions are expected to increase by 62% by 2030 compared with 2010 levels. Nepal's projected emission levels in 2020, 2025, and 2030 are in the "sufficient" range. CAT analysis determined an upper end of the "medium" range for Nepal using effort-sharing approaches based on equality principles. To be in line with approaches that focus on responsibility and capability, Nepal would need to reduce its emissions from its current policy projected levels.

[a] Climate Action Tracker. http://climateactiontracker.org/

[b] An "inadequate" rating indicates that inadequate commitments and warming likely to exceed 3°C-4°C. A "medium" rating indicates that commitments are not consistent with limiting warming below 2°C and greater effort or deeper reductions from other countries are required. A "sufficient" rating indicates that the commitments are fully consistent with below 2°C. A "role model" indicates a more than consistent commitment.

Source: Climate Action Tracker. http://climateactiontracker.org/countries.html

As with the UNFCCC synthesis report and the CAT findings, the PBL Netherlands Environmental Assessment Agency assessment noted that the collective ambition of the INDCs put forward in 2030 falls short of what is needed to put the world directly on a cost-effective pathway to keep the global temperature increase below 2°C; however, if fully implemented, the INDCs will deliver significant emission reductions from BAU.

A policy paper prepared by the Center for Clean Air Policy (CCAP)[12] and released prior to COP21 highlighted the importance of converting or turning INDCs into policies, measures, and finance-ready investment strategies for effective operationalization of goals (i.e., transforming them into on-the-ground actions) and attracting public and

[12] Center for Clean Air Policy. http://ccap.org/about-ccap/mission/

private international financing.[13] The policy paper analyzed selected INDCs, with focus on emission reductions, sector planned actions, and financial information, to determine what converting INDCs into investment strategies would involve. It finds, among others, that while many INDCs provided information that signals country priorities, greater specificity is required to allow conversion into policies, programs, and investment plans. The paper concluded that countries will require different types of support, with some requiring comprehensive support while others are ready to start mobilization of finance. Opportunities for financial, technology, and capacity-building support exist such as the Green Climate Fund (GCF), Global Environment Fund (GEF), and from bilateral and multilateral contributors, to help countries through the INDC conversion process.

Building on this analysis and other discussions and developments, the CCAP also prepared a policy brief that provides the key elements and necessary steps in converting INDCs.[14] It has identified key elements for strengthening INDCs as (i) quantified information on national and sectoral goals; (ii) fully specified policies, measures, mandates, and enabling frameworks to meet the goals; and (iii) required government spending, international public and private financing, and other policy mandates to meet the costs. Further, the policy brief informs on the steps to carry out INDC conversion including clarifying priorities and goals, and analysis and selection of options to achieve goals subject to technical and political considerations.

Another useful document was published by Investor Watch and focused on financing of country climate actions prescribed in the INDCs.[15] The report recognized the need for mobilization of substantial capital, and keys to this are the increase in quality of information, i.e., reflective of investment opportunities and needs; and linkage of investments to national climate action plans. It recommended the creation of categorization of mitigation and adaptation actions, which would be helpful in aggregating and analyzing data for markets and policy makers as well as in reporting on climate finance. It also recommended building on the INDCs and creating climate investment plans (CIPs), with concrete investment opportunities and funding proposals, which will be helpful in attracting financial investments and support.

Key web pages containing collated and processed information on the INDCs were also developed and established by various institutions, for easier tracking of country commitments and actions. The WRI has launched an interactive mapping tool for monitoring of countries that have signed and joined the Paris Agreement, against reaching the target of at least 55 countries covering 55% of global emissions, to bring the agreement into force.[16] The Institute for Global Environmental Strategies (IGES) has also established a database, compiling latest INDC information with focus on market mechanisms, enabling comparative analysis across regions and countries.[17] For Asia and Oceania regions, IGES has included a total of 25 countries, including 16 DMCs of ADB, claiming use of market mechanisms in their INDCs.

The Australian–German Climate and Energy College of the University of Melbourne has also developed, in cooperation with the PRIMAP group at the Potsdam Institute for Climate Impact Research, a portal that provides the quantified INDC Factsheets of 188 countries.[18] Specifically, the factsheets contain estimates on GHG emissions, with projections for 2020, 2025, and 2030 based on 1990, 2000, 2005, and 2010 figures, including coverage in the INDCs. Based on the GHG emission projections for 2030, percentage increases were observed for most of the DMCs and reduction in only a number of DMCs (Table 1).

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[13] N. Helme, L. Blandford, and H. Pitt. 2015. *Policy Paper: Converting Intended Nationally Determined Contributions into Action.* Center for Clean Air Policy. http://ccap.org/assets/INDC-Conversion-Paper_11-25-15.pd

[14] H. Pitt, P. Cozzi, and L. Blandford. 2016. *Policy Report: Next Steps for Converting Intended Nationally Determined Contributions into Action. Center for Clean Air Policy.* http://ccap.org/assets/Next-Steps-for-Converting-Intended-Nationally-Determined-Contributions-into-Action-3.4.16.pdf

[15] I. Callaghan. 2015. *Climate Finance after COP21: Pathways to the Effective Financing of Commitments and Needs.* Investor Watch, Ian Callaghan Associates Limited. http://track0.org/wp-content/uploads/2016/01/Climate_Finance_After_COP21.pdf

[16] At the time of writing, the web page indicates that 177 Parties have signed the Paris Agreement and 16 Parties have ratified or otherwise joined. CAIT Climate Data Explorer. http://cait.wri.org/indc/#/ratification?utm_campaign=International_Climate&utm source=Paris_Agreement_Tracker-2016-04-21&utm_medium=email&utm_content=name

[17] Institute for Global Environmental Strategies. IGES INDCs and Market Mechanism Database. http://enviroscope.iges. or.jp/modules/envirolib/view.php?docid=6147

[18] The University of Melbourne – Australian–German Climate and Energy College. INDC Factsheets. http://www.climate-energy-college.net/indc-factsheets

Table 1: Greenhouse Gas Emissions Projections of ADB Developing Member Countries (Excluding Land Use, Land-Use Change, and Forestry)

Developing Member Country	INDC-covered Emissions ($MtCO_2eq$/year)				GHG Emissions ($MtCO_2eq$/year)			
	2010	2030		% Change	2010	2030		% Change
		Low	High			Low	High	
CENTRAL AND WEST ASIA								
Afghanistan	31.0	52.0	45.0	56.5	31.0	52.0	45.0	56.5
Armenia	8.0	18.0	18.0	125.0	8.0	18.0	18.0	125.0
Azerbaijan	55.0	53.0	53.0	(3.6)	55.0	53.0	53.0	(3.6)
Georgia	12.0	35.0	31.0	175.0	12.0	35.0	31.0	175.0
Kazakhstan	295.0	315.0	278.0	0.5	295.0	315.0	278.0	0.5
Kyrgyz Republic	16.0	15.0	12.0	(15.6)	16.0	15.0	12.0	(15.6)
Pakistan	393.0	505.0	505.0	28.5	393.0	505.0	505.0	28.5
Tajikistan	9.0	25.0	19.0	144.4	9.0	26.0	19.0	150.0
Turkmenistan	77.0	136.0	120.0	66.2	77.0	136.0	120.0	66.2
Uzbekistan	no INDC				219.0	279.0	279.0	27.4
EAST ASIA								
People's Republic of China	7,685.0	11,998.0	10,498.0	46.4	11,321.0	16,228.0	14,728.0	36.7
Mongolia	27.0	53.0	45.0	81.5	27.0	53.0	45.0	81.5
PACIFIC								
Cook Islands	–	–	–	–	–	–	–	–
Fiji	2.0	2.0	2.0	0.0	3.0	4.0	3.0	16.7
Kiribati	–	–	–	–	–	–	–	–
Federated States of Micronesia	–	–	–	–	–	–	–	–
Marshall Islands	–	–	–	–	–	–	–	–
Nauru	–	–	–	–	–	–	–	–
Palau	–	–	–	–	–	–	–	–
Papua New Guinea	7.0	18.0	16.0	142.9	14.0	25.0	24.0	75.0
Samoa	–	–	–	–	–	–	–	–
Solomon Islands	–	–	–	–	–	–	–	–
Tonga	–	–	–	–	–	–	–	–
Tuvalu	–	–	–	–	–	–	–	–
Vanuatu	–	–	–	–	1.0	1.0	1.0	0.0
SOUTH ASIA								
Bangladesh	67.0	224.0	200.0	216.4	141.0	299.0	276.0	103.9
Bhutan	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0
India	2,043.0	5,285.0	3,802.0	122.4	3,115.0	6,523.0	5,040.0	85.6
Maldives	1.0	3.0	3.0	200.0	1.0	3.0	3.0	200.0
Nepal	34.0	37.0	37.0	8.8	34.0	37.0	37.0	8.8
Sri Lanka	26.0	34.0	29.0	21.2	26.0	34.0	29.0	21.2

continued next page

Table 1 Continued

Developing Member Country	INDC-covered Emissions ($MtCO_2eq$/year)				GHG Emissions ($MtCO_2eq$/year)			
	2010	2030		% Change	2010	2030		% Change
		Low	High			Low	High	
SOUTHEAST ASIA								
Cambodia	10.0	12.0	9.0	5.0	32.0	33.0	30.0	(1.6)
Indonesia	848.0	1,224.0	879.0	24.0	848.0	1,225.0	879.0	24.1
Lao People's Democratic Republic	3.0	3.0	4.0	16.7	13.0	13.0	14.0	3.8
Malaysia	286.0	514.0	435.0	65.9	288.0	517.0	438.0	65.8
Myanmar	-	-	-	-	105.0	110.0	110.0	4.8
Philippines	169.0	225.0	141.0	8.3	175.0	238.0	154.0	12.0
Thailand	435.0	444.0	416.0	(1.1)	435.0	444.0	416.0	(1.1)
Viet Nam	291.0	694.0	560.0	115.5	291.0	694.0	560.0	115.5

- = no data, ( ) = negative, ADB = Asian Development Bank, GHG = greenhouse gas, INDC = intended nationally determined contributions, $mtCO_2eq$ = metric ton of carbon dioxide equivalent.

Notes:

a) No INDC Factsheet is available for Timor-Leste.

b) Based on email correspondence with Prof. Malte Meinshausen, Director of the Climate and Energy College of the University of Melbourne, the "low" scenario is the low emission case which is taken as the lower end of the range of the conditional INDC pledge. If there is no conditional pledge, the lower end of the range of the unconditional pledge is taken. On the other hand, the "high" scenario is the high emission case which is taken as the higher emission end of the range of the unconditional INDC pledge. In both scenarios, if no quantification could be undertaken, reference scenario levels have been assumed.

Source: University of Melbourne. Australian-German Climate and Energy College. INDC Factsheets.. http://www.climate-energy-college.net/indc-factsheets (accessed on 28 April 2016).

This review of literature is not exhaustive and is intended to present the various efforts to monitor and analyze the INDCs. Overall, these materials and documents would be helpful in better understanding the pathways, and aligning strategies, actions, and collaborative support, for the effective implementation of the INDCs.

III. CLIMATE CHANGE IN THE ASIA AND PACIFIC REGION

A. Climate Change Impacts

The impacts of climate change are already being felt, and increasingly so, across the Asia and Pacific region. According to the President of Kiribati, the impacts of climate change will force people to start leaving his island country by 2020.[19] Many of the world's most vulnerable countries are ADB's DMCs (Box 2). The new Vulnerable 20 Group includes Afghanistan, Bangladesh, Bhutan, Kiribati, the Maldives, Nepal, the Philippines, Timor-Leste, Tuvalu, Vanuatu, and Viet Nam.[20] But other studies indicate that the large, highly populated countries such as the PRC, India, and Indonesia, will pay the highest financial price tags for adapting to climate impacts.

Box 2. Vulnerability of ADB Developing Member Countries

Based on the **Global Climate Risk Index (CRI),**[a] six of the 10 countries most affected by extreme weather events from 1995 to 2014 (based on average, weighted ranking or the CRI score) are developing member countries of the Asian Development Bank: Myanmar (rank 2), the Philippines (4), Bangladesh (6), Viet Nam (7), Pakistan (8), and Thailand (9). In 2014, five of the 10 most affected countries are in Asia: Afghanistan (2), the Philippines (4), Pakistan (5), Nepal (7), and India (10). These countries were affected by landslides, heavy rains, typhoons, tropical storms, heavy monsoon rains, and floods that killed thousands of people, displaced families, caused widespread damages to homes and agriculture, and threatened food security.

Global Climate Risk Index

Developing Member Country	Climate Risk Index			
	1995-2014		2014	
	Score	Rank	Score	Rank
CENTRAL AND WEST ASIA				
Afghanistan	34.67	12	10.67	**2**
Armenia	137.17	150	111.83	131
Azerbaijan	133.83	147	117.67	138
Georgia	100.00	109	70.17	75
Kazakhstan	131.17	143	115.67	135
Kyrgyz Republic	108.33	119	103.50	122
Pakistan	31.17	**8**	12.67	**5**
Tajikistan	47.67	29	57.17	52
Turkmenistan	179.00	182	117.67	138
Uzbekistan	139.00	153	117.67	138
EAST ASIA				
People's Republic of China	49.67	31	29.00	18
Mongolia	58.17	45	117.67	138
PACIFIC				
Cook Islands	not covered			
Fiji	45.67	26	75.83	84
Kiribati	112.50	128	117.67	138
Federated States of Micronesia	71.83	67	117.67	138
Marshall Islands	112.17	127	73.00	79

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[19] Climate Home. Kiribati President: Climate-induced Migration is 5 Years Away. http://www.climatechangenews. com/2016/02/18/kiribati-president-climate-induced-migration-is-5-years-away/

[20] V20: Vulnerable Twenty Group of Ministers of Finance. www.v-20.org/partners/

Box 2 *Continued*

Developing Member Country	Climate Risk Index			
	1995-2014		2014	
	Score	Rank	Score	Rank
Nauru	not covered			
Palau	167.17	176	117.67	138
Papua New Guinea	63.50	55	75.00	81
Samoa	78.33	80	70.00	74
Solomon Islands	74.83	73	20.67	12
Timor-Leste	174.33	180	117.67	138
Tonga	56.83	43	28.83	17
Tuvalu	115.50	132	117.67	138
Vanuatu	103.83	114	41.33	29
SOUTH ASIA				
Bangladesh	22.67	**6**	46.33	38
Bhutan	97.33	103	117.67	138
India	39.17	16	16.17	**10**
Maldives	175.50	181	117.67	138
Nepal	40.83	17	15.83	**7**
Sri Lanka	62.67	53	23.50	13
SOUTHEAST ASIA				
Cambodia	36.17	13	26.00	16
Indonesia	70.83	66	29.17	19
Lao People's Democratic Republic	78.83	81	108.33	129
Malaysia	85.67	87	41.00	28
Myanmar	14.17	**2**	83.17	94
Philippines	19.00	**4**	12.50	**4**
Thailand	32.33	**9**	64.33	65
Viet Nam	27.17	**7**	63.00	62

[a] Developed by Germanwatch, the Global Climate Risk Index analyses the quantified impacts of extreme weather events, both in terms of fatalities as well as economic losses that occurred, based on data from the Munich Re NatCatSERVICE. Extreme weather events include meteorological events such as tropical storms, winter storms, severe weather, hail, tornados, local storms; hydrological events such as storm surges, river floods, flash floods, mass movement (landslide); and climatological events such as freezing, wildfires, and droughts.
https://germanwatch.org/en/download/13503.pdf

Source: S. Kreft et al. 2015. *Global Climate Risk Index 2016: Who Suffers Most from Extreme Weather Events? Weather-related Loss Events in 2014 and 1995 to 2014. Briefing Paper.* Bonn: Germanwatch e.V.

The scientific understanding of climate change, its causes, likely future scenarios, and impacts on communities and ecosystems has dramatically improved during the last decade. The science continues to improve with a steady stream of peer-reviewed journal papers that almost all indicate warming is happening faster than was thought just a few years ago—the world is fast approaching 1.5°C average temperature rise above pre-industrial limits. The new information also points toward a stronger correlation between severe climate events and climate change. This means that the stated optimistic target in the recent Paris agreement of limiting to 1.5°C increase is not very likely since atmospheric concentrations of carbon dioxide are also now at record highs. The other general conclusion that can be drawn from the literature of the last 5 years, strengthened by emerging findings, is that the impacts of climate change will be felt faster and more severely than earlier thought, and that the differences of impact severity between 1.5°C, 2°C, 3°C, and 4°C, and beyond are highly significant.

The scientific community is increasingly concerned about the natural climate system being pushed beyond tipping points. Two irreversible impacts will be sea-level rise and the extermination of some species. The impacts are not linear-modeling, and modern observations of ice melt, sea-level rise, and superstorms point toward the likelihood that 2°C global warming could be much more dangerous than earlier perceived,[21] suggesting that the target of limiting global warming to 2°C does not provide adequate safety for vulnerable communities.

A recent study looking at the differences between a 1.5°C and 2°C global warming level, including extreme weather events, water availability, agricultural yields, sea-level rise, and risk of coral reef loss, demonstrates substantial differences in the impacts between these two levels of warming. The additional 0.5°C increase in global mean temperature marks the difference between the upper limit of present-day natural variability and a new climate regime, particularly in tropical regions.[22]

When assessing the likely impacts of climate change on Asia and Pacific DMCs, high levels of uncertainties in the scenarios and ranges of study conditions must be recognized. Most studies are now focusing on a 2050 impact scenario based on varying 2100 temperature rises. Recognizing these uncertainties is important because they are translated into uncertainties in development planning—particularly at the investment project level. There are questions that need to be asked: when, where, and how severe are impacts likely to be, and how does that relate to the economic, technical, social, and environmental viability—the sustainability—of the investment. More immediate, and related to these questions, is the need to strengthen the linkage between the plausible impact scenarios and country INDCs so that climate investment plans with priorities, timelines, and budgets/financing can begin to emerge to guide national climate and development action.

The following is a brief summary of some of the recent literature relating to climate impacts in Asia and the Pacific.

The combined effects of major global shifts from economic growth, climate change, and technological advances will be felt over the next decades in different places and with different results, but the greatest adverse impacts will be felt by DMCs that are less resilient to shocks and less able to manage and adapt.[23]

Climate change will affect biodiversity, freshwater resources, coastal areas, cities, food production, health, and the oceans—meeting just about every human need is linked to climate change. The extent of climate impact and the extent to which the natural and human-constructed resource base is able to adapt will depend on the level and pace of temperature rise. The temperature rise will largely depend on increases in the amount of human-generated GHG emissions. If countries meet their current commitments to reduce GHGs, then the world is likely to warm by about 2.7°C–3.7°C by 2100.(footnote 5) BAU would result in the increases being closer to 4°C–5°C by the end of the century.

What would a 4°C warmer world look like for ADB's DMCs? Examples of likely impacts are as follows:[24]

- Glacial melt, already affecting some vulnerable areas in the Himalayas, would reduce water availability for hundreds of millions of poor people.
- Many coastal and pelagic fish stocks will disappear, while others will be relocated thousands of kilometers away, raising major food security issues.
- Sea-level rise is a real threat to the coastal areas of the region, with all low-lying island countries and coastal cities at great risk from a projected sea-level rise of 50 centimeters above current levels by midcentury—a full meter by 2090.
- Typhoons will have associated extreme rainfall one-third stronger than before, reaching 50–80 millimeters per hour.
- Some parts of the region will suffer monthly heat extremes in a 2°C hotter world that currently do not exist. These extremes are projected to cover 60%–70% of land in the northern summer, with 30%–40% of the extremes at unprecedented levels. With a 4°C warming, today's unprecedented summer heat peak levels

[21] J. Hansen et al. 2016. Ice Melt, Sea Level Rise and Superstorms: Evidence from Paleoclimate Data, Climate Modeling, and Modern Observations that 2°C Global Warming Could be Dangerous. *Atmospheric Chemistry and Physics.* 16. pp. 3761–3812.
[22] C. F. Schleussner et al. 2016. Differential Climate Impacts for Policy-related Limits to Global Warming: The Case of 1.5°C and 2°C. *Earth System Dynamics.* 7. pp. 327–351.
[23] Organisation for Economic Co-operation and Development. 2008. *Environmental Outlook to 2030.* Paris.
[24] Examples drawn from Intergovernmental Panel on Climate Change (IPCC). 2014; World Bank. 2012.

would be normal, affecting nearly 90% of the region from June to August. New heat level peaks would gain in frequency.

- Coral reefs have suffered greatly over the past few decades from increased sea surface temperature. Annual bleaching, as early as 2030, can be predicted under just a 1.5°C warming. Acidification will also threaten corals as chemical stress damages reefs. This has significant impacts on fish stocks. Indeed, reports in April 2016 indicate massive parts of the Great Barrier Reef suffering from bleaching.
- South Asia is projected to face significant water supply crises. The annual mean monsoon levels will increase by 10%, with a 15% increase in variability, making the monsoon both stronger and less predictable.
- South Asia should have a 60% increase in crop production without climate change, but under just a 2°C rise, the more likely scenario is food imports needing to double to meet caloric needs. Decreasing food availability in 2050 is projected to cause a 35% increase in childhood stunting as undernourishment worsens.

Sea-level rise and storm surge are already affecting many communities in the region.

- Pacific island countries:[25]
  - The lowest-lying atoll states including the Marshall Islands, Tuvalu, and Kiribati will suffer profound impacts including disappearing in the worst-case scenario. The Federated States of Micronesia, Nauru, and Tonga could have major segments of their populations displaced. Under 4°C warming, for example, populations exposed are the Marshall Islands (93%), Tuvalu (81%), Kiribati (77%), and the Maldives (73%). Limiting warming to 2°C would dramatically reduce exposure, particularly for Kiribati by 48% and the Maldives by 42%.
  - Impacts from sea-level rise, storm surge, changes in water availability, seawater intrusion leading to soil degradation, ocean warming, and acidification will impact all of the Pacific DMCs (as well as the Maldives) much more severely than most other DMCs.
  - Massive investments, relative to national economies, are already being required by Pacific DMCs to adapt to the impacts of climate change—investments that otherwise would not be required such as seawalls, revamping water supplies to protect from storm surges, elevating houses and buildings, etc. Economic impacts from reduced crop production, loss of tourism income, and loss of fisheries will accelerate in the coming decade.
- Other countries:[26]
  - The six most at-risk countries (as measured by total 2010 population on threatened land) and nine of the 10 most at-risk countries (as measured by population) are in Asia (74% of the global population on implicated land lives in Asia as compared with 59% of global population inhabiting Asia).
  - Among all countries, the PRC has the most to lose from BAU, with 145 million citizens today on implicated land under 4°C warming. The PRC also has the most to gain from limiting warming to 2°C, which would cut the total to 64 million. Seven other DMCs have more than 10 million people living on implicated land— India, Bangladesh, Viet Nam, Indonesia, the Philippines, Thailand, and Myanmar, in descending order of total threats. A carbon path that limits warming to 2°C would reduce exposure by half or more (except Viet Nam with a 44% reduction).
  - Asia's coastal cities, which largely drive their national economies, and have a major role in the global economy, are particularly at risk. Global megacities with the top 10 populations in the balance include Shanghai; Hong Kong, China; Kolkata; Mumbai; Dhaka; Jakarta; and Ha Noi. Global warming of 4°C could lead to submergence of land inhabited by more than half the populations of Shanghai, Mumbai, and Ha Noi.
- Several Asian countries will suffer severe water shortages. For example, the melting of glaciers in the Hindu Kush–Himalayas will completely change the flow patterns and availability of water in rivers that supply water and generate hydropower for over 1 billion people. Millions of people in low-lying coastal cities and deltaic zones across Asia will suffer impacts from sea-level rise, increased storm surges, and salinity intrusion into freshwater supplies; indeed, this is already happening in several countries.
- Some DMCs' natural resource base, which provides the raw materials for industry, housing, and sustenance, and is the base for tourism, is already experiencing increased stress as a result of climate change.

[25] R.T. Watson, M.C. Zinyowera, and R.H. Moss, eds. 1997. The Regional Impacts of Climate Change: An Assessment of Vulnerability. Geneva: IPCC; IPCC. 2014. Climate Change 2014: Impacts, Adaptation and Vulnerability. Working Group II Contribution to Fifth Assessment Report. Geneva.

[26] B.H. Strauss, S. Kulp and A. Levermann, 2015. Mapping Choices: Carbon, Climate, and Rising Seas, Our Global Legacy. *Climate Central Research Report*. pp. 1-38.

There is an increasing number of studies in the region which are intended to facilitate a better understanding of what and where climate impacts will occur in order to assist governments, communities, and the private sector to take adaptive measures. A joint study conducted by ADB, the World Bank, and Japan International Cooperation Agency in 2010 focused on urban vulnerabilities to flooding and water shortages.[27] A more recent study conducted by the United States Agency for International Development is a good example of downscaling models to understand a wide range of impact types in a more narrow geographic zone—the study looked at climate change and water resources, food security, livelihoods, and biodiversity in the Lower Mekong River Basin (LMB) (Box 3).[28]

Box 3. Downscaling Climate Impact Studies under Different Climate Scenarios

A study conducted by the United States Agency for International Development (USAID) identified highly vulnerable and valuable agricultural and natural systems assets in the Lower Mekong River Basin (LMB) and projected 2050 impacts of a 4°C end-of-century climate change scenario. Climate threat modeling results were used to identify hot spots, i.e., areas affected by the greatest change in temperature or rainfall during the wet and dry seasons or the greatest change in flooding during the year. Most hot spots are located in northern Thailand; the northern Annamites of the Lao People's Democratic Republic (Lao PDR) and Viet Nam; the Srepok, Sesan, and Sekong river basins in the southeast LMB; and in the Delta. The five highest-ranked provinces were Chiang Rai in Thailand; Gia Lai and Kien Giang in Viet Nam; Khammouan in the Lao PDR; and Mondulkiri in Cambodia.

Some of the site-specific conclusions from the study show that, by 2050,

- The entire area may experience increased cyclone intensities with increased precipitation during storms leading to increase runoff and flows in the Mekong mainstream and its tributaries.
- 30% of the LMB will experience temperature increases greater than the 2.5°C threshold at which the Intergovernmental Panel on Climate Change has identified that plant and animal species are likely to be at an increased risk of extinction. By 2050, the largest increases in temperature will occur to the southeast of the LMB with some areas projected to have an increase of over 4°C. Provinces in Cambodia and Viet Nam are projected to experience large increases in temperature. In the Mekong Delta of Viet Nam and Cambodia, average maximum daily temperature increases in the wet season will be especially significant, ranging from 1.7°C to 5.3°C. Dry season temperatures will increase from 1.5°C to 3.5°C.
- Annual precipitation is projected to increase by 3%–18% throughout the basin. This will mostly be due to increases in wet season rainfall. Southern parts of the LMB will experience increased seasonal variability in rainfall, with wetter wet seasons and dryer dry seasons which, when combined with higher temperatures, will have especially significant effects on species and ecosystems. Provinces in the Lao PDR and Thailand will experience large increases in precipitation. Chang Rai province in Thailand is projected to experience some of the largest relative increases in precipitation with annual precipitation increasing by 9%–18%.
- Flash flooding and soil loss in upland areas are expected to become more frequent. Kien Giang in southern Viet Nam will experience the greatest change in flood duration in the Delta from both seaward and upstream influences.
- Shifts in extreme climate events, such as drought, flooding, flash floods, and storms, will lead to permanent ecosystem changes.
- The period of agricultural drought per year is likely to significantly increase in large areas in the south and east of the LMB by 2050. Projections for severe droughts are centered on Northeast Khorat plateau in Thailand, but the largest increases in drought will occur in the Mekong floodplain in Cambodia and southern Lao PDR.
- Saltwater intrusion of the Delta will become more intense due to increasing sea levels and storm surge. Projected changes in salinity intrusion under a 30-centimeter sea-level rise during 2045–2069 are expected to be moderate during the wet season but significantly more severe during the dry season. Maximum salinity concentration is projected to increase by more than 50% compared with the reference, affecting more than 133,000 hectares.

Source: International Centre for Environmental Management. 2013. *USAID Mekong ARCC Climate Change Impact and Adaptation Study for the Lower Mekong Basin: Main Report.* Prepared for the United States Agency for International Development by ICEM – International Centre for Environmental Management. Bangkok: USAID Mekong ARCC Project.

[27] World Bank. 2010. *Climate Risks and Adaptation in Asian Coastal Megacities*. Washington DC.

[28] International Centre for Environmental Management. 2013. *USAID Mekong ARCC Climate Change Impact and Adaptation Study for the Lower Mekong Basin: Main Report.* Prepared for the United States Agency for International Development by ICEM – International Centre for Environmental Management. Bangkok: USAID Mekong ARCC Project.

The poor are the most at risk to the impacts of climate change. Climate change brings more intense and frequent climate hazards/disasters; expands climate-related diseases, increasing health risks; and impacts on agricultural productivity, threatening food security and affecting the poor and undernourished who are more exposed and vulnerable to these impacts.

Climate change threatens poverty alleviation objectives. According to a recent World Bank study, climate change could push more than 100 million people into extreme poverty, with the agriculture sector as the key driver, and most impacts may be mitigated with rapid, inclusive, and climate-informed development.[29] And, this entails an integrated strategy targeting climate-resilient measures (e.g., climate-smart agricultural practices) and providing social safety nets, and universal health care for the poor. Social safety nets (e.g., cash transfers, insurance products, etc.) help the poor prepare for and manage the impacts of climate change.

B. Economics of Climate Change

In a series of studies, ADB assessed the associated economic costs of climate change for its operational regions, and found that the cost of inaction on climate change is greater than the cost of action (Box 4).[30] Adaptation can make a substantial contribution to reducing the damages but would not be sufficient on its own. Minimizing the losses also requires emissions abatement to slow and, eventually, reverse the accumulation of GHG in the atmosphere.[31]

Box 4: Economics of Climate Change in Asia and the Pacific

- In Southeast Asia, inaction in Indonesia, the Philippines, Thailand, and Viet Nam could result in a loss equivalent to more than 6% of gross domestic product (GDP) annually by 2100, more than double the global average loss while adaptation at a cost of just 0.2% of GDP for investment in such things as seawalls and drought- and heat-resistant crops, could avoid damages amounting to 1.9% of GDP , on an annual basis.
- In East Asia, under business-as-usual (BAU) scenario, if current patterns of development continue, the average losses due to climate change could amount to 5.3% of annual GDP by 2100. With adaptation at expected cost of 0.4% of GDP, residual damages would amount to 1.6% of GDP on average by 2100.
- In South Asia, without global deviation from a fossil-fuel-intensive path (BAU), losses for the region could amount to an equivalent 1.8% of annual GDP by 2050, which will progressively increase to 8.8% by 2100. Avoiding the damages and economic losses under BAU scenario would require an average adaptation expenditure of 0.48% of GDP per annum by 2050 and 0.86% of GDP per annum by 2100. If actions are taken to keep the global mean temperature rise at or below 2°C, the region would lose an average of 1.3% of GDP by 2050 and roughly 2.5% by 2100, with associated costs of 0.36% of GDP per annum by 2050 and 0.48% of GDP per annum by 2100.
- In the Pacific, if the world were to stay on the current fossil-fuel intensive growth model, total climate change cost in the region is estimated to reach 12.7% of annual GDP equivalent by 2100. Under this BAU scenario, the region would require on average approximately 1.5% of GDP (which could get as high as 2.5% of GDP) every year until 2050 to prepare for the worst case (95th percentile) of climate change. If global warming is maintained at approximately 2°C, the economic cost would be smaller but still would reach between 2% and 3% of GDP by 2100 while adaptation is expected to be as low as 0.5% of GDP per annum.

Sources: ADB. 2009. *The Economics of Climate Change in Southeast Asia: A Regional Review.* Manila; M. Westphal, G. Hughes, and J. Brömmelhörster. 2013. *Economics of Climate Change in East Asia.* Manila: ADB; M. Ahmed and S. Suphachalasai. 2014. *Assessing the Costs of Climate Change and Adaptation in South Asia.* Manila: ADB; and ADB. 2013. *The Economics of Climate Change in the Pacific. Manila.*

[29] S. Hallegatte et al. 2016. *Shock Waves: Managing the Impacts of Climate Change on Poverty.* Washington DC: World Bank. https://openknowledge.worldbank.org/bitstream/handle/10986/22787/9781464806735.pdf?sequence=13&isAllowed=y

[30] ADB. 2009. *The Economics of Climate Change in Southeast Asia: A Regional Review.* Manila.

[31] M. Westphal, G. Hughes, and J. Brömmelhörster. 2013. *Economics of Climate Change in East Asia.* Manila: Asian Development Bank.

IV. REGIONAL ASSESSMENT OF INTENDED NATIONALLY DETERMINED CONTRIBUTIONS

This section presents an initial review of the INDCs of ADB's DMCs. The analysis is structured to support an understanding of ADB program and pipeline alignment with DMCs' stated commitments. Table 2 presents the summary checklist of DMC INDCs, while Appendix 2 provides the details on the INDC targets, priority measures, and financing requirements in relation to ADB focus areas for the ADB operational regions. As discussed in subsection C, many of the mitigation actions proposed in several DMC INDCs are conditional upon access to additional and concessional finance. More than half of the INDCs (55%) have provided combined conditional and unconditional targets. A large proportion (68%) has indicated mitigation contributions in terms of GHG emission reduction. On sector information, more than half of the INDCs indicated key measures on agriculture and natural resources, energy, and transport. Further, about 76% of INDCs have indicated adaptation targets/measures, while only 42% have specified estimates on financing needs for the implementation of the INDCs.

Table 2: Checklist on Intended Nationally Determined Contributions of ADB Developing Member Countries

Developing Member Country[a]	Conditionality		Mitigation Targets					Sectoral Measures						Adaptation Targets/ Measures	Financing Requirements[b]
	Conditional	Combined	Increased Use of Renewable Energy	Enhanced Energy Efficiency	Reduced Carbon/ GHG Emission Intensity	Reduced Carbon/ GHG Emission	Carbon Neutral/ Ecosystem Neutral GHG Emissions	Agriculture and Natural Resources	Energy	Industry and Trade	Transport	Urban	Water		
CENTRAL AND WEST ASIA															
Afghanistan	√					√		√	√	√	√	√	√	√	√
Armenia	√						√	√	√	√	√	√	√	√	
Azerbaijan						√		√	√		√	√			
Georgia		√			√	√		√					√	√	√
Kazakhstan		√				√									
Kyrgyz Republic		√				√									√
Pakistan	√														
Tajikistan		√				√		√	√	√	√		√	√	
Turkmenistan		√						√	√	√	√		√	√	√
EAST ASIA															
People's Republic of China					√			√	√	√	√	√	√	√	
Mongolia	√					√		√	√	√	√	√	√	√	√
PACIFIC															
Cook Islands		√	√			√		√	√		√		√	√	
Fiji		√	√			√			√					√	√
Kiribati		√				√		√	√		√			√	√
Marshall Islands	√					√			√		√	√		√	
Federated States of Micronesia		√				√			√						
Nauru		√	√					√	√				√	√	√
Palau	√		√	√		√			√		√	√			√
Papua New Guinea	√		√			√		√	√		√				
Samoa	√		√						√						
Solomon Islands		√				√		√	√			√	√	√	√

continued next page

Table 2 *Continued*

Developing Member Country[a]	Conditionality		Mitigation Targets					Sectoral Measures						Adaptation Targets/ Measures	Financing Requirements[b]
	Conditional	Combined	Increased Use of Renewable Energy	Enhanced Energy Efficiency	Reduced Carbon/ GHG Emission Intensity	Reduced Carbon/ GHG Emission	Carbon Neutral/ Ecosystem Neutral GHG Emissions	Agriculture and Natural Resources	Energy	Industry and Trade	Transport	Urban	Water		
Tonga	√		√	√		√		√	√		√			√	√
Tuvalu		√				√		√	√						
Vanuatu	√		√			√		√	√				√	√	√
SOUTH ASIA															
Bangladesh		√				√		√	√	√	√	√		√	√
Bhutan		√					√	√	√	√	√	√	√	√	
India		√	√		√			√	√	√	√	√		√	√
Maldives		√				√		√	√		√		√	√	
Nepal	√		√					√	√		√			√	
Sri Lanka		√				√		√	√	√	√	√	√	√	
SOUTHEAST ASIA															
Cambodia	√					√		√	√	√	√	√		√	√
Indonesia		√				√		√	√			√		√	
Lao People's Democratic Republic	√		√					√	√		√	√	√	√	√
Malaysia		√			√			√	√		√		√	√	
Myanmar	√							√	√	√	√	√	√	√	
Philippines	√					√								√	
Thailand		√				√		√	√		√	√	√	√	
Viet Nam		√			√	√		√	√		√	√	√	√	
Count	**15**	**21**	**11**	**2**	**5**	**26**	**2**	**29**	**33**	**12**	**25**	**18**	**19**	**29**	**16**
% to Total DMC INDCs	**39%**	**55%**	**29%**	**5%**	**13%**	**68%**	**5%**	**76%**	**87%**	**32%**	**66%**	**47%**	**50%**	**76%**	**42%**

ADB = Asian Development Bank, DMC = developing member country, GHG = greenhouse gas, INDC = intended nationally determined contribution.
a Uzbekistan in Central and West Asia and Timor-Leste in the Pacific are excluded as both have not submitted an INDC at the time of writing.
b Cost estimates are preliminary or partial and derived from key mitigation and adaptation measures identified in the INDCs, and may not account for all expected costs of necessary measures.
Source: ADB.

A. Mitigation Contributions

The target mitigation contributions of the DMCs are set in various terms. For most of the DMCs (68%), mitigation contributions were expressed in terms of reduction in GHG emissions. A few have also indicated targets in terms of increased use of renewable energy (29%), enhanced energy efficiency (5%), carbon/GHG emission intensity (13%), and carbon neutral/ecosystem neutral GHG emissions (5%). The discussions in this subsection will focus on intended mitigation contributions in terms of reduction in GHG/carbon emissions or emission intensity, in each of the ADB operational region.

1. Central and West Asia

In Central and West Asia, six of the nine DMCs in the region specified an intended mitigation contribution target in terms of percentage reduction in GHG emissions. Afghanistan, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, and Tajikistan aim at GHG emission reduction ranging from 11.49 to 90% by 2030, compared with BAU (for Afghanistan, Georgia, and the Kyrgyz Republic), or to 1990 level (for Azerbaijan, Kazakhstan, and Tajikistan). Georgia also expressed its targets in terms of reduction in emission intensity.

Armenia, Pakistan, and Turkmenistan did not specify a GHG emission reduction target. Armenia has set a target on total aggregate emissions (at 633 million tons carbon dioxide equivalent [tCO_2e]) for the period 2015–2050 and

commits to strive in achieving ecosystem neutral GHG emissions in 2050. On the other hand, Pakistan committed to reduce its emissions after reaching peak levels, and indicated that it could only make specific commitments once reliable data on peak emission levels are available. Both Armenia and Pakistan mitigation commitments are conditional on international assistance. For Turkmenistan, it expects the stabilization of GHG emissions by 2030, and commits to reducing energy/carbon/GHG emission intensity after 2030. Additionally, Turkmenistan is of view that the baseline scenario ensures sustainable economic development, with GHG emissions growth far behind gross domestic product (GDP) growth rate, and reduction of GHG emissions will be at the expense of its own financial resources. As such, financial and technological support from developed countries is necessary to reduce emissions, and could help the country achieve zero growth in emissions and even reduce them up to 2030.

2. East Asia

In East Asia, both the PRC and Mongolia specified a target reduction in emissions or emission intensity by 2030. The PRC aims to reduce its carbon intensity in terms of its GDP by 60%–65% (compared with 2005 level), while Mongolia aims at a percentage reduction of GHG emissions by 14% (compared with BAU). The PRC additionally intends to achieve peaking of carbon dioxide (CO_2) emissions around 2030, with best efforts to peak early.

3. Pacific

Of the 13 Pacific DMCs, 11 have provided intended mitigation contributions in terms of percentage reduction in GHG emissions. Fiji, Kiribati, the Federated States of Micronesia, the Marshall Islands, and Solomon Islands have set an intended economy-wide GHG emission reduction target ranging from 12% to 49% compared with BAU/2000/2010/2015 levels. The Cook Islands, Palau, Papua New Guinea, Tonga, Tuvalu, and Vanuatu have set energy/electricity sector-specific GHG emissions targets, with Papua New Guinea, Tuvalu, and Vanuatu aiming at carbon-free electricity sector or at 100% emission reduction and/or 100% renewable electricity generation. For these six DMCs, targets are compared with BAU/2005/2006/2010 levels. All targets have components conditional on receiving international/external financing and technical support.

Samoa committed to reduce GHG emissions from the electricity sector, with a 100% renewable energy target for electricity generation through 2025, compared with 2014. This target is conditional on reaching 100% renewable electricity generation in 2017 and receiving international assistance to maintain contribution through 2025.

Nauru's INDC did not indicate a GHG emissions target, but specified unconditional contribution for implementation of 0.6 megawatt (MW) solar photovoltaic (PV) system to assist in unconditional reduction of CO_2 emissions marginally, which will serve as a model project facilitating institutional learning and technology transfer. It also specified a target on replacement of existing diesel-operated plants with large-scale, grid-connected solar PV system and improvements on demand-side energy management; however, these are conditional on provision of substantial technical, capacity building, and logistical assistance.

4. South Asia

Except for Bhutan and Nepal, South Asia DMCs provided intended mitigation contribution in terms of percentage reduction in GHG emissions or emission intensity. Bangladesh, the Maldives, and Sri Lanka aim at GHG emission/carbon intensity reduction ranging from 5% to 24% by 2030, from BAU, with components conditional on international assistance. India commits to reduce emission intensity by 33% to 35% by 2030 compared with 2005. While not providing a specific GHG emission reduction commitment, Bhutan stated intention to remain carbon neutral where GHG emissions will not exceed carbon sequestration by the forests. On the other hand, Nepal's stated commitments were in terms of reduction in fossil fuel dependency, appropriate mix of renewable energy in energy mix, and maintained forest cover.

5. Southeast Asia

DMCs in Southeast Asia, except the Lao People's Democratic Republic (Lao PDR) and Myanmar, provided intended mitigation contributions in terms of percentage reduction in GHG emissions or emission intensity. Cambodia, Indonesia, the Philippines, Thailand, and Viet Nam aim at GHG emission or emission intensity reduction ranging

from 8% to 70% by 2030, compared with BAU , with components conditional on international assistance. Malaysia commits to reduce GHG emission intensity by 45% by 2030, relative to 2005, with a component conditional on climate finance, technology transfer and capacity building support.

The Lao PDR and Myanmar did not specify a target in terms of GHG emission or emission intensity reduction. However, the Lao PDR specified undertaking a number of actions to reduce its future GHG emissions, subject to the provision of international support. These actions cover renewable energy development, rural electrification, transportation-focused Nationally Appropriate Mitigation Actions (NAMAs), and hydroelectricity plans. Similarly, Myanmar also provided a list of actions focused on the energy and forestry sectors to reduce GHG emission. These actions are contingent on support for capacity building, technology development and transfer, and financial resources from the international community, as well as the active participation of the national and international private sector.

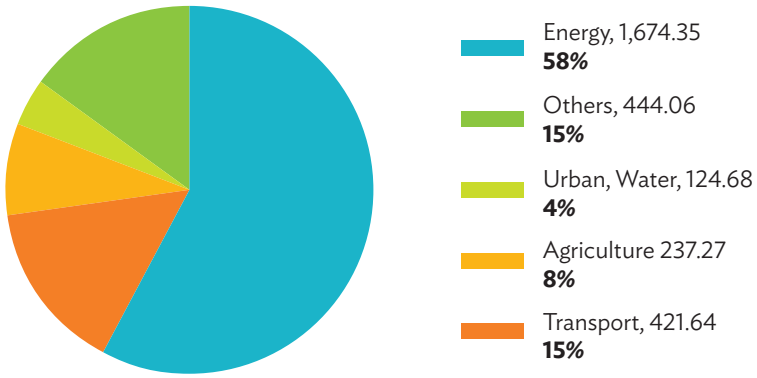
B. Sectoral Climate Actions/Priorities

As discussed in Section 2, a number of INDC analyses have indicated that the current INDCs are insufficient to reach the 2°C or even 1.5°C global warming limit. There is a need to determine where further emission cuts could be made to inspire increased level of ambition and move closer to achieving the global climate goal. An initial step is to assess the sectoral climate measures that have been identified in the INDCs.

A recent study analyzed INDCs (from 16 countries and the EU-28), and investigated on the levers countries prioritize to reduce emissions and what opportunities exist for further reduction.[32] Among others, it finds that expanding zero-carbon electrical sources of energy is the most clearly specified emission reduction lever in current INDCs. A massive renewable electrical energy is also expected. Further, there are very limited measures to decarbonize energy supply beyond the power sector such as in transport, building, and industry; and addressing nonenergy-related emissions could help countries achieve their targets.

For ADB's DMCs, climate measures in the agriculture and natural resources, energy, and transport sectors are the most common priorities identified in the INDCs, while in fewer DMCs, measures in the urban, water, and industry and trade sectors were also indicated as priorities. Historically, ADB's climate finance has been aligned with these priorities. The following figure presents ADB's sectoral climate investments in 2015. The discussions that follow inform on the measures for each of ADB's operational regions.

ADB Climate Finance by Sector, 2015 ($ million)



Note: "Others" aggregates figures from the public sector management, education, and finance sectors.
Source: ADB estimates.

[32] Energy Transition Commission. 2016. Pathways from Paris: Assessing the INDC Opportunity. http://www.energy-transitions.org/sites/default/files/20160426%20INDC%20analysis%20vF.pdf

1. Central and West Asia

The INDCs in the Central and West Asia placed sectoral priorities on agriculture and natural resources, energy, transport, and water. Climate actions/measures in the urban and industry and trade sectors were also covered in some DMCs.

- Agriculture and Natural Resources – Sustainable forest management, in particular regeneration of degraded forests, afforestation/reforestation, and forest protection, were identified as priority measures in the INDCs of Afghanistan, Armenia, Azerbaijan, Georgia, and Tajikistan. Development of sustainable agricultural/ irrigation systems is also a priority action specifically for Afghanistan, Georgia, and Tajikistan. Adaptation in the agriculture sector is also a priority in Turkmenistan's INDC.
- Energy – The use of alternative and renewable energy is a common priority in the INDCs, particularly for Afghanistan, Armenia, Azerbaijan, Tajikistan, and Turkmenistan. Meanwhile, energy efficiency/conservation measures were covered in the INDCs of Armenia, Azerbaijan, and Turkmenistan.
- Transport – The INDCs of Afghanistan, Armenia, Azerbaijan, Tajikistan, and Turkmenistan indicated priority mitigation/energy efficiency measures relating to the transport sector, such as the development of electrical vehicles or environment-friendly forms of transport, and metro transport; and electrification of railway lines. Tajikistan highlighted priority on full-scale integration of climate resilience and adaptation measures into the planning and development of green transport infrastructures.
- Water – The priority measures, as covered in the INDCs of Afghanistan, Armenia, Georgia, Tajikistan, and Turkmenistan, were mainly on sustainable water resources management.
- Urban development – Covered in Afghanistan, Armenia, and Azerbaijan, the common measure identified is on waste management, i.e., wastewater and solid waste.
- Industry and trade – Afghanistan and Armenia have identified measures for this sector, such as measures on industrial processes and mining. Tajikistan and Turkmenistan have also identified this as a key sector in their INDC.

In the area of environment, climate change, and disaster risk management, the Central and West Asia INDCs, particularly for Afghanistan, Armenia, Georgia, and Tajikistan, highlighted priority on adaptation actions add/or disaster risk reduction and management. Some of the key intentions highlighted in the INDCs are as follows:

- Afghanistan - focus on the development and adaption of a climate change strategy and action plan as well as development of a system to monitor and assess vulnerability and adaptation to climate change. Afghanistan also aims to strengthen meteorological and hydrological monitoring systems.
- Armenia - adaptation activities based on most vulnerable sectors such as natural ecosystems (aquatic and terrestrial, including forest ecosystems, biodiversity and land cover), human health, water resources management, agriculture (including fisheries and forests) energy, human settlements and infrastructures, and tourism, will be prioritized.
- Georgia - establishment of early warning systems for climate-related extreme events will be a key measure.
- Tajikistan - disaster risk reduction, modernization of hydrometeorological services, and the full-scale integration of climate resilience and adaptation measures into planning and development of green infrastructures will be key climate actions.
- Turkmenistan - focus on measures developing preventive programs to reduce adverse effects of climate change and adaptation to extreme changes of weather conditions. Adaptation measures will focus on the following sectors: water, agriculture, soil and land resources, and ecosystems.

2. East Asia

In East Asia, the PRC and Mongolia have common priorities on the agriculture and natural resources, energy, and transport sectors but have differing priorities on urban and water development, and industry and trade.

- Agriculture and natural resources - Sustainable forest management/strengthened forest disaster prevention (i.e., reduced deforestation/forest degradation, reforestation activities, enhanced forest climate resilience), and low-carbon and climate-resilient agriculture (irrigation, cultivation, crop rotation, livestock/pasture management) are the priority measures.
- Energy - the promotion of renewable energy (i.e., wind, solar, hydropower) and improved energy efficiency in buildings and coal-fired heating/thermal power plants are the common priorities.
- Transport – The PRC will focus on developing green and low-carbon transport system, improving quality of fuels and alternative fuels, and advocating green travel (i.e., dedicated system for pedestrians and bicycles). On the other hand, Mongolia will prioritize improvement of road networks, increased use of hybrid vehicles, development of bus rapid transit, and shift to liquefied petroleum gas. Both the PRC and Mongolia will also prioritize promotion/improvement of public transport.
- Urban development – The PRC will prioritize the optimization of urban system and space layout including integration of low-carbon development in urban development, while Mongolia will prioritize the development of a waste management plan including recycling, waste-to-energy development, and best management practices.
- Water – The PRC will focus on enhancing climate resilience of water operations and infrastructures and optimized allocation of water resources, while Mongolia will aim to invest on integrated water resources management, creation of water reservoirs and multipurpose systems of water use, and solutions for sustainable water supply.
- Industry and trade - Building energy-efficient and low-carbon industrial system will be a key measure for the PRC, while Mongolia has indicated a focus on reduced emissions in the cement industry.

On environment, climate change, and disaster risk management:

- People's Republic of China – prioritizes the strengthening of strategies, laws, and regulations, and development planning on climate change as well as its implementation, promotion of low-carbon development growth and way of life, enhancement of overall climate resilience, improvement of information relating to climate change (e.g., fundamental research on climate change, research and development on low-carbon technologies and early warning systems, GHG statistics and accounting systems, etc.), and promotion of carbon emission trading market.
- Mongolia - focus on strengthening of early warning systems for disasters from natural hazards. Mongolia will establish early detection and prediction system, conduct disaster risk assessments at local and subnational levels, improve forecast quality through increasing super computer capacity, and establish Doppler radar network covering entire territory of the country.

3. Pacific

For the Pacific region, energy, transport, and agriculture and natural resources are the key sectors in the INDCs. Urban development and water are covered in few DMCs.

- Energy - a key sector in all INDCs of the Pacific DMCs. The promotion of renewable energy (i.e., solar energy for almost all DMCs, and wind, hydropower, biomass/bioenergy, and geothermal for a selected number) is a common priority. For Fiji and the Marshall Islands, the potential for transformational technologies, such as ocean and wave energy, will also be explored. Further, the DMCs will combine renewable energy measures with energy efficiency and conservation measures in achieving the intended mitigation targets. Nauru and Samoa have specified demand-side energy improvements, while the Marshall Islands and Tonga have specified both supply- and demand-side energy efficiency improvements.
- Transport - The Cook Islands, Kiribati, the Marshall Islands, Palau, Papua New Guinea, and Tonga prioritize development of low-carbon transport technologies. The use of biodiesel from coconut oil or conversion of cooking oil to biofuel for use in vehicles, introduction of electric/solar-charged vehicles, and improvement of public transport through introduction of energy-efficient buses and other infrastructures/modes of transport have been specified as key measures.

- Agriculture and natural resources - Selected Pacific DMCs have also specified various priority actions on agriculture and natural resources. Cook Islands will focus on reduction of carbon emissions and strengthening of climate resilience through coastal protection, agriculture, forestry and marine conservation. Kiribati has indicated protection and sustainable management of mangrove resources and coastal vegetation and sea-grass beds as a key action. Nauru has indicated priority actions on agriculture and land management and rehabilitation. Papua New Guinea has identified reducing emissions from deforestation and forest degradation plus (REDD+) activities as a priority. Both Solomon Islands and Vanuatu have identified agriculture and food security as an adaptation priority area. For Vanuatu, additional priorities include sustainable forest and livestock farming management, land-use planning and management, and development of climate-resilient corps. For Tonga, the improvement in soil management, development of agro-forestry systems, and use of biogas systems, as well as improvements in animal welfare, will be prioritized for the enhancement of climate resilience of agriculture. Tuvalu has specified emission reduction from agriculture and waste as a key conditional target.
- Urban development – Planned actions on waste management, for reduction of methane emissions or as an adaptation priority, are identified in the INDCs of the Marshall Islands, Palau, and Solomon Islands.
- Water – Cook Islands, Nauru, Solomon Islands, and Vanuatu have identified the water sector as an adaptation priority, specifically to address water sanitation and security and implementation of integrated water resources management.

On environment, climate change, and disaster risk management, Pacific DMCs have generally provided high priority on increased resilience through adaptation and/or disaster risk reduction.

- Cook Islands – focus on building resilience including coastal protection, water security, agriculture, forestry, marine conservation, waste, tourism and land management.
- Fiji - focus on development of integrated approach to addressing climate change, ensuring cyclone-resistant buildings are constructed, strengthening of governments and partnerships in building resilience, enhancement of understanding on climate change impacts, ensuring that mitigation and adaptation are incorporated in national and subnational development planning and budgetary process; and increasing resources for climate change measures.
- Kiribati - seeks increased resilience through sustainable climate change adaptation and disaster risk reduction. This includes increasing water and food security and promoting healthy and resilient ecosystems; delivering appropriate education, training and awareness programs; promoting sound and reliable infrastructure development and land management; increasing effectiveness and efficiency of early warning systems and disaster emergency management; strengthening of governance, policies, and legislation; enhancement of knowledge and information generation, management and sharing; strengthening and greening of the private sector; strengthening capacity to access finance, monitor expenditures and maintain strong partnerships; strengthening health service delivery to address climate change impacts; and enhancing the participation and resilience of vulnerable groups.
- Marshall Islands - will further develop and enhance the adaptation framework to build upon disaster risk management strategies, including through development and implementation of a national adaptation plan, protecting traditional culture and ecosystem resources, ensuring climate-resilient public infrastructure, and pursuing facilitative, stakeholder-driven methods to increase resiliency of privately owned structures and resources.
- Nauru – adaptation priority actions targeting the following areas: water, health, agriculture, energy, land management and rehabilitation, infrastructure and coastal protection, biodiversity and environment, community development and social inclusion, and education and human capacity development, which also contribute to overall goals of the National Sustainable Development Strategy. Nauru will also address information gaps, vital for planning and management, and strengthen institutions.
- Solomon Islands – priority adaptation measures in priority sectors provided in the National Adaptation Programme of Action (NAPA) including agriculture and food security, water and sanitation, human settlements and human health, education awareness and information; low-lying and artificially built-up islands; waste management; coastal protection; fisheries and marine resources, infrastructure development and tourism.

- Tonga - aims at a holistic approach in addressing adaptation, mitigation, and disaster risk reduction through mainstreaming resilience in legislation, policies, and planning; coordinated approach in data/info research, monitoring, and management; capacity development on resilience-building responses; and implementation including financing of climate resilience actions.
- Vanuatu - NAPA identified priorities including agriculture and food security, sustainable tourism development; community-based marine resource management, sustainable forest management, and integrated water resource management. The mainstreaming of climate change and disaster risk reduction has been identified, among others, as a NAPA core issue and an integral part of climate activities.

4. South Asia

In the South Asia region, agriculture and natural resources, energy, and transport are the key sectors in all six INDCs, while the urban development, water, and industry and trade sectors were covered in selected INDCs.

- Agriculture and natural resources - Sustainable forest management for the increase in or maintenance of forest cover and enhanced climate resilience of the agriculture sector through climate-friendly technologies are key priority actions in the INDCs.
- Energy - The focus on development and promotion of renewable energy (i.e., solar, wind, hydro, and biomass) is common for all INDCs. Actions to enhance energy efficiency in appliances, buildings, and industrial/commercial processes were also provided in selected INDCs such as in Bangladesh, Bhutan, India, and Sri Lanka.
- Transport - The development and promotion of low-carbon/energy-efficient transport system (e.g., bus rapid transit systems, nonmotorized and nonfossil fuel-powered transport, electric railway system) is also a common action in most of the INDCs.
- Urban development –Climate measure focusing on reduction of emissions from sustainable waste management, as covered in the INDCs of Bangladesh, Bhutan, India, and Sri Lanka.
- Water – Common climate measures focus on integrated water resources management to address water security and water supply disturbances, as covered in Bhutan, the Maldives, and Sri Lanka INDCs.
- Industry and trade – Common climate measures, in particular for Bangladesh, Bhutan, India, and Sri Lanka, are focused on energy efficiency and conservation through promotion of policies, incentivizing uptake, and improvement of processes.

In the area of environment, climate change, and disaster risk management, the building or strengthening of climate-resilient infrastructures and/or enhancement of disaster risk management, including climate-proofing of infrastructures and improved disaster preparedness and response, were covered in all INDCs. In the Bangladesh, Bhutan, India, Nepal, and Sri Lanka INDCs, enhanced knowledge/understanding on climate change, impacts, loss, and damages, through study, research, enhanced information services, and knowledge management are highlighted.

- Bangladesh – priorities and measures include capacity building on planning and implementation of adaptation programs and projects, comprehensive disaster management (e.g., improved early warning systems, disaster preparedness and construction of flood/cyclone shelters), and building of climate-resilient infrastructure (e.g., flood-proofing, climate-resilient housing). Research and knowledge management is an adaptation priority.
- Bhutan – focus is on strengthening climate change resilience, enhancing climate change information services and integration of climate-resilient and low-emission strategies in urban and rural settlements.
- India – will develop climate-resilient infrastructure, and plan and implement actions enhancing climate resilience and reducing climate vulnerability. It will enhance investments in development programs for the vulnerable sectors, which includes agriculture, water resources, Himalayan region, coastal regions, health, and disaster management. It will build capacities and develop frameworks to enable diffusion of cutting-edge climate technology and joint collaborative research and development for future technologies.
- Maldives – will increase resilience and climate proofing of all critical infrastructures and facilitate integration of climate change into development planning. It will enhance early warning and systematic observation (e.g., expanding and strengthening the meteorological network and weather-related early warning systems, improving climate forecasting, developing risk management tools).
- Nepal – prioritizes adaptation and building of resilience to climate change impacts. Climate change

adaptation is placed at the center of development plans and policies. The country intends to undertake scientific approaches to understand and deal with climate change impacts, for the development of adaptation strategies.

- Sri Lanka – aims at the mainstreaming of climate change adaptation into national planning and development, enabling climate-resilient and healthy human settlements, minimizing climate impacts on food security, improving climate-resilience of key economic drivers, and safeguarding natural resources and biodiversity. It will also improve forecasting capabilities and analyze loss and damages of climate-induced disasters.

5. Southeast Asia

Agriculture and natural resources, and energy are the key sectors in the Southeast Asia INDCs.[33] Transport and urban development are covered in most INDCs, while a few covered water and industry and trade.

- Agriculture and natural resources - The increase of forest cover is a specified target for Cambodia, the Lao PDR, Malaysia, and Myanmar. Aligned with this target, sustainable forest management and the restoration and rehabilitation of the forests (afforestation/reforestation) are common prioritized activities in the INDCs. The promotion of sustainable agriculture and climate-resilient/climate-proof farming systems and agriculture infrastructures are also priority actions in the INDCs.
- Energy - The development and promotion of renewable energy (e.g., solar, hydropower, biomass, biogas, and wind) is a common priority in the INDCs. The promotion of end-use energy efficiency was specified in the INDCs of Cambodia (in particular, in buildings and households), Indonesia, Myanmar (energy-efficient cookstoves), Thailand, and Viet Nam (in residential, trade, and services). Key to these energy priorities is the enhancement of the policy and regulatory environment (Viet Nam and Myanmar) and the creation of incentive mechanisms for technology development (Thailand).
- Transport - The promotion of low-carbon/energy-efficient road transport system such as through mass public transport (rail-based, bus); increased use of hybrid cars, e-vehicles, and bicycles; modal shift for freight and passenger transport; and use of compressed natural gas and liquefied petroleum gas are priority actions in the INDCs, notably for Cambodia, the Lao PDR, Malaysia, Thailand, and Viet Nam.
- Urban development - Sustainable urban development is a priority in the INDCs of Cambodia, Indonesia, the Lao PDR, Myanmar, Thailand, and Viet Nam. Enhanced waste management is a common priority for Cambodia, Thailand, and Viet Nam. Indonesia aims at climate-resilient cities as one of its enhanced actions to support ecosystem and landscape resilience, while the Lao PDR will work at increasing climate resilience of urban infrastructures. Myanmar will ensure that increasing urbanization takes place in a sustainable manner.
- Water – For adaptation and increased climate resilience as well as ensured water security, the Lao PDR, Malaysia, Myanmar, Thailand, and Viet Nam have identified priorities in the water sector, focusing on water resources management, including strengthening of regulatory frameworks and information systems, infrastructure development, and enhanced cooperation on transboundary water issues.
- Industry and trade – Cambodia has identified the promotion/adoption of renewable energy and energy-efficient technologies for garment factories, rice mills, and brick kilns as priority, while Myanmar has identified the industry sector as an adaptation priority.

In the area of environment, climate change, and disaster risk management, the common priority actions for Cambodia, Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam are the strengthening of disaster risk management and improvement on disaster preparedness and response, e.g., early warning systems, flood mitigation programs. Also, the integration/mainstreaming of climate change in policies, development plans/programs/strategies is a priority for Cambodia, Indonesia, the Lao PDR, Malaysia, Myanmar, the Philippines.

- Cambodia – priority actions include building the adaptive capacity of communities; implementing management measures for protected areas; strengthening early warning systems and climate information dissemination; developing and/or rehabilitating flood protection dykes; promoting climate-resilience in agriculture, including climate-proofing of agricultural systems, developing crop varieties, promoting

[33] The Philippines did not specify climate activities that could be associated to a specific sector although the INDC noted that the reduction in carbon dioxide equivalent (CO_2e) emissions will come from the energy, transport, waste, forestry, and industry sectors.

aquaculture production systems, building sea dykes, and scaling-up of climate-smart farm systems; upscaling of national health programs in disaster-prone areas; and strengthening capacity to conduct climate impact assessments and projections as well as mainstream climate change in development plans.

- Indonesia – focus on integrated, landscape-scale approach covering terrestrial, coastal, marine ecosystems; blending of traditional wisdom and innovations; mainstreaming climate agenda in development planning and programs; and promoting climate resilience in food, water and energy as well as improvement in natural resources management. This also includes enhancement in disaster preparedness, human settlements, provision of basic services and climate-resilient infrastructure development.
- Lao PDR – aim at increasing resilience against climate change and disasters of key economic sectors and natural resources; enhancing cooperation, strong alliances and partnerships with stakeholders and partners and improving awareness and understanding on climate change, vulnerabilities and impacts to enhance interest to take action. This includes development and implementation of integrated adaptation and mitigation solutions, i.e., that are low-cost, improve energy efficiency, promote cleaner production, and provide adaptation/mitigation synergies as well as economic, environmental and socioeconomic benefits.
- Malaysia – adaptation focus on addressing flood risks, water security, food security, and protecting coastlines and health. This includes implementation of flood mitigation programs; strengthening of disaster risk management and resilience of infrastructures; and strengthening of regulatory framework, expanding supply network and treatment capacity infrastructure, and increasing efficiency of the water services.
- Myanmar – prioritizes adaptation and disaster risk reduction, in particular, agricultural sector resilience, early warning systems development, forest preservation measures, public health protection, water resources management, coastal zone protection, resilience in energy and industry sectors and biodiversity preservation. It will focus on climate-resilient, low-carbon, resource-efficient, and inclusive development; mainstreaming of environment and climate change in development and reform agenda; strengthening of institution and policy environment; promotion of evidence-based planning and policymaking; increased climate change awareness; promotion of economic green growth; and monitoring of environment quality.
- Philippines – will mainstream climate change adaptation and disaster risk reduction in country planning and programming. Priority measures include institutional and system strengthening climate modeling, scenario-building, monitoring and observation; roll-out of science-based climate/disaster risk and vulnerability assessment process; development of climate-/disaster-resilience in ecosystems and key sectors such as agriculture, water and health; systematic transition to climate- and disaster resilient social and economic growth; and research and development for improved risk assessment and management.
- Thailand – priorities include safeguarding of biodiversity and restoration of ecological integrity in protected areas and landscapes; promotion of nature-based and sustainable tourism, strengthening of disaster risk reduction and reduction of vulnerability to climate risks and extreme weather events, strengthening of climate modeling capacity, establishment of effective early warning system and enhancement of the adaptive capacity of national agencies.
- Viet Nam – priority actions include strengthening of the state in responding to climate change; managing and developing of sustainable forest, enhancing of carbon sequestration and environmental services, conserving biodiversity; enhancing communication and awareness; enhancing international cooperation in scientific research and information exchange; responding proactively to disasters including improved climate monitoring; and ensuring social security through measures such as climate-appropriate livelihood development and strengthened insurance system.

C. Financing Requirements

Finance has a key role in the implementation of the NDCs. A recent study reviewed the financial aspects of the INDCs and estimated total financing needs, based on the current INDCs, to roughly amount to more than $4.4 trillion (or $349 billion annually).[34] The study noted the importance of enhancing the financial aspects of future NDCs—improving comparability and transparency—and recommended for standardization or harmonization of

[34] L. Weischer et al. 2016. *Investing in Ambition: Analysis of the Financial Aspects in (Intended) Nationally Determined Contributions. Briefing Paper.* Germanwatch e.V. and Perspectives Climate Group: Bonn. https://germanwatch.org/en/download/15226.pdf

format and methodologies. It also highlighted that a key enabler to NDC implementation is the development of comprehensive financing strategies, which would outline the roles of domestic and international, public and private finance in support of meeting the commitments, as well as determine how market mechanisms may mobilize finance. This is another key area for international community support.

Almost all DMCs have provided commitments that are conditional (fully or partially) on provision of support in finance as well as capacity building, and/or technology transfer. However, of the DMCs that have provided indication on the financing requirements to implement their INDC, 16 DMCs (42%) have provided only preliminary or partial estimates and require better rationalization of financing needs to fully account the country's implementation requirements.

1. Central and West Asia

In Central and West Asia, only four of the nine DMCs provided an estimate of required financing to implement the mitigation/adaptation actions outlined in the INDCs. The Kyrgyz Republic, Georgia, and Turkmenistan provided partial/rough estimates, while Afghanistan provided an estimate based on adaptation/mitigation measures identified. The Kyrgyz Republic estimates are only on mitigation and based on GHG emission reduction scenarios presented. Georgia's and Turkmenistan's estimates cover only adaptation measures. For Georgia, the estimated adaptation total cost is based on expert judgment, and pre-2020 activities are planned to estimate the required financial support.[35] For Turkmenistan, the INDC indicated a preliminary estimate on costs covering adaptation measures; however, they are foreseen to be within the state budget.

The intended contributions and outlined mitigation and adaptation actions set out in the INDCs are dependent on international/developed country support on financing, capacity building, and technology transfer for most of the DMCs. Only Azerbaijan did not specify the need for external support, of note, its INDC did not provide much detail on means of implementation. Among those requiring support, Afghanistan's target GHG emission reduction is purely conditioned on external assistance. The GHG emission reductions for Georgia, Kazakhstan, the Kyrgyz Republic, and Tajikistan are partially unconditional and conditional. For Armenia, achievement of ecosystem neutral GHG emissions requires adequate (necessary and sufficient) international support. Turkmenistan has indicated that the means of implementation is primarily the state budget, and noted that the country's economy has the potential to further reduce GHG emissions. At a certain international support, Turkmenistan could achieve zero growth in emissions and even reduce them up to 2030.

Afghanistan, Kazakhstan, and Armenia have highlighted the need for access to climate financing in the INDCs. Afghanistan stated that it "requires the UNFCCC, the GEF, the GCF, and other international institutional arrangements to provide the extra finance and other support needed to successfully implement Low Emission Development Strategies across all sectors of its economy without compromising socio-economic development goals." Meanwhile, Kazakhstan's conditional target is "subject to additional international investments, access to low carbon technologies transfer mechanism, green climate funds and flexible mechanisms." Armenia intends to develop an appropriate legislative and institutional framework for adequate financial assistance that would consist of an external financial mechanism with resources from the GCF, Adaptation Fund, and the GEF; bilateral and multilateral funds; and other sources; and an internal (domestic) climate revolving civil fund, with allocations from environment/ecosystem services fees generated including carbon taxing.

2. East Asia

For East Asia, only Mongolia provided a preliminary indication and rough estimation on financing needs for the mitigation and adaption measures outlined in the INDC. Mongolia has indicated intention to seek international funding, as well as capacity building and technology support, to complement its domestic resource allocations and efforts. Mongolia is interested in opportunities to access international climate funds, namely the GCF and participation in crediting mechanisms to implement the measures. While a preliminary estimate has been provided, Mongolia will still articulate its specific needs on mitigation and communicate the potential supporting

[35] These activities include (i) prioritizing selected adaptation policies and measures based on national circumstances and identify associated financial needs, (ii) evaluating domestic sources of finances, and (iii) determining need and sources for external financial support.

role of international community. On adaptation measures, Mongolia expressed that about 80% of the total funding indicated in technology and capacity building will be financed from international sources and donor institutions.

The PRC INDC did not specify estimates on financing requirements. However, the PRC shared its view that the climate agreement should stipulate that developed countries provide new, additional, adequate, predictable, and sustained financial support to developing countries for their enhanced actions, and further, it should provide quantified financing targets and road map to achieve them. The important role of the GCF was highlighted, including the need to strengthen the GCF to fulfill its role as an important operating entity of the financial mechanism of the UNFCCC.

3. Pacific

Most of the Pacific INDCs provided partial or preliminary indication on financing requirements, based on early estimation of mitigation and/or adaptation measures. The Nauru INDC specified the preparation of detailed cost estimates as an important next step to be undertaken in conjunction with detailed design of the activities. The Cook Islands, the Federated States of Micronesia, the Marshall Islands, Papua New Guinea, Samoa, and Tuvalu acknowledged the importance of financing support but did not specify financing estimates to implement the INDCs.

The DMCs' intended contributions and outlined mitigation and adaptation actions set out in the INDC or in national strategies/plans are heavily dependent on international/external support on financing, capacity building, and technology transfer, and, in some cases, such as for Papua New Guinea and Nauru, to supplement domestic resources. Fiji, Kiribati, Nauru, Palau, Samoa, and Solomon Islands acknowledged the importance of collaboration and engagement with development partners on the implementation of the mitigation/adaptation measures.

For the Federated States of Micronesia, Kiribati, Solomon Islands, Samoa, and Vanuatu, a considerable portion of the necessary financing is intended to be accessed from available international climate change financing mechanisms such as grants from the GCF, GEF, Adaptation Fund, and from various bilateral climate change programs. These DMCs intend to build capacity or enhance institutional arrangements to facilitate direct access to these financing mechanisms.

4. South Asia

Most of the DMCs in South Asia did not provide an estimate/indication on financing requirements in the implementation of their INDCs. While Bangladesh and India provided some figures, the numbers are currently partial (i.e., in terms of time period and accounted climate measures). India indicated its intention to undertake and provide detailed assessment at a later date.

The South Asia DMCs' intended contributions are dependent on domestic resources and on the availability of financial (as well as technical) support. International/external support on finance, investments, technology development and transfer, and capacity building is acknowledged as necessary in meeting conditional (increased) targets in all INDCs, and to address the impacts of climate change. Specifically for Nepal, the need for technical and financial support from development partners to provide relevant technologies and build capacity to be cleaner and greener was highlighted. Bangladesh intends to carry out a gap analysis of existing institutional framework and strengthen institutions for the effective access of international climate finances including the GCF. Similarly, India will seek access to the GCF to achieve the target on electric power installed capacity from nonfossil fuel-based energy sources.

5. Southeast Asia

The INDCs of Southeast Asia DMCs did not provide concrete estimates on required financing to implement the mitigation/adaptation actions specified. Cambodia and the Lao PDR indicated partial/preliminary estimates, with a caveat that a further review and update of the estimates will be made for consistency/accuracy when more reliable data/information are available. The review will determine the precise nature and level of support needed, in particular with respect to capacity building and technology transfer.

The DMCs' intended contributions and outlined mitigation and adaptation actions set out in the INDCs are largely dependent on international/developed country support on financing, capacity building, and technology transfer. Specifically for the Lao PDR, the setting up of effective arrangements for liaison with, among others, international stakeholders and development partners at the national and local levels to facilitate implementation of INDCs was highlighted. Meanwhile, the conditional targets of both Indonesia and Thailand are provisioned on the global agreement under the UNFCCC, including through bilateral cooperation.

For Cambodia and the Philippines, the GHG emission reduction targets are purely conditional on international assistance, while for the rest, the targets contain conditional and unconditional components. The Philippines highlighted its vulnerability, and thus, public financing will prioritize adaptation to reduce vulnerability and risks to the community as well as provide a policy environment that will enable private sector participation to optimize mitigation opportunities and reduce business risks toward a climate smart development. For Cambodia, the international finance support is needed additional to what the country is allocating to implement its sustainable development plans to realize the identified positive impacts of GHG emission reduction activities.

Myanmar highlighted that the success of the mitigation and adaptation activities wholly depends on receiving sufficient technology-transfer, capacity-building, and financial support from developed and more experienced countries, international agencies, donors, and the wider international community.

V. ADB STRATEGIC APPROACH

ADB recognizes the important opportunity that adoption of INDCs provides in terms of guiding future ADB operations. The review of each DMC commitment is intended to support the internal assessment of ADB's current country program/pipeline to determine extent of alignment with the stated priorities of the DMC with regard to climate action, and consider if and how ADB might scale up support. Understanding the ADB program alignment with INDCs should facilitate discussion between ADB and each DMC as to whether and how the country would expect additional or different forms of support on climate actions from ADB. The compilation and evaluation of information on INDCs presented in this paper is drawn from the initial effort at such a review. Initial review of the alignment of ADB programs and INDCs shows that ADB is broadly supporting the climate-relevant sectors in most countries: energy, urban, water resources, etc.

ADB is currently defining its long-term climate change strategic directions through 2030.[36] The first time period covers 2016–2020 and is intended to facilitate a strategically oriented program of activities by ADB to help meet its $6 billion climate change investment target, including $4 billion for mitigation and $2 billion for adaptation, and also to mobilize other financial and technical assistance resources to complement and support ADB actions. The climate change strategic directions will enable ADB to shift from an opportunity-based approach to funding climate action in DMCs and at the subregional and regional levels to a much more strategic, tactical approach based on countries' NDCs.

In addition to the scaled-up financing target, ADB recognizes the importance of technology and partnerships in tackling climate change and supporting DMCs in the implementation of the INDCs. It intends to continue in facilitating the integration of cleaner and more advanced technology in projects and working through strengthened partnerships to provide knowledge and capacity-building support.

Considerable investment opportunities exist and are growing for renewable energy in DMCs. There are also significant opportunities for investment in clean transport and energy efficiency, but these present more challenges to accelerate scaled-up investments. The key low-carbon investment opportunities appear to be in the rapidly growing urban industrial complexes across the region. At the same time, the most significant funding required for adaptation is to transform numerous Asian cities from being highly vulnerable to climate impacts to being highly resilient. In this regard, urban growth presents to ADB an opportunity to help its DMCs avoid being locked in to inefficient, high-carbon, high climate vulnerability development paths. By taking a longer-term outlook to 2030, ADB will look at future scenarios for urban/industrial growth and similar development trajectories. This will enable ADB to maximize its developmental impact over the coming 10–15 years by helping the region's developing countries transition to sustainable low-carbon, climate-resilient development as quickly as possible, while optimizing local and global benefits.

[36] Working title. This is intended to provide a foundation for the new directions that ADB will take on climate change over the coming 15 years in response to the rapidly changing economic, social, and environmental setting.

VI. CONCLUSIONS

A key building block of the Paris Agreement is the INDCs that have been submitted by developed and developing countries to the UNFCCC ahead of or at COP21. The INDCs, which become NDCs upon ratification and effectivity of the Paris Agreement, communicate the measures countries intend to undertake after 2020 to (i) reduce GHG emissions; (ii) adapt to climate change; and in the case of developed countries (iii) provide financial, technological, and capacity-building support to developing countries. All but two of ADB's DMCs submitted an INDC. The NDCs should eventually serve as country-driven road maps for climate action which ADB and other sources of climate/development finance and technical assistance will utilize to identify those sectors and locations for which they provide climate change-related support.

The review of the DMC INDCs shows that there is a large range in the details presented by each country with regard to the actions and their estimated costs, as well as the need for external financial and technical support. None of the INDCs would match a "sector investment plan" in terms of technical, spatial, temporal, and financial details which ADB operational departments are accustomed to relying on for country operational planning. However, a few DMC INDCs are adequately detailed and therefore can be readily translated into climate action plans that are similar in planning detail to sector plans. Many of the more detailed INDCs are summaries of more detailed national climate action plans and other sector plans—these can be readily built upon to translate them into climate investment plans/road maps. Well-developed NDCs will be useful in facilitating a country dialogue with ADB and other sources of financial and technical assistance. Currently, less detailed INDCs indicate a need for support from institutions, such as ADB, to define objectives and outline actions that will help a country meet its objectives and commitments and then set priorities for investments in the form of climate investment plans. ADB will work with other international and bilateral development assistance partners at the regional and DMC levels to agree on how the development assistance community can most effectively and efficiently (avoiding duplication) support DMCs to improve the clarity and detail of NDCs, and subsequently support their implementation.

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APPENDIX 1

Brief Review on Assessment of Intended Nationally Determined Contributions of Selected ADB Developing Member Countries

In December 2015, at the United Nations Climate Change Conference (COP21) in Paris, 195 countries adopted the first universal and binding global climate deal.[1] The Paris Agreement sets out a global action plan to avoid dangerous climate change by limiting global warming well below 2°C and, if possible, below 1.5°C. In support of the agreement, developing member countries (DMCs) of the Asian Development Bank (ADB) have prepared and submitted their Intended Nationally Determined Contributions (INDCs), which outline their post-2020 climate actions in achieving climate resilience and reducing greenhouse gas (GHG) emissions, appropriate to their national circumstance.

This review provides an overview of the early analysis of the INDCs, with focus on four DMCs: the People's Republic of China (PRC), India, Indonesia, and the Philippines. It mainly covers the following references, supplemented with other INDC-related documents available online:

i) a working paper prepared by the World Resources Institute, which evaluates the transparency of GHG targets presented and presents the GHG emissions trajectories of top emitting Parties;[2]
ii) assessments by the Climate Action Tracker (CAT), an independent scientific analysis by research organizations tracking climate action, on whether countries are on track to meet the pledges, given currently implemented policies, and rated their pledges against the range of emission levels they should aim for in the framework of a 2°C global pathway;[3] and
iii) an assessment by the PBL Netherlands Environmental Assessment Agency, which provides an overview of the INDCs submitted and analyses on their level of ambition.[4]

I. People's Republic of China

On 30 June 2015, the PRC became the first among ADB's DMCs to submit its INDC. The PRC's intended contributions are as follows:

- Achieve peaking of carbon dioxide (CO_2) emissions by 2030, with best efforts to peak early
- Lower CO_2 emissions per unit of gross domestic product (GDP) by 60%–65% by 2030 compared with 2005 level
- Increase the share of nonfossil fuels in primary energy consumption to about 20%
- Increase the forest stock volume by about 4.5 billion cubic meters on the 2005 level
  Continue to proactively adapt to climate change through enhanced mechanism and capacity building; the effective management of climate change risks in the agriculture, forestry, and water resources sectors, and in regions including urban, coastal, and ecologically vulnerable areas; improved early warning and emergency response systems and disaster prevention and mitigation mechanisms

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[1] United Nations Framework Convention on Climate Change. UN Climate Change Newsroom. http://newsroom.unfccc.int/unfccc-newsroom/finale-cop21/

[2] T. Damassa et al. 2015. Interpreting INDCs: Assessing Transparency of Post-2020 Greenhouse Gas Emissions Targets for 8 Top Emitting Economies. Working Paper. Washington DC: World Resources Institute. http://www.wri.org/sites/default/files/WRI_WP_InterpretingINDCs.pdf

[3] The CAT provides an up-to-date assessment of the individual reduction targets with an overview of their combined effects to provide transparency on the pledges and to encourage governments to make or increase their pledges. The CAT tracks 32 countries covering about 80% of global emissions and assesses the total global efforts of INDCs, pledges and current policies on global warming over the 21st century and emissions gap. http://climateactiontracker.org

[4] A. Admiraal et al. 2015. Assessing Intended Nationally Determined Contributions to the Paris Climate Agreement – What Are the Projected Global and National Emission Levels for 2025--2030? The Hague: PBL Netherlands Environmental Assessment Agency. http://www.pbl.nl/sites/default/files/cms/publicaties/pbl-2015-assessing-intended-nationally-determined-contributions-to-the-paris-climate-agreement_1879.pdf

World Resources Institute paper:

- The PRC's INDC does not articulate a level at which CO_2 emissions should peak and does not specify a base level against which its target carbon intensity reduction will be measured. It misses important inputs such as the comprehensive breakdown of economic sectors covered, indication of potential emission reduction for non-CO_2 gases, and accounting assumptions or methodologies when evaluating the CO_2 emissions targets. Results on the PRC's energy-related CO_2 emissions in 2030 range from 10.7 $GtCO_2$ to 18.1 $GtCO_2$, and in 2020, from 9.8 $GtCO_2$ to 13.7 $GtCO_2$.

Climate Action Tracker analysis:[5]

- The emission levels estimated for 2025 and 2030 resulting from all aspects of the INDC, except the carbon intensity target, is rated medium. However, the resulting emissions from the carbon intensity target, if taken in isolation, are significantly higher and would rate as inadequate, in terms of limiting warming to below 2°C. Additionally, the weak INDC carbon intensity targets would also be met at the expense of important national policies and actions, which are assessed as unlikely.
- Under a scenario with currently implemented policies, the PRC's CO_2 emissions are likely to peak around 2025, or shortly after, partly due to important restrictions on coal consumption in the period from now until 2020, as well as other polices. However, total GHG emissions are likely to continue increasing until 2030, as the PRC has not yet implemented sufficient policies addressing non-CO_2 GHG emissions (methane, nitrous oxide, hydrofluorocarbons [HFCs], etc.).

PBL Netherlands Environmental Assessment Agency analysis:

- Substantive absolute emission reductions from business-as-usual (BAU) levels for the PRC and for emissions to peak by 2030 or later are expected; however, it notes that the INDC projection for the PRC is subject to uncertainties, relating to GDP growth rate projections and the implementation of policies announced in the submitted INDCs. For instance, a 1% change in the PRC's average annual economic growth would already result in a change in the emissions target of approximately 2.5 $GtCO_2e$ in the estimates of the PRC's INDC.

Carbon Brief analysis:[6]

- The PRC is on course to peaking CO_2 emissions as early as 2027, given its additional carbon intensity reduction target. Using GDP projections from the Organisation for Economic Co-operation and Development (OECD), the analysis shows CO_2 emissions could peak at about 12.7 billion tons in 2027 or possibly earlier if potential for cost-effective energy efficiency improvements (particularly in industry) is exploited. Also, the country's massive build-out on renewables is aligned with the goal to source 20% of energy needs from nonfossil sources.

A paper from the China National Center for Climate Change Strategy and International Cooperation also provided an analysis of the PRC's INDC in terms of its basic assumptions and considerations, the ambition and fairness of the intended contributions, and the obstacles and challenges facing the PRC in achieving these goals.[7]

- Under the INDC targets and through its innovate development pathway, the PRC will be sure to maintain its cumulative energy-related CO_2 emissions by 2030 lower than those of the United States and the European Union.
- The PRC's INDC contains a range of implementation measures and policies designed to mitigate existing climate change risk and fulfill the INDC's mandate across mitigation, adaptation, financing, technology development and transfer, capacity building, and transparency.

[5] Climate Action Tracker – China. http://climateactiontracker.org/countries/china.html
[6] Carbon Brief. Climate Pledge Puts China on Course to Peak Emissions as Early as 2027. http://www.carbonbrief.org/climate-pledge-puts-china-on-course-to-peak-emissions-as-early-as-2027
[7] F. Sha, Z. Ji, and L. Linwei. n.d. *An Analysis of China's INDC*. China National Center for Climate Change Strategy and International Cooperation. http://www.chinacarbon.info/wp-content/uploads/2015/07/Comments-on-Chinas-INDC.pdf

II. India

On 1 October 2015, India submitted its INDC outlining the following intended contributions:

- Reduce emission intensity of its GDP by 33%–35% by 2030 compared with 2005 (no bind on any sector specific mitigation obligation/action)
- Achieve 40% cumulative electric power installed capacity from nonfossil fuel-based energy resources by 2030 (with transfer of technology and low-cost international finance)
- Create an additional carbon sink of 2.5–3 billion tons of CO_2 equivalent through additional forest and tree cover by 2030
- Better adapt to climate change by enhancing investments in development programs for vulnerable sectors: agriculture, water resources, Himalayan region, coastal regions, health, and disaster management

World Resources Institute paper:

- India's emission intensity target does not specify a 2005 level against which the 2030 target will be measured, as well as information on target coverage (in terms of sector and GHG) and details on specific international finance, technology, and capacity-building requirements, in particular its alignment with the implementation of the INDC.
- Indicates that India's emissions level will be 2.9–3.4 $GtCO_2e$ by 2020, and will continue to rise through 2030 to 4.3–6.9 $GtCO_2e$ (5.8–9.2 $GtCO_2e$ if agriculture and net land-sector sequestration are included).

Climate Action Tracker analysis:[8]

- Makes the same assessment that the India INDC is lacking in detail and could be enhanced by describing GHG and sector coverage, the metric for the intensity target, and the way the nonfossil power capacity target is envisaged.
- However, it noted that India is likely to overachieve its 2030 climate intensity target without having to implement any new policies: with current policies in place, India would achieve about 41.5% decrease in emission intensity of GDP by 2030, and will decrease further if target share of nonfossil capacity is met, albeit conditional on international funding.[9]

PBL Netherlands Environmental Assessment Agency:

- Substantive absolute emission reductions from BAU levels for India and for emissions to peak by 2030 or later, but also notes uncertainties relating to projections and implementation of policies announced.

Carbon Brief analysis:[10]

- India's INDC is framed in terms of emission intensity. Given its growing economy and priorities on economic development, significant emissions growth up to 2030 is expected. India's emissions could reach about 6.5 billion tons of CO_2e (ahead of expected emissions from the United States or the European Union, but less than half as much as the PRC's) by 2030, but notes that emissions would remain comparatively low in per capita terms.
- The 40% share of nonfossil-based power generation target is also seen as a modest increase from the current 30% nonfossil fuel capacity, and is likely to be exceeded if the targets on renewables ascribed in the INDC are met.

[8] Climate Action Tracker – India. http://climateactiontracker.org/countries/india.html
[9] Climate Action Tracker. India Likely to Far Exceed Emissions Intensity Target: Analysis. http://climateactiontracker.org/publications/pressreleases/226/India-likely-to-far-exceed-emissions-intensity-target-analysis.html
[10] Carbon Brief. Analysis: India's Climate Pledge Suggests Significant Emissions Growth up to 2030. http://www.carbonbrief.org/indias-indc

An article prepared by Dubash and Khosla in 2015 examined India's INDC with regard to India's climate development and international interest strategic choices.[11] It finds that the emission intensity pledge is on the "conservative end of the spectrum" that corresponds to relatively low levels of policy effort, but this is an indicative measure as there is a great deal of uncertainty in forecasting the country's development trajectory. In terms of absolute and per capita GHG emissions, using INDC's GDP estimate, the numbers suggest that India will contribute a larger share of annual global emissions but low per capita emissions.

III. Indonesia

On 24 September 2015, Indonesia released its INDC containing the following intended contributions:

- Reduce emissions by 29% by 2030 compared with BAU
- Reduce emissions by 41% by 2030 compared with BAU (subject to provision in global agreement including through bilateral cooperation)

World Resources Institute paper:

- Indonesia's INDC misses some key elements, for instance, in its baseline scenario, information on whether the baseline scenario could change from current projections and under what circumstances, and the projected baseline for interim years to allow intermediate assessments; and the details on required international assistance (e.g., financing requirement) to achieve the emissions target.
- In terms of emissions trajectory, the Indonesia INDC provides few details (no additional information regarding BAU scenario) to permit assessment.

Climate Action Tracker analysis:[12]

- Rated the Indonesia INDC as inadequate, with profound lack of detail and credibility around both its emissions projections for deforestation, and its plans to slow emissions growth. The Indonesia INDC lacks detail on the share of climate action between reduced deforestation and emissions from energy, agriculture, and mining, with high uncertainty around emission projections for the land use sector.
- Further, while the INDC BAU indicates stable emissions from forestry through 2030 (from the BAU values, Indonesia's pledge corresponds to absolute emission levels of 1,336 $MtCO_2$/year unconditionally by 2020, 2,046 $MtCO_2e$/year unconditionally by 2030, and 1,700 $MtCO_2e$/year conditionally by 2030), the CAT analysis expects increased emissions based on observed deforestation trends in recent years.

PBL Netherlands Environmental Assessment Agency:

- Based on the Indonesia INDC, (i) emissions are expected to peak before 2025; (ii) large absolute reductions in land-use emissions and net land use, land-use change, and forestry (LULUCF) emissions are also expected from Indonesia; and (iii) emission intensities are expected to decline substantially between 2010 and 2030.

Carbon Brief analysis:[13]

- Indonesia's pledge has multiple uncertainties and lacks key specifics such as on policy priorities, financing needs, current emissions, and calculation of BAU trajectory. It does not contain information on the policy priorities it sets out and the needed international climate finance to meet the 2030 emissions targets.

[11] N.K. Dubash and R. Khosla. 2015. Neither Brake nor Accelerator: Assessing India's Climate Contribution. COP21 Side Event: How will INDCs Shape Development. *Economic and Political Weekly.* L(42). https://seors.unfccc.int/seors/attachments/get_attachment?code=K3UM38C1UCCJ5I95TBYFUKDF76M55Z5C

[12] Indonesia's Climate Plans Lack Transparency and Credibility. http://climateactiontracker.org/publications/pressreleases/230/Indonesias-climate-plans-lack-transparency-and-credibility.html

[13] Carbon Brief. Indonesian Pledge Suggests No Increase in Emissions to 2030. http://www.carbonbrief.org/indonesian-pledge-suggests-no-increase-in-emissions-to-2030

- The analysis noted that the INDC had no mention of coal while the country has major plans to expand its coal-fired electricity generation. The INDC has also omitted from a previous draft an international climate finance estimate (~$6 billion) which is perceived to exclude higher investment needs on renewables.

IV. Philippines

On 1 October 2015, the Philippines submitted its INDC with the following intended contribution:

- GHG (CO_2e) emission reduction of about 70% by 2030 compared with BAU (conditional on extent of financial resources, including technology development and transfer, and capacity building) covering all sectors, including LULUCF.
- Mainstream climate change and disaster risk reduction in planning and programming at all levels.

CAT analysis:[14]

- Provided the Philippine INDC a medium rating, which indicates that the commitments are "at the least ambitious end of what would be a fair contribution" and not consistent with limiting warming to below 2°C unless reductions are compensated by other countries' greater efforts. The INDC provides large uncertainties as it does not quantify BAU projections and future LULUCF emissions to clarify INDC targets with quantified emission levels.
- The CAT also noted the need for additional policies to be implemented for the Philippines to meet its conditional target, and the possibility of not meeting the INDC target given the announced coal-fired power plant capacity to be constructed.

[14] Climate Action Tracker – Philippines. http://climateactiontracker.org/countries/philippines.html

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APPENDIX 2

Table A2.1. Summary of Intended Nationally Determined Contributions of Developing Member Countries in Central and West Asia Region in Relation to ADB Focus Areas

ADB Focus Area	AFGHANISTAN	
	Commitment	Financing Needs
Intended Nationally Determined Contribution Highlights	13.6% reduction in greenhouse gas (GHG) emissions by 2030 compared with Business-as-Usual (BAU), conditional on external support	
Commitment Conditionality	Conditional target	
Agriculture and Food Security	Mitigation • National herd, reduction in fuel used, or cleaner fuel technologies. • South–south collaboration on low-carbon agriculture, study tours. • Funding for research and development activities. • Improved national dataset on agriculture, food security data. • Carbon sequestration on forest/rangelands, and forest carbon skills. • Funding institutional capacity to monitor and verify projects. • Better spatial planning for community and production agriculture. • Reduce rural peoples' dependence on fuel for cooking and heating. Adaptation • Planning for proper watershed management and promoted through community-based natural resources management • Increasing irrigated agricultural land to 3.14 million hectares (ha) through restoration and development of Afghanistan's irrigation systems • At least 10% of Afghanistan land area and habitat of selected species under a system of conservation • Behavioral change and opportunities for provision and development of alternative and renewable energy sources for 25% of the rural population above existing levels (15%), in order to contribute to a reduction in the unsustainable usage of natural resources and decreasing the strong reliance on fossil fuels by rural communities Regeneration of at least 40% of existing degraded forests and rangeland areas (the area covered will be approx. 232,050 ha for forestry; and 5.35 million ha for rangelands)	$100 million/year (mitigation) $100 million/year (mitigation) $2.5 billion (adaptation) $4.5 billion (adaptation) $0.3 billion (adaptation) $0.105 billion (adaptation) $2.5 billion (adaptation)
Education		
Energy	Mitigation • Human and institutional capacity for adoption of cleaner technology. • Capital markets that encourage investment in decentralized systems. • Information and intellectual property rights for mitigation technologies. • Renewable energy, entry costs support, access to capital, and subsidies. • Environmental compliance standards (emission and indoor). Mitigation. Energy Efficiency in Buildings • Carbon finance and project development skills. • Information on available technologies, measures, and financing skills. • Traditional customs and administered pricing. • Building codes, and standards on appliances and equipment. • Clean cooking, heating, and power projects.	$188 million/year (mitigation)
Environment, Climate Change, and Disaster Risk Management	13.6% reduction in GHG emissions by 2030 compared with BAU, conditional on external support Adaptation • Development and adoption of the Afghanistan Climate Change Strategy and Action Plan • Development of a system to monitor and assess vulnerability and adaptation to climate change • Strengthen and expand meteorological and hydrological monitoring networks and services, including a national database to archive and store meteorological and hydrological data	Own contribution $0.02 billion (adaptation) $0.1 billion (adaptation)

ADB Focus Area	AFGHANISTAN	
	Commitment	Financing Needs
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals	Identification and mainstreaming of climate change adaptation technologies into the sector policies, strategies, and development plans, and promotion of regional and international cooperation and coordination for adaptation technology transfer	$0.01 billion (adaptation)
Transport	Mitigation. Energy Efficiency in Buildings and in the Transport Sector • Carbon finance and project development skills. • Information on available technologies, measures, and financing skills. • Traditional customs and administered pricing. • Building codes, and standards on appliances and equipment. • Clean cooking, heating, and power projects.	$100 million/year (mitigation)
Urban Development	Mitigation • Landfill management, decentralized wastewater treatment • Climate project development skills	$74 million/year (mitigation)
Water	Adaptation • Development of water resources through rehabilitation and reconstruction of small-, medium-, and large-scale infrastructure	$0.75 billion (adaptation)
Industry and Trade	Mitigation • Cleaner coal mining, leave-it-in-the-ground approaches, combustion, and transportation of minerals • Hydrocarbon fields management • Technical industrial capacity to link basic industry and mining private and public sector with climate sector experts.	$100 million/year (mitigation)
TOTAL		**$662 million/ year (or $6.62 billion from 2020 to 2030) for mitigation** **$10.785 billion for adaptation**

Source: Afghanistan: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Afghanistan/1/INDC_AFG_Paper_En_20150927_.docx%20FINAL.pdf

ADB Focus Area	ARMENIA	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Total aggregate quantitative emission at 633 million tons of carbon dioxide equivalent (tCO_2e) for 2015–2050 (or 5.4 tons per capita per year) • Achieve ecosystem neutral GHG emissions in 2050 (2.07 tons per capita annual) with adequate (necessary and sufficient) international financial, technological, and capacity-building assistance • In case of non-exceeding its total emissions quota (633 million tons), can credit non-utilized reduction to "carbon market," or transfer it to the balance of emissions limitation envisaged for the period 2050–2100.	
Commitment Conditionality	Conditional target	
Agriculture and Food Security	• Measures on land use and forestry such as afforestation, forest protection, carbon storage in soil • Adaptation activities: natural ecosystems (aquatic and terrestrial, including forest ecosystems, biodiversity and land cover); agriculture (including fisheries and forests)	Financial mechanisms: • Establishment and development of the reliable public–private partnership • Use of climate resources Financial mechanism components to be created: • Internal climate revolving fund • External financial mechanism (Green Climate Fund, Adaptation Fund, Global Environment Facility, bilateral and multilateral funds, and other sources
Education		
Energy	• Measures on renewable energy and energy efficiency • Adaptation activities: energy	
Environment, Climate Change, and Disaster Risk Management	• Total aggregate quantitative emission at 633 million tCO_2e for 2015–2050 (or 5.4 tons per capital per year) • Achieve ecosystem neutral GHG emissions in 2050 (2.07 tons per capita annual) with adequate (necessary and sufficient) international financial, technological, and capacity-building assistance • Adaptation activities will be prioritized based on most vulnerable sectors: natural ecosystems (aquatic and terrestrial, including forest ecosystems, biodiversity and land cover), human health, water resources management, agriculture (including fisheries and forests) energy, human settlements and infrastructures, tourism	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health	Adaptation activities: human health	
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport	Measures on transport including development of electrical transport	
Urban Development	Measures on urban development including buildings and construction Measures on waste management including solid waste, wastewater, agricultural waste	
Water	Adaptation activities: water resources management	
Industry and Trade	Measures on industrial processes such as on construction materials and chemical production	
TOTAL		**No estimate provided**

Source: Armenia: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Armenia/1/INDC-Armenia.pdf

ADB Focus Area	AZERBAIJAN	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	35% reduction in the level of GHG emissions by 2030 compared with 1990 (target: 25.666 gigagram [Gg] CO_2e (excluding land use, land-use change, and forestry [LULUCF]), 24.374 Gg CO_2e (including LULUCF)	
Commitment Conditionality	No mention	
Agriculture and Food Security	Plant new forest areas, water and land protecting forest strips (windbreaks), urban and roadside greenery as well as further improve the management of pastures and agricultural lands Collect methane gas from manure of livestock and poultry, use of alternative sources of energy and modern technologies	
Education		
Energy	• Development of legislative acts and regulatory documents on energy • Implementation of awareness activities on energy efficiency • Replacement of existing technologies in electricity and thermal energy production with modern technologies • Reconstruction of the distribution networks and transmission lines • Implementation of isolation works and application of modern lighting systems • Application of new and modern environment-friendly technologies in the oil and gas processing, production of fuel in line with EURO-5 standards in a new refinery complex by 2019 and strengthening the capacity of the staff • Modernization of gas pipelines, gas distribution system, and other measures • Accumulation of gases emitted to the atmosphere during oil-gas production, prevention of gas leakages during oil-gas processing and at distribution networks • Massive use of control and measurement devices in electrical, heat energy, and natural gas systems • Application of energy-efficient bulbs • Use of modern energy-saving technologies in heating systems • Organization of public awareness programs on energy use • Development and application of technical and normative legal documents on the use of alternative and renewable energy sources based on conducted assessment • Acceleration of works to supply of renewable energy for the heating system for the population • Enhancement of use of innovative technologies • Construction of small hydropower plants (HPPs) on small rivers, irrigation canals, and water basins • Use of biomass, solar power, electric and heat energy, wind power, heat pumps, and geothermal energy in all sectors of economy.	
Environment, Climate Change, and Disaster Risk Management	35% reduction in the level of GHG emissions by 2030 compared with 1990 (target: 25.666 Gg CO_2e [excluding LULUCF], 24.374 Gg CO_2e [including LULUCF]) • Covering sectors: energy, agriculture, waste, LULUCF	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		

ADB Focus Area	AZERBAIJAN	
	Commitment	Financing Needs
Social Development and Poverty		
Sustainable Development Goals		
Transport	• Use of environment-friendly forms of transport • Enhancement of the use of electric vehicles at public transportation • Electrification of railway lines and the transition to alternative current system in traction • Improvement and expansion of the scope of intellectual transport management system • Development of metro transport and increase of a number of metro stations • Elimination of traffic jams through the construction of road junctions and underground and surface pedestrian crossings.	
Urban Development	Develop modern solid waste management system at big cities.	
Water		
Industry and Trade		
TOTAL		**No estimate provided**

Source: Azerbaijan: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Azerbaijan/1/INDC%20Azerbaijan.pdf

ADB Focus Area	GEORGIA	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Reduce GHG emissions by 15% below BAU for the year 2030 (equal to reduction in emission intensity by approx. 34% from 2013 to 2030). • Increased target to 25% (subject to global agreement addressing technical cooperation, access to low-cost financial resources and technology transfer) (equal to reduction in emission intensity by approx. 43% from 2013 to 2030).	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	Adaptation measures such as • research and development of emergency response plans for agriculture dealing with droughts, floods, etc. • introduction of innovative irrigation management and water application techniques • implementation of various site-specific anti-erosion measures • establishment of information centers for farmers that provide guidance on adaptive management of agriculture; etc. • sustainable agricultural technologies	• International support is needed for the development and transfer of technologies to increase adaptive capacity. • Continuous development and strengthening of capacities for the implementation of adaptation actions
	• establishment of sustainable forest management practices ➢ measures leading to carbon sequestration up to 6 million tCO_2 over the period 2020–2030	• Target conditional on substantial financial and technical support for the development of forest inventories and remote sensing and development of internationally recognized Sustainable Forest Management (SFM) practices
	• conduct afforestation/ reforestation and assist natural regeneration ➢ afforest/reforest up to 35,000 ha and support relevant activities to assist natural regeneration in identified areas by 2030	• Target conditional on external financial and technical support
	• expand protected area ➢ protected area expanded from 0.52 million ha to 1.3 million ha (with 1 million ha of forests)	• Target with financial support from international sources to set up adequate infrastructure and assure effective planning for management of additional protected areas during 2020–2030
	Integrated coastal planning and management instruments (coastal infrastructure protection technologies)	$600 million (coastline adaptation program)[1]
Education		

[1] Estimate according to the National Communications of Georgia to the UNFCCC.

ADB Focus Area	GEORGIA	
	Commitment	Financing Needs
Energy		
Environment, Climate Change, and Disaster Risk Management	Reduce GHG emissions by 15% below BAU for the year 2030, and by 25%, subject to global agreement addressing technical cooperation, access to low-cost financial resources and technology transfer • Covering sectors: energy, industrial processes, agriculture, and waste • Georgia plans to finalize its Low Emission Development Strategy, which will detail pre-2020 mitigation actions, in 2016. Also in progress and for completion in 2016 is the National Energy Efficiency Action Plan that will document the plans for implementation of energy efficiency measures. • Establishment of early warning systems for climate-related extreme events	
Finance Sector Development		
Gender and Development	Incorporate gender- and human rights-sensitive approach in adaptation planning capacity building	
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport		
Urban Development		
Water	Sustainable water management technologies	
Industry and Trade		
TOTAL		**$1.5 billion - $2 billion (adaptation measures)[2]**

Source: Georgia: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Georgia/1/INDC_of_Georgia.pdf

[2] According to expert judgment. To estimate required financial support, pre-2020 activities are planned such as prioritization of adaptation policies and measures and identification of associated financial needs, evaluation of domestic sources of finance, and determination of need and sources for external financial support.

ADB Focus Area	KAZAKHSTAN	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• 15% reduction in GHG emissions by 2030 compared to 1990 • 25% reduction in GHG by 2030 (with additional international investments, access to technology transfer mechanism, etc.)	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security		With additional international investments, access to low-carbon technologies transfer mechanism, green climate funds, and flexible mechanism for country with economy in transition
Education		
Energy		
Environment, Climate Change, and Disaster Risk Management	15% reduction in GHG emissions by 2030 compared with 1990, and by 25% with additional international investments, access to technology transfer mechanism, etc. • Economy-wide absolute reduction from base year emissions • All Intergovernmental Panel on Climate Change (IPCC) sectors are covered, namely energy, agriculture, waste, LULUCF.	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport		
Urban Development		
Water		
Industry and Trade		
TOTAL		**No estimate provided**

Source: Kazakhstan: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Kazakhstan/1/INDC%20Kz_eng.pdf

ADB Focus Area	KYRGYZ REPUBLIC	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Reduce GHG emissions by 11.49%–13.75% below BAU in 2030; by 12.67%–15.69% in 2050 • Reduce GHG emissions by 29%–30.89% below BAU in 2030; 35.06%–36.75% in 2050 (with international support)	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security		$1,937.5 million (total estimated resource requirement to reduce calculated losses) $213.4 million (domestic resources) $1,592.10 million (international support)
Education		
Energy		
Environment, Climate Change, and Disaster Risk Management	Reduce GHG emissions by 11.49%–13.75% below BAU in 2030; and by 29%–30.89% below BAU in 2030 (with international support) • Covering sectors: energy; industrial processes, solvents, and other product use; agriculture; LULUCF, and waste Implementation of adaptation actions is vital.[3]	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport		
Urban Development		
Water		
Industry and Trade		
TOTAL		**$1,937.5 million (total estimated resource requirement to reduce calculated losses)** **$213.4 million (domestic resources)** **$1,592.1 million (international support)**

Source: Kyrgyz Republic: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Kyrgyzstan/1/Kyrgyzstan%20INDC%20_ENG_%20final.pdf

[3] As noted in the INDC, actions for adaptation to climate change are developed and included in the "Priorities for Adaptation to Climate Change in the Kyrgyz Republic till 2017. The Kyrgyz Republic has developed the sector plans and programs for adaptation in all vulnerable sectors.

ADB Focus Area	PAKISTAN	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	Reduce emissions after reaching peak levels (subject to affordability, provision of international climate finance, transfer of technology and capacity building)	
Commitment Conditionality	Conditional target	
Agriculture and Food Security **Education** **Energy** **Environment, Climate Change, and Disaster Risk Management** **Finance Sector Development** **Gender and Development** **Governance and Public Management** **Health** **Information and Communication Technology** **Regional Cooperation and Integration** **Social Development and Poverty** **Sustainable Development Goals** **Transport** **Urban Development** **Water** **Industry and Trade**	Pakistan will only be able to make specific commitments once reliable data on peak emission levels are available. Potential for mitigation exists in all sectors of the economy. Adaptation to impacts of climate change is a vast area of untapped opportunities in Pakistan due to its multisector nature of economy; huge infrastructure needs; distinct climatic zones, ecological systems, and administrative arrangements	The investment costs for adaptation interventions are being determined in consultation with the provinces and other stakeholders, and will also be conveyed in due time
TOTAL		**No estimate provided**

Source: Pakistan: Intended Nationally Determined Contributions (INDCs). http://www4.unfccc.int/submissions/INDC/Submission%20Pages/submissions.aspx

ADB Focus Area	TAJIKISTAN	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Flexible target not exceeding 80%–90% reduction in GHG emissions (1.7–2.2 tCO_2e per capita) of 1990 level by 2030 • 65-75% reduction in GHG emissions (1.2–1.7 tCO_2e per capita) of 1990 level by 2030, subject to new substantial international funding and technology transfer	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	• Systematic reforestation • Investment projects and national programs in agriculture and forestry • Full-scale integration of climate resilience and adaptation measures into the planning and development of green infrastructure: agriculture, irrigation, and water systems	
Education		
Energy	• Investment projects and national programs in power industry • Promotion and diversification of renewable energy sources and reduction of energy losses • Full-scale integration of climate resilience and adaptation measures into the planning and development of green infrastructure: power engineering and housing infrastructures	
Environment, Climate Change, and Disaster Risk Management	• Flexible target not exceeding 80%–90% reduction in GHG emissions (1.7–2.2 tCO_2e per capita) of 1990 level by 2030 and 65%–75% reduction in GHG emissions (1.2–1.7 tCO_2e per capital), subject to international funding and technology transfer ➢ Covering sectors: power industry and water resources; industry and construction; land use, agriculture, and gardening and grazing; forestry and biodiversity; transportation and infrastructure • Risk reduction of natural disasters • Modernization, introduction of new technologies and development of the sectors of the economy • Modernization of hydrometeorological services • Full-scale integration of climate resilience and adaptation measures into the planning and development of green infrastructure: ➢ resilience to hydrometeorological hazards and climate changes ➢ disaster risk reduction ➢ adaptation of globally significant biological species and natural ecosystems ➢ monitoring and preservation of glaciers and water resources in the runoff formation zones	Subject to new substantial international funding and technology transfer Mobilization of additional external resources and enhancement of scientific and technical assistance to ensure full-fledged implementation
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health	Full-scale integration of climate resilience and adaptation measures into the planning and development of green infrastructure: improvement of occupational safety, life-sustaining activity and health, maternity and childhood protection	
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		

ADB Focus Area	TAJIKISTAN	
	Commitment	**Financing Needs**
Transport	• Investment projects and national programs in transport • Full-scale integration of climate resilience and adaptation measures into the planning and development of green infrastructure: transport	
Urban Development		
Water	Investment projects and national programs in water resources management	
Industry and Trade	Full-scale integration of climate resilience and adaptation measures into the planning and development of green infrastructure: industrial facilities	
TOTAL		**No estimate provided**

Source: Tajikistan: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Tajikistan/1/INDC-TJK%20final%20ENG.pdf

[4] Based on preliminary estimates. List of adaptation measures has been prepared in all priority sectors in the framework of preparation of Third National Communication and National Action Plan on Adaptation. Currently, costs for these activities are foreseen within the state budget.

ADB Focus Area	TURKMENISTAN	
	Commitment	Financing Needs
Intended Nationally Determined Contribution Highlights	• After 2030, energy/carbon/GHG emission intensity will be reduced • Stabilization of emissions by 2030 • Zero growth in emissions and even reduce them up to 2030, if financial and technological support is provided by developed countries	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	Adaptation measures (within state budget): • agriculture sector • soil and land resources and ecosystems	
Education		
Energy	• Energy efficiency and conservation • Sustainable use of natural gas and petroleum products • Increased use of alternative energy sources	
Environment, Climate Change, and Disaster Risk Management	After 2030, energy/ carbon/GHG emission intensity will be reduced. Zero growth in emissions and even reduce them up to 2030, if financial and technological support is provided by developed countries. • Economy-wide covering sectors: energy, industrial processes, agriculture, and waste Preparation of detailed national action plan for adapting to climate change: • measures for developing preventive programs to reduce impact of adverse effects of climate change and development of specific recommendations on various aspects of adaptation to extreme changes of weather conditions • include adaptation measures for sectors: water, agriculture, soil and land resources, and ecosystems.	Require limited support from developed countries to carry out preparatory work on legislative/ regulatory documents and plans, etc. Require financial and technological support by developed countries
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		

ADB Focus Area	TURKMENISTAN	
	Commitment	Financing Needs
Transport	• Energy efficiency and conservation • Sustainable use of natural gas and petroleum products • Increased use of alternative energy sources	
Urban Development		
Water	Adaptation measures (within state budget); water sector, e.g., collection of water into the lake in the Karakum Desert, and further use after desalination	
Industry and Trade	• Energy efficiency and conservation • Sustainable use of natural gas and petroleum products • Increased use of alternative energy sources	
TOTAL		**$10.5 billion (adaptation measures)[4]**

Source: Turkmenistan: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Turkmenistan/1/INDC_Turkmenistan.pdf

[4] Based on preliminary estimates. List of adaptation measures has been prepared in all priority sectors in the framework of preparation of Third National Communication and National Action Plan on Adaptation. Currently, costs for these activities are foreseen within the state budget.

Table A2.2. Summary of Intended Nationally Determined Contributions of Developing Member Countries in East Asia Region in Relation to ADB Focus Areas

ADB Focus Area	PEOPLE'S REPUBLIC OF CHINA	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Achieve peaking of carbon dioxide (CO_2) emissions by 2030, with best efforts to peak early • Lower CO_2 emissions per unit of gross domestic product (GDP) by 60%–65% by 2030 compared with 2005 level • Increase the share of nonfossil fuels in primary energy consumption to about 20% • Increase the forest stock volume by about 4.5 billion cubic meters on the 2005 level	
Commitment Conditionality	No mention	
Agriculture and Food Security	Increase the forest stock volume by about 4.5 billion cubic meters on the 2005 level • Increasing carbon sinks ➢ Enhance afforestation, strengthen forest disaster prevention and forest resource protection to reduce deforestation-related emissions, strengthen protection and restoration of wetlands and increase carbon storage capacity of wetlands, continue to restore grassland from grazing land • Enhancing overall climate resilience ➢ Improve construction of water conservation facilities for farmlands, develop water-saving agricultural irrigation, and cultivate heat-resistant and drought-resistant crops ➢ Strengthen the construction of forestry infrastructure • Promote low-carbon development in agriculture, and control methane emissions from rice fields and nitrous oxide emissions from farmland • Construct recyclable agriculture system (promoting comprehensive utilization of straw, reutilization of agricultural/forestry wastes, and comprehensive utilization of animal waste)	Shared its view that the climate agreement should stipulate that developed countries provide new, additional, adequate, predictable, and sustained financial support to developing countries for their enhanced actions, and further, it should provide quantified financing targets and road map to achieve them
Education		
Energy	Increase the share of nonfossil fuels in primary energy consumption to about 20% • Building low-carbon energy system ➢ Control total coal consumption, enhance the clean use of coal, increase share of concentrated and highly efficient electricity generation from coal, lower coal consumption of electricity generation of newly built coal-fired power plants (around 300 g coal equivalent per kilowatt-hour), expand the use of natural gas (by 2020 achieving more than 10% share of consumption in the primary energy consumption and making efforts to reach 30 billion cubic meters of coal-bed methane production), development of hydropower, nuclear power in a safe and efficient manner, wind power, solar power, geothermal energy, bioenergy and maritime energy, enhance recovery and utilization of vent gas and oilfield-associated gas, scale up distributed energy, and strengthen construction of smart grid • Controlling emissions from building sector ➢ Improving energy efficiency of building and quality of building construction, accelerate the construction of low-carbon communities (promoting green buildings and application of renewable energy in buildings), promote the share of green buildings in newly built buildings of cities and towns reaching 50% by 2020	

ADB Focus Area	PEOPLE'S REPUBLIC OF CHINA	
	Commitment	**Financing Needs**
Environment, Climate Change, and Disaster Risk Management	Achieve peaking of carbon dioxide (CO_2) emissions by 2030, with best efforts to peak early Lower CO_2 emissions per unit of gross domestic product (GDP) by 60%–65% by 2030 compared with 2005 level • Implement proactive national strategies on climate change ➢ Strengthen laws/regulations, integrate climate change into national economic/social development plans, formulate long-term strategy and road map, etc. • Improving regional strategies on climate change ➢ Implement regionalized policies, strictly control GHG emissions in urbanized zones, enhance carbon intensity control in urbanized zones, etc. • Promoting the low-carbon way of life ➢ Enhance education on low-carbon way of life and consumption, encourage public institutes to advocate low-carbon government buildings, campuses, etc. • Enhancing overall climate resilience ➢ Track, monitor, and assess the impact of climate change on biodiversity, enhance resistance to marine disasters and management of coastal zones and improve the resilience of coastal areas against climatic disasters, formulate contingency plan for public health under the impacts of climate change, etc. • Innovating low-carbon development growth pattern ➢ Advance low-carbon pilots, conduct low-carbon cities pilots, industrial parks, communities, business and transport pilots, explore diversified patterns of low-carbon growth, etc. • Enhancing support in Science and Technology ➢ Improve fundamental research into climate change, strengthen research and development (R&D) and commercialization demonstration for low-carbon technologies, conduct R&D on early warning systems for extreme weather, etc. • Increasing financial and policy support ➢ Increase budgetary support, actively innovate the application of funds and explore new investment/financing mechanisms for low-carbon development, implement preferential taxation policies for promoting new energy development, etc. • Promoting carbon emission trading market ➢ Build on carbon emission trading pilots; develop mechanisms for reporting, verifying, certificating carbon emissions, etc. • Improving statistical and accounting system for GHG emissions ➢ Strengthen work on statistics of climate change; improve GHG emission statistics, etc. • Broad participation of stakeholders ➢ Enhance responsibility of enterprises, strengthen role of public supervision and participation, etc.	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration	Promoting international cooperation on climate change	
Social Development and Poverty		
Sustainable Development Goals		

ADB Focus Area	PEOPLE'S REPUBLIC OF CHINA	
	Commitment	**Financing Needs**
Transport	Controlling emissions from transportation sector • Develop green and low-carbon transport system (optimizing means of transportation, etc.), improve quality of gasoline and promote new types of alternative fuels, promote the share of public transport in motorized travel in large and medium-sized cities reaching 30% by 2020, promote the development of dedicated transport system for pedestrians/bicycles to advocate green travel, accelerate the development of smart and green freight transport	
Urban Development	Optimizing the urban system and space layout (integrating low-carbon development in entire urban planning process, construction and management and promoting urban form that integrates industries to cities)	
Water	Enhancing overall climate resilience • Improve safe operation of infrastructure of water conservancy, transport and energy against climate change, develop and optimize allocation of water resources	
Industry and Trade	Building energy-efficient and low-carbon industrial system • Embark on new path of industrialization, promote share of value added from strategic emerging industries reaching 15% of total GDP by 2020, implement Action Plan of Industries Addressing Climate Change and formulating carbon emission control target and action plans, research and formulate GHG emissions standards for key industries, control emissions from key sectors (power, iron and steel, nonferrous metal, etc.), construct recycling-based industrial system, phase down production and consumption of HCFC-22 for controlled uses and achieve control on emissions of HFC-23 by 2020, etc.	
TOTAL		**No estimate provided**

Source: People's Republic of China: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/China/1/China's%20INDC%20-%20on%2030%20June%202015.pdf

ADB Focus Area	MONGOLIA	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	Reduce 14% of greenhouse gas (GHG) emissions (excluding land use, land-use change, and forestry [LULUCF]) by 2030 compared with Business-as-Usual (BAU), contingent upon gaining access to new technologies and sources of finance through internationally agreed mechanisms and instruments	
Commitment Conditionality	Conditional targets	
Agriculture and Food Security	Mitigation • Maintain livestock population at appropriate levels according to pasture carrying capacity • Development of a comprehensive plan for emission reductions in the livestock subsector for implementation between 2020 and 2030 Adaptation • Reduce rate of pasture degradation and regulate headcounts and types of animals including wild animals to match pasture carrying capacities ➢ Create regulations for pasture use, set up taxation system for pasture use, increase community participation in proper use of pastures including monitoring and conservation, build early warning system for drought and dzuds (severe winter) to prevent animal loss, improve livestock quality and breeds, improve livestock health • Reduce bare fallow by 30%, introduce crop rotation system with 3–4 routes and 3–5 crops, expand irrigated cropland by 2–2.5 times ➢ Create regulations on soil protection, diffuse zero-tillage technology, increase variety of crops and rotation, introduce effective drip irrigation technology reducing water use • Forest area will be increased to 9% by 2030 through reforestation activities ➢ Build capacity of community forest groups to conduct modern technologies for forest seedlings and tree plantations, introduce technology to plant seedlings • Reduce forest degradation rate caused by human activities, fires, insects, and diseases ➢ Set up fully equipped stations fighting forest fires and insects outburst and capacity building, use airplanes to fight against fires, introduce biological technologies against insects and pests • Make forests resilient to climate change by improving their productivity and changing their composition and structure ➢ Provide equipment and machineries to carry out forest cleaning activities, train human resources for forest management practices, improve efficiency of forest cleaning technologies	$46 million (adaptation) $150 million (adaptation) $11 million (adaptation) $13 million (adaptation) $7 million (adaptation)
Education		
Energy	Mitigation • Increase in the share of renewable electricity capacity to 30% of total electricity generation capacity by 2030, from 7.62% in 2014 ➢ Installation of 675 megawatt (MW) capacity large hydropower facilities ➢ Installation of 354 MW wind power facilities ➢ Installation of 145 MW solar photovoltaic (PV) power facilities • Reduce building heat loss by 40% by 2030, compared with 2010 levels ➢ Improved insulation for apartment buildings of 18,184 households in Ulaanbaatar • Improved efficiency of coal-fired heating plants and thermal power plants ➢ Improved efficiency of coal-fired plants • Reduce electricity transmission losses from 13.7% in 2014 to 10.8% by 2020 and to 7.8% by 2030 • Reduce internal energy use of combined heat and power (CHP) plants from 14.4% in 2014 to 11.2% by 2020 and 9.14% by 2030 • Implement advanced technology in energy production such as supercritical pressure coal combustion technology by 2030 • Reduce fuel use in individual households through improving stove efficiency (with co-benefit of air pollution reduction)	$1,350 million (mitigation) $584 million (mitigation) $573 million (mitigation) $90 million (mitigation) $900 million (mitigation)

ADB Focus Area	MONGOLIA	
	Commitment	Financing Needs
Environment, Climate Change, and Disaster Risk Management	Reduce 14% of greenhouse gas (GHG) emissions (excluding LULUCF) by 2030 compared with BAU, contingent upon gaining access to new technologies and sources of finance through internationally agreed mechanisms and instruments Strengthen early warning system for natural disasters • Establish early detection and prediction system, conduct disaster risk assessments at local and subnational levels, improve forecast quality through increasing super computer capacity, establish Doppler radar network covering entire territory of the country	$65.4 million (adaptation)
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport	Mitigation • Improve national paved road network. Upgrading/paving 8,000 kilometers (km) by 2016 and 11,000 km by 2021. • Improve Ulaanbaatar city road network to decrease all traffic by 30%–40% by 2023 • Increase the share of private hybrid road vehicles from approximately 6.5% in 2014 to approximately 13% by 2030 • Shift from liquid fuel to liquefied petroleum gas (LPG) for vehicles in Ulaanbaatar and aimag (province) centers by improving taxation and environmental fee system • Improve enforcement mechanism of standards for road vehicles and non-road-based transport • Development of a Bus Rapid Transit (BRT) system and improvement of the public transport system in Ulaanbaatar	
Urban Development	Development of a waste management plan, including recycling, waste-to-energy, and best management practices	

ADB Focus Area	MONGOLIA	
	Commitment	**Financing Needs**
Water	Adaptation • By 2030, 30% of the territory will be state protected and sustainable financial mechanism will be introduced ➢ Implement integrated water resources management systems, coordinate multi-stakeholder relations through improved legal policies and efficient management, strengthen human resources capacity to deal with technical issues, implement ecosystem-based technologies, support ecosystem services through hydrological monitoring, construction of water diversion canals to lakes located in floodplains, and reforestation actions • Create water reservoirs at rivers and outlets of lakes, and construct multipurpose systems of water use ➢ Enhance hydrological monitoring and research for river flow regulation, construct water reservoirs and water diversion facilities to transfer water resources to dry regions • Solutions for sustainable water supply in Ulaanbaatar and for industries and mining in the Gobi region ➢ Conduct studies and introduce sustainable water supply with closed systems preventing evaporation loss	$5 million (adaptation) $1,800 million (adaptation) $605 million (adaptation)
Industry and Trade	Mitigation • Reduce emissions in the cement industry through upgrading the processing technology from wet to dry processing and through the construction of a new cement plant with dry processing up to 2030 • Motor-efficiency and housekeeping improvements	
TOTAL		**>$3,497 million (mitigation)** **~2,702.4 million (adaptation)**

Source: Mongolia: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Mongolia/1/150924_INDCs%20of%20Mongolia.pdf

Table A2.3. Summary of Intended Nationally Determined Contributions of Developing Member Countries in Pacific Region in Relation to ADB Focus Areas

ADB Focus Area	COOK ISLANDS	
	Commitment	Financing Needs
Intended Nationally Determined Contribution Highlights	• 100% transformation from diesel-based to renewable sourced electricity by 2020 • Emission from electricity generation will be reduced to 38% by 2020 from 2006 level • Emissions from electricity generation reduced by 81% (or additional 43%) by 2030, conditional on receiving external support	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	Reduce and offset carbon emissions and strengthen resilience: coastal protection, agriculture, forestry, marine conservation, waste, and land management	
Education		
Energy	100% transformation from diesel-based to renewable sourced electricity by 2020 Emission from electricity generation will be reduced to 38% by 2020 from 2006 level; and by 81%, with external support • Construction of additional and new grid storage • Integration of improved energy efficiency and new technologies • Technology transfer • Strengthening capacities for overall sustainability and co-benefits	Additional target, conditional on external support
Environment, Climate Change, and Disaster Risk Management	Reduce and offset carbon emissions and strengthen resilience: tourism	• Building resilience to climate change is expected to be covered by international community • Delivery of adaptation measures, provision of tools and technologies and strengthening of capacities conditional to external support
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		

ADB Focus Area	COOK ISLANDS	
	Commitment	**Financing Needs**
Transport	• Proven low-carbon transport technologies • Explore most effective incentives for promotion of transition toward clean energy transportation	Further reduction on emissions, conditional on external support
Urban Development		
Water	Reduce and offset carbon emissions and strengthen resilience: water security	
Industry and Trade		
Total		**No estimate provided**

Source: Cook Islands: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Cook%20Islands/1/Cook%20Islands%20INDCsFINAL7Nov.pdf

ADB Focus Area	FIJI	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• 30% carbon dioxide (CO_2) emission reduction from Business-as-Usual (BAU) by 2030 (10% unconditional, 20% conditional on availability of external funding amounting to $500 million)[5] • Renewable energy share in electricity generation to approach 100% by 2030 from about 60% in 2013. • An indicative reduction of 10% CO_2 emissions for energy efficiency improvements economy-wide will be sought.	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security		
Education		
Energy	Reduced dependence on imported fossil fuel as a source of energy for electricity generation • More renewable energy investment projects (solar, biofuel, wind, micro hydro, and biogas power generation (agricultural development) • Continued research and development (R&D) in area of renewable energy technologies, including exploration of ocean energy, geothermal, wave energy, and generation of energy from wastes • Explore whether use of renewables could be part of approval process for new investments • Promote and improve guidelines and technical standards for renewable energy technologies • Continue R&D for energy from possible hydrocarbon resources and hydrogen fuel cells • Renewable energy share in electricity generation to approach 100% by 2030 (from 60% in 2013) 10% reduction in CO_2 emissions for economy-wide energy efficiency improvements	Mitigation options contingent on obtaining international funding in the power sector and assistance with economy-wide energy efficiency improvements
Environment, Climate Change, and Disaster Risk Management	30% emission reduction (10% through implementation of the Green Growth Framework (own resources); 20% conditional on availability of external funding ($500 million) from BAU (i.e., 2,500 gigagram [Gg] CO_2 emissions) • Develop an integrated approach and policy and operational level to effectively address climate change ➢ e.g., Establish National Platform for Climate Change and Disaster Risk Management • Ensure that cyclone-resistant buildings are constructed in urban and rural areas ➢ e.g., Review the National Building Code • Strengthen the role of local governments in building resilience ➢ e.g., Development of Local Government Self-Assessment Tool for Climate Change Resilience • Enhance understanding of climate change impacts for better planning of long term development ➢ e.g., Develop comprehensive assessment framework, including adoption of damage and loss assessment methodology • Ensure climate change mitigation and adaptation are incorporated in national and subnational development planning and budgetary process ➢ e.g., Integrate climate change and disaster risk reduction into National Development Plan • Increase resourcing of adaptation and mitigation measures ➢ e.g., Explore climate financing modalities • Strengthen partnerships for building climate change resilience ➢ e.g., partner with civil society in undertaking capacity building	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		

[5] Specific to the energy sector. Further accounting is necessary on mitigation potential of forestry sector via REDD+ program and other critical sectors.

ADB Focus Area	FIJI	
	Commitment	Financing Needs
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport		
Urban Development		
Water		
Industry and Trade		
Total		**$500 million (partial, mitigation)[6]**

Source: Fiji: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Fiji/1/FIJI_iNDC_Final_051115.pdf

[6] Mitigation contribution target will utilize resources available in country (unconditional) and availability of external funding amounting to $500 million (conditional).

ADB Focus Area	KIRIBATI	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Reduce emissions by 13.7% by 2025; and by 12.8 by 2030 compared with BAU • Proactively protect and sustainably manage its mangrove resources and protect and enhance coastal vegetation and sea-grass beds (equivalent to 6 million tons of carbon dioxide [tCO_2] stored) • 48.8% reduction in greenhouse gas (GHG) emissions by 2025; 49% reduction by 2030 compared with BAU, with international assistance	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	Proactively protect and sustainably manage its mangrove resources and protect and enhance coastal vegetation and sea-grass beds (equivalent to 6 million tCO_2 stored) Increased resilience through sustainable climate change adaptation and disaster risk reduction (Kiribati Joint Implementation Plan on Climate Change and Disaster Risk Management [KJIP]) • Increasing water and food security with integrated and sector-specific approaches and promoting healthy and resilient ecosystems	$3.42 million (A$4.69 million)[7]
Education	Increased resilience through sustainable climate change adaptation and disaster risk reduction (Kiribati Joint Implementation Plan on Climate Change and Disaster Risk Management [KJIP]) • Delivering appropriate education, training and awareness programs	$5.45 million (A$7.48 million)

Energy	• Uptake of renewable energy
	• Energy efficiency improvements in both demand and supply sides
	• Mitigation options:[8]
	  • Maximum use of renewable energy and energy efficiency
	  • Use of coconut oil as biodiesel for electricity generation
		Conditional on timely capacity building, technology transfer and financial support (primarily in the form of grants)

	• Proposed activities on off-grid electricity production:
	  • Solar photovoltaic (PV) minigrid system for Southern Kiribati Hospital (265 kilowatt-peak [kWp])
	  • Outer Island Clinic solar system rehabilitation (58 systems on 20 outer islands)
	  • Off-grid PV systems for lighting and charging laptop computers in Junior Secondary School system (2 units at 410 watt-peak [Wp] each)
	  • Outer Island Council solar PV minigrid system (5 kWp each)
	  • Outer Island Fish Centres off-grid PV systems (3.75 kWp each)
	  • Solar Water Desalination Plant for vulnerable rural community (19 systems for 12 community systems in 9 selected islands)
	  • Outer Island Police Station solar system rehabilitation (23 solar systems at 120 Wp each)
	  • Solar PV system for nongovernment vocational institutions (10 kWp each)
		~$1.75 million (A$2.4 million)
		~$0.17 million (A$230,000)
		~$0.21 million (A$285,000)
		~$0.52 million (A$710,000)
		~$0.45 million (A$610,000)
		~$0.08 million (A$115,000)
		~$0.04 million (A$60,000)
		~$0.37 million (A$500,000)

	Increased resilience through sustainable climate change adaptation and disaster risk reduction (Kiribati Joint Implementation Plan on Climate Change and Disaster Risk Management [KJIP]) • Promoting use of sustainable renewable sources of energy and energy efficiency	$11.18 million (A$15.34 million)

[7] Conversion rate used: A$1.00 = $0.73.

[8] Additional mitigation actions may be identified in the future.

ADB Focus Area	KIRIBATI	
	Commitment	**Financing Needs**
Environment, Climate Change, and Disaster Risk Management	Reduce emissions by 13.7% by 2025; and by 12.8 by 2030 compared with BAU (reduce emissions by 10,090 tCO_2e annually throughout 2020 to 2030). 48.8% reduction in GHG emissions by 2025; 49% reduction by 2030 compared with BAU (reduce emissions by 35,880 tCO_2e annually by 2025 and by 38,420 tCO_2e annually by 2030), with international assistance • Covering the energy sector, with power and transport subsectors; and maritime and coastal sector (including mangrove, coastal vegetation, and sea-grass beds) Increased resilience through sustainable climate change adaptation and disaster risk reduction (Kiribati Joint Implementation Plan on Climate Change and Disaster Risk Management [KJIP]) • Strengthening and greening the private sector including small business • Promoting sound and reliable infrastructure development and land management • Increasing effectiveness and efficiency of early warnings and disaster emergency management • Maintain the sovereignty and unique identity of Kiribati • Enhancing the participation and resilience of vulnerable groups	Financed through already existing strategies ranging from national budgets and other internal sources to official development assistance (ODA), additional climate funding and humanitarian aid including Green Climate Fund (GCF), Global Environment Facility (GEF), Adaptation Fund, and various bilateral climate change programs: $75 million (A$103.10 million) $3.60 million (A$4.93 million) $38.23 million (A$52.48 million) $3.28 million (A$4.51million) $0.13 million (A$0.18 million) $0.30 million (A$0.42 million)
Finance Sector Development	Increased resilience through sustainable climate change adaptation and disaster risk reduction (Kiribati Joint Implementation Plan on Climate Change and Disaster Risk Management [KJIP]) • Strengthening capacity to access finance, monitor expenditures, and maintain strong partnerships	$0.26 million (A$0.35 million)
Gender and Development		
Governance and Public Management	Increased resilience through sustainable climate change adaptation and disaster risk reduction (Kiribati Joint Implementation Plan on Climate Change and Disaster Risk Management [KJIP]) • Strengthening good governance, policies and legislation	$4.88 million (A$6.70 million)
Health	Increased resilience through sustainable climate change adaptation and disaster risk reduction (Kiribati Joint Implementation Plan on Climate Change and Disaster Risk Management [KJIP]) • Strengthening health service delivery to address climate change impacts	$0.34 million (A$0.47 million)

ADB Focus Area	KIRIBATI	
	Commitment	Financing Needs
Information and Communication Technology	Increased resilience through sustainable climate change adaptation and disaster risk reduction (Kiribati Joint Implementation Plan on Climate Change and Disaster Risk Management [KJIP]) • Improving knowledge and information generation, management, and sharing	$4.05 million (A$5.56 million)
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport	Mitigation option: Use of coconut oil as biodiesel for transport	Conditional on timely capacity building, technology transfer, and financial support (primarily in the form of grants)
Urban Development		
Water		
Industry and Trade		
Total		**~$3.58 million (partial, based on identified activities, not yet fully funded)** **$75 million or A$103.1 million (Adaptation and disaster risk reduction)[9]**

Source: Kiribati: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Kiribati/1/INDC_KIRIBATI.pdf

[9] Indicative resource costs to implement KJIP over the period 2013–2023.

ADB Focus Area	MARSHALL ISLANDS	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Quantified economy-wide target to reduce its emissions of GHG to 32% below 2010 levels by 2025. • Indicative target to reduce its emissions of GHGs to 45% below 2010 levels by 2030.	
Commitment Conditionality	Conditional targets	
Agriculture and Food Security		
Education		
Energy	Reducing emissions from electricity generation sector by 55% in 2025 and 66% in 2030, e.g.: • Ground and roof-mounted solar with associated energy storage; • Ongoing demand-side energy efficiency improvements (e.g., prepayment meters, end user efficiency improvements); • Supply-side energy efficiency improvements (e.g., new engines and system upgrades, heat recovery from engines) • Small-scale wind-powered electricity generation • Replanting and expansion of coconut oil production for use in electricity • Transition to electric and solar cookstoves from liquefied petroleum gas (LPG) cookstoves • Reduction of kerosene for lighting in outer atolls • Additional GHG reductions may become possible through the use of new technologies allowing the extraction of ocean energy for power generation Reducing emissions from other sources by 15% by 2030	Will need international support for its efforts to transition toward a low-emissions energy sector through greater use of renewables such as solar, biofuels, and wind, and potential use of transformational technology such as Ocean Thermal Energy Conservation.
Environment, Climate Change, and Disaster Risk Management	Quantified economy-wide target to reduce its emissions of GHG to 32% below 2010 levels by 2025. Indicative target to reduce its emissions of GHGs to 45% below 2010 levels by 2030. • Commits to further developing and enhancing the existing adaptation framework to build upon integrated disaster risk management strategies, including through development and implementation of a national adaptation plan (and further integration into strategic development planning tools), protecting traditional culture and ecosystem resources, ensuring climate-resilient public infrastructure and pursuing facilitative, stakeholder-driven methods to increase resiliency of privately owned structures and resources	Looks to regional and global cooperation for support in pursuit of these mitigation and adaptation-related development priorities
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		

ADB Focus Area	MARSHALL ISLANDS	
	Commitment	**Financing Needs**
Transport	Reducing emissions from transportation (including domestic shipping) by 16% in 2025, e.g., • Vehicle inspections and maintenance; • Introduction of electric vehicles, and emission standards for current vehicles; • Introduction of solar-charged electric lagoon transport Replanting and expansion of coconut oil production for use in the transport sector blended with diesel	
Urban Development	Reducing emissions from waste by 20% by 2030, e.g., Reduction in methane production in landfills through pre-sorting of waste and entrapment of methane	
Water		
Industry and trade		
Total		**No estimate provided**

Source: Marshall Islands: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Marshall%20Islands/1/150721%20RMI%20INDC%20JULY%202015%20FINAL%20SUBMITTED.pdf

ADB Focus Area	FEDERATED STATES OF MICRONESIA	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Reduce 28% of GHG emissions by 2025 compared with 2000. • Additional reduction up to 35% by 2025 (with additional financial, technical, and capacity-building support).	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security		
Education		
Energy	• Enhance the local capacity to plan, design, implement, manage, operate, and maintain installed energy technologies • Locally appropriate technology and equipment (resilient to the elements and extreme events) needs to be assessed and procured	
Environment, Climate Change, and Disaster Risk Management	Reduce 28% of GHG emissions by 2025 compared with 2000. Additional reduction up to 35% by 2025 (with additional financial, technical, and capacity-building support). • All necessary efforts are being made to engage the country in the formulation and implementation of transformational adaptation investment plans to protect the country against climate change. • An assessment of implementation options is needed. • There is a need to design a national inventory system and to develop a framework for domestic monitoring, reporting, and verification of GHG emissions, including capacity development. • Locally appropriate technology and equipment needs to be assessed and procured.	Potential sources include financial mechanism of the Convention and other non-Convention financial and investment sources
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport		
Urban Development		
Water		
Industry and trade		
Total		**No estimate provided**

Source: Federated States of Micronesia: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Micronesia/1/INDC%20Federated%20States%20of%20MICRONESIA.pdf

ADB Focus Area	NAURU	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Strong emphasis on building resilience encompassing mitigation • A secured funding of $5 million for implementation of a 0.6 megawatt (MW) solar PV system expected to assist unconditional reduction of CO_2 emissions marginally (model project) • Electricity generation from renewable energy with replacement of existing diesel-operated plants with large-scale, grid-connected solar PV system (conditional)	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	• Adaptation priority: food security, productive and secure land resources • Priority actions on agriculture, land management and rehabilitation	Many adaptation priorities will be heavily dependent on resources made available by external development partners (supplement to limited domestic resources)
Education	Priority actions on education and human capacity development	
Energy	• Implementation of a 0.6 MW solar PV system • Conditional ➢ Replacement of existing diesel-operated plants with large-scale, grid-connected solar PV system ➢ Demand-side energy management improvements (to complement solar PV installation) • Adaptation priority: energy security	$5 million (secured funding) $50 million (including substantial technical capacity building and logistical assistance) $42 million – solar PV installation $8 million – demand-side management improvements
Environment, Climate Change, and Disaster Risk Management	• Adaptation priority: healthy environment • Priority actions on infrastructure and coastal protection, biodiversity, and environment • Building and strengthening of information vital for planning and management, and institutions • Preparation of detailed technology needs for adaptation	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health	Adaptation priority: healthy people	
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty	Priority actions on community development and social inclusion	

ADB Focus Area	NAURU	
	Commitment	Financing Needs
Sustainable Development Goals		
Transport		
Urban Development		
Water	Adaptation priority: water security	
Industry and Trade		
Total		**$50 million (mitigation)[10]**

Source: Nauru: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Nauru/1/Nauru%20INDC%20Submission_Final.pdf

[10] Preparation of detailed cost estimates on adaptation is an important next step and is expected to be undertaken in conjunction with the process of detailed design of the activities. Nauru will work with bilateral partners, regional agencies for the financial and technical resources need to implement adaptation priorities, including the improvement of access and facilitation to international climate finance.

ADB Focus Area	PALAU	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• 22% energy sector emission reduction below 2005 level (88 thousand tCO_2e) by 2025 (additional reduction from the transport and waste sectors) • 45% renewable energy target by 2025 • 35% energy efficiency target by 2025	
Commitment Conditionality	Conditional targets	
Agriculture and Food Security		
Education		
Energy	• 22% energy sector emission reduction below 2005 level (88 thousand tCO_2e) by 2025 • 45% renewable energy target by 2025 ➢ Additional installed renewable energy capacity (5 MW solar, 10 MW to power the water sector) ➢ Reduce transmission and distribution losses • 35% energy efficiency target by 2025 ➢ Increase energy retrofit program ➢ Institute a Tropical Energy Efficiency Building Code ➢ Adopt the Energy Star Appliance Standard ➢ Implement an Energy Labelling Scheme ➢ Significantly expand Cool Roof Program ➢ Expand Energy Audit Program to include all government and nongovernment buildings ➢ Enhance the Building Managers Working Group ➢ Improve wastewater infrastructure	• Many of the renewable energy and energy efficiency initiatives will depend on availability of partnership finance and technology support • Implementation of policies and measures will depend on availability of partnership finance, technology support, and capacity development
Environment, Climate Change, and Disaster Risk Management		
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		

ADB Focus Area	PALAU	
	Commitment	Financing Needs
Sustainable Development Goals		
Transport	• Use and commercial sale of four-stroke outboard motor engines • Explore projects to convert waste cooking oil to biofuel for diesel vehicles, beginning with public school buses and potential public bus route	
Urban Development	• Reducing methane emissions from the solid waste sector ➢ Planned actions under the National Solid Waste Framework ➢ Analyze landfill gas emissions and evaluate potential for landfill gas capture projects at the national landfill site	
Water		
Industry and Trade		
Total		**$5.5 million (renewable energy and energy efficiency measures)[11]**

Source: Palau: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Palau/1/Palau_INDC.Final%20Copy.pdf

[11] Based on first order estimate.

ADB Focus Area	PAPUA NEW GUINEA	
	Commitment	Financing Needs
Intended Nationally Determined Contribution Highlights	• Mitigation contribution in terms of an indicative replacement of fossil-fueled electricity generation with renewable energy sources, accomplished at a rate determined by the availability of external funding. • National target of carbon-free electricity sector by 2030. • Adaptation high priority and will require financial, capacity building, and technical support.	
Commitment Conditionality	Conditional target	
Agriculture and Food Security	Reducing emissions from deforestation and forest degradation plus (REDD+) activities	Extensive capacity building, technology transfer, and technical assistance are required to implement effective actions and ensure the collection of accurate data.
Education		
Energy	• Indicative replacement of fossil-fueled electricity generation with renewable energy sources (PV, geothermal, biomass-fueled plants, and additional hydro) • National target of carbon-free electricity sector by 2030. • Energy efficiency and conservation	
Environment, Climate Change, and Disaster Risk Management	Capacity building and technology transfer for emissions data collection and tracking mitigation progress Adaptation high priority and will require financial, capacity building, and technical support.	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport	Improving public transport by introducing energy-efficient buses in the main urban centers and future introduction of infrastructure for more sophisticated modes of public transport (trains and trams)	
Urban Development		
Water		
Industry and Trade		
Total		**No estimate provided**

Source: Papua New Guinea: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Papua%20New%20Guinea/1/PNG_INDC%20to%20the%20UNFCCC.pdf

ADB Focus Area	SAMOA	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• 100% renewable energy target for electricity generation (compared with 2014) through 2025 (conditional on reaching 100% renewable electricity generation target in 2017 and receiving international assistance to maintain contribution through 2025) • Economy-wide emissions reduction conditional on external international assistance (to transport, agriculture, forestry, and waste)	
Commitment Conditionality	Conditional target	
Agriculture and Food Security		
Education		
Energy	100% renewable energy target for electricity generation (compared with 2014) through 2025 (conditional on reaching 100% renewable electricity generation target in 2017 and receiving international assistance to maintain contribution through 2025) Combination of both renewable energy projects and energy efficiency measures • Grid-connected solar PV projects with total installed capacity of 6 MWp as of September 2015 • Wind Power – 550 kW of installed capacity; • Hydropower – rehabilitation of 3.5 MW hydropower plants destroyed by Cyclone Evan in 2012 as well as additional small run-of-river schemes; • Bioenergy – 12 MW of various projects aimed at utilizing biomass, biogas, or alternative bioenergy source for electricity generation to be implemented by independent power producers (IPPs). • Energy Efficiency – Projects aimed at controlling the importation of energy-inefficient appliances such as product and labeling standards, retrofitting older and less efficient lightbulbs with more efficient alternatives in the residential sector and other demand-side management programs.	Financial assistance from donors and development partners to implement proposed renewable energy projects and also improve the existing infrastructure and technologies. International support is necessary to ensuring the low emission pathway chosen by the electricity subsector is achieved
Environment, Climate Change, and Disaster Risk Management	• Implementation of adaptation projects is heavily dependent upon external financial assistance from the international community. Building climate resilience, disaster risk reduction as well as adaptation projects in vulnerable sectors require significant external assistance. • Potential for economy-wide emissions reduction is conditional on assistance provided to other sectors such as transport, agriculture, forestry, and waste.	Human, financial, and technical resources
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		

ADB Focus Area	SAMOA	
	Commitment	Financing Needs
Social Development and Poverty		
Sustainable Development Goals		
Transport		
Urban Development		
Water		
Industry and Trade		
Total		**No estimate provided**

Source: Samoa: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Samoa/1/Samoa%20INDC_Submission%20to%20UNFCCC.pdf

ADB Focus Area	SOLOMON ISLANDS	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Reduce GHG emissions by 12% below 2015 level by 2025; and 30% below 2015 level by 2030 compared with BAU • Reduce GHG emissions by 27% by 2025; 45% by 2030 compared with BAU; and 50% by 2050, with international assistance	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	National Adaptation Programme of Action (NAPA) Priorities: ➢ agriculture and food security ➢ coastal protection ➢ fisheries and marine resources	$17.25 million (covering all NAPA priorities)
Education	NAPA Priority: education awareness and information	
Energy	• Mitigation options: ➢ Fiu Hydropower ➢ Solar Farm ➢ Tina Hydropower ➢ Solar homes ➢ Mini hydropower ➢ Energy efficiency usage • Proposed activities on off-grid electricity production: ➢ Hydropower projects[12] ➢ Solar projects (diesel/solar PV hybrid system, solar PV grid-connected system) (footnote 12)	Require timely international climate change financing, capacity building, technology transfer support (grants) $170.7 million (total) $10.65 million (total hydro costs) $160.05 million (total solar costs)
Environment, Climate Change, and Disaster Risk Management	• Reduce emissions by 12% below 2015 level by 2025; and 30% below 2015 level by 2030 compared with BAU ➢ Reduce by 8,300 tCO_2e annually • Reduce GHG emissions by 27% by 2025; 45% by 2030 compared with BAU; and 50% by 2050, with international assistance ➢ Reduce by 18,800 tCO_2e annually by 2025 and by 31,125 tCO_2e annually by 2030 • Covering the energy sector, with power and transport subsectors; and land use, land-use change, and forestry • NAPA Priorities: ➢ low-lying and artificially built-up islands ➢ infrastructure development and tourism • Establish necessary legal, institutional, and fiduciary management framework and accredit the national implementing entity to facilitate direct access (through GCF readiness program)	Necessary financing is expected to be financed in the form of grants from GCF, GEF, Adaptation Fund, and from various bilateral climate change programs
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health	NAPA Priority: human settlements and health	
Information and Communication Technology		
Regional Cooperation and Integration		

[12] Project details are provided in the INDC.

ADB Focus Area	SOLOMON ISLANDS	
	Commitment	Financing Needs
Social Development and Poverty		
Sustainable Development Goals		
Transport		
Urban Development	NAPA Priority: waste management	
Water	NAPA Priority: water and sanitation	
Industry and Trade		
Total		**$170.7 million (proposed activities on off-grid electricity production) $126.65 million (adaptation) – $17.25 million on NAPA and $109.4 million on other priorities identified in national communication process[13]**

Source: Solomon Islands: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Solomon%20Islands/1/SOLOMON%20ISLANDS%20INDC.pdf

[13] NAPA cost estimate for further evaluation and costing.

ADB Focus Area	TONGA	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• 50% of electricity generation from renewable sources by 2020 (equivalent to reduction of 27 Gg CO_2e); 70% by 2030 • Improve energy efficiency through reduction of electricity line losses to 9% by 2020 (from 18% baseline in 2010) • Double the number of marine protected areas in 2015 by 2030 • Sector emission reduction targets in transport, agriculture, environment-friendly waste management, and reforestation • Climate resilience: public infrastructures, foreshore protection, buildings and houses	
Commitment Conditionality	Conditional targets	
Agriculture and Food Security	• Resilience building: ➢ Halting deforestation and degradation of indigenous forests ➢ Maintaining national parks, reserves, and protected areas ➢ Establishing and managing forest reserves ➢ Promoting reforestation and rehabilitation of cleared and degraded forests with climate change-resilient, and ecologically and socially appropriate tree species ➢ Promoting integrated agroforestry in areas earmarked for agriculture ➢ Discouraging tree removal on tax allotments ➢ Encouraging tax allotment holders to plant and manage trees on their properties • Climate-resilient agricultural production systems ➢ Improved soil management practices ➢ Increased use of biogas systems that also provide organic fertilizers ➢ Improvements in animal welfare through greater water availability to stock and improvements in feed quality	Tonga relies on a range of international and bilateral sources for funding, mobilizing climate financing
Education		
Energy	• 50% of electricity generation from renewable sources by 2020 (equivalent to reduction of 27 Gg CO_2e); 70% by 2030 ➢ Replace all diesel-based water pumping engines by 2017 using solar power • Improve energy efficiency through reduction of electricity line losses to 9% by 2020 (from 18% baseline in 2010) • Biofuels for electricity generation (aligned with resilience focus) Priority investments requiring support: • Energy sector reforms/regulatory development • Solar (various)[14] • Wind (various)(footnote 14) • Biomass (various) (footnote 14) • Development of new renewable energy sources: coconut oil, heat recovery, biogas, tidal • Development of energy storage strategy • Energy efficiency strategy • Enforcement of minimum energy performance standards regulation (cooling equipment) • Network efficiency, power system monitoring, village electricity network upgrade • Diesel engines fuel efficiency services training • Geothermal power generation	 ~$43.85 million ~$40 million ~$4.6 million ~$1.95 million (A$2.7 million) ~$26.4 million (NZ$40 million)[15]

[14] Details on investments and/or activities available in INDC.

[15] Conversion rate used: NZ$1.00 = $0.66.

ADB Focus Area	TONGA	
	Commitment	Financing Needs
Environment, Climate Change, and Disaster Risk Management	• Double the number of marine protected areas in 2015 by 2030 • Sector emission reduction targets in transport, agriculture, environment-friendly waste management, and reforestation • Climate resilience: public infrastructures, foreshore protection, buildings and houses • Building resilience through holistic approach in addressing climate change adaptation, mitigation, and disaster risk reduction ➢ Mainstreaming resilience in legislation, policies, and planning at all levels ➢ Coordinated approach in research, monitoring, management of data/info ➢ Capacity development on resilience building responses ➢ Implement actions toward climate resilience ➢ Resources and finance to implement designed actions Priority investments/ activities requiring support: • Investment in resilience ➢ Scientific and technology transfer ➢ Disaster resilience ➢ Seawall and foreshore protection • Climate proofing ➢ Public infrastructure ➢ Housing	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport	• Develop transport sector measures: e.g., solar car public transport • Biofuels for transport (aligned with resilience focus)	Welcomes international assistance in the development of mitigation opportunities to reduce oil dependence and reduce GHG emissions
Urban Development		
Water		
Industry and Trade		
Total		**$116.83 million (partial, mitigation)[16]**

Source: Tonga: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Tonga/1/Tonga%20INDC.pdf

[16] Providing details on general resilience building and adaptation requires detailed facilitated process.

ADB Focus Area	TUVALU	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Reduction of GHG emissions from power sector electricity generation by 100% (zero emissions) by 2025 • Indicative quantified economy-wide target reduction in total GHG emissions for entire energy sector by 60% below 2010 level by 2025 • Emission reduction from other key sectors: agriculture and waste (conditional upon necessary technology and finance)	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	Emission reduction from agriculture and waste	• Conditional upon necessary technology and finance • International cooperation and support is crucial
Education		
Energy	• Reduce GHG emissions by 100% from electricity sector by 2025 ➢ Renewable electricity program – installation of PV arrays with battery storage, wind turbine generation, wind–solar mix, conversion or replacement of existing diesel generators to run on biodiesel fuel • Reduce GHG emissions from the energy sector by 60% below 2010 level by 2025 ➢ Energy efficiency improvements, public education, energy audits, and technology improvements ➢ Introduce legislation to promote energy efficiency and control the importation, use and sale of inefficient electrical appliances • Covering electricity generation, transport and other energy subsector (cooking)	
Environment, Climate Change, and Disaster Risk Management		
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport		
Urban Development		
Water		
Industry and Trade		
Total		**No estimate provided**

Source: Tuvalu: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Tuvalu/1/TUVALU%20INDC.pdf

ADB Focus Area	VANUATU	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• 100% renewable energy in the electricity subsector by 2030 (contingent upon appropriate financial and technical support) • 100% below BAU emissions and 30% for whole energy sector (or 72 Gg) by 2030.	
Commitment Conditionality	Conditional targets	
Agriculture and Food Security	• NAPA Priorities: ➢ agriculture and food security ➢ development of resilient crop species including traditional varieties ➢ sustainable forest management ➢ sustainable livestock farming and management ➢ land-use planning and management ➢ marine resource development and aquaculture ➢ Integrated coastal zone management • Forestry sector measures to reduce deforestation and promote good land care to accepted mitigation practices according to REDD+ • Planned cooperation with New Zealand and other countries interested in mitigating methane (CH_4) and associated emissions for ruminant and pasture management	
Education		
Energy	• 100% renewable energy in the electricity subsector by 2030 (contingent upon appropriate financial and technical support) • 100% below BAU emissions and 30% for whole energy sector (or 72 Gg) by 2030. ➢ Doubling of wind installed capacity to 5.5 MW by 2025 ➢ Installing 10 MW grid-connected solar PV by 2025 ➢ Commissioning the proposed first-stage 4 MW geothermal plant by 2025 ➢ Adding 10 MW grid-connected solar PV by 2030 ➢ Commissioning the second-stage 4 MW geothermal plant by 2030 ➢ Substituting and/or replacement of fossil fuels with coconut oil-based electricity generation Additional planned mitigation interventions: • National Energy Road Map • Rural Electrification Nationally Appropriate Mitigation Action (NAMA) • Off grid renewable energy projects under Scaling Up Renewable Energy in Low-Income Countries Program • Energy efficiency measures to be pursued across the board to enable 15% savings in the energy sector.	$180 million (mitigation external funding) and substantial technology transfer and institutional support and training • $210.5 million indicative – with some overlap • $5 million (indicative) • $34.2 million
Environment, Climate Change, and Disaster Risk Management	• NAPA Priorities: ➢ Climate change and infrastructure ➢ Sustainable tourism development • NAPA core issues: ➢ Awareness raising at all levels ➢ Capacity building including institutional capacity ➢ Research and development ➢ Promotion of appropriate traditional knowledge and practices ➢ Technology Transfer ➢ Education and training ➢ Mainstreaming of climate change and disaster risk reduction ➢ Consideration of marine and terrestrial biodiversity issues • National Climate Change and Disaster Risk Reduction Policy ➢ Climate vulnerability and multi-sector impact assessments ➢ Integrated climate change and disaster risk reduction ➢ Community-based adaptation ➢ Loss and damage ➢ Ecosystem-based approaches • Carry out technology needs assessments	$9.5 million/ year (adaptation measures)

ADB Focus Area	VANUATU	
	Commitment	Financing Needs
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health	NAPA Priority: vector-borne and waterborne disease management	
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport		
Urban Development		
Water	NAPA Priority: integrated water resources management	
Industry and Trade		
Total		**About $429.7 million (partial, mitigation)** **$9.5 million/year (adaptation)**

Source: Vanuatu: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Vanuatu/1/VANUATU%20%20INDC%20UNFCCC%20Submission.pdf

Table A2.4. Summary of Intended Nationally Determined Contributions of Developing Member Countries in South Asia Region in Relation to ADB Focus Areas

ADB Focus Area	BANGLADESH	
	Commitment[17]	**Financing Needs[18]**
Intended Nationally Determined Contribution Highlights	• Reduce greenhouse gas (GHG) emissions by 5% (12 million metric tons of carbon dioxide equivalent [$MtCO_2e$]) from Business-as-Usual (BAU) levels by 2030 in the power, transport, and industry sectors, based on existing resources • Reduce GHG emissions by 15% (36 $MtCO_2e$) from BAU levels (by 2030 in the power, transport, and industry sectors (subject to appropriate international support on finance, investment, technology development and transfer, and capacity building)	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	• *(Non-energy related) Increase mechanization in agriculture leading to a reduction in numbers of draft cattle (and therefore lower methane emissions). 50% reduction in draft animals compared with BAU* • *Increase the share of organic manure in the used fertilizer mix. 35% increase in organic fertilizer share compared with BAU* • *Scale up rice cultivation using alternate wetting and drying irrigation. 20% of all rice cultivation uses alternate wetting and drying irrigation* • *Continuation of coastal mangrove plantation* • *Reforestation and afforestation in the reserved forests* • *Plantation in the island areas of Bangladesh* • *Continuation of Social and Homestead forestry* • Mitigation measure: ➢ Scaling up biomass production from sugar Adaptation priorities: • River training and dredging (including excavation of water bodies, canals, and drains) • Stress tolerant (salinity, drought, and flood) variety improvement and cultivation (including livestock and fisheries) • Adaptation measures:z ➢ Food security and livelihood and health protection (including water security) ➢ Salinity intrusion and coastal protection ➢ River flood and erosion protection ➢ Ecosystem-based adaptation (including forestry co-management) ➢ Community-based conservation of wetlands and coastal areas	$0.2 billion (mitigation) $8 billion (adaptation) $3 billion (adaptation) $6 billion (adaptation) $2.5 billion (adaptation) $1 billion (adaptation)
Education		

[17] Those in regular text indicate possible mitigation actions to deliver the conditional contribution, while those in italics are the possible conditional action-based contributions.
[18] Partial estimate only as just some examples of the kinds of investments were provided.

ADB Focus Area	BANGLADESH	
	Commitment[17]	**Financing Needs**[18]
Energy	• Ensure all new coal generation uses supercritical technology. 100% of new coal-based power plants use supercritical technology by 2030 ➢ Mitigation measures: ▪ Switching to 100% super critical coal power generation ▪ Repowering steam turbine with combined cycle gas turbine • Increased penetration of wind power. 400 megawatt (MW) of wind generating capacity by 2030 ➢ Mitigation measure: scaling up wind energy • Implement grid-connected solar plant to diversify the existing electricity generation mix. 1,000 MW of utility-scale solar power plant ➢ Mitigation measures: ▪ Developing utility-scale solar energy ▪ Expanding the solar homes programme ▪ Other solar • *Put in place policy mechanisms to incentivize the uptake of improved (more efficient) gas cookstoves.* • *70% market share of improved biomass cookstoves, reaching 20 million households in 2030* • *40% market share of improved gas cookstoves* • *Support the replacement of biomass with liquefied petroleum gas (LPG) for cooking purposes. 10% market switch from biomass to LPG for cooking compared with BAU* • *Promoting policies to induce greater level of energy efficiency and conservation in the household sector based on the Bangladesh Energy Efficiency and Conservation Masterplan* • Adaptation measure: ➢ Rural electrification	$16.5 billion (mitigation) $0.63 billion (mitigation) $0.6 billion (mitigation) $1.3 billion (mitigation) $1.2 billion (mitigation) $1.22 billion (mitigation) $3 billion (adaptation)
Environment, Climate Change, and Disaster Risk Management	• Reduce greenhouse gas (GHG) emissions by 5% (12 million metric tons of carbon dioxide equivalent [$MtCO_2e$]) from Business-as-Usual (BAU) levels by 2030 in the power, transport, and industry sectors, based on existing resources • Reduce GHG emissions by 15% (36 $MtCO_2e$) from BAU levels (by 2030 in the power, transport, and industry sectors (subject to appropriate international support on finance, investment, technology development and transfer, and capacity building) Adaptation priorities: • Improved early warning system for tropical cyclone, flood, flash flood and drought; disaster preparedness and construction of flood and cyclone shelters; tropical cyclones and storm surge protection ➢ Adaptation measure: comprehensive disaster management • Inland monsoon flood-proofing and protection; climate-resilient infrastructure and communication; climate-resilient housing ➢ Adaptation measure: building climate-resilient infrastructure • Research and knowledge management • Adaptation on local-level perspectives, etc. • Biodiversity and ecosystem conservation • Capacity building at the individual and institutional levels to plan and implement adaptation, programs, and projects in the country. ➢ Adaptation measure: policy and institutional capacity-building	$10 billion (adaptation) $5 billion (adaptation) $0.5 billion (adaptation)
Finance Sector Development		

ADB Focus Area	BANGLADESH	
	Commitment[17]	Financing Needs[18]
Gender and Development		
Governance and Public Management		
Health	• Adaptation priority: adaptation to climate change impacts on health	
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport	• Modal shift from road to rail, delivered through a range of measures, including underground metro systems and bus rapid transit systems in urban areas. Co-benefits will include reduced congestion, improved air quality, and improved traffic safety. To achieve a shift in passenger traffic from road to rail of up to about 20% by 2030 compared with BAU. • Reduced congestion and improved running of traffic. This will be achieved by a number of measures, including building of expressways to relieve congestion and public transport measures. 15% improvement in the efficiency of vehicles due to more efficient running. • Mitigation measures: ➢ Building an elevated express highway in Dhaka ➢ Dhaka mass rapid transit system	$2.65 billion (mitigation) $2.70 billion (mitigation)
Urban Development	• *Increase composting of organic waste. 50% of the managed waste fraction is diverted from landfill to composting* • *Promote landfill gas capture and power generation. 70% of landfill gas captured and used for electricity generation* Adaptation priority: • Improvement of urban resilience through improvement of drainage system to address urban flooding ➢ Adaptation measure: urban resilience	$3 billion (adaptation)
Water		

ADB Focus Area	BANGLADESH	
	Commitment[17]	Financing Needs[18]
Industry and trade	• (Energy-related) Carry out energy audits to incentivize the uptake of energy efficiency and conservation measures in the main industry sectors based on the Bangladesh Energy Efficiency and Conservation Masterplan. 10% energy consumption reduction in the industry sector compared with BAU • *Promote policies to induce greater level of energy efficiency and conservation in the commercial sector based on the Bangladesh Energy Efficiency and Conservation Master plan* • *Incentivize rainwater harvesting in commercial buildings as a form of water and energy conservation* • *25% reduction of overall energy consumption of the commercial sector compared with BAU*	
Total		**~$27 billion (mitigation) ~$42 billion (adaptation)[19]**

Source: Bangladesh: Intended Nationally Determined Contributions. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Bangladesh/1/INDC_2015_of_Bangladesh.pdf

[19] These adaptation/mitigation cost figures were derived from the key mitigation and adaptation measures identified in the INDC, and does not necessarily account for all expected costs of necessary measures.

ADB Focus Area	BHUTAN	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	Intends to remain carbon neutral where GHG emissions will not exceed carbon sequestration by the forests (estimated at 6.3 million tons of carbon dioxide [CO_2])	
Commitment Conditionality	Unconditional and conditional target	
Agriculture and Food Security	• Maintain a minimum of 60% total land under forest cover for all time • Sustainable forest management and conservation of environmental services (maintain current levels of forest cover, currently at 70.46%) ➢ Sustainable management of forest management units (FMU), protected areas, community forests, forest areas outside FMUs, and private forests ➢ Enhancing forest information and monitoring infrastructure through national forest inventories and carbon stock assessments ➢ Forest fire management and rehabilitation of degraded and barren forestlands • Climate smart livestock farming practices ➢ Organic livestock farming and eco-friendly farm designs ➢ Improvement of livestock breeds, including conservation of native gene pool ➢ Expansion of biogas production with stall feeding ➢ Agroforestry or agro-salvo pastoral systems for fodder production • Climate smart agriculture ➢ Organic farming and conservation agriculture ➢ Sustainable agricultural practices ➢ Integration of soil and land management technologies and approaches • Climate-resilient agriculture ➢ Climate-resilient crop varieties and conservation of plant genetic resources ➢ Surveillance of crop pests and diseases ➢ National capacity development on emergency response to agricultural pest and disease outbreaks/epidemics ➢ Cold storage facilities at subnational regions ➢ Investments in irrigation systems and management ➢ Crop insurance programs against climate-induced extremes ➢ Sustainable soil and land management technologies and approaches • Climate-resilient livestock farming practices ➢ Climate-resilient farm designs and practices ➢ Livestock insurance against climate-induced extremes	• Successful implementation will depend on the level of financial (and technical) support received • Implementing adaptation measures with sufficient funding will be required to ensure that progress made over the past decades are not derailed by adverse climate change impacts
Education		
Energy	• Export of electricity from clean hydropower projects (can offset up to 22.4 million tCO_2e per year by 2025 in the region) • Renewable energy generation ➢ Sustainable and clean hydropower development with support from Clean Development Mechanisms (CDM) or other climate market mechanisms • Energy demand side management by promoting energy efficiency in appliances, buildings and industrial processes and technologies • Clean renewable and climate-resilient energy generation ➢ Promotion of renewable energy (solar, wind, small hydro, biomass) other than large hydro ➢ Water storage and reservoirs to ensure energy security during lean dry season ➢ Watershed and sustainable land management to protect catchment areas for hydropower	

ADB Focus Area	BHUTAN	
	Commitment	**Financing Needs**
Environment, Climate Change, and Disaster Risk Management	• To remain carbon neutral (i.e., emission of GHG will not exceed carbon sequestration by the forests, estimated at 6.3 million tCO_2) • Strengthen climate change resilience ➢ Remote sensing and satellite-based technologies and approaches ➢ Continual assessment of potentially dangerous glacial lakes and improvement of early warning systems for glacial lake outburst floods ➢ Monitoring, assessment, and warning systems for flash floods and landslide hazards/ risks ➢ Forest fire assessment and management ➢ Risk and damage from windstorms assessment and management on agricultural crops and human settlements ➢ Enhancement of emergency medical services and public health management ➢ Enhancing preparedness and response to climate change-induced disasters • Enhancing climate change information services ➢ Improvement of hydrometeorological network and weather and flood forecasting ➢ Development of climate change scenarios with appropriate resolution for mountainous situation • Integration of climate-resilient and low-emission strategies in urban and rural settlements ➢ Storm water management and sewer systems ➢ Environmental management and safeguards of development activities	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health	Strengthened integrated risk monitoring and early warning systems and response to climate-sensitive diseases	
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport	• Promotion of low-carbon transport system ➢ Alternative modes of transport to road transport (rail, water, gravity ropeways) ➢ Efficiency of freight transport ➢ Nonmotorized transport and nonfossil fuel-powered transport (electric and fuel cell vehicles) ➢ Improved efficiency and emissions from existing vehicles through standards and capacity building ➢ Use of appropriate intelligent transport systems • Climate-proof transport infrastructure (critical roads, bridges, tunnels, trails) against landslides, flash floods	
Urban Development	• Application of zero waste concept and sustainable waste management practices ➢ Enhance three R principle including conversion of waste into resources ➢ Improve current system and infrastructure for waste management • Integration of climate-resilient and low-emission strategies in urban and rural settlements ➢ Green buildings, sustainable construction methods ➢ Climate smart cities	

ADB Focus Area	BHUTAN	
	Commitment	**Financing Needs**
Water	• Integrated Water Resources Management approach ➢ Water resources monitoring, assessment, and mapping ➢ Appropriate technologies for water harvesting and efficient use ➢ Climate proofing water distribution systems ➢ Integrated watershed and wetland management • Climate-resilient household water supply and sanitation	
Industry and trade	• Improve manufacturing processes in existing industries through investments and adoption of cleaner technology, energy efficiency, and environmental management • Enhance and strengthen environmental compliance monitoring system • Promote investments in new industries that are at higher levels in the value chain, green industries and services • Promote industrial estate development and management in line with efficient, clean, and green industry development objectives	
Total		**No estimate provided**

Source: Bhutan: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Bhutan/1/Bhutan-INDC-20150930.pdf

ADB Focus Area	INDIA	
	Commitment[20]	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Reduce emission intensity of its gross domestic product (GDP) by 33%–35% by 2030 compared with 2005 (no bind on any sector-specific mitigation obligation/action) • Achieve 40% cumulative electric power installed capacity from nonfossil fuel-based energy resources by 2030 (with transfer of technology and low-cost international finance) • Create an additional carbon sink of 2.5–3 billion tons of CO_2 equivalent through additional forest and tree cover by 2030 • Better adapt to climate change by enhancing investments in development programs for vulnerable sectors: agriculture, water resources, Himalayan region, coastal regions, health, and disaster management	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	• Create an additional carbon sink of 2.5–3 billion tons of CO_2 equivalent through additional forest and tree cover by 2030 • Full implementation of Green India Mission (with aim to further increase forest/tree cover to the extent of 5 million ha and improve quality of forest/tree cover on another 5 million ha of forest/nonforest lands along with providing livelihood support) and other programs of afforestation	$206 billion (for adaptation actions in agriculture, forestry, fisheries infrastructure, water resources and ecosystems)
Education		
Energy	• Achieve 40% cumulative electric power installed capacity from nonfossil fuel-based energy resources by 2030 (with transfer of technology and low-cost international finance) • Introduce new, more efficient, and cleaner technologies in thermal power generation • Promote renewable energy generation and increase the share of alternative fuels in overall fuel mix • Promote energy efficiency in buildings and appliances	~$7.7 billion (in 2030, for adaptation)[21]

Environment, Climate Change, and Disaster Risk Management	• Reduce emission intensity of its GDP by 33%–35% by 2030 compared with 2005 (no bind on any sector-specific mitigation obligation/action)
	• Put forward and further propagate a healthy and sustainable way of living based on traditions and values of conservation and moderation
	  ➢ Develop climate-resilient infrastructure
	  ➢ Planning and implementation of actions to enhance climate resilience and reduce vulnerability to climate change
	• Better adapt to climate change by enhancing investments in development programs for the vulnerable sectors: agriculture, water resources, Himalayan region, coastal regions, health, and disaster management
	• Build capacities, create domestic framework and international architecture for quick diffusion of cutting-edge climate technology in India and for joint collaborative R&D for such future technologies
		Additional investments for strengthening resilience and disaster management
		
		Mitigation activities for moderate low-carbon development would cost around $834 billion (until 2030)[22]

Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		

[20] Identified priority areas where India will continue with ongoing interventions, enhance existing policies, and launch new initiatives.
[21] Based on an ADB study on assessing the costs of climate change adaptation in South Asia.
[22] Estimates by NITI Aayog (National Institution for Transforming India).

ADB Focus Area	INDIA	
	Commitment[20]	**Financing Needs**
Sustainable Development Goals	Adopt a climate-friendly and cleaner path than the one followed hitherto by others at corresponding level of economic development	
Transport	Reduce emissions from and promote energy efficiency from the transport sector	
Urban Development	Reduce emissions from waste	
Water		
Industry and trade	Promote energy efficiency	
Total		**Detailed assessment will be finalized at a later date. At least $2.5 trillion for climate change actions between 2015 and 2030 (rough estimate)**

Source: India: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/India/1/INDIA%20INDC%20TO%20UNFCCC.pdf

ADB Focus Area	MALDIVES	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Reduce 10% of GHG emissions by 2030 compared with BAU • Reduce 24% of GHG emissions (supported and enabled by availability of financial resources, technology transfer and capacity building)	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	• Enhancing food security ➢ Strengthen existing climate risk insurance mechanism to protect the farmers and reduce the income losses from extreme weather events ➢ Establish strategic food storage facilities and distribution centers as adaptive measure ➢ Promote/introduce alternative technologies to make local agriculture more climate-resilient ➢ Establish mechanisms to ensure food security to citizens in case of extreme events and market irregularities • Fisheries ➢ Facilitate fisheries industry to adapt tuna catch from shallow water to deep water ➢ Diversification of the fisheries sector to sustainable use of available marine resources ➢ Facilitation and increased access to finance to develop mariculture ➢ Strengthen fisherfolk insurance mechanism • Coastal protection ➢ Coastal protection of inhabited islands and resorts ➢ Land elevation, shore protection, and reclamation as adaptation measures to increase resilience of vulnerable islands	Successful implementation of adaptation and mitigation actions and undertakings require provision of adequate and predictable financial resources, transfer of environmentally sound technologies, and capacity building support
Education		
Energy	• Efforts, actions, and undertakings in reducing GHG emissions focused on the energy sector • Fuel switching to alternative energy options • Infrastructure resilience ➢ Establishment of national building code for integration of climate- and weather-related factors into the design of buildings and facilities	
Environment, Climate Change, and Disaster Risk Management	• Reduce 10% of GHG emissions by 2030 compared with BAU • Increase reduction in GHG up to 24% (from 10%), supported and enabled by availability of financial resources, technology transfer, and capacity building ➢ Sectors: energy-electricity generation, energy efficiency (domestic consumption, processes and product use), transportation, waste • Actions and undertakings will be based on strategies and sectoral action plans designed among others, for the following areas of intervention: energy, tourism, waste, water, and building sectors • Infrastructure resilience ➢ Increase resilience and climate proofing of all critical infrastructures including utility services, health-care facilities, telecommunications ➢ Establishment of National Development Act to facilitate integration of climate change into development planning, considering the economies of scale for public services, land-use planning, and population consolidation • Safeguarding coral reef and biodiversity ➢ Coral reef conservation through ecosystem approach ➢ Reduction of sources of pollution through appropriate policies, development of appropriate sewage treatment systems on the islands, management and safe disposal of solid waste as adaptation measures to protect coral reefs • Tourism ➢ Insurance mechanism to reduce impacts on the tourism sector through risk sharing and risk management ➢ Green tax on tourism to finance for environmental management • Early warning and systematic observation ➢ Expand and strengthen the meteorological network and weather-related early warning system ➢ Improve climate forecasting using climate modeling ➢ Develop appropriate early warning systems and risk management tools	

ADB Focus Area	MALDIVES	
	Commitment	Financing Needs
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health	• Public Health ➢ Vector surveillance program to address emergence and reemergence of vector-borne diseases ➢ Nationwide vector control programs ➢ Food safety increased through appropriate policies and monitoring mechanisms	
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport	Infrastructure resilience: airport expansion to handle additional passenger capacity. To protect airports and seaports, coastal protection measures will be carried out	
Urban Development		
Water	• Enhancing water security ➢ Cost-effective desalination techniques to be explore ➢ Integrated Water Resources Management Schemes, which includes rainwater harvesting, groundwater recharging, and desalination ➢ Develop appropriate policies and implement programs to address water security and water shortages during dry periods	
Industry and Trade		
Total		**No estimate provided**

Source: Maldives: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Maldives/1/Maldives%20INDC%20.pdf

ADB Focus Area	NEPAL	
	Commitment[23]	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Achieve 80% electrification through renewable energy sources having appropriate energy mix by 2050. • Reduce dependency on fossil fuels by 50% by 2050. • Maintain 40% of total area of country forest cover • Sustainable forest management to increase forest productivity and products	
Commitment Conditionality	Conditional targets	
Agriculture and Food Security	• Maintain 40% of the total area of the country under forest cover and forest productivity and products will be increased through sustainable management of forests (equal emphasis on enhancing carbon sequestration and forest carbon storage and improving forest governance) • *Control drivers of deforestation and forest degradation to enhance carbon sequestration* • *Enhance the agriculture sector by adopting climate-friendly technologies and reducing climate change impacts*	Requires bilateral and multilateral grant support to meet both qualitative and quantitative targets
Education		
Energy	• Achieve 80% electrification through renewable energy sources having appropriate energy mix by 2050. • Reduce dependency on fossil fuels by 50% by 2050. • Under the National Rural and Renewable Energy Programme (NRREP), more efficient and reduced dependency on biomass: ➢ 25 MW of mini and micro hydropower ➢ 600,000 solar home systems ➢ 1,500 institutional solar power systems (solar photovoltaic [PV] and solar pumping systems) ➢ 4,000 improved water mills ➢ 475,000 improved cookstoves ➢ 130,000 household systems, 1,000 institutional and 200 community biogas plants • Convert waste to energy	
Environment, Climate Change, and Disaster Risk Management	• Adaptation needs for future and in context of post-2020 will be envisioned through the National Adaptation Plans (NAPs) ➢ *Formulate and implement NAP, NAPA, Local Adaptation Plans of Action* • Strengthen implementation of Environment-Friendly Local Governance (EFLG) Framework in Village Development Committees and municipalities to complement climate change adaptation, promote renewable energy technologies, and water conservation and greenery development • Undertake scientific (biophysical as well as social sciences) approaches to understand and deal with the impacts of climate change in mountains, hills, and lowland ecosystems and landscapes. It will develop and implement adaptation strategies for climate change-affected sectors • Study and understand further loss and damage associated with climate change impacts with the support from scientific and academic communities. • Formulate the Low Carbon Economic Development Strategy (envision country's future plan to promote economic development through low-carbon emission with particular focus on the (i) energy, (ii) agriculture and livestock, (iii) forests, (iv) industry, (v) human settlements and wastes, (vi) transport, and vii) commercial sectors • *Provide better price from carbon markets to ensure an equitable benefit-sharing mechanisms and maximize benefits at the local level to help sustainable management of forests* • *Sell carbon credits at a better price from its renewable energy and REDD+ programs* • *Address climate-induced disasters in earthquake-affected areas and rebuild Nepal better.* • *Capacity building at the institutional level to plan and implement adaptation and mitigation programs and projects* • *Create an enabling environment to promote private sector investments and foreign direct investments in low carbon (energy efficiency and renewable energy) technologies*	

[23] Those in italics are identified priority areas requiring bilateral and multilateral grant support.

ADB Focus Area	NEPAL	
	Commitment[23]	Financing Needs
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health	Decrease the rate of air pollution through proper monitoring of sources of air pollutants like wastes, old and unmaintained vehicles, and industries.	
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport	Develop its electrical (hydropowered) rail network by 2040 to support mass transportation of goods and public commuting	
Urban Development		
Water		
Industry and Trade		
Total		**No estimate provided**

Source: Nepal: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Nepal/1/Nepal_INDC_08Feb_2016.pdf

ADB Focus Area	SRI LANKA	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Reduce GHG emissions by 20% (approximately 36,010.2 gigagram [Gg]) in energy sector by 2030 against the BAU scenario – 4% unconditionally (approximately 7,202.04 Gg) and 16% conditionally (approximately 28,808.16 Gg). • Reduce GHG emissions by 10% from transport, waste, industries, and forest – 3% unconditionally and 7% conditionally against BAU scenarios • Build resilience in most vulnerable communities, sectors, and areas to adverse effects of climate change, focusing on human health, food security, water and irrigation, coastal and marine, biodiversity, urban infrastructure and human settlement, tourism and recreation	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	• Increasing forest cover in the country up to healthy level and manage deforestation and enriching use by introducing perennial crops ➢ Increase forest cover from 29% to 32% by 2030 ➢ Improve of the quality of growing stock of Natural Forests and Forest plantations ➢ Restore of degraded forests and hilltops ➢ Increase river basin management for major rivers ➢ Forestation of underutilized private lands and marginal tea lands ➢ Urban forestry (tree planting along roadside, temple lands, schools, government lands) ➢ Establish/reactivate National Forest Monitoring System ➢ Promote private and public sector companies for investment in environmental conservation projects through corporate social responsibility (CSR) programs • Adaptation in agriculture ➢ Develop/introduce/ produce integrated Pest Management practices to minimize pest damages ➢ Develop varieties' resistance/tolerance to biotic and abiotic stresses arising from climate change ➢ Re-demarcating Agro Ecological Regions maps of Sri Lanka with current climate and future climate and recommend appropriate crops for different areas to reduce climate vulnerability ➢ Introduce suitable soil and water conservation practices for other marginal areas to minimize land degradation and to improve land and water productivity (Soil Conservation Act to sustain land productivity, water harvesting technologies, on-farm efficient water management practices, on- and off-farm drainage for agriculture/ efficient water management practices, on- and off-farm damage, restoration of marginal lands, efficient use of crop rotation to improve soil nutrition status and reduce use of chemical fertilizers, climate smart villages for different farming situation • Adaptation in livestock ➢ Introduce improved feeding practices ➢ Establish proper waste disposal facilities in all livestock farms ➢ Introduce enhanced soil fertility by proper livestock management ➢ Introduce heat-tolerant breeds ➢ Enhance existing capacity of managing and diagnosis of livestock and poultry diseases related to climate change ➢ Introduce early warning system and network for exchange information on extreme weather and climate changes associated with hazard to livestock and poultry • Adaptation in fisheries ➢ Establish fish barricade devices for each perennial reservoir to prevent fish escape (in consultation with Irrigation Department) ➢ Cryopreservation for stock fish sperms for artificial breeding ➢ Convert existing open breeding facilities into indoor facilities and design same as at inception of construction to control temperature impacts ➢ Appropriate fish fingerlings stocking program for stock enhancement for culture fisheries ➢ Develop temperature-tolerant species to aquaculture and promote mariculture ➢ Minimize aquatic pollution due to water scarcity in lagoons and inland water bodies ➢ Increase production capabilities of fisheries, aquatic resources in lagoons	

ADB Focus Area	SRI LANKA	
	Commitment	**Financing Needs**
Agriculture and Food Security	• Adaptation in Irrigation ➢ Restore/rehabilitate abandoned tanks and irrigation canals ➢ Establish water flow and sediment loads monitoring system in selected streams ➢ Introduce boreholes/tube wells as a drought intervention for domestic water supply ➢ Enhance productivity of irrigation water use by introducing improved on-farm water application technologies ➢ Assess river floods and mitigation measures and early warning system for possible flash floods ➢ Develop water resources management plans and strategies for selected major rivers adopting traditional knowledge and new technology ➢ Adopt water-efficient technologies to harvest water, conserve solid moisture, and reduce siltation and saltwater intrusion ➢ Modify irrigation techniques, including amount, timing, or technology ➢ Develop conservation measures for irrigation tanks and canals to ensure sustainable water supply • Adaptation in coastal and marine ➢ Establish accurate sea-level rise forecasting system (reestablish existing mean sea-level rise, establish additional sea-level stations, acquire globally available technology) ➢ Map inundation-prone areas with assessing vulnerability to sea-level rise along coastal belt (reassess inundation maps, periodically validate and update inundation maps) ➢ Restore, conserve, and manage coral, sea grass, mangroves, and sand dunes in sensitive areas (survey and mapping of coastal habitats; scientifically identify suitable sites for conservation, rehabilitation, and restoration; conduct pilot projects at high prioritized sites) ➢ Prepare risk maps for coastal zone with mapping and take appropriate actions (prepare vulnerability database for coastal zone, establish Digital Elevation Model) ➢ Establish 1,000 hectares of coastal forests and greenbelt along the island	
Education		
Energy	• Establish large-scale wind power farms of 514 MW (replace the equivalent of energy generation from planned thermal power plants) • Broadening the solar power electricity generation capacity of the country with participation of the private sector and adapting of advanced technology available. Solar power plants with the capacity of 115 MW will be established. • Promote use of biomass (fuelwood) and waste (municipal waste, industrial and agricultural waste) by elevating its use in the power generation as a modern and convenient energy source of Sri Lanka, which will be adding 104.62 MW in 2025. • Promote mini and micro hydropower generation projects as an environment-friendly power generation option to national economy. Mini hydropower plants with 176 MW capacity will be established. • Introduce Demand Side Management (DSM) activities to improve the load factor of the system and to upgrade the efficiency at consumer end such as increase efficiency of fans, pumps, motors, compressors, refrigerators, and Building Management System (BMS) for the commercial, government, and domestic sector. • More priority for sustainable energy policies (enforced to absorb more Non-Conventional Renewable Energy to the system, i.e., at least 50% by 2030)	
Environment, Climate Change, and Disaster Risk Management	• Reduce GHG emissions by 7% (4% [7,202.04 Gg] from the energy sector and 3% from others, i.e., energy, transport, industry, waste, and forests) by 2030 compared with BAU. • Reduce GHG emissions by 23% (16% [28,808.16 Gg] from energy and 7% from others), with international assistance • Build resilience in most vulnerable communities, sectors, and areas to adverse effects of climate change, focusing on human health, food security, water and irrigation, coastal and marine, biodiversity, urban infrastructure and human settlement, tourism and recreation. The adaptation targets are • Mainstream climate change adaptation into national planning and development • Enable climate-resilient and healthy human settlements • Minimize climate change impacts on food security • Improve climate resilience of key economic drives • Safeguard natural resources and biodiversity from climate change impacts	

ADB Focus Area	SRI LANKA	
	Commitment	**Financing Needs**
	• Adaptation for biodiversity ➢ Restore degraded areas inside and outside the protected area network ➢ Increase connectivity through corridors, landscape/matrix improvement and management ➢ Improve management and consider increasing the extent of protected areas, buffer zones, and create new areas in vulnerable zones ➢ Identify biodiversity hot spots and upgrade them ➢ Promote traditional methods of biodiversity conservation ➢ Implement community-driven conservation projects and programs • Adaptation in tourism and recreation ➢ Adjust tourism and recreation industry to altered conditions of the destinations ➢ Increase the preparedness of tourism and recreation operation to extreme weather conditions ➢ Assess the current promotional strategies with connection to emerging scenarios of climate change; beach tourism and nature destinations ➢ Improve energy efficiency in tourism establishments by using available best alternative environment-friendly energy sources, solar and wind power, biomass ➢ Introduce resources management mechanism into the tourism sector to minimize damages to the existing ecosystem by contributing in waste management, solid and waste water, in tourism destinations which could affect the ecosystem • On loss and damage ➢ Improve forecasting capabilities at all-time scales ➢ Improve weather forecasting capabilities – extended range forecasting (longer period) and Seasonal Forecasting ➢ Analyze total losses and damages of climate-induced disasters from 1990 and the gap that was not compensated / recovered, and make recommendations to establish the Warsaw International Mechanisms for Loss and Damage in an effective and efficient manner ➢ Strengthen existing national mechanism to recover the losses and damages to the maximum possible extent ➢ Introduce possible insurance schemes to recover the losses and damages on livelihood, properties, infrastructure, agriculture and fisheries, and other affected sectors due to climate change adverse impacts	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health	• Adaptation ➢ Establish clinical waste (solid and liquid) disposal systems in all hospitals, in collaboration with relevant agencies ➢ Control of vector-borne diseases ➢ Control of food-borne and waterborne diseases including non-communicable diseases such as chronic kidney disease of unknown origin, mental diseases, and cancers due to dehydration from extreme heat and drought	
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		

ADB Focus Area	SRI LANKA	
	Commitment	**Financing Needs**
Transport	• Mitigation: Climate smart technology ➢ Establish energy-efficient and environmentally sustainable transport systems by 2030. Launching of Electric Buses as a Pilot Project, introduction of Bus Rapid Transport (BRT) system to encourage public transport, introduction of Intelligent Transport System (ITS)-based bus management system ➢ Upgrade Fuel Quality Standards to reduce GHG emissions ➢ Reduce unproductive transport systems from current usage (reduce unproductive vehicles by 25% in 2025, unconditionally, and this could increase to 50% with conditions, development of urban transport master plans to improve transport system) ➢ Shift passengers from private to public transport modes (park and ride system, BRT system, rehabilitation of railway line) ➢ Enhance energy efficiency and quality of public transport and economic instruments to environment-friendly transport modes (electrify railway, purchase new rolling stock for railway) ➢ Electrify three-wheelers ➢ Introduce electric boat service using inland water canal for public transportation to reduce congestion in roads as well as GHG emissions ➢ Implement international laws and regulations on Maritime Safety and Security in collaboration with Merchant Shipping Secretariat ➢ Maintain international standards in maritime transportation ➢ Implement new vehicle emission standards ➢ Minimize emissions from vehicles that emit excessive smoke on the road (heavy smoke vehicle spotter program, roadside vehicle emission testing program, inspection and monitoring of vehicle emission testing centers) ➢ Encourage/ introduce low emission vehicles (electric and hybrid)	
Urban Development	• Mitigation ➢ Introduce source separation system at the household level and proper collection mechanism ➢ Improve /introduce compost preparation system for each local authority and increase organic fertilizer for agricultural purposes by providing facilities to control quality of compost and introduce market for produced compost ➢ Introduce energy generation by waste (waste to energy programs) ➢ Improve waste collection mechanism ➢ Design and implement Comprehensive Solid Waste Management Strategies for 40%–60% local authorities before 2030 ➢ Monitor waste management activities ➢ Implement systematic management of industrial/hazardous and clinical waste management • Adaptation ➢ Mainstream climate reliance in physical and urban planning and incorporate them into development projects ➢ Promote climate resilience building designing and alternative materials for construction ➢ Minimize impacts on human settlements and infrastructure due erratic changes in population ➢ Enhance the resilience of human settlements and infrastructure to extreme weather event (infrastructure facilities giving due consideration to contour line and soil conservation methods particularly in hilly areas, design and maintenance of infrastructure giving due consideration to the runoff system and flooding) ➢ Minimize the impact of sea-level rise on coastal settlements and infrastructure (design infrastructure and structures to face sea-level rise, shifting urban densification inward, demarcate protection areas from sea level) ➢ Reduction of urban–rural gap in terms of housing in the physical environment along with other amenities ➢ Housing for all in 2025 through implementation of Low-Income Housing ➢ Greening cities by introducing Urban Forest Parks, rooftop gardens, vertical gardens, wetland parks, and roadside planting	

ADB Focus Area	SRI LANKA	
	Commitment	**Financing Needs**
Water	• Adaptation ➢ Erect sand bags across the river to prevent saline water intrusion wherever intakes are subjected to saline water intrusion ➢ New water supply projects and schemes in water-scarce areas (assess scarce areas and map, explore new water sources, identify alternative sources, implement schemes, design quantification, qualitative analysis, etc.) ➢ Water safety management plans ➢ Improve protection and conservation measures in all drinking water catchment areas ➢ Permanent water supply method implemented with pipeline system through new water supply scheme ➢ Mobile laboratories to ensure safe drinking water supply ➢ Monitoring and recording of saline water intrusion into drinking water source during the drought period ➢ Safety of water management facilities and minimize disturbances to water supply due to extreme weather events	
Industry and Trade	• Mitigation ➢ Modernize and facilitate industries to follow recognized standards related to GHG emissions ➢ Continue fuel switching to biomass ➢ Improve industrial energy/water/raw materials efficiency ➢ Introduce and promote tax structures to promote sustainable technologies ➢ Encourage industries to reduce GHG emissions through introduction of rewarding system ➢ Establish eco-industrial parks and villages ➢ Implement National Green Reporting System ➢ Apply eco-efficiency and cleaner production ➢ Greening the supply chain through introduction of Life Cycle Management and Industrial Symbiosis to managing zero waste ➢ Introduce high efficiency motors for the entire industry sector	
Total		**No estimate provided**

Source: Sri Lanka: Intended Nationally Determined Contributions. http://www4.unfccc.int/Submissions/INDC/Submission%20Pages/submissions.aspx

Table A2.5. Summary of Intended Nationally Determined Contributions of Developing Member Countries in Southeast Asia Region in Relation to ADB Focus Areas

ADB Focus Area	CAMBODIA	
	Commitment	Financing Needs
Intended Nationally Determined Contribution Highlights	• Greenhouse gas ([GHG], carbon dioxide equivalent, CO_2e) emission reduction of 27% by 2030 compared with Business-as-Usual (BAU), with international assistance • Increase forest cover to 60% by 2030, conditional • Adaptation emphasis on forestry, biodiversity, coastal and flood protection, health, agriculture, and fisheries	
Commitment Conditionality	Conditional targets	
Agriculture and Food Security	Mitigation • Use of renewable energy for irrigation and solar lamps. • Increasing forest cover to 60% of national land area by 2030 and maintaining it after 2030 ➢ Reclassification of forest areas to avoid deforestation ➢ Implementation of the Forest Law Enforcement, Governance and Trade Programme in Cambodia – Improved forest governance and promote international trade in verified legal timber. Adaptation • Climate-proof agriculture systems for adapting to changes in water variability to enhance crop yields • Climate-resilient agriculture in coastal areas (sea dykes, climate-smart farm systems) • Crop varieties suitable to Agro-Ecological Zones • Aquaculture production systems and practices • Flood protection dykes for agricultural and urban development • Mobile pumping stations and permanent stations in responding to mini-droughts, promoting groundwater research	$1.27 billion (for priority activities up to 2018)
Education		
Energy	• National grid-connected renewable energy generation (solar energy, hydropower, biomass, and biogas) and connecting decentralized renewable generation to the grid. • Off-grid electricity such as solar home systems, hydro (pico, mini, and micro). • Promoting energy efficiency by end users. • Promoting energy efficiency for buildings and more efficient cookstoves	
Environment, Climate Change, and Disaster Risk Management	• Greenhouse gas ([GHG], carbon dioxide equivalent, CO_2e) emission reduction of 27% by 2030 compared with Business-as-Usual (BAU), with international assistance • Adaptation emphasis on forestry, biodiversity, coastal and flood protection, health, agriculture, and fisheries Adaptation • Community-based adaptation actions, restoration of natural ecology system • Management measures for protected areas to adapt to climate change • Early warning systems and climate info dissemination • Strengthen technical/ institutional capacity to conduct climate change impact assessments, projections, and mainstreaming of climate change into sector/ subsector development plans	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health	Adaptation • Upscale Malaria Control Program • Upscale national programs to address risk of acute respiratory infection, diarrheal disease and cholera	
Information and Communication Technology		
Regional Cooperation and Integration		

ADB Focus Area	CAMBODIA	
	Commitment	**Financing Needs**
Social Development and Poverty		
Sustainable Development Goals		
Transport	Mitigation • Promoting mass public transport • Improving operation and maintenance of vehicles through motor vehicle inspection and eco-driving, and the increased use of hybrid cars, electric vehicles, and bicycles Adaptation • Road infrastructure and ensuring effective operation and maintenance, taking into account of climate change impacts	
Urban Development	Reducing emissions from waste through use of biodigesters and water filters.	
Water		
Industry and Trade	Promoting use of renewable energy and adopting energy efficiency for garment factory, rice mills, and brick kilns.	
TOTAL		**$1.27 billion (for priority activities up to 2018)** **No estimate for post-2018**

Source: Cambodia: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Cambodia/1/Cambodia's%20INDC%20to%20the%20UNFCCC.pdf

ADB Focus Area	INDONESIA	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Reduce emissions by 29% by 2030 compared with BAU • Reduce emissions by 41% by 2030 compared with BAU (subject to provision in global agreement including through bilateral cooperation)	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	Economic resilience • Sustainable agriculture and plantations • Integrated watershed management • Reduction of deforestation and forest degradation • Land conservation	
Education		
Energy	Economic resilience • Utilization of degraded land for renewable energy • Improved energy efficiency and consumption patterns	
Environment, Climate Change, and Disaster Risk Management	• Reduce emissions by 29% compared with BAU scenario (approximately 2,881 gigatons of carbon dioxide equivalent [$GtCO_2e$]) by 2030 • Reduce emissions by 41% by 2030 compared with BAU (subject to provision in global agreement including through bilateral cooperation, covering technology development and transfer capacity building, payment for performance mechanisms, technical cooperation, and access to financial resources. • Nationwide coverage of the following sectors: energy (including transport), industrial processes and product use; agriculture; land use, land-use cover, and forestry (LULUCF); and waste Strategic approach: • Take on integrated, landscape-scale approach covering terrestrial, coastal, and marine ecosystems, implemented through capacity building of subnational jurisdictions. • Scale up the diversity of traditional wisdom as well as innovative climate mitigation and adaptation efforts by the government, the private sector, and communities. • Include key climate change indicators in formulating its development program targets. • Improve its management of natural resources to enhance climate resilience by protecting and restoring key terrestrial, coastal, and marine ecosystems. Enabling conditions for climate resilience: • Certainty in spatial planning and land use • Tenurial/food/water security • Renewable energy Social and livelihood resilience: • Enhancement of adaptive capacity by developing early warning systems, broad-based public awareness campaigns, and public health programs • Development of community capacity and participation in local planning processes to secure access to key natural resources • Ramping-up disaster preparedness programs for natural disaster risk reduction • Identification of highly vulnerable areas in local spatial and land-use planning efforts • Improvement of human settlements, provision of basic services and climate-resilient infrastructure development • Conflict prevention and resolution Ecosystem and landscape resilience: • Coastal zone protection • Ecosystem conservation and restoration • Social forestry • Integrated watershed management	Welcomes bilateral, regional, and international market mechanisms that facilitate and expedite technology development and transfer, capacity building, payment for performance mechanisms, technical cooperation, and access to financial resources to support climate mitigation and adaptation efforts toward a climate-resilient future.
Finance Sector Development		
Gender and Development		
Governance and Public Management		

ADB Focus Area	INDONESIA	
	Commitment	Financing Needs
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport		
Urban Development	Ecosystem and landscape resilience: climate-resilient cities	
Water		
Industry and Trade		
TOTAL		**No estimate provided**

Source: Indonesia: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Indonesia/1/INDC_REPUBLIC%20OF%20INDONESIA.pdf

ADB Focus Area	LAO PEOPLE'S DEMOCRATIC REPUBLIC	
	Commitment	**Financing Needs [24]**
Intended Nationally Determined Contribution Highlights	• Increase forest cover to 70% of land area • Increase share of renewable energy to 30% by 2025 • Emphasis on large hydropower • Increased resilience of eco sectors including agriculture, forestry, water resources, transport and urban development, and public health	
Commitment Conditionality	Conditional targets	
Agriculture and Food Security	• Increase forest cover to a total of 70% of land area (i.e., to 16.58 million hectares) by 2020, and maintain emission reductions going forward • Promote climate resilience in farming systems and agriculture infrastructure • Promote appropriate technologies for climate change adaptation in the agriculture sector • Promote climate resilience in forestry production and forest ecosystems • Promote technical capacity in the forestry sector for managing forest for climate change adaptation	$180 million (mitigation) $750 million (adaptation)
Education		
Energy	• Increase the share of small-scale (<15 megawatts [MW]) renewable energy to 30% of energy consumption by 2025 • Utilize unexploited large-scale (>15 MW) hydropower resources to export clean electricity to neighboring countries. Total installed capacity by 2020: 5.5 gigawatts (GW); planned for construction after 2020: 20 GW • Make electricity available to 90% of households in rural areas by the year 2020 to offset the combustion of fossil fuels to produce power where there is no access to the electricity grid	$1,139 million
Environment, Climate Change, and Disaster Risk Management	• Develop and implement integrated adaptation and mitigation solutions, i.e., that are low-cost, improve energy efficiency, promote cleaner production, and provide adaptation/mitigation synergies as well as economic, environmental and socioeconomic benefits • Strengthen enabling environment for green growth, adoption of sustainable consumption and production, conserving natural resources and strengthening resilience against climate change and natural disasters • Build capacity to monitor and evaluate policy implementation success, with a view to producing new policy, guidance, and data	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health	• Improving public health services for climate change adaptation and coping with climate change induced impacts • Increasing the resilience of public health infrastructure and water supply system to climate change	$5 million
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals	• Develop and implement effective, efficient, and economically viable climate change mitigation and adaptation measures	

[24] Initial government estimate of the financial needs for implementing identified mitigation and adaptation policies, as outlined in the Lao PDR INDC.

ADB Focus Area	LAO PEOPLE'S DEMOCRATIC REPUBLIC	
	Commitment	**Financing Needs [24]**
Transport	• Implement transport Nationally Appropriate Mitigation Actions (NAMA): Develop road network to reduce distances travelled by all vehicles, and increase public transport compared with BAU • Increase the share of biofuels to meet 10% of the demand for transport fuels by 2025	$105 million
Urban Development	Increasing the resilience of urban development and infrastructure to climate change	$190 million
Water	• Strengthening water resource information systems for climate change adaption • Managing watersheds and wetlands for climate change resilience • Increasing water resource infrastructure resilience to climate change • Promotion of climate change capacity in the water resource sector	$44 million
Industry and Trade		
TOTAL		**$1,483 million**

Source: Lao People's Democratic Republic: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Laos/1/Lao%20PDR%20INDC.pdf

ADB Focus Area	MALAYSIA	
	Commitment[25]	Financing Needs
Intended Nationally Determined Contribution Highlights	• Reduce GHG emission intensity by 45% by 2030 (relative to 2005, i.e., 0.531 ton of carbon dioxide equivalent [tCO_2e] per thousand ringgit [RM]) – 35% reduction on unconditional basis and 10% conditional upon climate finance, technology transfer, and capacity building • Adaptation emphasis on flood risks, water and food security, coastlines, and health	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	• Restoration and rehabilitation of forests/forest management • Expand implementation of good agricultural practices and intensifying research and development for improving agricultural production. • New granary areas and adequate and efficient irrigation and drainage infrastructure will be developed to increase rice production	
Education		
Energy	Renewable energy	
Environment, Climate Change, and Disaster Risk Management	• Reduce GHG emission intensity by 45% by 2030 (relative to 2005, i.e., 0.531 tCO_2e per thousand RM)– 10% conditional upon climate finance, technology transfer, and capacity building • Economy-wide emission intensity covering sectors: energy; industrial processes; waste; agriculture; and land use, land-use change, and forestry (LULUCF) (Note: the inclusion of non-forestland, i.e., cropland, grassland, wetlands, and settlement will be determined later) Flood mitigation programs and strengthening of disaster risk management and resilience of infrastructure	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport	Rail-based mass transport system/ electrification of transport systems	
Urban Development		
Water	• Strengthen the regulatory framework of the water services industry • Expand water supply network and treatment capacity infrastructure • Increase efficiency of water supply services • Ensuring clean water supply and optimal sewerage services during disasters	
Industry and Trade		
TOTAL		**No estimate provided**

Source: Malaysia: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Malaysia/1/INDC%20Malaysia%20Final%2027%20November%202015%20Revised%20Final%20UNFCCC.pdf

[25] The INDC identifies the barriers for implementation to the mitigation opportunities which are outlined herein.

ADB Focus Area	MYANMAR	
	Commitment[26]	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• National Climate Change Policy in 2016 • Mitigation in energy and forestry (no emission estimates)[27] • Resilience in agriculture, early warning systems, forest preservation, public health, water resources management, coastal zone protection, energy, industry, and biodiversity	
Commitment Conditionality	Conditional target	
Agriculture and Food Security	• By 2030, Myanmar's permanent forest estate (PFE) target is to increase national land area as forestland ➢ Reserved Forest (RF) and Protected Public Forest (PPF) = 30% of total national land area ➢ Protected Area Systems (PAS) = 10% of total national land area • Decrease the rate of deforestation • Preserve natural forest cover to maintain biodiversity and ecosystems in Myanmar • Realize the co-benefits of the policy such as reducing soil erosion, thereby decreasing the risk of floods and landslides that may occur near rivers • Increase the resilience of mangroves and coastal communities that are at risk of flooding. • Increase capacity on Sustainable Forest Management. • Mitigate GHG emissions from the agriculture sector from combustion of agricultural residues and growing rice in paddy fields. • National Adaptation Programme of Action (NAPA) Priorities: resilience in the agriculture sector, forest preservation measures	• With the scale of the adaptation effort, considering the current level of capacities, and the trend of worsening changes in climate, means major support and investment is required. Investments, both from the Private and Public International Cooperation, will be oriented toward capacity building and technology development and transfer. • Myanmar will develop appropriate mechanism for monitoring of climate vulnerability, funds allocated for adaptation and the results of adaptation actions. • Myanmar requires the support of the international community in improving its planning and monitoring for adaptation efforts, and to implement priorities which may be re-prioritized. • The success of the mitigation and adaptation activities in
Education		
Energy	• Increase the share of hydroelectric generation within limits of technical hydroelectric potential. Indicative goal – 9.4 gigawatts (GW) by 2030 • Increase access to clean sources of electricity among communities and households currently without access to an electric power grid system. ➢ Indicative goal: Rural electrification through use of at least 30% renewable sources (mini-hydro, biomass, solar, wind, and solar minigrid technologies) to generate electricity supplies. • To increase the number of energy-efficient cookstoves disseminated to reduce the amount of fuelwood used for cooking. ➢ Indicative goal: To distribute approximately 260,000 cookstoves between 2016 and 2031. • Achieve the optimal level of renewable sources in the primary energy fuel supply mix • Increase understanding on renewable power potential and support preparation of sustainable policies and strategies including formulation of Energy Master Plan • NAPA Priority: energy sector	
Environment, Climate Change, and Disaster Risk Management	• Mitigation in energy and forestry (no emission estimates) • Achieve climate-resilient, low-carbon, resource-efficient, and inclusive development as a contribution to the overall policy for sustainable development. • Mainstream environment and climate change into the national policy development and reform agenda. • Strengthen the climate change-related institutional and policy environment through sharing of technical knowledge and best practice, training and institutional support. • Promote evidence-based planning and policy making through the integration of climate change mitigation experience into subnational, state, and regional development planning initiatives. • Increase awareness of climate change at the national, state and region, and local levels. • Promote an economy based on green growth. • Consistently monitor and take stock of the status of national environmental quality. • NAPA Priorities: development of early warning systems, coastal zone protection, biodiversity preservation	

[26] A costing exercise, including considering short-, medium-, and long-term priorities, will be conducted to ensure the implementation plan has the necessary resources to deliver on intended contributions, intended actions, and future policy development. Financial support will first need to be determined by completing a detailed costing estimate in the very short term. The financial support will be utilized in a variety of ways including, but not limited to, technology needs assessment for mitigation and adaptation activities, implementation of identified actions in the forestry and energy sectors, addressing financial needs of other key sectors, etc.

[27] The information required to estimate GHG emissions was collected and an estimate was produced. However, given the deadline and the current available data, it was decided not to include the estimate in the INDC, which was deemed not sufficiently reliable. Further analysis to quantify the GHG emission will be conducted as a result of the identified actions and strategies in the INDC.

ADB Focus Area	MYANMAR	
	Commitment[26]	**Financing Needs**
Finance Sector Development		Myanmar is wholly dependent on receiving sufficient technology-transfer, capacity-building, and financial support from developed and more experienced countries, international agencies, donors, and the wider international community
Gender and Development		
Health	• NAPA Priority: public health protection	
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport	Reduce the rate of GHG emissions and air pollution caused by the transport sector, especially from road transport.	
Urban Development	• Ensure that increasing urbanization takes place in a sustainable manner. • Mitigate emissions, generate power, and reduce pollution from nonrecyclable waste.	
Water	NAPA Priority: water resources management	
Industry and Trade	• NAPA Priority: industry sector • In industrial processes, improving energy efficiency within the Myanmar industry, focusing on the implementation of energy management systems compatible with the international standard ISO50001, energy system optimization. Indicative goal: To realize a 20% electricity savings potential by 2030 of the total forecast electricity consumption.	
TOTAL		**No estimate provided**[28]

Source: Myanmar: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Myanmar/1/Myanmar's%20INDC.pdf

[28] A costing exercise, including considering short-, medium-, and long-term priorities, will be conducted to ensure the implementation plan has the necessary resources to deliver on intended contributions, intended actions, and future policy development. Financial support will first need to be determined by completing a detailed costing estimate in the very short term. The financial support will be utilized in a variety of ways including, but not limited to, technology needs assessment for mitigation and adaptation activities, implementation of identified actions in the forestry and energy sectors, addressing financial needs of other key sectors, etc.

ADB Focus Area	PHILIPPINES	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• GHG (CO_2e) emissions reduction of about 70% by 2030 compared with BAU (with international assistance) • Sectors: energy, transport, waste, forestry, industry • Mainstream climate change and disaster risk reduction in planning and programming at all levels. • Loss and damage not to incur diversion of resources for reconstruction and rehabilitation (key assumption)	
Commitment Conditionality	Conditional target	
Agriculture and Food Security		
Education		
Energy		
Environment, Climate Change, and Disaster Risk Management	• GHG reduction of about 70% by 2030 relative to BAU scenario of 2000–2030, coming from the energy, transport, waste, forestry, and industry sectors • Ensure that climate change adaptation and disaster risk reduction are mainstreamed and integrated into the country's plans and programs at all levels. • Priority measures: ➢ Institutional and system strengthening for downscaling climate change models, climate scenario-building, climate monitoring and observation ➢ Science-based climate/disaster risk and vulnerability assessment ➢ process as the basis for mainstreaming climate and disaster risks reduction in ➢ development plans, programs, and projects; ➢ Development of climate- and disaster-resilient ecosystem(s); ➢ Enhancement of climate and disaster resilience of key sectors: agriculture, water, and health; ➢ Systematic transition to a climate- and disaster-resilient social and economic growth; ➢ Research and development on climate change, extremes and impacts for improved risk assessment and management.	Provision of financial resources, technology development and transfer, and capacity building
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport		
Urban Development		
Water		
Industry and Trade		
TOTAL		**No estimate provided**

Source: Philippines: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Philippines/1/Philippines%20-%20Final%20INDC%20submission.pdf

ADB Focus Area	THAILAND	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	Reduce GHG emission by 20% by 2030 compared with BAU; increased up to 25% (with adequate and enhanced access to technology development and transfer, financial resources, and capacity-building support)	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	• Explore opportunities and cooperation in the forest sector through Reducing Emissions from Deforestation and Forest Degradation Plus (REDD+) Readiness • Adaptation priorities: ➢ Safeguard food security, e.g., an application of the New Theory in agriculture and land management to promote appropriate resource allocation and economic diversification at the household level and sustainable management of community forests to promote food security at the community level ➢ Promote sustainable agriculture and Good Agricultural Practice ➢ Increase national forest cover to 40% through local community participation, including headwaters and mangrove forests to enhance adaptive capacities of related ecosystem ➢ Develop participatory, integrated marine conservation and coastal rehabilitation plan to protect marine ecosystem and enhance climate proofing infrastructure to strengthen coastal protection against erosion ➢ Forecasting and early warning system technologies, crop improvement technologies, and precision farming technologies ➢ Modeling, in need of an integrated national data center, national data transfer/ management process and the advanced research, weather research and forecasting (WRF – ARW) model, and an integrated model to address the needs of the agriculture sector	To ensure that adaptation actions can be effectively enhanced to address the distress experienced in highly vulnerable developing countries, it will be necessary to secure adequate means of implementation including finance, technology development and transfer, and capacity building for adaptation in the new global agreement under the United Nations Framework Convention on Climate Change
Education		
Energy	• Renewable energy development ➢ 20% share of power generation from renewable sources in 2036 ➢ 30% share of renewable energy in the total final energy consumption in 2036 ➢ Create incentives for technology developers to cooperate and share technology knowledge to enable technology transfer on a larger scale ➢ Reduce energy intensity by 30% below 2010 level in 2036 • Promotion of power generation from waste-to-energy technologies	International financial support mechanisms such as technical assistance and technology transfer funds for purchasing intellectual property rights for a free distribution of clean energy technologies would be very valuable to accelerate diffusion of renewable energy technologies
Environment, Climate Change, and Disaster Risk Management	• Reduce GHG emission by 20% by 2030 compared with BAU; increased up to 25% (with adequate and enhanced access to technology development and transfer, financial resources and capacity-building support) • Economy-wide (inclusion of LULUCF to be decided later) • Adaptation priorities: ➢ Safeguard biodiversity and restore ecological integrity in protected areas and important landscapes from the adverse impacts of climate change ➢ Promote nature-based and sustainable tourism while enhancing better understanding on risk and vulnerability of the tourism sector ➢ Strengthen disaster risk reduction and reduce population's vulnerability to climate risk and extreme weather events through enhanced awareness, coordination and adaptive capacity of local communities, especially in the disaster risk-prone areas ➢ Strengthen climate modeling capacity while promoting collaboration among relevant agencies ➢ Establish effective early warning system and enhance the adaptive capacity of national agencies through multi-hazard risk assessment, systematic observations, integrative research and development of database, model, and technology	Continue to explore the potentials of bilateral, regional and international market mechanisms as well as various approaches that can facilitate, expedite and enhance technology development and transfer, capacity building and access to financial resources

ADB Focus Area	THAILAND	
	Commitment	Financing Needs
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health	Adaptation priority: increase capacity to manage climate-related health impacts • development of health surveillance and early warning systems • systematic climate risk assessment • effective disease prevention and response measures to climate change-related health consequences	
Information and Communication Technology		
Regional Cooperation and Integration	Adaptation priority: build regional climate resilience by serving as a knowledge hub to foster regional cooperation and exchange experiences on adaptation	
Social Development and Poverty		
Sustainable Development Goals		
Transport	Promote road-to-rail modal shift for both freight and passenger transport • Extension of mass rapid transit lines • Construction of double-track railways • Improvement of bus transit	
Urban Development	More efficient and sustainable waste management	
Water	Adaptation priorities: • Promote and strengthen Integrated Water Resources Management (IWRM) practices • Water Resources Management, in need of networking (via pipes and canals) and management of infrastructures (including zoning), seasonal climate prediction, and sensor web using observation and/or modeling data • Modeling, in need of an integrated national data center, national data transfer/ management process and the advanced research, weather research and forecasting (WRF– ARW) model, and an integrated model to address the needs of the water resources management sector	
Industry and Trade		
TOTAL		**No estimate provided**

Source: Thailand: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Thailand/1/Thailand_INDC.pdf

ADB Focus Area	VIET NAM	
	Commitment	**Financing Needs**
Intended Nationally Determined Contribution Highlights	• Reduce GHG emissions by 8% by 2030 compared with BAU (emission intensity per GDP unit reduced by 20% compared with 2010 levels; forest cover increase to the level of 45%) • Reduce GHG emissions by 25% by 2030 compared with BAU (with international assistance)	
Commitment Conditionality	Unconditional and conditional targets	
Agriculture and Food Security	Forest cover increase to 45% level • Research and develop solutions to reduce GHG emissions in farming, livestock, fisheries, and animal feed and food processing • Research and apply production processes and economic technologies that efficiently use agriculture inputs and reduce GHG emissions • Replicate technologies that treat and reuse by-products and waste from agricultural production to produce animal feed, biogas, organic fertilizer, etc. • Promote sustainable forest management, afforestation and reforestation, biodiversity conservation, and livelihood development ➢ Review and identify areas and objects ➢ Develop and improve policies ➢ Implementation of programs and projects ➢ Strengthen and expand international cooperation for investment, technical assistance and capacity building, information and experience sharing • Protect, restore, and improve the quality of coastal forest, including mangroves • Ensure food security through protecting, sustainably maintaining, and management agricultural land, restructuring crops/livestock, creating new climate-resilient varieties and complete disease control and prevention system	• Contribution to be increased if international support is received through bilateral and multilateral cooperation, as well as through implementation of new mechanisms under the global climate agreement • International assistance and cooperation with other developing countries for capacity building, technology transfer (e.g., technologies for real-time forecasting, sustainable use of water resources, prevention of erosion, etc.), and finance for climate change adaptation (mainly for maintenance of existing infrastructure and built of important projects).
Education		
Energy	• Innovate technologies and apply advance management and operation procedures for efficient and effective use of energy in production, transmission, and consumption • Apply energy savings and efficiency, and renewable energy applications in the residential, trade, and services sectors. • Establish standards on fuel consumption and develop a road map to remove obsolete and energy-consuming technologies in energy production and consumption systems • Develop/exploit different energy sources while simultaneously using energy sources effectively • Change energy structure toward reduced fossil fuel share (renewables/low GHG emission sources) • Promote structural change and improve energy efficiency. Encourage the use of clean fuels, support the development of renewable energy implement road map to phase out subsidies for fossil fuels • Label energy-saving equipment and issue national standards for quality of equipment • Develop and implement financial and technical mechanisms and policies to support research and application of appropriate advanced technologies • Develop a renewable energy technology market, domestic industries, and local service providers	
Environment, Climate Change, and Disaster Risk Management	• Reduce GHG emissions by 8% by 2030 compared with BAU, and increased to 25% with international support ➢ Sectors: energy, agriculture, LULUCF, waste ➢ Emission intensity per gross domestic product (GDP) unit reduced by 20% compared with 2010 levels • Strengthen the leading role of the State in responding to climate change (e,g., integration of climate change in development strategies and plans, improving and strengthening institutions) • Manage and develop sustainable forest, enhance carbon sequestration and environmental services, conservation of biodiversity associated with livelihood development and income generation for communities and forest –dependent people • Communication and awareness raising (e.g., raising awareness on GHG mitigation activities, provision of technical assistance to implement and enlarge economic, safe and climate-friendly production and consumption models) • Enhance international cooperation in scientific research, information exchange of formulation and implementation of policies and in basic content of climate change strategies and policies, enlist support of other countries in implementation of climate change strategies and policies, facilitate international cooperation on implementation of foreign direct investment (FDI) on climate change-related projects	

ADB Focus Area	VIET NAM	
	Commitment	Financing Needs
	• Respond proactively to disasters and improve climate monitoring (e.g.,modernization of observatory and forecasting system as well as assessment and monitoring system on climate change and sea level rise, development of socio- economic development plans based on climate change scenarios, implementation of disaster prevention plans and measures, development of infrastructures and plans for relocation and resettlement of communities affected by climate change impacts, mobilization of community-based climate change adaptation) • Ensure social security (e.g., development of climate-appropriate livelihoods and production processes, strengthening of insurance system, improvement in infrastructure regulations and technical standards, implementation of ecosystem-based adaptation through development of ecosystem services and biodiversity conservation)	
Finance Sector Development		
Gender and Development		
Governance and Public Management		
Health		
Information and Communication Technology		
Regional Cooperation and Integration		
Social Development and Poverty		
Sustainable Development Goals		
Transport	• Develop public passenger transport, especially in fast modes of transit in large urban centers. • Restructure freight toward reduction in share of road transport in exchange for an increase in share of rail and inland waterways transport • Encourage use of compressed natural gas (CNG), liquefied petroleum gas (LPG) • Implement management solutions for fuel quality, emissions standards, and vehicle maintenance	
Urban Development	• Develop waste management planning and enhance waste management capacity • Research and apply advanced waste treatment technologies, deploy modern waste treatment technology, strengthen management and treatment of industrial and household wastewater • Utilize landfill gas and solid waste combustion for power generation • Support communities to develop eco-cities, green rural areas, green housing, sort waste at the source through the 3R approach and improve energy efficiency • Respond to sea-level rise and urban inundation ➢ Use sea-level rise scenarios in urban and land-use planning ➢ Implement anti-inundation measures for large coastal cities ➢ Construct climate-resilient urban infrastructure ➢ Strengthen and build new large urban drainage infrastructure	
Water	• Implement integrated water resources management in river basin systems • Ensure reservoir safety • Strengthen cooperation in addressing transboundary water issues • Ensure water security	
Industry and Trade		
TOTAL		**No estimate provided**

Source: Viet Nam: Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Viet%20Nam/1/VIETNAM'S%20INDC.pdf

Assessing the Intended Nationally Determined Contributions of ADB Developing Members

At the United Nations Climate Change Conference in Paris in December 2015, 195 countries adopted the first universal global climate agreement which sets out a global action plan to combat climate change. The Paris agreement is anchored on the implementation between 2020 and 2030 of nationally determined contributions. Ahead of or at the Paris conference and in support of reaching an international climate change agreement, countries submitted intended nationally determined contributions which outline their post-2020 climate actions. This working paper provides a preliminary review of the intended nationally determined contributions of ADB developing members. The review of each member commitment is intended to determine the extent to which ADB's current country program is aligned with the country priorities with regard to climate action and consider if and how ADB might scale up support.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to half of the world's extreme poor. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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