ISLAMIC REPUBLIC OF AFGHANISTAN
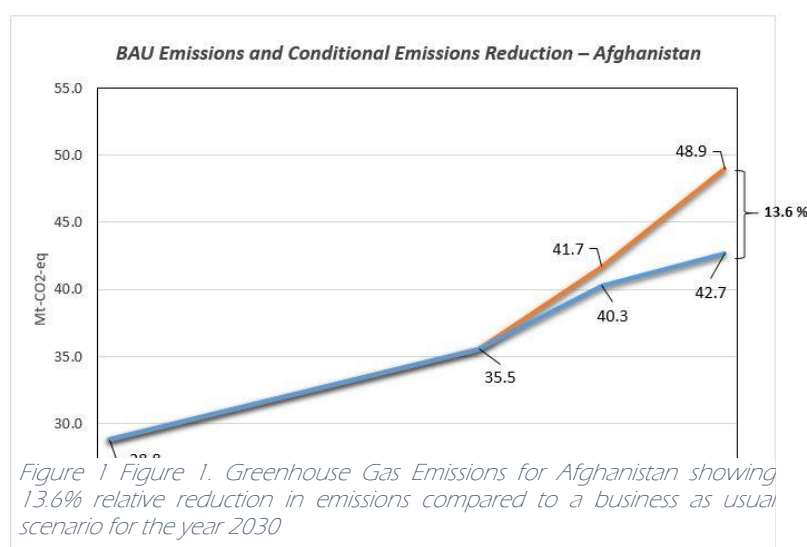
Intended Nationally Determined Contribution

Submission to the United Nations Framework Convention on Climate Change

21 September 2015

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The Islamic Republic of Afghanistan hereby communicates its Intended Nationally Determined Contribution (INDC) and information to facilitate understanding of the contribution.

Executive Summary	
Base Year:	2005
Target Years:	2020 to 2030
Contribution Type:	Conditional
Sectors:	Energy, natural resource management, agriculture, waste management and mining
Gases Covered:	Carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O)
Target:	There will be a 13.6% reduction in GHG emissions by 2030 compared to a business as usual (BAU) 2030 scenario, conditional on external support.
Financial Needs:	Total: USD 17.405 billion • Adaptation: USD 10.785 billion • Mitigation: USD 6.62 billion (2020-2030)

Figure 1 Figure 1. Greenhouse Gas Emissions for Afghanistan showing 13.6% relative reduction in emissions compared to a business as usual scenario for the year 2030

1. Afghanistan's National Circumstances and Commitment to Climate Change

Introduction

Afghanistan has extensive development and climate adaptation needs and, currently, low levels of greenhouse gas (GHG) emissions. Afghanistan remains one of the poorest countries in the world today, with an estimated population of 28.6 million (2015)[1] and a per capita GDP of USD 660.[2]

Afghanistan is highly prone to natural disasters throughout its 34 provinces.[3] As a result of climate change, it is anticipated that the incidence of extreme weather events, including heat waves, floods, and droughts will likely increase, as will climate change-linked disasters such as glacial lake outflows. The majority of Afghanistan's population relies directly or indirectly on the available natural resources for their livelihoods so with these climatic changes the foundation of the country's economy, stability, and food security is under threat.

Despite these challenges, Afghanistan can remain a low emission economy while developing rapidly if, under the Paris Climate Change Agreement, extensive financial and other resources are made available to allow Afghanistan to successfully develop and implement Low Emission Development Strategies (LEDS) and Highly Effective Adaptation and Development Strategies (HEADS).

Appropriate support in the form of finance, capacity building, technology and legal assistance is needed for Afghanistan to make substantial progress on social and economic fronts while maintaining low per capita GHG emission levels.

Description of Fairness and Ambition

Afghanistan recognizes that all countries in the world need to make rapid progress towards lowering, or maintaining if already low, per capita emission levels to avoid dangerous levels of global warming. It is therefore critical that under the Paris Agreement, financial resources, capacity building, technology transfer, and other support is provided to Afghanistan in order to enable it to implement LEDS and HEADS. This will allow Afghanistan to continue developing while maintaining low level of emissions and increasing adaptive capacity to climate change.

There would be lower costs and a clearer development path for Afghanistan if it pursued development using mainly fossil fuels, as other countries have. This would likely result in GHG emission in Afghanistan continuing to increase at current rates for the period to 2025 and beyond. However, given the extremely limited remaining global GHG emissions budget, Afghanistan requires the UNFCCC, the Global Environmental Facility (GEF), the Green Climate Fund (GCF), and other international institutional arrangements to provide the extra finance and other support needed to successfully implement LEDS across all sectors of its economy without compromising socio-economic development goals.

National Development Objectives

Despite suffering decades of instability and war, Afghanistan has made considerable development progress. Over the past 13 years notable achievements have been made in the areas of environment, agriculture, health, education, infrastructure, the economy, and the provision of other important basic services.[4]

Afghanistan's National Development Strategy (ANDS) is based on Afghanistan's Millennium Development Goals (MDGs). It identifies the environment as "a cross-cutting issue that underpins the entire social and economic development framework for the country." The National Environment Protection Agency (NEPA), mandated to address environmental concerns, continues to work with all parts of the Government of the Islamic Republic of Afghanistan (GIRoA) to mainstream environmental and climate

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[1] CSO 2015 estimation

[2] IMF 2015 estimate for Afghanistan.

[3] NEPA (2009), *National Capacity Needs Self-Assessment for Global Environmental Management (NCSA) and National Adaptation Programme of Action for Climate Change (NAPA)*.

[4] (GIRoA, 2015)

change considerations into the country's national development framework. NEPA advocates for appropriate policies and measures that enable rapid development while ensuring good environmental and climate change outcomes. Afghanistan has developed its INDC with the conviction that countering the effects of climate change requires a commitment from all countries with regard to mitigation, and adaptation.

In terms of international commitments on climate change, Afghanistan joined the UNFCCC in 1992, and ratified the Kyoto Protocol in 2013. Afghanistan completed its National Adaptation Programmes of Action for Climate Change (NAPA) and National Capacity Needs Self-assessment for Global Environmental Management (NCSA) in 2009. Afghanistan submitted its Initial National Communication (INC) under the UNFCCC in 2012, and is currently preparing its Second National Communication (SNC) for submission to the UNFCCC in 2016. At present, Afghanistan is finalizing its national Climate Change Strategy and Action Plan (ACCSAP) as well as its National Adaptation Plan (NAP).

In 2015, as part of the INDC preparation process, NEPA convened a series of consultation and awareness-raising workshops to bring together decision-makers from government institutions and stakeholders from non-governmental organizations to develop the current INDC and establish a sustainable development vision for Afghanistan. Through this INDC process and existing policies and strategies, the overall vision that was developed for Afghanistan aims to enhance the adaptive capacity and resilience of its agriculture, environment, and population to climate change, while developing and implementing LEDS.

Climate Change Trends, Impacts, and Vulnerabilities

Afghanistan is ranked among the most vulnerable countries in the world to the adverse impacts of climate change.[5] Afghanistan's INC report has documented an increase of 0.6°C in the country's mean annual temperature since 1960. Based upon recent climate observations, precipitation patterns have decreased during springtime (March-May) by approximately 40.5mm; however, the total annual precipitation has only slightly decreased by approximately 30mm since there is a slight increase in precipitation from June until November. This implies that Afghanistan is already beginning to experience the initial adverse impacts of climate change.

Recent climate projections, based on Cordex regional climate models and representative concentration pathways (RCPs)[6], indicate that Afghanistan will face an overall strong increase in mean annual temperature, considerably higher than global mean projections, when compared to a baseline period of 1986-2006. More specifically, under the "optimistic" scenario (RCP4.5), the mean of the model ensembles projects a warming of approximately 1.5°C until 2050 and of approximately 2.5°C until 2100. For the "pessimistic" scenario (RCP8.5), the models project an extreme warming of approximately 3°C until 2050, with further warming up to 7°C by 2100. Under both scenarios there are regional differences, with a higher temperature increases at higher altitudes compared to the lowlands.

For precipitation a significant (α=0.05) mean decrease of precipitation during springtime (March-May) for the North, the Central Highlands and the East for both scenarios from 2006 until 2050 between 5-10 percent is seen. This decrease is offset by a slight increase of precipitation during autumn and wintertime (October-December) in these regions. For the Hindu Kush area, a significant and substantial increase in precipitation during the winter season of approximately 10 percent is seen, whereas during spring season precipitation is projected to stay stable. For the arid South of the country, the models do not project significant trends for precipitation. The decrease of precipitation during spring is particularly relevant since during these months the main plant growth for agricultural production takes place. In addition, the decrease

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[5] DARA Climate Vulnerability Monitor (2012); GermanWatch Global Climate Risk Index (2013); and Notre Dame Global Adaptation Index (2014).

[6] Representative concentration pathways (RCPs) are GHG emission scenarios adopted by the IPCC to describe four possible climate futures depending on the levels of future global GHGs emitted. There are four RCPs: 1) RCP2.6, which assumes that GHG emissions peak between 2010-2020 and then decline; 2) RCP4.5, which assumes that GHG emissions peak around 2040 and then decline; 3) RCP6, which assumes that GHG emissions peak around 2080 and then decline; and 4) RCP8.5, which assumes that GHGs emissions continue to rise throughout the 21st century.

is projected to take place in the regions with the highest agricultural productivity of Afghanistan (East, North, and Central Highlands). In combination with the overall increase in temperature and the related increase in evapotranspiration across the country, this will most likely negatively impact the hydrological cycle, agricultural productivity, and availability of water resources. Climatic changes are also likely to impact upon the spread of water, food and vector-borne diseases, presenting considerable health risks to both urban and rural populations. Finally, the aforementioned climate-induced risks and challenges can enhance social inequalities, poverty, and food insecurity causing considerable and fundamental threats to human life, livelihoods, property, political stability, the economy, and the environment in Afghanistan.

Based upon these climate change projections, Afghanistan's environment will experience considerable changes over the remainder of this century. Climate change, based on sound scientific analysis of climatic changes and uncertainties, must be mainstreamed into sectoral planning to reduce the negative impacts of climate change in Afghanistan and increase resilience, both in rural and urban areas.

2. Climate Change Adaptation

Near- and Long-term Adaptation Visions, Goals and Targets

Afghanistan's vision for addressing the adverse impacts of climate change through adaptation aims to protect the country and its population by enhancing adaptive capacity and resilience, effectively respond to the vulnerabilities of critical sectors, and efficiently mainstream climate change considerations into national development policies, strategies, and plans. In order to achieve this vision, a national strategy for climate change adaptation must include community level vulnerabilities and build up their adaptive capacities by investment in short- and long-term initiatives. Short-term action plans formed part of the 2009 NAPA, while the NAP will implement both short- and long-term priorities These priorities include, but are not limited to:

1. Reducing vulnerability of the country and its population through enhancement of adaptive capacity and resilience, and deployment of disaster risk reduction approaches
2. Integrating climate change consideration into the national planning processes
3. Promoting economic development and sustainable rural livelihoods through sustainable management of environmental resources and increase access to modern forms of efficient and sustainable energy services
4. Improvement of technical capacity in governmental institutions
5. Adaptive and integrated land and water management
6. Improving access by rural communities and farmers to water to support food security, reduce poverty and improve agricultural productions
7. Raising awareness for people of Afghanistan on climate change impacts and adaptation measures

Current Adaptation Undertakings and Support

Afghanistan has initiated a number of steps to promote the country's sustainable development. In term of national development policies, plans, and legal frameworks, considerable effort has been placed on addressing environmental challenges, disaster risk reduction, food security, water security, protection of forest and rangelands, and biodiversity conservation, all of which have clear relevance to climate change adaptation. Some noteworthy examples of such policies and plans that have successfully and explicitly integrated climate change include:

- Afghanistan National Renewable Energy Policy (ANREP)
- National Water and Natural Resource Management Priority Programme
- Strategic National Action Plan for Disaster Risk Reduction (SNAP)
- National Environmental Action Plan (NEAP)
- National Comprehensive Agriculture Production and Market Development Programme
- Energy for Rural Development (ERDA)
- National Biodiversity Strategy and Action Plan (NBSAP)

Additional national development policies, strategies, and plans that currently do not mention climate change but have entry points for the further mainstreaming of climate change include:

- National Agricultural Development Framework (NADF)
- National Environment Strategy
- Energy Sector Strategy
- National Forestry Management Plan
- Rangeland Management Plan
- Strategic Policy Framework for the Water Sector

In term of programmes and projects, support provided by the international community and multilateral agencies have laid the groundwork for building Afghanistan's adaptive capacity and resilience to climate change. Major contributors include the Tokyo Framework bilateral partners, Global Environmental Facility (GEF), which has provided support through enabling activities, mid-size projects, and full-size climate change adaptation projects funded by the Least Developed Countries Fund (LDCF), as well as bilateral donors, non-governmental organizations, and the United Nations. With the scale and urgency of Afghanistan's adaptation needs, additional financial and other resources are strongly needed in order to effectively build the adaptive capacity and resilience of the country and its people before more severe impacts of climate change begin to be felt.

Adaptation Needs and Means of Implementation (MOI)

Afghanistan faces a number of specific challenges in terms of addressing climate change through adaptation. These challenges include, but are not limited to, funding gaps, lack of expertise, lack of reliable historical climate data, weak public awareness about environmental issues, and security. Afghanistan has identified the following key actions as part of its National Adaptation Plan (NAP) in order to overcome existing gaps and barriers towards sufficiently addressing its climate change adaptation needs. The total estimated cost of full implementation of the NAP is USD10.785 billion over ten years.

Action- Planning, technology and capacity building needs	Technology Needs	Capacity Building Needs	Finance Needs (USD)
Development and adoption of the Afghanistan CCSAP.	--	--	Own contribution
Development of a system to monitor and assess vulnerability and adaptation to climate change.	Climate science technology	Climate science institutes with university	0.02 Billion
Identification and mainstreaming of climate change adaptation technologies into the sectoral policies, strategies and development plans, and promotion of regional and international cooperation and coordination for adaptation technology transfer.	Climate policy technologies and methods	Training Afghan climate policy experts	0.01 Billion
Strengthen and expand meteorological and hydrological monitoring networks and services, including a national database to archive and store meteorological and hydrological data.	Hydrological, meteorological and data equipment and integrated systems	Operators and analysts for hydrological, meteorological and data integrated systems	0.1 Billion
Development of water resources through rehabilitation and reconstruction of small-, medium-, and large-scale	Improved designs and methodologies for catchment management	Ecological engineering and spatial planning for water resources	0.75 Billion

infrastructure.	technology		
Planning for proper watershed management and promoted through community-based natural resources management.	Full catchment planning technology and models	Practitioners for watershed management	2.5 Billion
Increasing irrigated agricultural land to 3.14 M-ha, through restoration and development of Afghanistan's irrigation systems.	Eco-agriculture and climate friendly irrigation technology transfer to Afghanistan	Vocational and engineering capacity to design, build and maintain climate friendly irrigation networks and local schemes.	4.5 Billion
At least 10% of Afghanistan land area and the habitat of selected species under a system of conservation	Conservation ecology methods and tools	Protected areas and species ecologists, and ecological economists trained and working.	0.3 Billion
Behavioural 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.	Technology transfer of renewable energy and sustainable energy	National centre for sustainable energy strengthened and expanded. Combine public and private competencies.	0.105 Billion
Regeneration of at least 40% of existing degraded forests and rangeland areas (the area covered will be approximately 232,050 ha for forestry; and 5.35 million ha for rangelands).	Forestry and rangeland management tools and methods transferred to Afghanistan	Practitioners group built in university, government and local delivery levels.	2.5 Billion
TOTAL FINANCIAL RESOURCES NEEDED:			**10.785 Billion**

3. Climate Change Mitigation

GHG Emissions and Mitigation Measures
Afghanistan has very low relative per capita GHG emissions. While 1990 emissions were at 0.2 metric tons CO_2 per capita, data indicates that per capita emissions were around 0.3 for 2010, making Afghanistan one of the lowest GHG emitters globally.[7] However, the country is on a growth path, which is expected to strengthen over the coming years, meaning GHG emissions are likely to increase. It is important that support be provided to Afghanistan to develop LEDS to minimize the increase in its GHG emissions.

Afghanistan's overall GHG emission figures (Table 1) demonstrate that the most important sources of CO_2 emissions are from the "Land-Use Change and Forestry" and "Energy" sectors.[8] In terms of CH_4 and N_2O emissions, the agriculture sector is the major contributor.[9] It is therefore important that greater attention should be focused on GHG mitigation measures within these sectors. Afghanistan has only started to access UNFCCC technology transfer opportunities. It needs to build national capacity to navigate opportunities and play a more critical role in international negotiations.
The following mitigation options are designed to enable Afghanistan to make a mitigation contribution which is condition on support needs for financial and technical support being met.

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[7] The World Bank, *CO₂ Emissions (Metric Tons Per Capita)*.
http://data.worldbank.org/indicator/EN.ATM.CO2E.PC
[8] NEPA & ADB (2007), *Afghanistan Greenhouse Gas Inventory Report*.
[9] IBID

2030 Mitigation Contribution	
Type of Contribution	**Conditional Target**: A relatively reduction in GHG emission is achievable through meeting Afghanistan's financial, technical, and technological needs in energy, forest and rangeland, industrial process and extractive industry, agriculture and livestock, and waste management sectors. Primarily focused is on sustainable process and development initiatives based on the outcomes of 2015 national consultation on LEDS and NAMA.
Gases	Carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O)
Sectors	• Energy Production (hydropower, solar systems, wind and biomass, commercial, domestic: clean cook stoves and fuels, and solar energy • Energy Efficiency (households, transport, industry, services, mining, agriculture) • Land Use, Forests and Rangelands (Afforestation and reforestation, natural forests, fuelwood from forest and orchards, rangelands rehabilitation) • Agriculture and Livestock (manure management, land use/change for agriculture) • Irrigation Infrastructure • Improved Cropping Systems • Industrial Processes and Extractive Industries (mining and extractives, gas and hydrocarbons, coal and minerals) end-use saving, and fuel shifts • Power plants: fuel shift to natural gas and renewables • Transport: more efficient vehicles, clean fuels, and alternative fuels • Waste Management (solid waste management and wastewater recycling/composing of biodegradable waste instead of landfill, and methane recovery from landfill) • Coal mines: gas recovery in coal mines • Rice paddies: modified rice strains • Mitigation measures for N_2O include reduced fertilizer application; optimal timing of fertilizer application; nitrification inhibitors, less use of histosols (peat soils)[10].

Afghanistan's GHG inventory in Table 1 is calculated for each GHG emission sector for 2005[11] and business-as-usual projections based on the growth rate for a medium-term timeframe (2020-2030).

Table 1: Green House Gas Emissions of CO_2, CH_4 and N_2O in Afghanistan in 2005-2030*							
GHG emission sector	*CO_2 Equivalent, Gg*				2020	2025	2030
	CO_2	CH_4	N_2O	Aggregated	CO_2-eq, Gg	CO_2-eq, Gg	CO_2-eq, Gg
Energy	2,910.04	736.00	129.83	3,775.87	*9,745.46*	*10,849.02*	*12,087.00*
Industry	312.15	-	-	312.15	791.57	878.25	974.42
Agriculture	-	9,296.49	5,812.50	15,108.99	24,665.30**	29,578.77**	35,471.04**
Land use change and forestry	9,341.13	80.64	9.30	9,431.07	10,949.18	11,507.70	12,094.71
Waste	-	130.41	-	130.41	330.70**	366.91**	407.09**
Total GHG emission incl. LULUCF	12,563.32	10,243.54	5,951.63	28,758.49	46,482.20	53,180.64	61,034.25
Total GHG emission excl. LULUCF	3,222.19	10,162.90	5,942.33	19,327.42	35,533.02	41,672.95	48,939.54

* Information used from ADB – Afghanistan Greenhouse Gas Inventory Report and projection for 2020-2030 using GACMO model

** CH_4 (CH_4 emission x 21) and N_2O (N_2O emission x 310) counted as CO_2-eq

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[10] IBID
[11] IBID

Climate Mitigation Gaps and Barriers and Support Needs USD 662 Million/Year from 2020		
Sector	**Technology and Capacity Building Needs**	**Finance Needs (USD)**
Energy Efficiency in Buildings and in 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
Energy	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).	188 Million/Year
Waste Management	Landfill management, decentralised wastewater treatment. Climate Project development skills.	74 Million/Year
Forest and Rangelands	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.	100 Million/Year
Industry and Mining	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
Agriculture and Livestock	National herd, reduction in fuel used, or cleaner fuel technologies. South-south collaboration on low-carbon agriculture, study tours. Funding for R&D activities. Improved national dataset on agriculture, food security data.	100 Million/Year