Afghanistan's 6th National Report to

The United Nation's Convention on Biological Diversity

National Environmental Protection Agency (NEPA) | 2019

Foreword

Afghanistan has faced social instability for over four decades due to conflictg, a situation which has exacerbated existing challenges for human development such as increasing poverty, food insecurity, poor health, and other social inequities.

One of the less-publicised casualties of this conflict situation is the damages to Afghanistan's natural environment. Additionally, climate change, with its compounding impacts, and a crisis that knows no boundaries, has led to an increase in temperature and changes in precipitation. This has resulted in increased frequency of disasters such as droughts and floods and has escalating degrading effects on ecosystems and biodiversity. The latest climate science describes these scenarios, and governments around the world are guided towards the appropriate measures and action strategies to cope with the adverse impacts of climate change over time.

For Afghanistan, it means the climate crisis exponentially increases the vulnerabilities of our societies already facing an existential threat due to the ongoing conflict. What is "few" becomes "less" in terms of natural resources; what is "more" becomes "much more" in terms of burden to the economy to meet and sustain the desired level of national development. For one, for our people, the health of our environment, the richness of our biodiversity, means securing and sharing our natural wealth for sustainable development.

The importance of biodiversity can hardly be overstated as it is essential to human life. Biodiversity (which can be roughly defined as the number of living things in a given area) is needed for maintaining 'ecosystem services' – those aspects of ecosystems that contribute to human wellbeing like food, clean water, building materials, clean air, and many other things on which our lives depend. This is not to mention 'non-essential' services that nature and ecosystems provide such as aesthetic, spiritual and recreational wellbeing. Biodiversity also supports the sustainability of critical economic sectors like agriculture and helps reduce the risk of disaster. All of these things are necessary for prosperity in all its dimensions and for citizens to live fulfilled lives.

Considering the above, it is my great pleasure to submit Afghanistan's Sixth National Report to the United Nations Convention on Biological Diversity. It has been a special privilege to be part of the team carrying out this vital work of reviewing and reporting the species, ecosystems and the rich natural heritage of Afghanistan, which are important to preserve for future generations to enjoy.

The preparation of this report was undertaken using a consultative and participatory approach, with data collected from all relevant organisations. I am happy to say that Afghanistan has made substantial and tangible progress towards the targets outlined in its National Biodiversity Strategy and Action Plan and has achieved significant results, notably in protected areas management, species conservation, and awareness-raising. However, there is no room for complacency, as the report also shows that we, as a nation, still have a long way to go to the full achievement of our targets.

This National Report is significant for the entire country. In the context of the ongoing peace negotiations, this report will also play an essential role in making sure that the environment and biodiversity are crucial parts of any dialogue towards a post-peace settlement. The National Environmental Protection Agency is planning to revise its National Biodiversity Strategy and Action Plan based on the report's recommendations. With these collaborative efforts, we are affirming—and championing—that biodiversity and peace are but foundations of lasting growth as a nation.

Therefore, on behalf of the people of Afghanistan, I take great honour and pleasure in reporting and submitting our Sixth National Report, and I hope that it proves to be a useful tool in conservation

planning in the future. Together, we must protect the remarkable biological diversity of Afghanistan, and preserve it for future generations, so that it can be enjoyed and cherished in perpetuity.

Schah-Zaman Maiwandi

Director-General

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Acronyms

6th NR	6th National Report
ACCSAP	Afghanistan's Climate Change Strategy and Action Plan
ADP	Asian Development Bank
AfSiS	Afghanistan Soil Information System
ANSOR	Afghanistan National Seed Organization
ALCS	Afghanistan Living Condition Survey
ANPASP	Afghanistan National Protected Area System Plan
ANPDF	Afghanistan National Peace and Development Framework
AWEC	Afghanistan Wildlife Executive Committee
BWG	Biodiversity Working Group
BAPAC	Band-e-Amir Protected Area Committee
BACC	Band-e-Amir Community Council
C	Celsius
CBD	Convention on Biological Diversity
CBNRM	Community-Based Natural Resources Management
CDCs	Community Development Councils
DACAAR	Danish Committee for Aid to Afghan Refugees
EIMPA	Establishing Integrated Models of Protected Areas in Afghanistan
ESC	Environmental Sub-Committees
ECCAP	Ecological Calendars and Climate Adaptation in the Pamirs
FAO	Food and Agriculture Organization
FMCs	Forest Management Committees
GDP	Gross Domestic Product
GEF	Global Environment Facility
GNI	Gross National Income
GSPC	Global Strategy for Plant Conservation
HA	Hectare
HCVFs	High Conservation Value Forests
HDI	Human Development Index
ICIMOD	International Centre for Integrated Mountain Development
IPAT	Interim Protected Area Tarzulamal
IWRM	Integrated Water Resource Management
KMA	Kabul Metropolitan Area
KM	Kilo Meter
KM^2	Square Kilo Meter
LCCS	Land Cover Classification System
LLDCs	Land-Locked Developing Countries
LCDP	Liter Per Capita Per Day
MAIL	Ministry of Agriculture, Irrigation and Livestock
MEAs	Multi-lateral Environment Agreements
MCM	Million Cubic Meter
MoCI	Ministry of Commerce and Industries
MW	Mega Watts
MIS	Management Information System
MoEC	Ministry of Economy
MRRD	Ministry of Rural Rehabilitation and Development
MSPs	Multi - Stakeholder Platforms
NBSAP	National Biodiversity Strategy and Action Plan
NEAC	National Environmental Advisory Council
NEPA	National Environmental Protection Agency
NGOs	Non-Governmental Organizations
NSIA	National Statistics and Information Authority
NPPs	National Priority Programs
NR	National Report

NRM	Natural Resources Management
NRMCs	Natural Resources Management Committees
PEACs	Provincial Environment Advisory Councils
PIC	Prior Informed Consent
PSE	Private Seed Enterprise
RBM	River Basin Management
SAISEM	Strengthened Approach for Integration of Sustainable Environment Management
SGDs	Sustainable Development Goals
SGP	Small Grans Program
UN	United Nation
UNCBD	United Nation's Convention on Biological Diversity
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
WCS	Wildlife Conservation Society
WDPA	World Database of Protected Areas
WPA	Wakhan-Pamir Association
WSS	Water Sector Strategy

Profile of Afghanistan

Table 1: Summary Profile of Afghanistan

	Afghanistan	South Asia Group	Low-Income Group
Land Area (1,000 km^2)	653	…	…
Agricultural Land (% land area)	12	57	39
Agricultural irrigated land (% of total agricultural land)	5.6	…	…
Agricultural Rain-fed (% of total agricultural land)	5.8		
Cereal yield (kg per hectare)	2,021	3066	1601
Forests & Biodiversity			
Forest area (% land area)	2.1	17.5	27.5
Deforestation (avg. annual %, 2000-2015)	0.0	-0.4	0.4
Terrestrial protected areas (% land area)	0.5	6.6	15.2
Wildlife protected species, plants	8	…	…
Wildlife protected species, insects	1	…	…
Wildlife protected species, reptiles	4	…	…
Wildlife protected species, amphibians	1	…	…
Wildlife protected species, birds	57	…	…
Wildlife protected species, mammals	76	…	…
Wildlife protected species, fish	2	…	…
Threatened species, mammals	10	249	623
Threatened species, birds	17	238	610
Threatened species, fish	5	353	1132
Threatened species, higher plants	5	749	1898
Energy & Emissions			
Energy use per capita (kg oil equivalent)	…	550	…
Energy from biomass products and waste (% of total)	…	26.3	77
Electric power consumption per capita (kWh)	…	673	…
Electricity generated using fossil fuel (% of total)-thermal	50	78.5	…
Electricity generated by hydropower (% of total) (2015)	41	13.4	…
Powered generated by renewables (% of total) (2015)	9		
CO_2 emissions per capita (metric tons)	0.4	1.4	0.4
Water & Sanitation			
Internal freshwater resources per capita (cu.m)	1491	1152	4777
Total freshwater withdrawal (% of internal resources)	43	51.6	3.1
Agriculture (% of total freshwater withdrawal)	99	91	90
Access to improved water sources (% of the total population)	55	92	66
Rural (% of rural population)	47	91	56
Urban (% of total urban population)	78	95	87
Access to improved sanitation (% of the total population)	32	45	28
Rural (% of rural population)	27	35	23
Urban (% of total urban population)	45	65	40
Environment & Health			
PM2.5 pollution, mean annual exposure (µg/ cu. M)	22	46	20
PM2.5 exposure (% pop. Exceeding WHO guideline level)	99	100	80
Acute resp. infection prevalence (% of children under five)	…	…	6
Diarrhea prevalence (% of children under five)	…	…	15
Under-five morality rate (per 1000 live births)	91	53	76

Summary

Afghanistan is rich in biodiversity and the government recognizes the importance of conserving it. The goods and services provided by biodiversity support the livelihood basis for the majority of the Afghan population. About 80 per cent of Afghan's livelihood is either directly or indirectly related to the tangible goods and services that biodiversity provides. The direct use of the components within biodiversity such as traditional crops, fruits, grazing, fuel, timber, harvesting, fishing, and hunting are key to the Afghan rural population. In addition, the ecosystem services such as soil fertility, erosion control, crop pollination, and climate stability are also crucial to the agriculture and food security of the country.

Out of the total land area of the country (64 million hectares), 12 per cent of the total land area is arable land, of which 5.6 per cent (3.6 million hectares) is irrigated agricultural land, 5.8 per cent (3.7 million hectares) holds rain-fed agricultural land, and the remaining are either fruit trees, vineyards, or marginal agricultural land. Forests (open and closed natural needle-leaved forests) and high shrubs land make 2.8 per cent (1.7 million hectares) of the total area of the country. Afghanistan rangeland (30.2 million hectares or 47 per cent of total land) varies from grassland, forbs and or low shrubs. Rangelands are rich in medicinal plants and fodder that is crucial for the protection of water and soil, biodiversity, protection of vegetation cover, food and habitat for wildlife and is key for the protection of the environment. Bare areas including bare soil, rock outcrops, sand-covered areas, and sand dunes make over 34 per cent (22.2 million hectares) of the total land. The rest of the land is classified as built-up or permanent snow (500,000 hectares or 0.8 per cent of the total land).

Afghanistan is a very mountainous country where approximately 70 per cent of the land is mountains. The Hindukush mountains split the country east to west and the second highest peak of the Hindukush, the Noshaq or Nowshakh, is located in Badakhshan province (in the far northeast) with an elevation of around 7,400 meters. Within ecological regions the country is classified into four biomes: deserts and semi-desert, open woodlands, closed woodlands, and alpine and subalpine. Each biome features distinct climate, ecological features, plant and animal communities.

Water bodies and marshland make 1.8 million hectares (2.9 per cent) of the total land. Afghanistan has remarkable rivers that act as strong agents of formation of fluvial landforms and their waters are critical lifeblood for the Afghan people (John F. Shroder, 2014). Overall, Afghanistan has five major river basins. The larger rivers of arid Afghanistan rise in the Hindukush and Pamir mountains, mainly from snow and glacier melt which flow on fairly steep gradients to the lowlands. It is estimated that Afghanistan has an annual total surface water flow of 57 bcm, a balance of 18 bcm per year groundwater with an overall surface water availability of 2,775 cubic meters per capita per year. Afghanistan's use of water includes 98% of the abstractions for the agriculture sector, 1% for municipalities use, and another 1% for industries (Duran 2015). In contrast, about 80% of the Afghan population rely on agriculture and natural resources for livelihoods. Water conservation is, therefore, a high priority for the Afghan government as water remains the second key source of conflict in rural Afghanistan.

As an upper riparian country, the water originated in Afghanistan flows into its neighbouring country of Iran, Turkmenistan, Pakistan, Tajikistan, and Uzbekistan. Most runoff is delivered from melting of seasonal winter snow or older glacier ice. Vegetation flourishes in those areas of the country that receives summer monsoon rains. Therefore, Afghanistan's surface water availability is prone to climate change and varies in the precipitation patterns and levels, and associated drought affects the vegetation cover in Afghanistan. Based on the Ministry of Energy and Water (MEW), the total surface water in Afghanistan in 2018 has declined to approximately 48 bcm due to climate change and cycles of drought. For more on urbanization and water, stresses see Case Study 3: Urbanization and Water Stress in Kabul River Basin.

The limited number of wetlands available in Afghanistan is essential for the formation of water ecosystem and habitat, which is also significant for a population of migratory birds. These wetlands benefit resident communities as well. Many wetlands have degraded and impacted by droughts in addition to the decades of conflict.

A quarter of Afghanistan has an average altitude of 2500 meters. The climate of the country is classified as semi-arid and continental with warm to hot summers and cold winters; this is why the country is highly prone to natural disasters induced by climate change. Natural hazards, such as droughts and flood, low level of precipitation, warmer temperatures, and melting glaciers have devastating impacts on ecosystems.

Agricultural biodiversity is known as the variabilities in species of crops and livestock used by farmers. This is significant for environmental resilience and adaptation as it provides Afghan farmers with the flexibility to adapt

to changing conditions. With traditional farming, early farmers had to plant several varieties of each crop so that at least some produce would harvest through the drought, flood, and disease during the growing season. Afghanistan has very old traditional farming and pastoral systems that have been shaped by the harsh physical, mixed geology, topography and climatic environment of the country (Anthony Fitzherbert, 2014). Field crops and wild plants have always been used by the farming and pastoral households to feed their livestock throughout centuries. The most ancient crops, wheat and barley (in particular the wheat) form the basis of all Afghan cropping system, feeding both the people and livestock.

Afghanistan, along with its immediate neighbouring countries, has been an important centre for the origination of crops and is the original home of bread wheat, rye, barley, chickpeas, peas, flax, alfalfa, clover, apple, pear, pomegranate, quince, sweet cherry, melons, grapes, pistachio, and some vegetables (Breckle & Rafiqpoor 2010). Agricultural produce ranging from fresh fruits, dried fruits, and medicinal plants are key export commodities of the agriculture and farming system of Afghanistan. For instance, Afghanistan exports 45 different and high-quality medicinal plants to regional and global markets. Afghanistan is also a major producer of liquorice, ferula, and assafoetidae among other plants. Global imports show continuous growth over the last five years and medicinal plants (under which Liquorice and ferula) enjoy wider recognition for the application possibilities in the pharmaceutical and confectionary industry.

The impoverished soils have a reduced crop-carrying capacity, which leads to attempted overstocking, the cultivation of unsuitable land for cash and subsistence crops, and increased exposure of soils to erosion. The consequences have also produced several issues: severe flooding, slope wash, wind erosion, deforestation, reduced pasture quality, the decimation of wildlife numbers, air pollution decreases of quantity and quality of water for drinking or irrigation, and so on. These consequences illustrated are further compounded by climate changes, especially precipitation.

Primarily the past four decades of persistent conflicts and natural hazards have had destructive impacts on ecosystems, biodiversity and natural resources in Afghanistan. In addition, the traditional and sustainable use of natural resources has been largely impacted by the conflicts which have weakened the ability of the state to better govern and manage resources. Furthermore, climate change, exploitation, overuse and unsustainable use of resources such as forests and rangelands have reduced biodiversity and made essential land and rangelands unsafe to use (NEPA and UNEP, 2008). The country's vegetation cover has been threatened by long-lasting exploitation, over-grazing, agricultural production, irrigation, and deforestation.

Decades of insecurity, migration, breakdown of social structures, drought, and extreme poverty have all disrupted the agricultural and farming systems of the country. As a result, this has produced overexploitation of the natural resource base, and in turn the loss of biodiversity and degradation of the land by both natural and anthropogenic causes, which has the country environmentally stressed. This, therefore, makes Afghanistan prone and vulnerable to different variations of climatic and natural hazards.

Afghanistan is highly vulnerable to natural hazards, and a changing climate is likely to exacerbate their impacts. As a very mountainous country with an arid and semi-arid climate, Afghanistan is exposed to several natural hazards that impact biodiversity. Based on the World Bank, every earthquake causes more than 500 fatalities. Around 800,000 individuals are exposed to floods and droughts that cause damages worth US$ 280 million, impacting the country's agriculture and farming systems. In addition, landslides expose up to 130,000 private buildings with dwellings and avalanches damaging 10,000 km roads in the country (World Bank, 2017).

In addition to climate change-induced hazards such as droughts and floods, other threats to biodiversity in Afghanistan include the following: rapid urbanization, hunting, illegal trade, over-grazing, deforestation, over-hunting, shrub collection, dry-land farming, and desertification.

Floods and droughts are two water-related disasters Afghanistan has been facing. Deforestation in upper catchment leads to soil degradation and erosion resulting in raised riverbeds and increased flood risks; degradation of rangelands can lead to increase run-off and soil erosion; improper engineered irrigation systems lead to over-irrigation, increased siltation, and flood damage. Finally, the lack of policy and regulations on land use has led to encroachment on flood-prone lands in rural and urban areas.

Afghanistan has committed to several interests: sustainable use of its biodiversity resources, controlling impacts of climate change, desertification, pollution and other threats on biodiversity resources, escalating assessments of the country's flora and fauna, expansion of the key protected areas, prevention of damages to the natural ecosystems from invasive alien species, recognizing and the traditional knowledge and land uses, and ensuring that key government institutions have sufficient capacity and resources to carry out the country's obligations as

a signatory to the Convention and other Multi-lateral Environment Agreements (MEAs). For Afghanistan, these are areas of intervention for biodiversity conversation outlined in the country's National Biodiversity Strategy and Action Plan (NBSAP).

With all these imperatives and recognizing the importance of biodiversity conservation, Afghanistan signed the United Nations Convention on Biological Diversity (UNCBD) in 1992 and became a party in 2002. In March 2009, the Afghan government defined its principal conservation goals and strategies in its first draft of the NBSAP. In 2014, the NBSAP was revised in which 13 specific strategic directions with 11 preliminary targets were set. Afghanistan's National Biodiversity Strategy and Action Plan (NBSAP, 2014-2017) has ambitious measures for biodiversity conservation in Afghanistan. In line with Aichi Targets and Strategic Plan for Biodiversity 2011-2020, Afghanistan has embraced a set of 11 preliminary targets. The NBSAP is aligned with 12 of the Aichi Biodiversity targets with broad strategic directions. Afghanistan's preliminary targets mark effective conservation of 10 per cent of each of the important ecological regions, restoration of the threatened species, conservation of the genetic diversity of crops, livestock, wildlife, and other valuable species. In addition, sustainable management of biodiversity-based products and resources, reduction of the rate in habitat loss, and boosting the resilience of the components of biodiversity to adapt to climate change are other biodiversity priorities for the country.

Generally, the implementation of Afghanistan's NBSAP has been undercut by the government's other higher priorities, including security and socio-economic development. However, while confronting with continued conflict and war with the Taliban, Afghanistan has made steady progress towards the implementation of its biodiversity conservation measures. Key measures taken include the following: conservation and expansion of protected areas, assessment and creating the protected species list of the country, progress towards finalization of a sound legislation and policy frameworks, improved governance mechanisms and institutional capacities, carrying out scientific assessments and surveys of flora and fauna insecure regions, increasing awareness on biodiversity and protection of the ecosystems, and inclusion of the local and rural communities in conservation activities. Like other development sectors, Afghanistan's conservation activities are also hugely reliant on donors' financial and technical support. The projects and programs that are said to support the Afghan government in the implementation of the NBSAP are also reported in this 6th national report.

After the official announcement of Band-e-Amir as the country's first National Park in 2009, the Afghan government announced the Wakhan Corridor as its second National Park in 2014. However, some actions have been taken on conservation of Shah Foladi Mountain Landscape in Central Highlands and the Kol-e-Hashmat Khan Sanctuary. Conservations of biodiversity in these four protected areas are guided by specific management plans. The classification and official recognition of the national parks and the protected areas have made the implementation of the conservation strategies and policies mandatory; perhaps the bulk of achievements and progress of the country on biodiversity can be attributed to the conservation interventions in the two national parks. In addition to these, in 2018 Afghanistan proposed Bamyan Plateau as another potential area in the Central Highlands to be added to the network of protected areas in Afghanistan.

Although the impacts of the climate on biodiversity including water resources, agriculture, and forest resources is not receiving the attention it deserves, Afghanistan has committed to working towards a climate-secure future for the country. It has strongly committed to mainstream climate change with the development planning processes. Afghanistan's Climate Change Strategy and Action Plan (ACCSAP, 2016) lays out policy directions, a robust institutional framework, strategies to address climate change adaptation and mitigation, and an action plan with a list of programs and projects that the country needs to adopt. Nevertheless, the implementation of this ambitious strategy and action plans not only to require better security but also adequate resources.

The conservation programs primarily in the protected areas in Afghanistan have substantially raised awareness of the local authorities and communities on issues of conservation of the natural habitats and ecosystems. Today there is a growing interest in the sustainable management of natural resources in the country due to these interventions.

The Afghan Government has also fully recognized the important role that the Afghan people and local communities play in the conservation of their biological heritage. Apart from living alongside biological resources and interacting with them on a daily basis, the active participation of local communities in natural resource management plans and strategies is considered essential. This is reflected in Afghan legislation, policies, strategies and action plans for conservation and protection of Afghan land and habitat.

Key threats to the country's biodiversity include the following: persistent conflict, increasing population growth rate, desertification, deforestation, low level of awareness and knowledge on sustainable use of natural

resources, illegal hunting, overgrazing, and most importantly climate-induced poverty and natural disasters (floods, and droughts). A huge drought-driven population displacement happened during 2017-2018 when about 250,000 people were forced to abandon their homes and farming.

This 6th national report is prepared by NEPA as a requirement to fulfil its commitment to the Convention on Biological Diversity (UNCBD) and includes a description of Afghanistan's 11 preliminary targets set out in its NBSAP strategy, key measures taken for the implementation of the strategy and conservation of biodiversity, progress towards each national target and those relevant Aichi Biodiversity targets. And the last section provides a rather detailed description of the country's biodiversity profile and key detailed key threats to biodiversity.

The Process: Preparation of the 6th National Report

The ownership of the 6th national report relies on the National Environmental Protection Agency (NEPA). The consultative process was led by a joint team from National Environmental Protection Agency (NEPA),primarily the Natural Heritage department led by Mr. Jalaludin Naseri (*jalaludinnaseri@gmail.com)*, with support from the UNDP consultant Mr. Faraidoon Shariq (fshariq@gmail.com) working with the UNDP Afghanistan under the guidance of Ahmad Jamshed Khoshbeen, Programme Analyst for Livelihoods and Resilience Unit of UNDP.

The extensive inputs and support provided by the colleagues at the department were crucial at different stages of this process. The biodiversity working group acted as the steering committee for the report and provided initial guidance on the different thematic areas covered in the report. The committee also reviewed and validated the report.

The data and information for the report were gathered through reviews of the annual reports from NEPA, Ministry of Agriculture, Irrigation and Livestock (MAIL) as well as reviews of reports, surveys, and numerous other documents from a wide range of stakeholders. The desk review included an analysis of project and program documents related to natural resource management that were directly or indirectly linked with the different components of the biodiversity. The report is prepared and validated during the workshops with Afghanistan's Biodiversity Working Group. The Working Group acted as the Steering Committee for the 6th NR and provided insights during the preparation of the report. The members of the Biodiversity Working Group include biodiversity experts, university lecturers and representatives of other non-government stakeholders.

During June to December 2018, numerous individual consultations were conducted mainly in Kabul and Bamyan. The analysis and indications of changes in Afghanistan biodiversity are therefore based on expert opinions. Individual consultations and exchanges of expertise with the key partners in Kabul that were conducted includes the following: World Bank, United Nations Environment Programme (UNEP), International Centre for Integrated Mountain Development (ICIMOD), Wildlife Conservation Society (WCS), MADERA, and Danish Committee for Aid to Afghan Refugees (DACAAR). In addition, during the whole process for preparing the report, the author enjoyed personal interactions and exchanges with numerous government and non-government experts on topics such as Afghanistan's natural resources management, Kabul university lecturers, experts on protected areas and experts on Afghanistan environment, economists and data experts.

Furthermore, the reviews and individual consultations, data, and analysis presented in the report also comes from focus group discussions with local communities of Shah Foladi and Band-i-Amir National Park; two of the key protected areas of Afghanistan with rich biodiversity and exposure to conservation interventions. Therefore, opinions of the local communities and people mainly on issues of protected areas are elucidated in the 6th national report.

Several workshops were organized with experts and technical staff of NEPA and General Directorate of Natural Resources at MAIL. During these full-day workshops, the specific data tracking tool designed for the 6th national report was used to collect primary data on the implementation of Afghanistan's National Biodiversity Strategy and Action (NBSAB). The primary tool for data collection and data analysis was the 6NR Data Tracking Tool; the Excel spreadsheet guided to assess Afghanistan's biodiversity strategies, actions, targets, and indicators. The Tracking Tool also supported with collecting data on identifying progress, barriers, and challenges, as well as the capacity needs for each of the actions and targets prioritized under Afghanistan's NBSAP.

The Convention on Biological Diversity (CBD)'s Technical Review framework for the 6th NR was also closely followed. In addition to the tracking tool, a detailed questionnaire was developed based on the Sense-Maker

methodology, which is an innovative narrative-based research and monitoring tool. The questionnaire was designed in a way to collect expert opinions on the general status of biodiversity in Afghanistan.

Section I. Information on the Targets Being Pursued at the National Level

☒ *My country has adopted national biodiversity targets or equivalent commitments in line with the Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets*

AFGHANISTAN'S NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN	
Goal	*to conserve all aspects of Afghanistan's biodiversity and to ensure that future utilization of Afghanistan's biodiversity resources is sustainable.*
Strategy	*to create and implement a viable, cost-effective and sustainable framework for the conservation and management of all elements of Afghanistan's biodiversity, based on the mobilization and effective utilization of available national human and financial resources, and on international partnerships.*
Action Plan	*to identify and implement short, medium and long-term actions that need to be taken, institutional responsibilities, and (to the extent possible) obtain the budgetary requirements for the implementation of the identified actions.*

1.1. Afghanistan Preliminary Target 1

At least 10 percent of each ecological region effectively conserved, and areas of particular importance to biodiversity protected.

1.1.1. The Rationale for National Target

As the least developing country, Afghanistan has urgent needs to develop and grow. Nevertheless, it recognizes the importance of biodiversity and environment conservation. The country's National Protected Area System Plan (2009) acknowledges that protected areas contribute to a healthier environment. Protected areas can also facilitate social and economic development including better security and increased income generation for local communities.

Afghanistan understands that protected areas can provide enhanced livelihoods for the Afghan people at the national and regional level in the long term. Furthermore, such recognition enables the government to attract international financing as it supports community-based governance of natural resources and enhances a sense of national identity and shared history. Protected areas can help facilitate environmental recovery and stimulate social and economic development. Protected areas can also help provide resource security by facilitating community self-governance, creating community-based management policies that protect limited or threatened resources, and assisting communities to prevent external groups from over-utilizing natural resources.

Afghanistan has set three long-term objectives for protection: 1) to provide effective protection on at least 10 per cent of Afghanistan land area and of the habitat of selected species in these areas by 2030 2) to effectively engage the local people in setting management directions for each established protected areas 3) to improve the standard of living of people in and near protected areas within 10 years of legally established of each protected areas (ANPASP, 2008). Afghanistan National Protected Area System Plan (ANPASP, 2009) categorizes areas of high biodiversity in all major eco-regions of the country; recognizing 14 protected areas from which only four has been officially announced. Except for Band-e-Amir, none of these areas is classified as the designated area in the World Database of Protected Areas (WDPA). The system plan has established legal, financial and management systems that are necessary for effective and sustainable conservation of the protected areas.

1.1.2. Main Related Aichi Biodiversity Targets

☐ *1* ☐ *6* ☒ *11* ☐ *16*

☐ *2* ☐ *7* ☐ *12* ☐ *17*

☐ 3 ☐ 8 ☐ 13 ☐ 18

☐ 4 ☐ 9 ☐ 14 ☐ 19

☐ 5 ☐ 10 ☐ 15 ☐ 20

1.1.3. Level of Applicability

☐ *Regional/multilateral*

☒ *National*

☐ *Subnational*

1.1.4. Additional Information

Afghanistan Biomes and Ecoregions

Afghanistan is divided into four main geographical zones. The Northern Plains has an area of 103,000 km^2 with an average elevation of about 600 meters. The altitude of the plains rises rapidly toward the foothills of the central mountains zone. This mountain range extends from Pamir in the northeast to the central and eastern parts of the country. This region is intensively cultivated and in addition to fertile soil, it is endowed with rich mineral resources including natural gas.

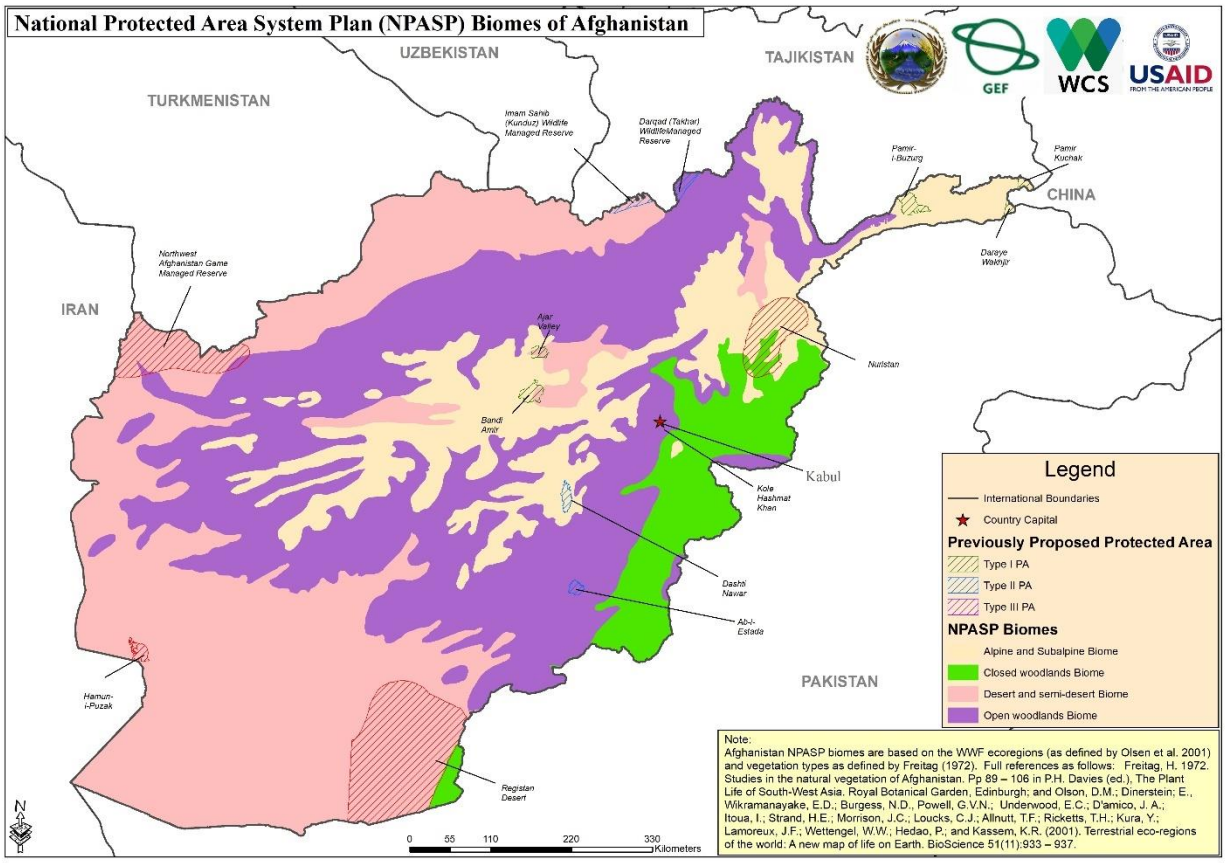

Figure 1: A map showing the National Protected Area System Plan (NPASP) Biomes of Afghanistan (Source: Wildlife Conservation Society - WCS)

The Central Mountains/Highlands zone includes the main Hindukush range. It has an area of approximately 414,000 km^2 with deep and narrow valleys. Some peaks of the mountain range rise above 6,400 meters. The Southern and Western Lowlands (the Southwestern Plateau) has an area of 130,000 km^2. The average elevation is 900 meters in this zone and the western lowlands are the largest that comprise the Helmand and the Harirud river basins. It is a region of high plateaus, sandy deserts, and semi-deserts.

In terms of ecological regions, the country is classified into four biomes, each having a distinct climate, ecological features, plant and animal communities. The Afghanistan National Protected Area system plan divides each of these biomes into several ecoregions.

- Desert and semi-desert (252,044 km^2): The biome is classified into four ecoregions including the Registan-North Pakistan sandy desert, Badghis, and Karabil semi-desert, Central Persian desert basins, Afghan Mountains semi-desert.
- Open woodlands (240,745 km^2): Central Afghan xeric woodlands, Sulaiman Range alpine meadows, Paropamisus xeric woodlands, Gissaro-Alai open woodlands.
- Closed woodlands (47,354 km^2): Baluchistan xeric woodlands, East Afghan montane conifer forests, Western Himalayan subalpine conifer forests.
- Alpine and Subalpine (106,584 km^2): Ghorat-Hazarajat alpine meadow, Karakoram-West Tibetan Plateau alpine steppe, Hindukush alpine meadow, North-western Himalayan alpine shrub and meadows, Pamir alpine desert and tundra Rock and Ice.

Inspired by Aichi Biodiversity Targets, Afghanistan developed this preliminary target under its NBSAP. The development of the NBSAP was a participatory process led by the National Environmental Protection Agency (NEPA). Technical guidance was provided by the Biodiversity Working Group comprising senior representatives from Kabul University, Ministry of Agriculture, Irrigation and Livestock (MAIL) and other key government and non-government stakeholders.

Provincial-level consultations were also held in Bamyan, Mazar, Herat, and Kabul, primarily involving personnel from provincial NEPA offices, but also community members, NGOs, and journalists. The provincial-level consultations were designed to solicit information on biodiversity status, threats, and management options, and included representatives from 27 of Afghanistan's 34 provinces.

1.1.5. Relevant Online Resources, Websites, and Documents

- *Afghanistan Environment Law (2007); https://postconflict.unep.ch/publications/afg_env_law.pdf*
- *NEPA. Afghanistan National Biodiversity Strategy and Action Plan (2014-2017). Kabul. Afghanistan https://www.cbd.int/doc/world/af/af-nbsap-01-en.pdf*
- *NEPA. 2009. National Protected Area System Plan of Afghanistan. Kabul. Afghanistan*
- *The Constitution of Afghanistan (2004). http://moj.gov.af/en/page/legal-frameworks/168329941684*

1.2. Afghanistan Preliminary Target 2

Populations of species of selected taxonomic groups restored, maintained or decline reduced; status of threatened species improved.

1.2.1. The Rationale for National Target

Biodiversity Resources in Afghanistan comprise an estimated 3,500-4,000 native species of vascular plants, 428-515 bird species, 137-150 mammal species, 101-139 fish species, 92-112 reptile species, and 6-8 amphibians. The number of endemic species is relatively low for vertebrates (7 species) but relatively high for plants (possibly more than 1,000 species).

Wildlife diversity in Afghanistan include leopards, wolves, owls, wild cats, bears, and snakes. There are some of the inspiring creatures found in Afghanistan. Only 7 vertebrate species (Mammals, none; Birds, Afghan Snow Finch [Montifringilla theresae]; Reptiles, Leviton's Gecko [Asiocolotes levitoni], Cyrtopodion voraginosus, Eremias aria, Point-snouted Racerunner [Eremias afghanistanica], Amphibians, Paghman Mountain Salamander [Batrachuperus mustersi]; Fish, Triplophysa farwelli) are known to be endemic to Afghanistan.

As noted by the many observations of wildlife reported by Emperor Babur in his memoirs 500 years ago, the country was known for its rich wildlife. Since then, a number of these species have been driven to extinction in the country, including the Caspian tiger (Panthera tigris virgata), the cheetah (Acinonyx jubatus), and the wild ass or onager (Equus hemionus). Many other large mammals are threatened, including snow leopards (Uncia uncial), wild goat (Capra aegagrus), marker (Capra falconerie), Marco Polo sheep (Ovis ammon polii), urial (Ovis orientalis), and the Asiatic black bear (Ursus thibetanus).

Many of the bird species in Afghanistan are also threatened globally. Examples include the following: Siberian crane (Grus leucogeranus), white-headed duck (Oxyura leucocephala), marbled teal (Marmaronetta angustirostris)), Pallas's sea eagle (Haliaeetus leuco- ryphus), greater spotted eagle (Aquilla clanga), imperial eagle (Aquilla heliacal), lesser kestrel (Falco naumanni), corncrake (Crex crex), sociable lapwing (Vanellus gragaria), and the pale-backed pigeon (Columba hodgsonii). Of these birds, the Siberian cranes are the most endangered because only a few thousand are left due to decimated by the lake drying out in the recurrent droughts, as well as by hunting because the hungry Afghan people hunt and eat these and many other birds. Furthermore, Flamingos that used to breed there have also not been seen in Afghanistan for decades.

Due to persistent conflict, habitat loss, illegal hunting, and trade, biodiversity and wildlife have continued shrinking at a high rate in Afghanistan. biodiversity resources have historically been primary sources of food, medicine, building materials, and trade items. Since they continue to be important throughout all levels of the Afghan economy, the government has set key strategic objectives to continue ongoing assessments of the status regarding Afghanistan's floral and faunal with the overall aim to improve the understanding of Afghanistan's biodiversity resources and their conservation requirements.

1.2.2. Main Related Aichi Biodiversity Targets

☐ *1*	☐ *6*	☐ *11*	☐ *16*	
☐ *2*	☐ *7*	☒ *12*	☐ *17*	
☐ *3*	☐ *8*	☐ *13*	☐ *18*	
☐ *4*	☐ *9*	☐ *14*	☐ *19*	
☐ *5*	☐ *10*	☐ *15*	☐ *20*	

1.2.3. Level of Applicability

☐ *Regional/multilateral*

☒ *National*

☐ *Subnational*

1.2.4. Additional Relevant Information

For a list of species known to exist in Afghanistan, see annex 1. For the protected species list of Afghanistan, see annex 2.

Inspired by Aichi Biodiversity Targets, Afghanistan developed this preliminary target under its NBSAP. The development of the NBSAP was a participatory process led by the National Environmental Protection Agency (NEPA). Technical guidance was provided by the Biodiversity Working Group comprising senior representatives from Kabul University, Ministry of Agriculture, Irrigation and Livestock (MAIL) and other key government and non-government stakeholders.

Provincial-level consultations were also held in Bamyan, Mazar, Herat, and Kabul, primarily involving personnel from provincial NEPA offices, but also community members, NGOs, and journalists. The provincial-level consultations were designed to solicit information on biodiversity status, threats, and management options, and included representatives from 27 of Afghanistan's 34 provinces.

1.2.5. Relevant Online Resources, Websites, and Documents

- *NEPA. Afghanistan National Biodiversity Strategy and Action Plan (2014-2017). https://www.cbd.int/doc/world/af/af-nbsap-01-en.pdf*
- *S.-W. Breckle & M.D. Rafiqpoor. 2010. Field Guide Afghanistan: Flora and Vegetation.*

1.3. Afghanistan Preliminary Target 3

Genetic diversity of crops, livestock and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained.

1.3.1. The Rationale for National Target

The genetic resources that exist in Afghanistan should also be mentioned as a number of important plants such as common bread wheat (Triticum aestivum) appear to have been first cultivated in Afghanistan over 5000 years ago. More native varieties of wheat occur wild in Afghanistan than any other place in the world. They could have residual genetic variation with great resistance to disease or pests that could be exploited, providing habitat destruction that also does not drive them into extinction.

Afghanistan has been one of the most important centres of crop origin and original home to the following produce: bread wheat, rye, barley, chickpeas, peas, flax, alfalfa, clover, apple, pear, pomegranate, quince, sweet cherry, melons, grapes, pistachio, and some vegetables. Preserving the genetic diversity of these wild ancestors of humanity's crop species is therefore crucial for the Afghan government. In addition, agricultural biodiversity is important because it provides farmers with the flexibility to adapt to changing conditions. Early farmers had to plant many varieties of each crop to guarantee harvest through the drought, flood, and disease during the growing season. Consequently, many landraces of plants and animals are in danger of being lost along with their genetic resources.

There are varying estimates on Afghanistan's plant species. Based on some estimates the country has between 35,00 to 4,000 species of vascular plants, of which 30 per cent to 35 per cent are considered endemic to the country. Other estimates show that the country has about 5,000 plant species, where 25 per cent to 30 per cent are endemic. Agricultural species diversity in Afghanistan includes varieties of fruits and nuts, vegetables, cereals, pulses, fodder, and forage. The country is believed to have more native bread wheat variations than anywhere else in the world. For example, grapes are believed to have been first domesticated in Herat province (western part of the country). There are about 70 varieties found in the Herat region and some of these landraces have been used by other plant breeders such as those in the US to develop new variations.

Afghanistan's land is covered by a variety of vegetation types rich in biodiversity. Due to the higher level of rainfall, the Northern and Eastern parts of the country have better vegetation. According to Breckle and Rafiqpoor (2010), the most comprehensive information source for the flora of Afghanistan is the "Flora Iranica" edited by Rechinger (1963). Afghanistan flora was much studied prior to the start of the Soviet military occupation of the country in 1978.

The value of genetic variability encompassed by farmer-developed landraces of crop plants has long been known. Consequently, there are many seed banks around the world that preserve as wide a diversity of genetic adaptations as possible. Prior to the war, Afghanistan had a world-renowned crop seed collection. Unfortunately, the Kabul University collection was destroyed between 1992 and 1994 by factional conflicts. Researchers then re-collected samples of the country's major food and cash crops. During the Taliban era, scientists quietly stockpiled hundreds of seed samples and hid these collections in private homes.

Sometime prior to 2002, these collections were again ransacked, supposedly to steal the plastic containers in which the seed was stored. The destroyed seed collection included variations descended from many wild ancestors, representing a rich genetic diversity that may have contained rare traits for characteristics such as disease and pest resistance and drought tolerance (Future harvest 2002). A number of international collections of Afghan seed biodiversity are still well preserved including Royal Botanical gardens Kew, England; Edinburgh Botanical gardens, Scotland, Vienna herbarium and Vavilov Institute in Moscow herbarium, in particular, have significant Afghan botanical collections. In addition, the original Afghan herbarium collections were somewhat preserved by professors in Kabul University. Today, over 37,000 plants pressed samples have been recovered, digitized and databased.

Medicinal plants that account for around 20 per cent of exports of Afghanistan have great potential for further contribution to the national economy of the country. Global import trends show continuous growth in demand for medicinal plants, particularly Liquorice and ferula, which Afghanistan is a major producer. The regional and international demand for these plants is estimated at around 20,000 tons per year.

1.3.2. Main Related Aichi Biodiversity Targets

☐ *1* ☐ *6* ☐ *11* ☐ *16* ☐ *2* ☐ *7* ☐ *12* ☐ *17*

☐ *3* ☐ *8* ☒ *13* ☐ *18*
☐ *4* ☐ *9* ☐ *14* ☐ *19*
☐ *5* ☐ *10* ☐ *15* ☐ *20*

1.3.3. Level of Applicability

☐ *Regional/multilateral*

☒ *National*

☐ *Subnational*

1.3.4. Additional Relevant Information

s

1.3.5. Relevant Online Resources, Websites, and Documents

- *NEPA. Afghanistan National Biodiversity Strategy and Action Plan (2014-2017). https://www.cbd.int/doc/world/af/af-nbsap-01-en.pdf*
- *S.-W. Breckle & M.D. Rafiqpoor. 2010. Field Guide Afghanistan: Flora and Vegetation.*

1.4. Afghanistan Preliminary Target 4

Biodiversity-based products derived from sources that are sustainably managed and production areas managed consistent with the conservation of biodiversity.

1.4.1. The Rationale for National Target

Despite frequent disasters and the impact of climate change, Afghanistan remains a country rich in natural resources such as over 1.7 million hectares of forest (around 3 per cent of the total surface of the country), over 30.2 million hectares of rangelands (47 per cent of the total surface of the country), and 75 bcm of freshwater (surface and groundwater). Water is the single largest natural factor contributing to Afghanistan's socioeconomic and agricultural development.

Water shortage still remains one of the major causes of food insecurity in the country. Afghanistan is divided into five major river basins: (1) the Amu Darya Basin, (2) Northern River Basin, (3) Harirud-Murghab Basin, (4) Helmand River Basin and (5) the Kabul-Eastern Basins. Of Afghanistan's water resources, 80 per cent originate in the Hindukush Mountains at altitudes above 2,000 meters. These resources include permanent snowfields and glaciers, as well as seasonal snowfall, which accumulates during the winter months and melts during spring and summer, thus supporting the perennial flow of all major rivers.

Natural resources have a significant economic, social and cultural value. Majority of the Afghan population is rural, and their livelihoods depend on natural resources which include forests, rangeland, medicinal plants, wildlife, water resources, and watersheds.

However, these resources face serious manmade and natural threats. High population growth, poverty, overdependence of rural populations on natural resources coupled with a low level of awareness about natural resource management, and climate change are the biggest challenges for the protection and management of natural resources.

Afghanistan's strategic objective in the management of its natural resources is to develop and implement mechanisms to ensure sustainable use of biodiversity resources. The country's five-year NRM strategy ensures sustainable development and community-based management of natural resources. The NRM strategy has four strategic objectives: (1) Community-based Forest management (Conservation, Restoration, Afforestation, Development, Sustainable Harvesting, and Value addition) for resilient, climate-adapted, sustainable economic and social development; (2) Sustainable management of rangeland and medicinal plants through strengthening community-based practices for better local livelihood (herders and local people), reduce desertification and subsequently combat negative impacts of climate change; (3) Co-management and conservation of protected areas to improve biodiversity conservation and promote eco-tourism; (4) Institutional and human capacity development to build an enabling environment for meeting the expected outcome of the NRM Strategy.

Although limited in extent, forests in Afghanistan are still significant for their contribution to the economy and ecology of the country. They provide critical ecosystem services by contributing to watershed protections, helping combat soil erosions, and controlling floods. They also represent a unique ecosystem with significant biodiversity. Economically, they are an important source of valuable timber and non-timber products including fuelwood.

Afghanistan has two basic forest types: closed forest of oak and conifer in the monsoon-influenced areas of eastern Afghanistan, and savannah-like open pistachio woodlands originally located in an arc around the mountains. Closed forests (not including northern juniper communities) have once covered about 5 per cent of the country, which is approximately 34000 km^2. There were about 3600 km^2 of closed-canopy forest remaining in the late 1970s, i.e. only about 11 per cent of pristine forest cover. Similarly, open woodlands originally comprised 38 per cent (ca. 250,000 km^2) of the Afghan landscape. Severe destruction during the wars, internal conflicts, and droughts between 1990 to 2000 resulted in deforestation of 29400 hectares of natural forest. Since 2002, the General Directorate of Natural Resource Management (GD-NRM) is implementing multiple watersheds and NRM management interventions by the involvement of local communities and could promote the forest coverage from 2.8 per cent to 3 per cent.

Forests in Afghanistan vary with region and elevation. In the central mountains below 2,000m, degraded Pistacia atlantica forest is widespread although often degraded to the extent of an occasional vestige. North of the Hindukush is commonly between 600 and 1,600 m above sea leave mainly rich with Amygdalus bucharica and Cercis griffithii plants. These pistachio forests are a valuable source of high-quality pistachios but have been

heavily exploited for firewood. In the east and south between 1,200m and 2,000m, Oak (Quercus baloot) and Amygdalus kuramica occur. At low elevations in the east, Acacia modesta is frequently occurred and, with adequate moisture Olea cuspidate can also be found. In Paktia towards the Pakistan- Waziristan border, the dwarf palm Nannorhops is locally important and is exploited for fibre. Between 2,200m and 2,500m, Pinus gerardiana (an important cash crop for piñons 'chilgoza') and Betula sp. occur. From 2,500m to 3,100m there are Deodar (Cedrus deodara) forests but large parts have been severely exploited and have been replaced by stable Artemisia communities. From 3,100m to the tree line at about 3,300m Picea smithiana and Abies webbiana occur in areas of higher precipitation while Juniperus spp is in the drier zones - often heavily used for firewood.

1.4.2. Main Related Aichi Biodiversity Targets

☐ *1* ☐ *6* ☐ *11* ☐ *16*

☐ *2* ☒ *7* ☐ *12* ☐ *17*

☐ *3* ☐ *8* ☐ *13* ☐ *18*

☐ *4* ☐ *9* ☐ *14* ☐ *19*

☐ *5* ☐ *10* ☐ *15* ☐ *20*

1.4.3. Level of Applicability

☐ *Regional/multilateral*

☒ *National*

☐ *Subnational*

1.4.4. Additional Relevant Information

Up until now, over 95 per cent of the surface water explored has been for irrigation purpose, and the exploitation of groundwater is still small. Water resources in Afghanistan are distributed unevenly in both temporal and spatial terms. Steppe, Desert, and Mediterranean climate types dominate Afghanistan. Most of the country has a long dry season from May to October and a cold rainy season from November to April. Geographically, the Amu Darya Basin with about 14 per cent of the area holds approximately 60 per cent of the water flow; whereas, Helmand with around 40 per cent of the area coverage holds only 11 per cent. Socially, downstream areas are often at a disadvantage in terms of water use. Within communities, there is also a problem of equitable distribution of water resources for irrigation.

Non-Timber Forest Products (NTFPs) such as medicinal plants, Pistachio (Pistacia vera) nuts, Walnuts, Almonds, dried mulberry, and Chilgoza pine (Pinus Geradiana) nuts already contribute positively to the nations' Gross Domestic Product (GDP). NTFPs currently constitute around a third of total export of the country. Ensuring that such resources are harvested sustainably and marketed appropriately, the role of NTFP's in improving livelihoods and expanding economic opportunities particularly for rural communities could increase significantly.

Export of other NTFPs (e.g. pistachio and pine-nuts) account to more than 40 million USD a year. Expansion and improvement of NTFPs can significantly increase the global market share of Afghan dried fruits. Seven years after plantation, each hectare of pistachio trees can on average generate USD 24500 income per year. In the next 5 years, MAIL is planning to expand pistachio forests by 23000 hectares. This expansion will result in an annual income of USD 563.5 million after seven years. Improvement of another 40000 hectares of pistachio forests will result in additional annual income of USD 235 million. Similar to pistachio, Chilgoza pine also has a high Return of Interest (ROI). Each hectare of Chilgoza pine on average generates USD 18375 income per year upon maturity in year 15 of the plantation. Expansion of Chilgoza pine by 23000 hectares will result in additional annual income of USD 423 million. Improvement of existing Chilgoza forests will generate an annual income of USD 137 million. The timber industry also has great potential for growth. A current estimate shows that timber trade in Kabul accounts for more than 2 per cent of the country's reported GDP. Commercial farming of fast-growing poplars can turn into a steady and secure source of income for Afghan farmers. Each hectare of Populus generates an income of USD 69,825 on six-year production cycle while production cost for each cycle is only USD 8500 resulting in over USD 10,000 net-income per year. In addition to the direct benefit to farmers, commercial plantation of poplars will expand the timber and spinoff industries such as wood pulp.

To address these challenges, the General Directorate of Natural Resources, Ministry of Agriculture, Irrigation and Livestock (GD-MAIL) presents a five-year (2017-2021) Natural Resource Management (NRM) Strategy. The NRM Strategy is based on the National Comprehensive Agriculture Development Priority Program (NCADP 2016-2020). The NCADPP is a strategic framework for agricultural development that reflects the views of the Government and Ministry to realign the priorities into seven target areas (NRM is one of them) with focus on creating an enabling environment for farmers to produce a surplus, increase on and off-farm employment, and generate income through increased exports. 'Strategic priority 5: Climate-sensitive Natural Resource Management' of the NCADP states.

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Provincial-level consultations were also held in Bamyan, Mazar, Herat, and Kabul, primarily involving personnel from provincial NEPA offices, but also community members, NGOs, and journalists. The provincial-level consultations were designed to solicit information on biodiversity status, threats, and management options, and included representatives from 27 of Afghanistan's 34 provinces.

1.4.5. Relevant Online Resources, Websites, and Documents

- *NEPA. Afghanistan National Biodiversity Strategy and Action Plan (2014-2017). https://www.cbd.int/doc/world/af/af-nbsap-01-en.pdf*
- *Afghanistan National Agriculture Extension Policy (August 2015);*
- *http://mail.gov.af/en/news/afghanistan-national-association-of-private-seed-enterprises-holds-election-for-members-of-board-head-of-the-association-his-deputy-and-secretary*
- *National Comprehensive Agriculture Development Priority Program (2016-2020); http://policymof.gov.af/home/national-priority-programs/*
- *S.-W. Breckle & M.D. Rafiqpoor. 2010. Field Guide Afghanistan. Flora and Vegetation.*
- *National Natural Resource Management Strategy (2017-2021). Ministry of Agriculture, Irrigation, and Livestock (MAIL). Afghanistan. PDF*

1.5. Afghanistan Preliminary Target 5

Rate of loss and degradation of natural habitats decreased.

1.5.1. The Rationale for National Target

Afghan government highly recognize the importance of preventing the degradation of natural habitats, revival, and conservation of ecosystems and their related services. The conservation of traditional knowledge is crucial for not only conservation interventions but also for the survival of local communities in Afghanistan.

Afghanistan's natural resources include forests (around 3 per cent of total area), rangelands (47 per cent), medicinal plants, protected areas, and water resources. Afghanistan has a total land area of 653,000 km^2 from which only 12 per cent is arable; half of it is irrigated agricultural land and the remaining half is rain-fed agriculture land. Between 70 to 80 per cent of the Afghan population live in rural areas and are either directly or indirectly dependent on these natural resources for their livelihoods. Persistent conflict and war have contributed to the rapid reduction of the country's natural resources. Decreased and limited access to these resources reduces livelihood choices for people, making them even more dependent on the existing degraded natural resources.

Afghanistan's natural resources have kept degrading at a high rate due to natural hazards and or human activities. The following concerns insert great pressures on the rate of loss of the natural resources in Afghanistan: the annual 3 per cent population growth rate, the 54 per cent national poverty rate, the 46 per cent national food insecurity rate, overdependence of the population in particular the rural population on natural resources, low level of awareness on conservation agriculture and sustainable management of natural resources, institutional obstacles and challenges, and climate change-induced natural hazards.

Deforestation has resulted in a higher incidence of landslides and floods. Overgrazing, climate change-induced hazards as floods and droughts have turned the land in Afghanistan highly vulnerable to desertification. Water diversions and drought have threatened the few water bodies and lakes Afghanistan has. The country has an arid to semi-arid climate, therefore resulting in the rangelands of the country to have a limited level of fodder productivity, producing on average of 04-1.5 tons per hectare of dry matter. In recent years, conversion of rangelands into rain-fed farming land either for fodder production or for other proposes has become common. This practice brings about serious erosion problems and decreases the available rangeland areas. Due to the same reasons, forest cover has increasingly declined over the past four decades. The natural forest of the country has an estimated delink of 50 per cent in the past 4 decades.

Open and closed natural needle-leaved forests and high shrubs make only 2.6 per cent (1.8 million hectares) of the total land of Afghanistan. There are two basic forest types in Afghanistan: closed forest of oak and conifer in the monsoon-influenced areas of eastern Afghanistan, and savannah-like open pistachio woodlands. Closed forests (not including northern juniper communities) have once covered 5 per cent of the country which is approximately 34,000 km^2. In the late 1970s, there were about 3,600 km^2 of closed-canopy forests remaining; which consisted approximately 11 per cent of pristine forest. Based on a number of assumptions, as much as half of that has been lost since the 1980s leaving some 1,800 km^2.

Open woodlands originally comprised 38 per cent (ca. 250,000 km^2) of the country's landscape. In the late 1970s, approximately 32,000 km^2 remained, representing about 13 per cent of the original open woodland and 5 per cent of the landscape.

There are forty-one watersheds delineated within five river basins in Afghanistan, with five of them being non-drainage areas. Upper Helmand is the largest watershed in Afghanistan, covering 46,882 km^2, while the smallest watershed is Dasht-i Nawur which covers 1,618 km^2. Local communities are convinced that flood and drought risks can be mitigated only through improved management of the upstream areas (watersheds) where runoff and erosion originate through sustainable management of available natural resources. The strategy includes measures aimed at protecting people's assets downstream and taking off pressure from the watershed resources.

Afghanistan also has wetlands that support underground water improvement and the formation of water ecosystem and habitat for a significant population of migratory birds. These wetlands benefit the resident communities as well. Many wetlands have been impacted by drought as well as the conflict within the country. Band-e-Amir consists of a chain of six lakes in the Hazarajat Mountains of the western Hindukush, in Bamyan Province. Ghulaman, Qambar, Haibat, Panir, Pudina, and Zulfiqar, are lakes known for their scenic beauty and

are also home to several water birds. The Dasht-i-Nawar lake lies in a vast depression at high altitude in the Koh-e-Baba range, an offshoot of the Hindukush. Formerly a perennial lake with a huge area of mudflats and numerous islands, it dried up in 1999 as a result of drought. The lake provided breeding grounds for the Greater Flamingo Phoenicopterus (ruber) roseus and a base for thousands of migratory waterbirds of various species. The Government of Afghanistan had declared the lake a Waterfowl and Flamingo Sanctuary in 1974. The Kol-e-Hashmat Khan, in the south-eastern outskirts of Kabul, is situated at an elevation of 1973m and has an area of 191 hectares. The lake was formerly a royal hunting ground and was declared a Waterfowl Reserve by King Zahir Shah in the 1930s. Over 150 species of migratory birds have been recorded in the area and the lake has supported as many as 30,000-35,000 water birds. This lake also dried out in 1999 due to the severe drought in the region. The Gardez, Ghazni and Mahara rivers in addition to a few unclassified streams drain into a large depression in the Koh-e-Baba and Koh-e-Paghman foothills of the Hindukush and form the large saline lake of Ab-i-Estrada. This lake was a Waterfowl and Flamingo Sanctuary prior to the war in 1979 (Khan 2006b).

1.5.2. Main Related Aichi Biodiversity Targets

☐ *1* ☐ *6* ☐ *11* ☐ *16*

☐ *2* ☐ *7* ☐ *12* ☐ *17*

☐ *3* ☐ *8* ☐ *13* ☐ *18*

☐ *4* ☐ *9* ☐ *14* ☐ *19*

☒ *5* ☐ *10* ☐ *15* ☐ *20*

1.5.3. Level of Applicability

☐ *Regional/multilateral*

☒ *National*

☐ *Subnational*

1.5.4. Additional Relevant Information

In Afghanistan, protection of natural habitats is largely dependent on the security situation. Due to the issue of access, the government is unable to enforce existing laws and regulations to protect its natural habitats such as forests. Not many people in forest parts of the country are aware of the Presidential decree which bans the cutting of forests. Smuggling timber to Pakistan through the lawless tribal areas is significant, but unquantifiable because of security concerns.

Large swathes of forest in the north-eastern Afghan province of Kunar are being destroyed by illegal logging, with local authorities unable to protect the rich natural resource. Huge areas of both spruce and pine are being cut down and the timber is then sold over the border in Pakistan. It is believed that some of these funds are also channelled to insurgent groups.

For local population, poverty, unemployment, lack of access to alternatives and lack of "choice" are major causes of illegal logging despite the fact that they only get a tiny share of the benefit (only USD 7 per day) of benefits from illegal logging. It is the mafia and the insurgent groups who make far more from illegal logging and smuggling the timber. By some accounts, insurgent groups and other armed groups in Kunar province (eastern Afghanistan) fall hundreds of trees each day. It is widely believed insurgent groups and armed groups finance their activities by engaging in illegal logging.

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1.5.5. Relevant Online Resources, Websites, and Documents

- *NEPA. Afghanistan National Biodiversity Strategy and Action Plan (2014-2017). https://www.cbd.int/doc/world/af/af-nbsap-01-en.pdf*
- *The Islamic Republic of Afghanistan - Land Cover Atlas (2015), http://www.fao.org/geospatial/resources/detail/en/c/1024570/*
- *Illegal Logging Destroying Afghan Forests (January 2018); https://iwpr.net/global-voices/illegal-logging-destroying-afghan-forests (accessed February 2019).*
- *National Natural Resource Management Strategy (2017-2021), MAIL, Afghanistan.*
- *Conservation Strategy for Wetland Protected Areas of Afghanistan. Asian Development Bank. pp31. Khan, A. 2006b.*

1.6. Afghanistan Preliminary Target 6

Pathways for major potential alien species controlled, and management plans for major alien species that threaten ecosystems, habitats or species in place.

1.6.1. The Rationale for National Target

Afghanistan NBSAP includes the target, however, there is little information and data on this target. The NBSAP also fails to provide a rationale for why this target is being selected for the country. In addition, in MAIL and NEPA's report, there is minimal reference on invasive alien species, hence there is little to outline regarding this target in this report. Afghanistan's NBSAP ensures to develop and implement mechanisms for preventing damage to natural ecosystems from invasive alien species.

1.6.2. Main Related Aichi Biodiversity Targets

☐ *1* ☐ *6* ☐ *11* ☐ *16*

☐ *2* ☐ *7* ☐ *12* ☐ *17*

☐ *3* ☐ *8* ☐ *13* ☐ *18*

☐ *4* ☒ *9* ☐ *14* ☐ *19*

☐ *5* ☐ *10* ☐ *15* ☐ *20*

1.6.3. Level of Applicability

☐ *Regional/multilateral*

☒ *National*

☐ *Subnational*

1.6.4. Additional Relevant Information

Inspired by Aichi Biodiversity Targets, Afghanistan developed this preliminary target under its NBSAP. The development of the NBSAP was a participatory process led by the National Environmental Protection Agency (NEPA). Technical guidance was provided by the Biodiversity Working Group comprising senior representatives from Kabul University, Ministry of Agriculture, Irrigation and Livestock (MAIL) and other key government and non-government stakeholders.

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1.6.5. Relevant Online Resources, Websites, and Documents

NA

1.7. Afghanistan Preliminary Target 7

The resilience of the components of biodiversity to adapt to climate change maintained and enhanced; pollution and its impacts on biodiversity reduced.

1.7.1. The Rationale for National Target

Controlling the impacts on biodiversity resources from climate change is a key strategic objective of the Afghan government. Climate change is a significant threat to ecosystems in Afghanistan because the country's climate is semi-desert and continental. It is highly prone to natural disasters induced by climate change. Natural hazards, droughts and flood, low level of precipitation, warmer temperatures, and melting glaciers have devastating impacts on ecosystems.

Climate change impacts environmental pollution and degradation including desertification, deforestation, water resources depletion and firing of forests. It also addresses diminishing issues such as the wildlife, damage to the agricultural land, surface water pollution, and an increase to population density in the urban areas.

Climate change reduces the water supplies available for farming. In 2015, 21 per cent of available irrigated land and 36 per cent of available rain-fed land was not cultivated due to a shortage of water supplies. This is while 2015 was considered to have a relatively good farming condition.

In the future, the problem of wetland loss can be expected to worsen as Afghanistan diverts more water for irrigation, hydroelectric and flood control. This is as wetlands are drained for agriculture and urbanization and as drought becomes more common through climate change.

The mean annual temperatures in Afghanistan have increased by 0.6°C since 1960 or about 0.13°C per decade. Increased temperatures have been most pronounced during the autumn, with increases of 0.29°C per decade. Mean rainfall has decreased slightly at an average rate of 2 per cent per decade, mainly due to decreases in spring precipitation (Savage et al. 2009).

Afghanistan has historically experienced climate cycles of about 15 years, of which 2–3 are generally drought. Since 1960, the country has experienced drought in 1963-64, 1966-67, 1970-72 and 1998-2006. The period 1998 to almost 2006 marked the longest and most severe drought in Afghanistan's known climatic history (ECHO 2006). This increased frequency of drought in recent years appears to be a consequence of increased temperature coupled with reduced spring precipitation (Savage et al. 2009).

Modelling reported by Savage et al. (2009) indicates that by 2030, mean annual temperatures are likely to rise by about 1.4°C with little change in overall precipitation. By 2090, increases in average temperature are likely to be between 2-6°C higher, dependent upon global emissions scenarios. Conditions will become drier, especially in spring, with reductions in rainfall of between 10-40mm and with drier conditions in the south.

Savage et al. (2009) predicts that Afghanistan will be confronted by a range of increased climatic hazards. These are likely to be primarily drought-related and associated with increased desertification and land degradation. Drought is likely to be regarded as the norm by 2030, rather than as a temporary or cyclical event. They suggest that flood impacts will likely be amplified by more rapid spring snowmelt combined with greater runoff associated with land degradation, loss of vegetative cover and land mismanagement.

Increased soil evaporation, reduced river flow from earlier snowmelt, and less frequent rain during peak cultivation seasons will all impact upon agricultural productivity and crop choice availability. Crop failures will probably increase in frequency, and areas of abandoned and uncultivated land will likely increase. Crop choices will shift to more drought-hardy species. By 2060, agricultural practices will become marginal without significant investment in water management and irrigation (Savage 2009).

Climate change has the capacity to plunge many more Afghans into poverty. This is why the government is considering climate change in the national or sectoral plans of the Government of Afghanistan and focus on adaptation and mitigation measures.

1.7.2. Main Related Aichi Biodiversity Targets

☐ *1* ☐ *6* ☐ *11* ☐ *16*

☐ *2* ☐ *7* ☐ *12* ☐ *17*

☐ *3* ☒ *8* ☐ *13* ☐ *18*

☐ *4* ☐ *9* ☐ *14* ☐ *19*

☐ *5* ☒ *10* ☐ *15* ☐ *20*

1.7.3. Level of Applicability

☐ *Regional/multilateral*

☒ *National*

☐ *Subnational*

1.7.4. Additional Relevant Information

Inspired by Aichi Biodiversity Targets Afghanistan developed this preliminary target under its NBSAP. The development of the NBSAP was a participatory process led by the National Environmental Protection Agency (NEPA). Technical guidance was provided by the Biodiversity Working Group comprising senior representatives from Kabul University, Ministry of Agriculture, Irrigation and Livestock (MAIL) and other key government and non-government stakeholders.

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1.7.5. Relevant Online Resources, Websites, and Documents

- *NEPA. Afghanistan National Biodiversity Strategy and Action Plan (2014-2017). https://www.cbd.int/doc/world/af/af-nbsap-01-en.pdf*
- *add the link from the World Bank data set;*
- *Afghanistan Living Condition Survey (2016-2017);*
- *Afghanistan Climate Change Strategy and Action Plan, November 2016;*
- *Afghanistan Second Communication to UNFCCC (2017);*
- *FAO's and the World Food Programmes Joint Emergency Food Security Assessment, July 2018;*

1.8. Afghanistan Preliminary Target 8

The capacity of ecosystems to deliver goods and services maintained; biological resources that support sustainable livelihoods, local food security and health care, especially of poor people, maintained.

1.8.1. The Rationale for National Target

One other important strategic objective of Afghanistan is to develop and implement mechanisms and plans for maintaining ecosystems that are resilient and well-managed. This is to provide a good environment for habitation that supports sustainable and equitable socio-economic development and quality life for the people and contributes to the global conservation, development and 'climate-smart' agenda. The biological resources and the ecological processes in Afghanistan are crucial for the survival of local people. Barring the most arid deserts and frozen mountains, virtually every other ecosystem in the country has been used from time immemorial such as farming, livestock grazing, fuelwood, and medicinal plant collection or hunting.

Although limited in extent, forests in Afghanistan are still significant for their contribution to the economy and ecology of the country. They provide critical ecosystem services by contributing to watershed protection, helping combat soil erosion and controlling floods. They also represent a unique ecosystem with significant biodiversity. Economically, they are an important source of valuable timber and non-timber products including fuelwood, charcoal, roots, and nuts. Afghanistan's timber trade is a significant contributor to the country's economy. Measured against its gross domestic product from the year 2007 (est. as $8.4 billion; Source: US Department of State Full reference), the Kabul timber trade alone is made up 2 per cent of the country's economy. Sale statistics from other parts of the country and cross border trade with Pakistan would add significantly to this figure, making timber trade one of the more important single resource use in the country. The National Environmental Protection Agency (NEPA) estimates that roughly half of all energy needs in the country are met by firewood. An Asian Development Bank (ADB) (Azimi 2007) reference study claims that as much as 85 per cent of Afghanistan's energy demand is met by wood.

Rangeland and medicinal plants provide specific values to the development of agricultural products, handicrafts, economic development, and rural livelihood development. Aside from feeding domestic animals, rangelands are also the important or sole supplier of some critically important ecosystem services and goods in Afghanistan: providing firewood and medicinal plants for people, and habitat for biodiversity and pastoral culture, preserving soil and water, and regulating climate (e.g., worldwide, rangelands are second only to forests in its capacity for carbon sequestration). These multiple functionalities of rangelands have gained increasing recognition by the users.

Issues related to rangelands have been extensively discussed by a range of stakeholders, academicians, and policymakers due to their significant role in the socio-economic development of the country. Severe degradation of rangeland ecosystem continues to remain a major cause for concern. Afghanistan is highly susceptible to desertification. It is believed that the process of desertification is advancing in several areas of Afghanistan's arid northern, western and southern regions. Rangelands are at particular risk from desertification, where widespread grazing has reduced vegetation cover and exposed soils to erosion. Many communities have had to reduce or dispose of livestock because of the diminished quality of rangelands. Even though there is an increasing recognition that the reduced ecosystem functions of the rangelands may partly be due to the climatic variability characterized by frequent droughts, it is also inadequate management that has impacted these ecosystems.

Furthermore, Afghanistan has wetlands that support underground water improvement and the formation of water ecosystem and habitat for a significant population of migratory birds. These wetlands are of use to resident communities as well. Many wetlands have been impacted by drought as well as the conflict within the country. Band-e-Amir consists of a chain of six lakes in the Hazarajat Mountains of the western Hindukush, in Bamyan Province. Ghulaman, Qambar, Haibat, Panir, Pudina, and Zulfiqar, are lakes known for their scenic beauty and are also home to several water birds. The Dasht-i-Nawar lake lies in a vast depression at high altitude in the Koh-e-Baba range, an offshoot of the Hindukush. Formerly a perennial lake with a huge area of mudflats and numerous islands, it dried up in 1999 as a result of drought. The lake provided breeding grounds for the Greater Flamingo Phoenicopterus (ruber) roseus and a base for thousands of migratory waterbirds of various species. The Government of Afghanistan had declared the lake a Waterfowl and Flamingo Sanctuary in 1974. The Kole- Hashmat Khan, in the south-eastern outskirts of Kabul, is situated at an elevation of 1973 m and has an area of 191 hectares. The lake was formerly a royal hunting ground and was declared a Waterfowl Reserve

by King Zahir Shah in the 1930s. Over 150 species of migratory birds have been recorded in the area, and the lake has supported as many as 30,000-35,000 water birds. This lake also dried out in 1999 due to the severe drought in the region. The Gardez, Ghazni and Mahara rivers and a few unclassified streams drain into a large depression in the Koh-e-Baba and Koh-e-Paghman foothills of the Hindukush and form the large saline lake of Ab-i-Estada. This lake was a Waterfowl and Flamingo Sanctuary prior to the war in 1979 (Khan 2006b).

1.8.2. Main Related Aichi Biodiversity Targets

☐ *1* ☐ *6* ☐ *11* ☐ *16*

☐ *2* ☐ *7* ☐ *12* ☐ *17*

☐ *3* ☐ *8* ☐ *13* ☐ *18*

☐ *4* ☐ *9* ☒ *14* ☐ *19*

☐ *5* ☐ *10* ☐ *15* ☐ *20*

1.8.3. Level of Applicability

☐ *Regional/multilateral*

☒ *National*

☐ *Subnational*

1.8.4. Additional Relevant Information

Inspired by Aichi Biodiversity Targets Afghanistan developed this preliminary target under its NBSAP. The development of the NBSAP was a participatory process led by the National Environmental Protection Agency (NEPA). Technical guidance was provided by the Biodiversity Working Group comprising senior representatives from Kabul University, Ministry of Agriculture, Irrigation and Livestock (MAIL) and other key government and non-government stakeholders.

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1.8.5. Relevant Online Resources, Websites, and Documents

- *NEPA. Afghanistan National Biodiversity Strategy and Action Plan (2014-2017).* https://www.cbd.int/doc/world/af/af-nbsap-01-en.pdf

1.9. Afghanistan Preliminary Target 9

Traditional knowledge, innovations, and practices protected, and rights of indigenous and local communities over their traditional knowledge, innovations, and practices, including their rights to benefits sharing, protected.

1.9.1. The Rationale for National Target

Afghanistan's traditional farming and pastoral systems are an integral part of the resilience and coping mechanisms of the Afghan rural population. These systems developed over time in Afghanistan have forged and shaped the country's harsh physical and climatic environment. These systems have developed in a diversity of geography, climatic and ecological conditions created by the mixed geology and topography of Afghanistan. Though they are threatened, these systems survive simply because they are so well adapted to extreme conditions. These systems are sophisticated, resilient, well adapted to the local conditions and open to adopting appropriate innovations.

Furthermore, climate change impacts the traditional systems that are important for biodiversity and sustainable management of natural resources. Warmer temperatures and melting glaciers have even damaged indigenous and local practices. Indigenous Kyrghis people of Pamir in the Badakhshan of Afghanistan traditionally have used ecological calendars to coordinate seasonal activities. Such a traditional form of tracking time allows the communities to track seasonal and environmental changes. With the support of the Canadian embassy, the Afghan government work re-establish these traditional systems.

Afghanistan acknowledges the importance of these indigenous systems as it is significant for the resilience of the local population. The crops and plants that fit so well in these local and traditional systems need to be not only preserved but also promoted. The conservation of both wild and endemic plant species cannot be separated from the pastoral and livelihood systems in Afghanistan. It is highly needed for all stakeholders in Afghanistan to understand these systems better and learn how these can be encouraged, restored and built upon to increase productivity, and promote sustainability.

1.9.2. Main Related Aichi Biodiversity Targets

☐ *1* ☐ *6* ☐ *11* ☐ *16*

☐ *2* ☐ *7* ☐ *12* ☐ *17*

☐ *3* ☐ *8* ☐ *13* ☒ *18*

☐ *4* ☐ *9* ☐ *14* ☐ *19*

☐ *5* ☐ *10* ☐ *15* ☐ *20*

1.9.3. Level of Applicability

☐ *Regional/multilateral*

☒ *National*

☐ *Subnational*

1.9.4. Additional Relevant Information

Afghanistan is predominantly a rural society wherever 80 per cent of the population either directly or indirectly relies on natural resources for livelihoods. Recognizing the importance of a decentralized system of management, the country's NRM strategy outlines community-based natural resources management as a crucial principle. The strategies do recognize the importance of the local and indigenous people participating in the management of natural resources for ownership, accountability, and better protection and conservation.

Local governance structures engaged in supporting community-based natural resources management include local Protection Committees, Natural Resources Management Committees (NRMCs), Provincial Environment Advisory Councils (PEACs), Village Environment Committees under the Community Development Councils (CDCs) at the village levels, Forest Management Committees (FMCs) and Rangeland Associations. CDCs have a significant role in formulating guidelines for the use of natural resources. In Afghanistan subsistence farmers and nomadic Kuchis use common rangeland properties, where these local governance structures play a key role in the management and conflict resolution when it occurs between nomads and the settlers.

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1.9.5. Relevant Online Resources, Websites, and Documents

- *NEPA. Afghanistan National Biodiversity Strategy and Action Plan (2014-2017). https://www.cbd.int/doc/world/af/af-nbsap-01-en.pdf*
- *National Natural Resource Management Strategy (2017-2021). Ministry of Agriculture, Irrigation, and Livestock (MAIL). Afghanistan. PDF*
- *Anthony Fitzherbert. An Introduction Guide to Sources of Traditional Fodder and Forage and Usage (2014).*
- *Dr. Antonio Guistozzi, The Role of the Afghan State in Managing Nomadism and Nomad-Settler Conflict. December 2018. Afghanistan Research and Evaluation Unit (AREU) https://areu.org.af/archives/publication/1822; (Accessed, January 2019)*
- *Band-e-Amir National Park Management Plan for 2016-2020). March 2016.*

1.10. Afghanistan Preliminary Target 10

All-access to genetic resources in line with the Convention on Biological Diversity and its relevant provisions, and benefits arising from the commercial and other utilization of genetic resources shared in a fair and equitable way with the countries providing such resources in line with the Convention on Biological Diversity and its relevant provisions.

1.10.1. The Rationale for National Target

Knowledge regarding the native plants is important and useful, for providing ecosystem services and for sustaining life in the harsh and beautiful landscape.

Afghanistan has recently ratified the Nagoya Protocol. The Head of the National Environmental Protection Agency (NEPA) is the official designated focal point for the Protocol; however, the country has not yet designated either a competent national authority or checkpoints as required by the provisions for the Protocol, mainly because the country has recently ratified it.

NEPA has less than 5 employees that are tasked to work on planning, implementation, and reporting on the Protocol. Technical knowledge on the provisions and obligations under the Nagoya Protocol and limited financial constraints are perhaps key challenges NEPA face to implement the Protocol.

Both at policy and practice, the critical roles of the local communities in biodiversity conservation activities are recognized and respected. The interest in conservation and sustainable use of resources will help the country to take further effective measures in addressing biodiversity in the future.

There are several legislations, policies and work plans that address the issues under the Nagoya Protocol. For example, these legislations make access to genetic resources subject to prior informed consent (PIC) as provided by Article 6.1 of the Protocol. These include the Natural Resources Management (NRM) Strategy, regulations on the use of Pistachio forests, regulation on the utilization of medicinal plants, and Afghanistan National Saffron Policy. Except for the NRM strategy, others are in draft stages.

The country's NRM Strategy has four strategic objectives the first being the community-based forest management that includes conservation, restoration, afforestation, development, sustainable harvesting and value addition for resilient, climate-adapted, sustainable economic and social development. In addition, the 2007 Land Policy also focuses on community-based management and strives toward the recognition of community lands. MAIL is in the process of developing guidelines for community-level land management programs. The 2008 Law on Managing Land Affairs further supports this by defining land types, classifications, lease, land expropriation, settlement of land rights, and other aspects of land management.

Furthermore, the four existing management plans for key Protected Areas in Afghanistan ensures two key thematic areas. Firstly, local communities and individuals are directly involved in the design and implementation of the management plans. Secondly, the local people received economic benefits from the revenues generated from the protected areas. For instance, the Band-e-Amir management plan was developed in close consultation with the local authorities and communities. The Band-e-Amir Protected Area Committee (BAPAC) and the Band-e-Amir Community Council (BACC), which is a social organization includes representatives of all local CDCs representatives are actively engaged in the implementation of the management plan. BAPAC is collaborative management with a role to provide management advice from communities and local government. The central government cannot take major management decisions without first consulting with the BAPAC.

Afghanistan's policy for protected areas ensures to take an approach to allocate and operate the protected areas in a way to ensure equitable distribution of benefits. In addition, based on the policy, all staff hiring for the management of the protected areas had to be from local communities unless local expertise and skilled workers don't exist.

Based on the constitution of the country, all funds collected by national, provincial, and district governments must be remitted to the state-designated bank account. Therefore, all revenues from National Parks and protected areas are deposited to the state bank account. Although local communities refer back to the government with submitting proposals for development projects in order to utilize that revenue, it doesn't seem it has even happened in practice. Hence, it is required that appropriate and practical measures need to be taken to ensure local communities can directly gain from the benefits (revenues) from the national parks. Nevertheless, the local communities enjoy better economic opportunities and obtain a form of income from the

inflow of domestic and international tourists who annually visit the national parks. This is done through renting out their guests' houses, establishing restaurants, selling handy crafts, and more.

Although there is a focus on the NRM strategies to focus decentralization of authorities for the management and utilization of the natural resources, there is no specific legislation on how local and indigenous people might be granted access to genetic resources.

1.10.2. Main Related Aichi Biodiversity Targets

☐ *1* ☐ *6* ☐ *11* ☒ *16*

☐ *2* ☐ *7* ☐ *12* ☐ *17*

☐ *3* ☐ *8* ☐ *13* ☐ *18*

☐ *4* ☐ *9* ☐ *14* ☐ *19*

☐ *5* ☐ *10* ☐ *15* ☐ *20*

1.10.3. Level of Applicability

☐ *Regional/multilateral*
☒ *National*
☐ *Subnational*

1.10.4. Additional Relevant Information

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1.10.5. Relevant Online Resources, Websites, and Documents

- *NEPA. Afghanistan National Biodiversity Strategy and Action Plan (2014-2017). https://www.cbd.int/doc/world/af/af-nbsap-01-en.pdf*
- *National Natural Resource Management Strategy (2017-2021). Ministry of Agriculture, Irrigation, and Livestock (MAIL). Afghanistan. PDF*

1.11. Afghanistan Preliminary Target 11

New and additional financial resources and technology transferred to Afghanistan, to allow for the effective implementation of commitments under the Convention

1.11.1. The Rationale for National Target

Afghanistan is dependent on the external assistant and foreign aid for its development. Protection and conservation after the decline of aids and the international troop withdrawal have had negative impacts on key socio-economic indicators. Overall, the national poverty rate increased to 54.5 per cent in 2017 from 39.1 per cent in 2014 and unemployment rate increased to 30.7 per cent in 2017 from 22.6 per cent in 2014.biodiversity is also hugely reliant on interventions and programs funded and implemented by international entities.

Afghanistan's public expenditure is largely dependent on foreign assistance and donors' support. In addition, as a developing country, its main development policy is focused on economic growth and job generation to tackle poverty and unemployment. This limits the space for budget allocation towards the implementation of the not only Nagoya Protocols but other international conventions as well. Nevertheless, there are numerous programmatic interventions either by the Afghan government or its development partners that focus on issues

of biodiversity conservation including forests, rangelands, desertification, and management of protected areas. These interventions include implementation of the obligations under the Nagoya Protocol.

The Afghan government has a strategic objective to increase the absorptive capacity of those entities directly responsible for biodiversity conservation, which are NEPA and MAIL. Afghanistan is a signatory to several multilateral agreements including the UNCBD and UNFCCC among others and this provides a great opportunity for the country to use international financial resources. Afghanistan is a party to several multilateral treaties and international conventions, including Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES ~ ratified in 1986), United National Framework on Climate Change Convention (UNFCCC), United National Convention on Biodiversity (UNCBD), and United National Convention Combating Desertification (UNCCD), all three ratified in September 2002.

The adoption of Sustainable Development Goals (SDGs) in 2015 provides an opportunity for the government of Afghanistan to tap into international climate resources as part of the international committee for supporting Least Developed Countries to invest in adaptation programs. SDG 15 aims to "protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt the reverse land degradation and halt biodiversity loss". Goal 13 of the SDG, 'take urgent action to combat climate change and its impacts', obligates developed countries to assist developing and least developed countries in combating the impact of climate change. Goal 13.b states, "Promote mechanisms for raising capacity for effective climate change-related planning and management in the least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities". Goal 13.1 states, "Implement the commitment undertaken by developed country parties to the United Nations Framework Convention on Climate Change (UNFCCC) to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible".

As of now, Afghanistan has not received its fair share of international climate fund. In 2014 alone, total commitments of bilateral ODA by OECD-DAC countries targeting the global climate finance objectives were USD 27.3 billion. Until now, Afghanistan has merely received around USD 32 million mainly from GEF. OECD datasets indicate that Afghanistan has only received a minuscule share (0.17 per cent) of the global development finance targeting forestry sector development since 2000. On average, not only did Afghanistan receive 36 times less than the total ODA for forestry development, but also barely a quarter of the ODA for forestry research, and administration-policy management then its South Asian neighbours secured during 2000-2013. Afghanistan is currently not covered under some of the larger climate finance initiatives such as the $8.3 billion Climate Investment Funds (CIF) initiative comprising of the $1.2 billion Pilot Program for Climate Resilience (PPCR) and the $775 million Forest Investment Program (FIP).

MAIL is committed to leveraging climate financing for implementation of the NRM strategy. In particular, efforts will be made to raise funding from the Green Climate Fund (GCF), UN-REDD+ and Adaptation Fund, among others. However, to achieve this MAIL requires support from partnered agencies and accredited entities in developing project proposals for accessing climate finance and building the needed internal capacity to establish a platform for attracting climate funds.

Since 2002, Afghanistan has been a party to the United Nations Framework Convention on Climate Change (UNFCCC) and ratified the Kyoto Protocol in March 2013 enabling the country to participate in the Clean Development Mechanism (CDM). Based on article 12 of the Kyoto Protocol regarding the CSM, developing countries can develop projects (supported by financing and technology transfer from the developed countries) called CDM projects. This is provided that the projects can reduce greenhouse gas (GHG) emissions and contribute to the process of sustainable development in the host country. For Afghanistan to participate in the CDM project processes, it has to first establish a national body, called Designated National Authority (DNA) in order to oversee the potential eligibility of the projects for Afghanistan.

1.11.2. Main Related Aichi Biodiversity Targets

☐ *1* ☐ *6* ☐ *11* ☐ *16*

☐ *2* ☐ *7* ☐ *12* ☐ *17*

☐ *3* ☐ *8* ☐ *13* ☐ *18*

☐ *4* ☐ *9* ☐ *14* ☐ *19*

☐ *5* ☐ *10* ☐ *15* ☒ *20*

1.11.3. Level of Applicability

☐ *Regional/multilateral*

☒ *National*

☐ *Subnational*

1.11.4. Additional Relevant Information

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1.11.5. Relevant Online Resources, Websites, and Documents

- *NEPA. Afghanistan National Biodiversity Strategy and Action Plan (2014-2017). https://www.cbd.int/doc/world/af/af-nbsap-01-en.pdf*
- *National Natural Resource Management Strategy (2017-2021). Ministry of Agriculture, Irrigation, and Livestock (MAIL). Afghanistan. PDF*

Section II. NBSAP implementation measures taken an assessment of their effectiveness, associated obstacles, and scientific and technical needs

Note:

The implementation of Afghanistan's NBSAP has been undercut by the government to pursue other higher priorities such as security, development, and growth. Nevertheless, while affected by security challenges, Afghanistan has made significant progress towards the implementation of its biodiversity conservation measures.

In the past four years, the country has taken some important steps towards the implementation of the NBSAP. Among the measures taken there is the finalization of a protected area system plan, carrying out scientific assessments and surveys of flora and fauna, increasing awareness on biodiversity and protection of the ecosystems, and building institutional capacities surrounding the management of protected areas and sustainable agricultural practices.

As in other development sectors, Afghanistan's biodiversity intervention is also hugely reliant on donors' financial and technical support. The projects and programs supporting the Afghan government in the implementation of the NBSAP are also reported under each relevant measure.

2.1. Sound Legislation and Governance for Biodiversity Conservation

Afghanistan has established sound legislation and governance structures for biodiversity conservation. The Afghan constitution provides for the state to adopt necessary measures for safeguarding forests and the environment. The Environment Law aims at improving livelihoods and protecting the health of humans, fauna, and flora; maintain ecological functions; secure the needs and interests of present and future generations and preserve natural and cultural heritage. The country has put in place policies, strategies, and action plans to address protected area conservation, biodiversity, and climate change. For a complete list of these legal documents see annexe 1.

Afghanistan's National Biodiversity Strategy and Action Plan (NBSAP, 2014-2017) has ambitious measures for biodiversity conservation in Afghanistan. In line with Aichi Targets and Strategic Plan for Biodiversity 2011-2020, Afghanistan has embraced a set of 11 preliminary targets. The NBSAP is aligned with 12 of the Aichi Biodiversity targets with broad strategic directions. Afghanistan's preliminary targets mark effective conservation of 10 per cent of each of the important ecological regions, restoration of the threatened species, conservation of the genetic diversity of crops, livestock, wildlife, and other valuable species. Other biodiversity priorities for the country are: sustainable management of biodiversity-based products and resources, reduction of the rate in habitat loss and boosting the resilience of the biodiversity components to adapt them to climate change.

In addition to the NBSAP, the country's legislation and numerous policy documents acknowledge the importance of local communities in the conservation and protection of biodiversity. Protection of traditional and local knowledge, innovations and rights of the indigenous and local communities on natural resources is recognized and prioritized in Afghanistan's biodiversity strategy. Afghanistan NRM goals include community-based forest management, (including reforestation and afforestation), pastures management (rehabilitation and protection) and medicinal plants, community-based protected areas management (protection and conservation of the wildlife), vegetation and forestry (through tree saplings), and, lastly, conservation of water, soil and protection of vegetation cover in order to improve the environment.

NEPA is the country's authority for the environment. NEPA was established in 2005 as an independent institution responsible for making policies and regulations on management and protecting the environment. The agency is also responsible for coordinating and monitoring interventions surrounding the environment and for enforcing Afghanistan's Environmental Law. However, the bodies responsible for executing interventions to protect the areas and the forest and to manage rangeland are the General Directorate of the Natural Resources Management of the Ministry of Agriculture, Irrigation and Livestock (MAIL) and NEPA.

The Afghanistan Resilience Consortium (ARC) was established in 2014. It is a partnership between Afghan Aid, Action Aid, Concern Worldwide, Save the Children, and the United Nations Environment Programme (UNEP). It integrates environment, disaster risk reduction, and humanitarian support to build lasting resilience in Afghanistan's communities and ecosystems. The ARC's holistic approach recognizes that conflicts and environmental degradation can exacerbate the impact of natural hazards and strives towards supporting communities and improving ecosystem management in order to reduce the risk of disasters and build adaptive capacity to climate change.

Other governance platforms include the Wildlife Executive Committee, the Biodiversity Working Group, and several protected areas conservation committees and forest and rangeland associations at the local level. In addition, several inter-ministerial coordination mechanisms address issues related to climate change, agriculture, biodiversity and ecosystems, forests and rangelands, energy, resilience and disasters, and water.

Several sectoral and inter-ministerial coordination mechanisms address the country's obligations under the climate change convention and the convention to combat desertification. The National Environmental Advisory Council (NEAC) has been established to advise NEPA on environmental matters of the environment. The National Climate Change Committee supports NEPA and other stakeholders advising on climate change adaptation and mitigation programs. In addition, there are at least 10 inter-ministerial mechanisms, including the Afghanistan Wildlife Executive Committee (AWEC) and Biodiversity Working Group (BWG), that facilitate the work on biodiversity and conservation.

To address the CBD convention on biodiversity, UNFCCC, and other conventions, Afghanistan has finalized a few key planning documents. In addition to the National Adaption Program of action and the national capacity self-assessment, NEPA has developed a climate change strategy (2016), Afghanistan's Protected Area System Plan (2009) and finalized four management plans for protected areas.

These are Afghanistan's inter-ministerial coordination mechanisms classified by sector:

- Climate Change Adaptation and Mitigation: 1. National Climate Change Committee.
- Agriculture: 1. Agriculture and Rural Development Cluster; 2. Inter-Ministerial Committee on Food Security; 3. Sector-wide Coordination Mechanism in Agriculture.
- Biodiversity and Ecosystems: 1. Committee for Environmental Coordination (CEC); 2. National Environment Advisory Council (NEAC); 3. Subnational Environment Advisory Councils (SEACs); 4. Afghanistan Wildlife Executive Committee (AWEC); 5. Biodiversity Working Group (BWG); 6. Parliamentary Committee on the Environment (PCE); 7. Protected Area Working Group (PAWG); 8. High-Level Commission on Air Pollution Control; 9. Supreme Committee for Environment; 10. Designated National Authority Steering Committee for Clean Development Mechanism.
- Energy: 1. Inter-ministerial Commission for Energy (ICE); 2. Inter-ministerial Commission for Renewable Energy (ICRE).
- Resilience and Disasters: 1. The High Commission of Disaster Management (HCDM); 2. Provincial Disaster Management and Response Committees (PDMCs); 3. District Disaster Management and Response Committees (DDMCs).
- Water: 1. Supreme Council for Water Affairs Management (SCWAM); 2. River Basin Councils and Sub-Basin Councils; 3. Water User Associations; 4. High Council on Water and Land.

2.1.1. For the Implementation Measure, Please Indicate to Which National or Aichi Biodiversity Target(s) it Contributes

- *Afghanistan Target: 1, 2, 5, 7, 9*
- *Aichi Target: 2, 3, 16, 17*

2.1.2. Assessment of the Effectiveness of the Implementation Measure Taken in Achieving Desired Outcomes

☐ *Measure taken has been effective*

☒ *Measure taken has been partially effective*

☐ *Measure taken has been ineffective*

☐ *Unknown*

2.1.3. Please Explain the Selection and Where Possible Indicate the Tools or Methodology Used for the Assessment of Effectiveness Above

No assessment is available; however, the measure of effectiveness indicated above is based on reviews of documents and numerous consultations during the preparation of this report.

2.1.4. Relevant Online Resources, Websites, and Documents

- *The Islamic Republic of Afghanistan - Land Cover Atlas (2015), http://www.fao.org/geospatial/resources/detail/en/c/1024570/*
- *Afghanistan Project: Strengthening Agricultural Economics, Market Information and Statistics Services http://dwms.fao.org/~draft/lc_main_en.asp*
- *The Afghanistan Constitution (2004), chapter 1, article 15.*
- *[1] Environment Law (2007), chapter 1, article 2.*

2.1.5. Obstacles and Scientific and Technical Needs Related to the Measure Taken

- *Afghanistan NBSAP needs to be revised based on the current status of the country and of its priorities. Even though the preliminary targets have served as a reference for biodiversity conservation, these targets need to be specific, measurable, attainable, relevant, and time-bound (SMART) and need specific indicators for reporting and measurement.*
- *The Forest Law and Rangelands Law are still a draft; the current rangeland law (from 1971) lacks clarity in defining village rangelands and common rangeland. This vagueness impacts the identification and the sustainable management and conservation of pastures in Afghanistan.*
- *Strengthen Coordination on Biodiversity Conservation. There is usually a lack of adequate coordination between provincial authorities and central ones that obstructs an effective and timely implementation of the projects. Primarily coordination in data and knowledge sharing should be overall strengthened. The absence of a link between central and provincial authorities in developing and implementing consistent strategies and plans is a bottleneck. The level of coordination between Afghan government authorities and non-governmental partners also need to be strengthened. This is key for knowledge sharing, exchange, and transfer of expertise and to build capacities at all levels.*
- *Absence of adequate support from security authorities' ineffective implementation of projects and enforcing laws pertaining to biodiversity and the environment.*
- *The lack of institutional capacities of some governmental authorities (such as transport facilities) to monitor and evaluate the status and conservation of the activities and delays in procurement and budget allocation continue to obstruct the effective implementation of the NBSAP and its conservation measures. For this reason, the conservation and biodiversity interventions have continued to rely on the financial and technical support of the country's international partners.*
- *Pending Legislation. While Afghanistan has established a relatively sound legal and policy frameworks for environment and biodiversity conservation, there are still important legislation and policies pending to be finalized. These include the Rangelands Law, the Hunting, and Wildlife Management Law, and Sustainable Development Policy. Lack of a clear definition for the rangeland areas and the pending issue of user's rights have continued to create nomads and settlers' conflicts on rangelands. Such conflicts have had a negative impact on the degradation and overuse of the rangelands. Therefore, finalizing the Rangeland law, with clear cut definitions for the types of rangelands used by different users' groups is imperative for conservation purposes.*
- *Existing laws need to be enforced. Existing legislation frameworks or policies are not sufficient, governmental agencies for law enforcement need to closely support NEPA and MAIL to ensure the laws are enforced. For instance, the Hunting Law and the codes of the Penal Code for the protection and preservation of the environment and biodiversity had to be enforced. The security authorities need to ensure illegal tree cutting is prohibited; especially in key provinces of Nangarhar, Kunduz, Badghis, and Kunar with higher instances of tree cutting and deforestation. Although such environmental violations constantly happen in Afghanistan, there is no single case of such violations brought to the courts in Afghanistan.*
- *Adequate external financing of biodiversity is needed. Biodiversity and conservation interventions do not receive adequate funding in the Afghan official budget. The largest part of the government public spending is allocated either on security or growth-related projects. According to the ANPDF, the High Economic Council of the country has approved a 70-30 split in development investment between growth*

and social sectors, which means the bulk of investment goes to projects that increase economic productivity and growth.

- *In addition, for the natural resources management projects and programs funded by the official government budget, the long procurement processes and delays in the budget allocation is are between the challenges that prevent timely implementation of the projects; there is a budget gap issue as well; the fact that biodiversity and environmental priorities are considered a 'luxury item' by some officials, and the fact that Afghan government has a focus on growth and job-creation strategies, leads to insufficient budget allocation for biodiversity and environment interventions. Therefore, Afghanistan, unfortunately, must rely on its donors' financial support to ensure the implementation of its biodiversity strategy.*
- *Strengthening human capital. Lack of qualified personnel in natural resource management in some of the sub-national authorities. There are huge gaps in human capital in Afghanistan. In order to effectively continue the protection of the habitats and important ecological regions, the country needs to invest in training specialists, ecologists, environmental economists, botanists, and zoologists in protected areas.*
- *Since Afghanistan is highly vulnerable to climate change, the country needs to boost its awareness programs on mitigation of and adaptation to climate change. Both public and private universities need to include curriculum on climate change and biodiversity. This would help the country to boost climate science and climate technologies.*
- *Identification and mainstreaming of climate change adaptation technologies into sectoral policies, strategies and development plans, and promotion of regional and international cooperation and coordination for adaptation technology transfer.*
- *The sustainable use of its water resources is crucially important to Afghanistan. The country needs to continue to invest in developing water resources through rehabilitation and reconstruction of small-scale and large-scale infrastructures. Afghanistan needs improved designs and methodologies for catchment management technologies. On the other hand, ecological engineering and spatial planning for water resources are crucial to the sustainable use of water resources. Similarly, Afghanistan needs to plan for proper watershed management supported through community-based natural resources management. The country needs to develop full catchment planning technology and model. The country needs to upgrade its human skills in watershed management.*
- *Afghanistan has limited agricultural lands and in order to meet the food needs of its growing population, the country has to increase its irrigated agriculture to 3.14 million hectares. Afghanistan does recognize the importance of the sustainable management of these resources, the eco-agriculture and climate-friendly irrigation technology needs to be transferred to Afghanistan. Vocational and engineering capacity to design, build and maintain climate-friendly irrigation networks and local schemes need to be supported.*

2.2. Expansion and Effective Conservation of Protected Areas

Protection and conservation of ecological regions in Afghanistan are largely reliant on the better security situation. Afghanistan Biodiversity Working Group (ABWG) has selected eight ecoregions based on relative better security. This is based on the pre-condition that the country's National Protected Area System Plan has set short-term strategies to achieve long-term conservation objectives. Afghanistan aims at protecting at least 2 per cent of each of the eight secure ecoregions as an initial step to achieve the 10 per cent conservation target. In order to have real impacts on biodiversity the number and size of protected areas need to be increased; acknowledged that Afghanistan has identified 14 sites important for conservation activities in the country. It has officially declared several natural sites as areas requiring special protection. These include Band-i-Amir National Park, Wakhan National Park (including Big and small Pamir Wildlife Reserves, Teggermansu Wildlife Reserve), Shah Foladi, and Kol-e-Hashmat Khan.

In 2014, the Afghan government declared Wakhan as the country's second national park while Band-e-Amir was declared as the country's first national park in 2009; both Band-e-Amir in Bamyan and Wakhan national parks are comparatively well-studied protected areas and a great deal of knowledge on the wildlife is available about these important landscapes.

During 2014 and 2018, almost the bulk of activities related to management and conservation of ecosystems, and assessments of flora and fauna have been implemented in Band-e-Amir and Wakhan National Parks. This was made possible by the relative security of both of these areas, rich in biodiversity and where local communities not only truly understand the importance of conservation but actively take part in such interventions.

In 2018 Afghanistan has proposed Bamyan Plateau area for protection as well. The Plateau covers an area of 5,500 km^2 and has an outstanding ecological value. Located in the most remote central part of Hindukush Mountain Range, the area has a relatively undisturbed habitat. A good population of ibex is documented in the area. It has a high bird diversity with a rich assemblage of wild carnivores. See annexe 5 for a list of identified wildlife in Bamyan Plateau.

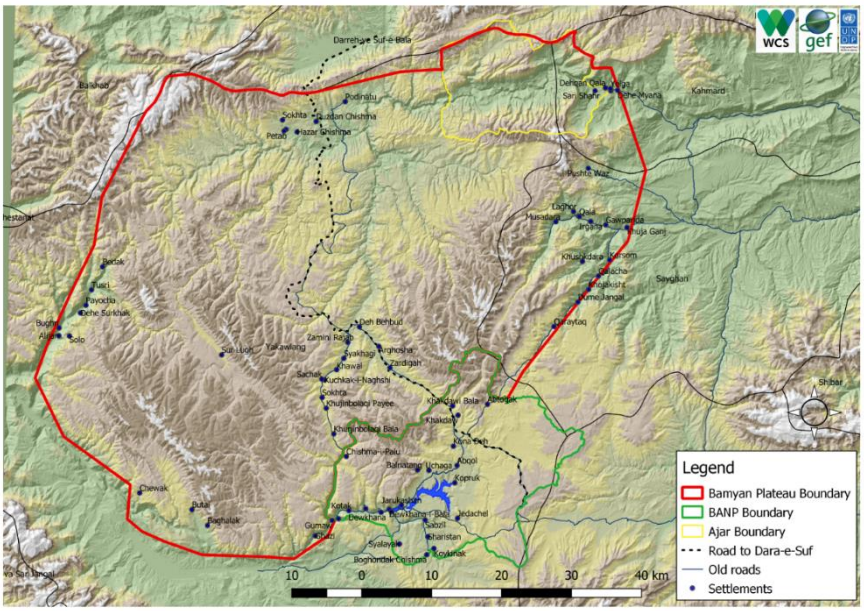


Figure 2: Map of proposed boundary for Bamyan Plateau Protected Area showing the boundaries of the Band-e-Amir National Park and the Ajar Valley.

Afghanistan has a clear goal to preserve protected areas: "to establish a national legacy of exceptional areas, with the aim of preserving in perpetuity representatives of the nation's biodiversity, and natural and cultural features managed sustainably in cooperation with local people, to benefit them as well."

Afghanistan's ANPASP Objectives

By 2030, provide effective protection on at least 10 per cent of Afghanistan's land area and of the habitat of selected species in these areas; For each established protected area, local people will be effectively engaged in setting management direction; Within 10 years of legal establishment of each protected area, the standard of living of people in and near protected areas will be improved

The Priority Zones Assessment of the country identifies 28 sites holding rich biodiversity requiring further investigations, however, the World Database on Protected Areas lists 12 protected areas in Afghanistan showing only one of them has been classified as officially designated protected area (Band-e-Amir).

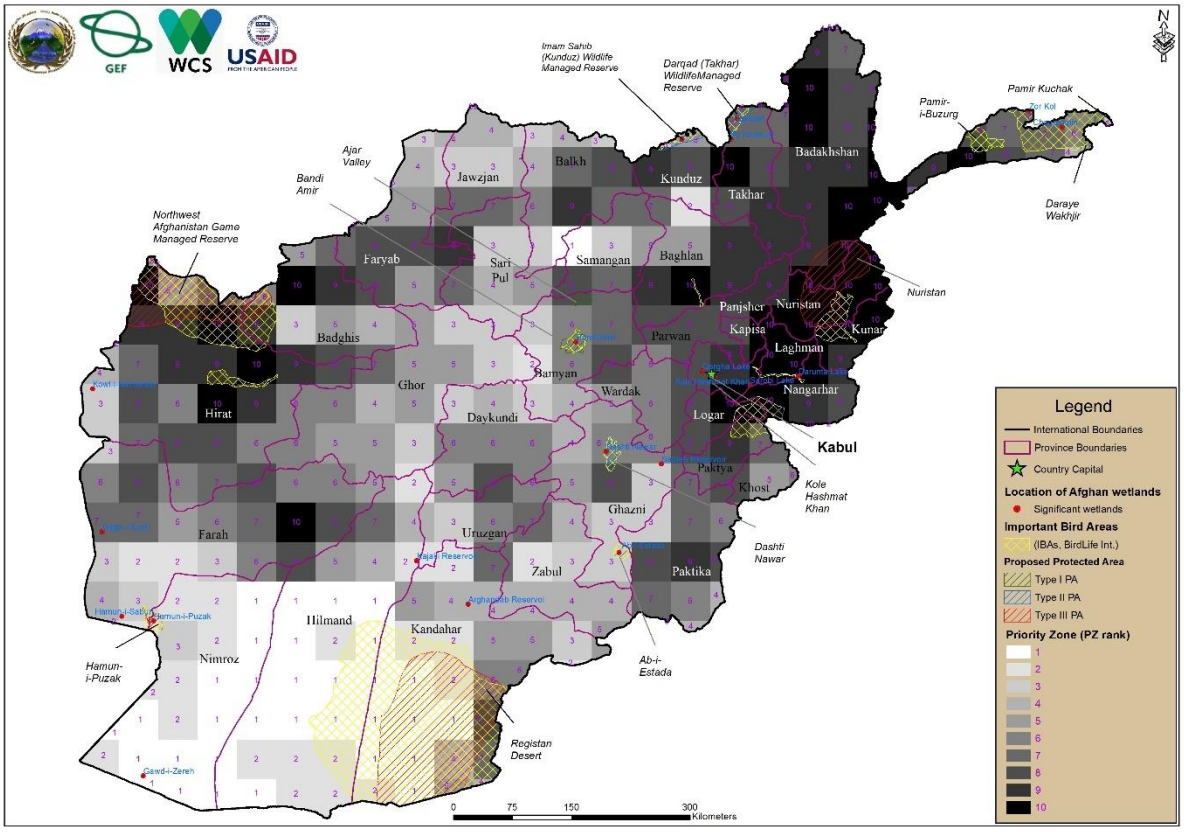


Figure 3: A map of Afghanistan showing the 2015 important bird areas and biologically significant wetlands overlaid on the priority conservation protection zones (source: ESRI, accessed 24 November 2018, URL: http://www.esri.com/news/arcnews/spring12articles/spring12gifs/p39p1-lg.jpg)

Band-e-Amir National Park (613.3 km^2)

Band-e-Amir is Afghanistan's first area to be designated as protected. It is a category II IUCN. It consists of six lakes (at approximately 2,900 m elevation) covering an area 613.3 km^2 located in the Central Highlands region. Declared as the first national park of the country in 2009, Band-e-Amir has a spectacular landscape. The National Park is one of the key tourism destinations in the country; about 30,000 to 40,000 domestic tourists and 1,000 and 1,500 foreign tourists visit it annually. In 2017, a tourism survey revealed that over 189,000 people now have visited the park, more than 99 per cent of whom are Afghan citizens. Wildlife surveys by WCS have confirmed the presence of Siberian Ibex, Urial, and sporadic sightings of wolves, Himalayan Lynx, Pallas' cat, and Afghan Snow finch. These last ones are believed to live only in Afghanistan and Turkmenistan.

The Wakhan National Park:

The Wakhan National Park consists mainly of three divisions: the main Wakhan strip, Big Pamir, and Little Pamir. Located between the Hindukush range and the Panj River, the Wakhan National Park is in the north-eastern part of the country. The park is rich in biodiversity and famous for its types of flora and wildlife. The flora of the valley includes sedge meadows, alpine steppes, alpine heaths, rubble slopes, and gullies. Yaks (Bos grunniens), Marco Polo Sheep, (Ovis ammon polii) and Snow Leopard, (Uncia uncia) are the three famous species, included in the country's list of protected species. The Afghan government declared Wakhan as the second National Park in 2014 and has a functional management plan for it.

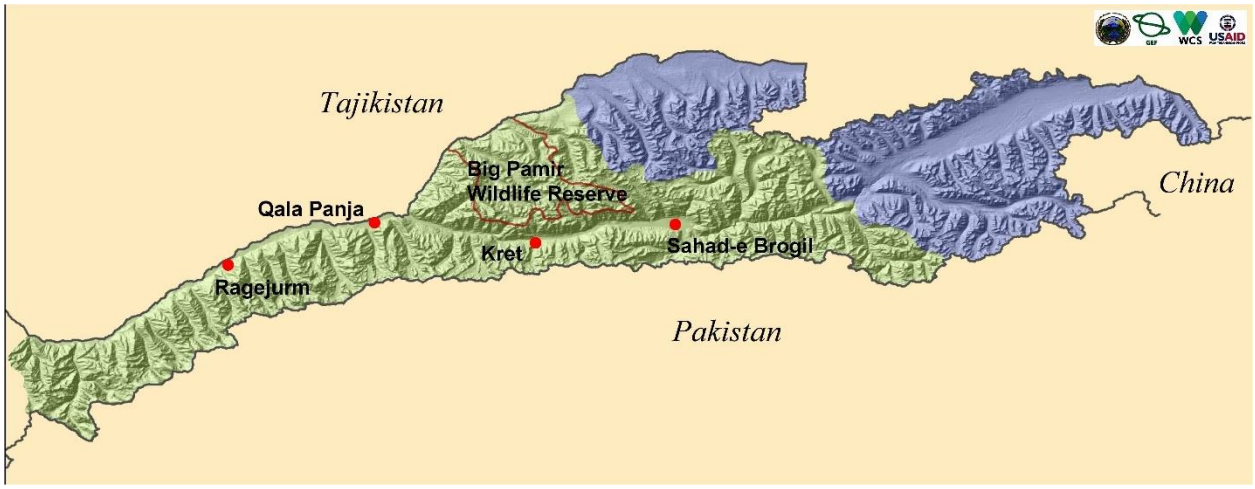


Figure 4: Map of Wakhan National Park and Protected Area

Kol-e-Hashmat Khan waterfowl sanctuary (1.91 km^2)

Located in Kabul city, Kol-e-Hashmat Khan is one of the few wetlands of Afghanistan. It is a seasonal lake, covered by reeds. In the past, it was one of the historical hunting grounds for different Afghan royalties and it is an important staging area for waterfowl. The wetland is an important stopover for a vast number of migratory birds. The wetland is threatened by water diversion from Logar River, the main source of water for the wetlands. Climate change and drought have been also another threat to the wetland. Though there is no authentic data, it is reported that a large part of the land is illegally seized by the people.

Bamyan Plateau (5,500 km^2)

Bamyan Plateau is an area of outstanding ecological value. Located in the most remote central part of Hindukush Mountain Range, the area has a relatively undisturbed habitat and good populations of ibex are documented. It has a high bird diversity with a rich assemblage of wild carnivores. Since 2006 the Wildlife Conservation Society in partnership with the National Environmental Protection Agency and the Ministry of Agriculture, Irrigation and Livestock have carried out many surveys in Bamyan Plateau, including, rangeland (Bedunah et al. 2010; Zandler 2018), birds (Busuttil and Ayé 2009; Mostafawi and Ostrowski 2018), urial and ibex (Shank and Alavi 2010). At least 20 camera trap-based surveys were undertaken between 2011 and 2018 (e.g. Jahed 2017) to assess the presence of rare wildlife species (e.g. Moheb and Bradfield 2014). In 2018, the Bamyan Plateau has been recommended as Category VI protected area. Designation of the Plateau as a protected area provides a legal basis for the management and protection of this rich ecological region. The wildlife of the proposed Plateau includes 12 species of mammals, 15 species of birds, four species of reptiles and amphibians, three species of freshwater fishes, two species of invertebrates, and nine species of flora.

Shah Foladi (700 km^2)

Shah Foladi is one of Afghanistan's most beautiful and fascinating landscapes. The Shah Foladi Valley spans over 700 km^2. Situated near the UNESCO World Heritage Site of Bamyan city, Shah Foladi is not only significant for its outstanding natural beauty but also for its cultural significance. It is part of the larger Koh-e Baba Mountain Range in the Central Highlands and is crowned by the impressive Shah Foladi peak that rises 5,050 meters above sea level. This mountain range is the geological and geomorphological core of the country. Along with the nearby city of Bamyan, Shah Foladi has a diverse range of habitats, species, and human settlements.

Maintaining biodiversity in Afghanistan and preserving the local livelihood practices, including the rich traditional knowledge and usage of a high diversity of medicinal and edible plants of the local communities in

Shah Foladi is important for conservation interventions. Being a home to many endemic species of flora and fauna, the landscape provides essential habitat for a large number of endemic species endangered by environmental changes and human activities.

The Shah Foladi is a glaciated landscape with abundant cirques, glacial lakes, moraines, sharp ridgelines, pyramidal peaks, and U-shaped valleys. The mountains are the birthplace of all Afghanistan's most important watersheds. The numerous alpine lakes, glaciers and extensive pastures, store water and release it throughout the year, feeding creeks, canals, and rivers throughout the entire country. Water originating in the Shah Foladi, and the wider Koh-e Baba mountain range, feed five of the major river systems in Afghanistan including Harirod, Helmand, Kabul, Kunduz, and Balkh rivers. The Kunduz and Balkh rivers eventually feed into the Amu Darya before flowing directly to the Aral Sea.

The Shah Foladi area has a harsh and challenging high-mountain climate, with long winters, limited growing seasons, and marginal mountain soils. Despite these environmental challenges, the landscape harbours an impressive diversity of fauna and flora. The rangelands are a carpet of rich floral diversity throughout the spring and summer. They are a haven for endemic plant species and an important resource of fuel, food, livestock fodder and medicine for resident human populations. Despite a history of persecution and hunting, there is still a great diversity of wildlife, including species such as gray-wolf (Canis lupus), red fox (Vulpes vulpes), European lynx (Lynx lynx) among other wild cats, Siberian ibex (Capra Sibrica), urial (Ovis orientalis vignei) and more than 110 species of bird. Historically, Persian leopard (Panthera pardus ciscancasicas), brown bear (Ursus arctos), and wild boar (Sus scrofa) inhabited the area, but in the last decades there is no record of the presence of these species.

In the past several years most of the conservation interventions were focused on the abovementioned protected since with relatively better security, they were more accessible to all stakeholders. The other protected areas, with little interventions and therefore with little current knowledge and information about them include the Northwest Afghanistan Game Reserve, Hamun-e-Puzak Waterfowl Sanctuary (1,453.4 km^2), Registan Desert, Ab-e-Estada, Imam Sahib Wildlife Reserve, Nuristan, Ajar Valley Wildlife Reserve (400 km^2), and Darqad Wildlife Reserve (120 km^2), which all together make 381,129 km^2 or 5.8 per cent of the total land area.

Relevant Projects and Programmes

- *Establishing Integrated Models of Protected Areas in Afghanistan (EIMPA): The project supports Afghanistan by managing and expanding its protected areas and developing and testing regulations related to protecting forests. The project has encouraged local communities' participation to preserve soil fertility, watershed stability, and forage productivity through the provision of incentives to the local people.* *http://www.af.undp.org/content/afghanistan/en/home/projects/Biodiversity-Afghanistan.html*
- *Ecosystem-based Disaster Risk Reduction (Eco-DRR) (completed): This four-year project, launched in 2012, aimed at promoting ecosystem management for disaster risk resilience development. This included the mainstreaming of ecosystem-based adaptation approaches into disaster and resilience planning and working directly with local communities in the Shah Foladi Protected Area on community-based natural resource management pilot demonstrations, including landscape-level planning, community nursery establishment, and forestry initiatives for landslides and avalanche risks, and integrated watershed management.*

2.2.1. For the Implementation Measure, Please Indicate to Which National or Aichi Biodiversity Target(s) it Contributes

- *Afghanistan Target 1, 2, 3, 8, 9, 10, 11*
- *Aichi Target 1, 2, 4, 5, 7, 11, 14, 16, 17, 18, 19, 20*

2.2.2. Assessment of the Effectiveness of the Implementation Measure Taken in Achieving Desired Outcomes

☐ *Measure taken has been effective*

☒ *Measure taken has been partially effective*

☐ *Measure taken has been ineffective*

☐ *Unknown*

2.2.3. Please Explain the Selection and Where Possible Indicate the Tools or Methodology Used for the Assessment of Effectiveness Above

No assessment is available; however, the effectiveness measure indicated above is based on the document's reviews and numerous consultations during the preparation of this report. Relevant online resources, websites, and documents

- *National Protected Area System Plan of Afghanistan (2009);*
- *Identifying Priority Zones for a Protected Area Network in Afghanistan (December 2009); https://global.wcs.org/DesktopModules/Bring2mind/DMX/Download.aspx?EntryId=6423&PortalId=87&DownloadMethod=attachment&test=1*
- *Proposal and justification to establish a protected area in Bamyan Plateau (December 2018);*
- *Capacity Building for Biodiversity Conservation in Afghanistan; December 2009.*
- *Biodiversity Conservation in Afghanistan, 2007 ~ WCS*

2.2.4. Obstacles and Scientific and Technical Needs Related to the Measure Taken

- *Afghanistan NBSAP needs to be revised based on the current status of the country and of its priorities. Even though the preliminary targets have been a reference for biodiversity conservation, these targets need to be specific, measurable, attainable, relevant, and time-bound (SMART) and need specific indicators for reporting and measurement.*
- *Better security better conservation. In the very first place, persistent conflicts and insecurity in some parts of Afghanistan have prevented full and effective implementation of the NBSAP. Due to insecurity, it has been hardly possible to access to some priority areas of ecological and biodiversity importance. Assessments, surveys, and implementation of conservation measures have been restricted only to a few areas with reasonable security. Other barriers, however, include institutional complexities, lack of capacities, and lack of adequate financial resources.*
- *Conflicting mandates restrain NBSAP implementation. NEPA and MAIL are primarily the two-state institutions mandated to address issues of environment and natural resources management. However, these two entities have conflicting mandates and tasks on conservation issues. This hardened cooperation and coordination in the implementation of the NBSAP, and made monitoring, capacity and data sharing cumbersome.*

2.3. Assessments of Flora and Fauna

Afghanistan has been conducting numerous surveys of the country's wildlife of flora and fauna. These surveys are conducted mainly in the protected areas covering wildlife, including snow leopard, Marco Polo and Ibex, assessments of local livestock, animal health issues, assessment of forest and deforestation, survey of birds and the conservation needs of breeding birds (Waterfowl, Vultures, Saker Falcon, Snowcocks, Sandgrouse, Piegion, Ibisbill, Woodpeckers, Leaf-Warblers, and Rose-finches).

NEPA and MAIL in a joint effort with other partners have conducted numerous surveys and field studies in Band-e-Amir on both fauna and flora. The surveys and assessments show the presence of both Siberian Ibex, Urial, sporadic sightings of wolves, Himalayan Lynx and Pallas' cat. Band-e-Amir has a diverse birdlife and recent surveys confirmed the presence of Afghan Snow-finch. This area is believed to be the only one to host this species both in Afghanistan and Turkmenistan.

Due to the persistent conflicts, Afghanistan's assessments of flora and fauna has been limited to the areas officially declared as protected to those that have yet to be designated as protected areas. Several studies and surveys conducted by NEPA and other stakeholders usually focused on Band-i-Amir and Wakhan National Parks.

2.3.1. For the Implementation Measure, Please Indicate to Which National or Aichi Biodiversity Target(s) it Contributes

- *Afghanistan Target 1, 2, 3, 5,*
- *Aichi Target 1, 9, 12, 13, 19,*

2.3.2. Assessment of the Effectiveness of the Implementation Measure Taken in Achieving Desired Outcomes

☐ *Measure taken has been effective*

☒ *Measure taken has been partially effective*

☐ *Measure taken has been ineffective*

☐ *Unknown*

2.3.3. Please Explain the Selection and Where Possible Indicate the Tools or Methodology Used for the Assessment of Effectiveness Above

No assessment is available; however, the effectiveness measure indicated above is based on the documents' reviews and numerous consultations during the preparation of this report.

2.3.4. Relevant Online Resources, Websites, and Documents

- *Nasratullah Jahed & Stéphane Ostrowski The first record of the Southwest Asian Badger Meles canescens (Mammalia: Mustelidae) from Afghanistan (January 2018); (PDF)*
- *Proposal and justification to establish a protected area in Bamyan Plateau (December 2018); (PDF)*
- *Biodiversity Reconnaissance Survey in Darwaz Region, Badakhshan Province, Afghanistan (April 2012); (PDF)*
- *Biodiversity Reconnaissance Survey. Shahr-e Buzurg Survey Report (2011); (PDF)*

2.3.5. Obstacles and Scientific and Technical Needs Related to the Measure Taken

- *Afghanistan NBSAP needs to be revised based on the current status of the country and of its priorities. Even though the preliminary targets have been a reference for biodiversity conservation, these targets need to be specific, measurable, attainable, relevant, and time-bound (SMART) and need specific indicators for reporting and measurement.*
- *Lack of adequate scientific research and surveys; insecurity in some parts of the country; lack of budget and financial resources; lack of national scientists and experts; low level of institutional capacities (primarily education institutes to train experts and scientists); lack of adequate access to technology; threats from illegal trade of wildlife; climate change;*
- *In some parts of the country, some areas and habitats with biodiversity importance were not surveyed yet due to the insecurity that prevents assessment, surveys, and implementation of effective*

conservation actions. One additional barrier to better management of conservation in the country i is duality in roles and responsibilities. Therefore, it is required that all responsibilities of biodiversity conservation are mainstreamed under one government agency (currently both NEPA and MAIL NRM department are involved); it is also required to reinforce capacity building programs, continue biodiversity inventory and to legalize existing protected areas;

2.4. Climate Change Sensitive Natural Resources Management

There is a growing understanding of the importance of integration of climate-sensitive natural resource management, conservation agriculture, and sustainable environmental management in Afghanistan. The Afghan government has strengthened coordination for climate change management as an effort to manage natural resources in order to better support poverty reduction, minimizing land disputes, and reducing vulnerability to natural disasters. NEPA has developed national environment mainstreaming guideline and established 18 Provincial Environment Advisory Councils (PEACs). The main role of the PEACs is to integrate environmental issues into provincial planning processes; as part of the PEACs, 21 Environmental subcommittees (ESC) have been established at the district and village level aiming to raise local awareness about environmental issues and climate change.

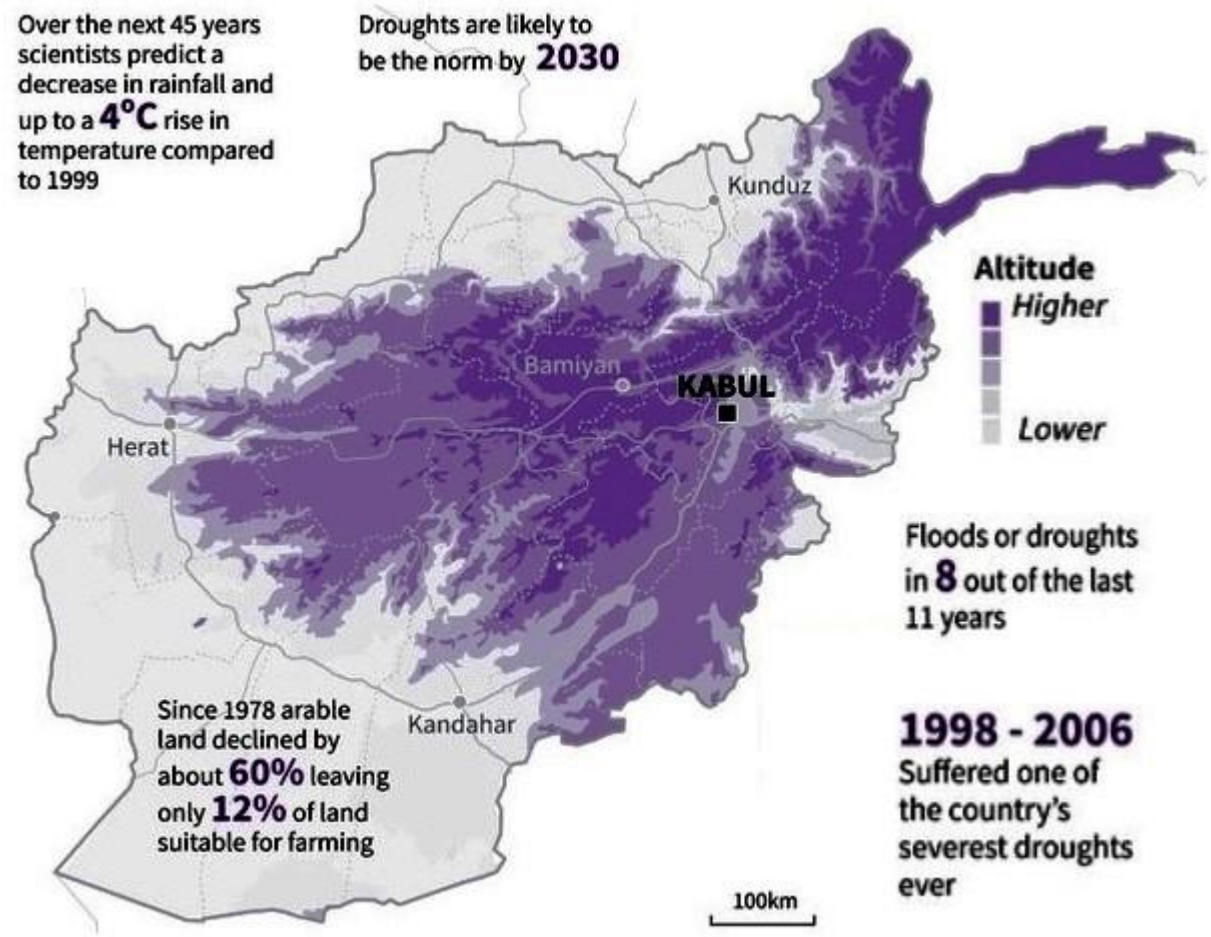


Figure 5: A map listing predicted effects of global warming for Afghanistan in 2016 (source: after UNDP Afghanistan, accessed 23 November 2018, URL: http://www.af.undp.org/content/afghanistan/en/home/presscenter/IntheNews/Climate-change-fuels-insurgency-Afghanistan.html)

Back in 2009 NEPA, supported by the UNEP, implemented the National Adaptation Programs of Action for Climate Change and National Capacity Needs Self-Assessment for Global Environmental Management. The program identified the country's primary capacity needs and introduced further climate-sensitive programming.

Related Programs and Projects:

- *Climate Technology Centre and Network (ongoing): Afghanistan's first CTCN Technical Assistance was launched in early 2015, upon request of NEPA and focuses on capacity building and identifying technical needs and priorities in the key sectors of agriculture, energy, and water. The CTCN is a global initiative hosted by the UN Environment that aims at enhancing the development and transfer of climate-smart*

technologies in order to promote adaptive capacity and climate change mitigation efforts in developing counties.

- *Strengthening the Resilience of Afghanistan's Vulnerable Communities Against Natural Disasters and Climate Change (ongoing): This five-year project, launched in early 2015, aims at addressing the root causes of the vulnerability to natural disasters and climate change through a blend of institutional capacity building, sectoral coordination, and community-based resilience-building activities. This project is accredited by the UK's International Climate Fund (ICF) and includes components on climate early warning, climate-smart agriculture, and integrated watershed management across 9 of Afghanistan's most disaster-prone provinces.*
- *The Strengthened Approach for Integration of Sustainable Environment Management (SAISEM) is a joint UN project that aims at supporting the government to manage natural resources, supporting poverty reduction, minimizing land disputes, and reducing vulnerability to natural disasters. The project strengthens coordination mechanisms among MRRD, MAIL, and NEPA. It helps the stakeholders to directly mainstream environmental issues into national and sub-national development plans. Funded by GEF, UNDP implements SAISEM with the aim of improving the preparedness and resilience of selected Afghan communities to climate-induced disaster risks.*

2.4.1. For the Implementation Measure, Please Indicate to Which National or Aichi Biodiversity Target(s) it Contributes

- *Afghanistan Target 7, 8*
- *Aichi Target 2, 4, 8, 10*

2.4.2. Assessment of the Effectiveness of the Implementation Measure Taken in Achieving Desired Outcomes

☐ *Measure taken has been effective*

☒ *Measure taken has been partially effective*

☐ *Measure taken has been ineffective*

☐ *Unknown*

2.4.3. Please Explain the Selection And Where Possible Indicate the Tools or Methodology Used for the Assessment Of Effectiveness Above

No assessment is available; however, the effectiveness measure indicated above is based on the document's reviews and numerous consultations during the preparation of this report.

2.4.4. Relevant Online Resources, Websites, and Documents

- *Afghanistan Second National Communication Under the United Nations Framework Convention on Climate Change (UNFCCC) (2018); https://postconflict.unep.ch/publications/Afghanistan/Second_National_Communication_Report2018.pdf*
- *15 Years in Afghanistan. A Special Report (2003-2018), FAO. http://www.fao.org/3/CA1433EN/ca1433en.pdf*

2.4.5. Obstacles and Scientific and Technical Needs Related to the Measure Taken

- *Strengthen Climate Change Resilience. Afghan population heavily depend on natural resources. The farmers and the rural areas rely on agriculture and natural resources for subsistence and livelihoods. Natural hazards and shocks have a critical impact on people's lives and on biodiversity. Strengthening the people's resilience through adaptation and mitigation is critical in order to ensure support mechanisms are in place for the rural population.*
- *Afghanistan needs to build robust knowledge and data collection mechanisms. Afghanistan faces a number of challenges related to the vulnerability to climate change assessment. The country has sporadic and poor-quality data on climate change, and this makes difficult analysis and programming*

on adaptation and mitigation. Before the war in 1979, Afghanistan had one of the most advanced meteorological monitoring systems in the region, something destroyed during the past four decades' conflicts. The hydromet (Hydrological and meteorological) networks are essential for collecting accurate and ground-based data on climate and water flow. Such information is vital for better decision resulting especially in the prediction of climate disasters. Even though hydromet networks have been established in Afghanistan since 2002, persistent and prolonged conflicts degraded some of these systems in some parts of the country; and insecurity has prevented their maintenance.

- *In order to address climate change, Afghanistan has developed a Climate Change Strategy and Action Plan. Afghanistan needs to invest in developing systems to monitor and assess vulnerability and adaptation to hazards induced by climate change.*
- *Climate change can have a significant negative impact on urban and rural livelihoods of all citizens. As such, several national planning exercises have been undertaken, such as the national adaptation Plan of action, the national Capacity needs self-assessment and the 2012 initial national Communication on Climate Change. In 2013, the first full-sized Climate Change adaptation Project was started with GEF funds. Executed by NEPA, with MAIL, MRRD, MEW, ANDMA, and the Afghan Meteorological authority, its aim is to apply an ecosystem-based approach to build climate change adaptation and resilience in national plans and actions in four provinces. As the first of a series of globally funded environmental programs in Afghanistan, the hope is that addressing climate change and biodiversity as mutually connected national issues will create significant new capacity and positive biodiversity results in the coming years.*
- *Based on these climate change projections, Afghanistan's environment will experience considerable changes in 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*

2.5. Streamlining Biodiversity in National Programmes and Strategies

Afghanistan has taken a number of initiatives to promote country's sustainable development. In term of national development policies, plans, and legal frameworks, a considerable effort has been put on addressing environmental challenges, disaster risk reduction, food security, water security, protection of forest and rangelands, and biodiversity conservation This has clear relevance to climate change adaptation.

NEPA and MAIL are the key government authorities responsible to ensure biodiversity conservation is streamlined in all government policies and development plans. Both authorities have specifically joint mandates for the management of the country's protected areas. In 2009, an Interim Protected Area Tarzulamal (IPAT) was agreed by both authorities. Tarzulamal is a Dari term that means regulation. One of the requirements of the IPAT is that all Management Plans for protected areas have to be harmonized with the National and Provincial development plans.

Afghanistan National Peace and Development Framework (ANPDF, 2017-2021) is the country's five-year grand development strategy. It stipulates Afghanistan's main development policy to reduce poverty and improve the welfare of the people. Based on this strategy, the country has approved a 70-30 per cent split between growth and social development. The key objective of the strategy is to increase productivity through expanding the land under irrigation from 2.2 million hectares to 2.7 million and to increase wheat production from 4.5 million metric tons to 5.9. The strategy also aims at expanding agroforestry and reforestation with over 60,000 hectares that should support environmental conservation and income generation.

Today the environment and conservation being mainstreamed in local and national development plans, and both at policy and practice the critical roles of the local communities in conservation activities are recognized and respected. The interest in the conservation and in the sustainable use of resources will help the country to take further effective measures to address biodiversity in the future. Today mainstreaming biodiversity is taken at the local and national level by multiple organizations (including UN agencies, NGOs and private sector). The intervention includes programs and projects on biodiversity, climate change, land degradation, desertification, sustainable use of natural resources, sustainable water, and energy.

National Priority Programs (NPPs) are sectoral development programs that are implemented by more than one government agency. One program is the Citizen's Charter that promotes inclusive development. It is a government effort that will link rural communities, districts, and provinces with those of the central ones. This NPP is to promote inclusive development. At the village level, the aim of the Citizen's Charter program is to reduce poverty and break the cycle of fragility and violence, using Community Development Councils (CDCs). The Citizen's Charter will ensure the delivery of a basic package of services to all communities by 2026. The program will provide over the next four years 12000 communities across 34 provinces with universal access to clean water. It will provide as well nearly 20,000 water points, quality education in public schools and a basic package of health services to all clinics.

With support from international partners, NEPA has now established co-management of protected areas. Since 2014, NEPA and MAIL have finalized four management plans for protected areas. These plans are streamlined with local development plans. For example, the Band-e-Amir Management Plan for 2016-2020, is streamlined with the Bamyan Provincial Development Plan (2011-2015) and with the Yakawlang District Development Plan (2007). Band-e-Amir is Afghanistan's first national park and is located in Yakawlang district of Bamyan Province in the Central Highlands of the country.

Related Programs and Projects:

- *Citizens Charter Afghanistan Project (ongoing): The Citizens Charter is a National Priority Program launched in 2016. The program is the first-ever inter-ministerial, multi-sectorial NPP, where Ministries will collaborate on a single program using a programmatic approach. The key services delivery ministries involved are MRRD, MoE, MoPH, and MAIL. The Community Development Councils (CDCs) will be linked to the sub-national government to improve communications and coordination from the community to the district, provincial and national levels, which will increase Government visibility and accountability. The project has established hundreds of environmental committees at a village level across the country. The key responsibilities of these committees are to raise awareness of local people on biodiversity,*

environment and sustainable use of natural resources.

2.5.1. For the Implementation Measure, Please Indicate to Which National or Aichi Biodiversity Target(s) it Contributes

- *Afghanistan Target 3, 4*
- *Aichi Target 1, 2, 17, 19*

2.5.2. Assessment of the Effectiveness of the Implementation Measure Taken in Achieving Desired Outcomes

☐ *Measure taken has been effective*

☒ *Measure taken has been partially effective*

☐ *Measure taken has been ineffective*

☐ *Unknown*

2.5.3. Please Explain the Selection and Where Possible Indicate the Tools or Methodology Used for the Assessment of Effectiveness Above

No assessment is available; however, the effectiveness measure indicated above is based on the documents' reviews and numerous consultations during the preparation of this report.

2.5.4. Relevant Online Resources, Websites, and Documents

- *Afghanistan National Peace and Development Framework (2017-2022); http://policymof.gov.af/home/wp-content/uploads/2016/10/Final_rev_ANPDF-paper-English.pdf*
- *Band-e-Amir National Park Management Plan (2016-2020). March 2016.*
- *The Citizens Charter National Priority Program (CC-NPP); http://www.ccnpp.org/Default.aspx*

2.5.5. Obstacles and Scientific and Technical Needs Related to the Measure Taken

- *Strengthen Advocacy for Biodiversity. There is little attention to the fact that biodiversity conservation and sustainable use of its resources support poverty reduction and food security, and in the long run, it reduces human pressures on biodiversity loss. Such debates are clearly limited in the development policy debates in Afghanistan. NEPA and MAIL jointly need to advocate to properly address the issues of biodiversity and sustainable use of natural resources and policy and program levels.*

2.6. Education and Public Awareness on Biodiversity Conservation

The conservation interventions, mainly in key protected areas in Afghanistan, have substantially raised the awareness of the local authorities and communities on conservation and preservation of natural habitats and ecosystems issues. During the past four years, the Afghan government supported by its partners has ensured that all biodiversity-related projects and programs include awareness-raising as one of their key components. As a result, several training workshops were held both at national and sub-national levels to raise awareness on biodiversity. The government established Environmental Education Programs in six schools and environmental committees focused on collecting environmental data and conducting clean-up activities in their communities

To raise public awareness of environmental and biodiversity issues, media in the country have played an important role as well. Only in 2018, numerous outlets have published dozens of articles on air pollution, climate change and drought, forestry, and wildlife. These interventions were a highly important contribution to raise public awareness in Afghanistan. Although these are not daily headlines, the importance of biodiversity and conservation of the environment has continued to gain a deserved attention in the media. During the consultations and exchanges with local communities in Bamyan roughly30 per cent of the general public understood the importance of biodiversity and conservation of natural resources. This figure was even twice higher in protected areas; around 60 per cent of the people, residing in and around protected areas, knew the importance of biodiversity and conservation of natural resources and habitats.

The government has ensured the influx of tourists benefits local communities by implementing a tourism facility development plan, building a tourism information centre, new park entrance facility, new Rangers' complex, a waste disposal site, improved campsites and picnic areas with garbage bins, trails, and latrines. There are currently about 40 rangers including 9 female rangers hired (through contracted employees) to assist in the protection and monitoring of the wildlife and other natural resources.

Overall, the Afghan government and specifically NEPA and MAIL have continued to advocate for biodiversity and the crucial need for its conservation, sustainable resources management and their role in poverty reduction and long-term well-being of the Afghan people. As a result, today there is a genuine and widespread interest in the sustainable management of natural resources in Afghanistan and stakeholders are beginning to move towards climate-sensitive natural resources management and conservation agriculture.

Recognizing the important role of the private sector in the conservation activities, NEPA has provided an official license to Al-Gharafa Foundation to help the country's captive breeding programs. Afghanistan has a highly endemic avifauna, which has been threatened by the lack of conservation activities and has been partially lost. The Foundation has established a Falcon place, a breeding centre for birds and a lab for diagnosis and treatment of birds in the Farah province where Hubara, Uriel and Falcons are conserved. This is in addition to the Balkh Captive Breeding and Conservation Centre that was inaugurated in 2012. Currently, in addition to Houbara and falcons, other animals and birds are kept for propagation including deer, gooseberries, rabbits, ostriches, Indian goats (Uriel), crowned chickens, white Quebecois, peacocks, ducks, geese, pigeon, lunar, taro, and quail. Since 2014, hundreds of birds were treated, conserved and released to the nature in the Farah province. In addition, this intervention has been a great platform for the exchange of ideas, knowledge, and expertise in captive breeding. The foundation has provided NEPA technical staff members with capacity training workshops and scholarships.

Civil society, including community associations and local non-governmental organizations (NGOs), have actively taken part in the promotion of biodiversity. These interventions and projects which have been mainly funded through the GEF Small Grants Program (SGP) are jointly led by NEPA and UNDP Afghanistan. The projects focus on biodiversity conservation, land degradation, and climate change mitigation. SGP Afghanistan became operational in October 2012 and has, since then, supported 79 community-based projects. These projects are focused on promoting sustainability through community-based rangeland conservation, environmental education, ecotourism, conservation of endangered medicinal plants, establishing a botanical garden at Kabul University, production of compost from biodegradable waster in Bamyan, and vegetation of degraded watershed among others.

2.6.1. For the implementation measure, please indicate to which national or Aichi Biodiversity Target(s) it contributes

- *Afghanistan Target 1, 2, 3*
- *Aichi Target 1, 2, 18, 19*

2.6.2. Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes

☐ *Measure taken has been effective*

☒ *Measure taken has been partially effective*

☐ *Measure taken has been ineffective*

☐ *Unknown*

2.6.3. Please Explain the Selection and Where Possible Indicate the Tools or Methodology Used for the Assessment of Effectiveness Above

No assessment is available; however, the effectiveness measure indicated above is based on the documents' reviews and numerous consultations during the preparation of this report.

2.6.4. Obstacles and Scientific and Technical Needs Related to the Measure Taken

- *Education, Awareness Raising and Advocacy. Although there is a growing interest within the academia and policymakers on biodiversity and conservation of nature issues. There is still a huge lack of public interest in biodiversity issues. It seems the general public does not recognize yet the crucial link between biodiversity conservation, poverty reduction, rural livelihood, food security and sustainable use of natural resources. The field visits and community consultations with Band-e-Amir, and Shah Foladi communities, showed that biodiversity and conservation actions have hugely contributed to raising awareness of local communities and boosted their knowledge on the importance of the conservations of ecosystems and biodiversity. In areas where local communities understand the importance of conservation, biodiversity is conserved better.*

2.7. Biodiversity Knowledge Management

A clear picture of the biodiversity status is key for conservation activities. Both NEPA and MAIL have been establishing mechanisms and platforms to support data collection, knowledge management, and information flow. Financed by the European Commission and with the technical support by the UN Food and Agriculture Organization (FAO), Afghanistan prepared the Afghanistan Land Cover Atlas under the auspices of the project "Strengthening Agricultural Economics, Market Information and Statistics Services". The availability of a reliable land cover database not only supports Afghanistan in having authentic and up-to-date information to monitor natural resources, but also better programming aimed at food security, better agricultural assessments, agriculture, and rural development, and it provides reliable information on crops and livestock market. In addition, the Atlas supports better management of rangeland and forests by providing updated information and data on the current status of these resources.

The Afghan government authorities that have a mandate for biodiversity conservation, promoting sustainable use of natural resources, conservation agriculture and rural development directly benefit from the Land Cover Atlas and database. These authorities/ entities include the National Environment Protection Agency (NEPA), Ministry of Agriculture, Irrigation, and Livestock (MAIL), Ministry of Rural Rehabilitation and Development (MRRD), and Ministry of Energy and Water (MEW). The ultimate beneficiaries of the Land Cover Atlas are, however, the Afghan people. They receive better-targeted development programs and policies based on reliable evidence. Through the provision of reliable information, programs will be efficiently implemented, ultimately improving the livelihoods of the population, whose majority lives in rural areas.

In addition to coordinating and implementing numerous wildlife surveys, the entities have created informational portals and databases. Afghanistan Soil Information System (AfSiS) is being implemented to produce and update soil data and maps in Afghanistan. The project, funded by the UN FAO Afghanistan, will provide, once completed, soil data of Afghanistan aimed at improving agricultural productivity and environmental conservation. Other informational platforms include NEPA's biodiversity web portal, NEPA's biodiversity library, MIS database at MAIL and Afghanistan's land cover atlas remised by UN FAO based on 2010 data sets.

Relevant Programmes and Projects:

- *Agro-Meteorology (Agromet) Project (completed): The Agromet project was established as a collaboration between MAIL and the USGS to generate and disseminate climatic data relevant to agricultural production. Agromet's objectives include assisting the government in the collection and analysis of meteorological and agricultural data relevant to crop production, irrigation, water supply, and energy, as well as building national capacity on agro- and hydro-meteorology, statistical monitoring and assessments of droughts and floods, and the dissemination of meteorological data for the agriculture sector. As of June 2014, USGS ended its involvement in the Agromet Project, and it has since been fully integrated into MAIL.*
- *Afghanistan Soil Information System (AfSIS) (ongoing): Produces and updates soil data and maps in; avails the public and raises awareness on the existence of data on Afghanistan soil and how to use the data to improve agricultural productivity and environmental conservation. It supports Afghan institutions and personnel in the soil departments in producing and maintaining updated soil information; advises soil users on appropriate investments for agricultural development in Afghanistan; and maintains an online soil information repository on Afghanistan. The Project will increase the technical capacities of the MAIL and soil science for systematic and standardized field and laboratory soil survey. In order to bridge the gap of low technical performances of soil laboratories in the country, the Project will strengthen the existing ones, and/or establish new soil laboratories in few locations in the county.*
- *Strengthening Agricultural Economics, Market Information and Statistics Services (ongoing): The project has three immediate objectives: **1):** institutional development; **2)** provide agricultural statistics for food security and agricultural planning and policy and **3)** establish an Early Warning System in MAIL.* http://mail.gov.af/en/page/3253/5013

2.7.1. For the Implementation Measure, Please Indicate to Which National or Aichi Biodiversity Target(s) it Contributes

- *Afghanistan Target 1, 2, 3*
- *Aichi Target 1, 2, 18, 19*

2.7.2. Assessment of the Effectiveness of the Implementation Measure Taken in Achieving Desired Outcomes

☐ *Measure taken has been effective*

☒ *Measure taken has been partially effective*

☐ *Measure taken has been ineffective*

☐ *Unknown*

2.7.3. Please Explain the Selection and Where Possible Indicate the Tools or Methodology Used for the Assessment of Effectiveness Above

No assessment is available; however, the effectiveness measure indicated above is based on the documents' reviews and numerous consultations during the preparation of this report.

Although there is no specific assessment to evaluate how the Land Cover Atlas Afghanistan supports biodiversity conservation, the availability of authentic data and information on the status of land, rangelands, forests, agricultural and rain-fed land seems to provide a solid base for better conservation interventions. During the workshops and consultations for the 6th NR, it was observed that several government officials referred to data and information from the Atlas. For this reason, the effectiveness of these data and its contribution to the biodiversity conservation is "Unknown".

2.7.4. Relevant Online Resources, Websites, and Documents

- *The Islamic Republic of Afghanistan - Land Cover Atlas (2015), http://www.fao.org/geospatial/resources/detail/en/c/1024570/*
- *Afghanistan Project: Strengthening Agricultural Economics, Market Information and Statistics Services http://dwms.fao.org/~draft/lc_main_en.asp*

2.7.5. Obstacles and Scientific and Technical Needs Related to the Measure Taken

- *Implementation and monitoring of conservation require authentic and reliable data. Setting appropriate indicators for a structured list of conservation targets of the NBSAP requires authentic and reliable baseline data and information. The National Statistics and Information Authority (NSIA; previously Central Statistics Organization or CSO), provides baseline data for only 20 indicators of the SDGs, which do not include those relevant to biodiversity issues. The data and information sporadically available lack of data sharing mechanisms, sometimes completely. This has made implementation and monitoring a challenge. Some data are sparsely available, stakeholders need to consolidate all data on biodiversity in one single platform, this will simplify monitoring the progress on the implementation of the NBSAP and will make reporting even easier.*

- *Afghanistan needs to strengthen and expand its meteorological and hydrological monitoring networks and services, including a national database to archive and store meteorological and hydrological data. In order to establish this crucial network, Afghanistan needs to invest in its hydrological, meteorological and integrated data management systems.*
- *Baseline information on natural ecosystems and resources is either unavailable or outdated. Information such as the floristic composition of the rangelands, vegetation types and their distribution, the annual production of dry matter, nutrition analysis, annual variations of biomass production and so on, is almost non-existent.*

2.8. Protected Wildlife Species of Afghanistan

In the past four years, Afghanistan has witnessed widespread security challenges. Nevertheless, it has continued its work on conservation of species, though it has been limited to certain geographic areas with better security situations and to selected species. Afghanistan has a solid strategy to continue ongoing assessments of the status of the country's flora and fauna species. The overall aim is improving the understanding of Afghanistan's biodiversity resources and their conservation requirements (NBSAP).

For many reasons, a comprehensive description of Afghanistan's biodiversity is a challenging task. First, little research has been undertaken on Afghan biodiversity. There are thousands of species that have not been recognized by scientists and there is little information on the status or distribution of most of those catalogued. Secondly, most of the biodiversity research was undertaken prior to the outbreak of war in 1979 and is, therefore, out of date. Unfortunately, the current security situation makes it difficult to reassess, validate and update old information (UNEP, 2003).

In 2014, the scientific wing of NEPA, the Wildlife Executive Committee (AWEC) finalized a list of country's protected species of fauna and flora. This includes eight species of plants, one insect (Pamir butterfly, Parnassius autocrator), four reptiles (including Afghan Tortoise, Testudo horsfieldii), one amphibian (Paghman Salamander, Afghanodom mustersi), 57 birds, 76 mammals, and two species of fish. Furthermore, the Red List of the World Conservation Union (IUCN) shows a total of 39 species and eight sub-species as being globally threatened with extinction (Annex 6). Based on some sources, Asiatic cheetah became extinct in the 1950s and Caspian tiger became extinct in the 1970s while the extinction of the Asiatic lion in Afghanistan not yet confirmed. Appendix I of the Convention of the International Trade in Endangered Species (CITES) list 23 Afghan species and Appendix II of the same reference lists 88 endangered species. Please see Annex 6 and Annex 7 for those Afghan species that are at risk of extinction on a global scale.

The process of listing Afghanistan's protected species of wild fauna and flora is considered an important step towards identification and conservation of country's threatened species. AWEC members include experts from different government ministries, public universities (mainly from the University of Kabul), members of civil society, and other stakeholders like WCS.

AWEC assessed the risks incurred by Afghan species on a national scale using IUCN regional criteria. AWEC also advised NEPA on which species should be legally listed as Harvestable or Protected according to Article 47 of the Environment Law. The species on this list are protected against illegal hunting and harvest. NEPA is the key government agency responsible for the management of these protected species in Afghanistan. By writing up recovery plans and through projects conducted by the government and other stakeholders, it ensures the conservation of these species. Every five year, NEPA assesses whether the population of these species has recovered so that it can be removed from the protected list. Please see annex 2 for the protected species list of the country.

Though in the past almost no information was available on the current status of species within the borders of Afghanistan, today there are several assessments of wildlife, mainly those conducted by WCS and NEPA in the two key National Protected areas (Band-i-Amir and Wakhan National Parks). For a complete list of these studies, refer to annex 4. All of these studies and reports are available on the WCS Afghanistan website.

2.8.1. For the Implementation Measure, Please Indicate to Which National or Aichi Biodiversity Target(s) it Contributes

- *Afghanistan Target 2, 3*
- *Aichi Target 12, 13, 19,*

2.8.2. Assessment of the Effectiveness of the Implementation Measure Taken in Achieving Desired Outcomes

☐ *Measure taken has been effective*

☒ *Measure taken has been partially effective*

☐ *Measure taken has been ineffective*

☐ *Unknown*

2.8.3. Please Explain the Selection and Where Possible Indicate the Tools or Methodology Used for the Assessment of Effectiveness Above

Generally, this measure indicated above is based on documents' reviews and numerous consultations during the preparation of this report. The indicator for the Species Richness within protected areas network (Assessments by WCS) shows that in 2014 in the Wakhan National Park there have been more than 50% of snow leopard population, 100% of argali population, more than 10% of Himalayan ibex and the population of the brown bear around 20 to 30 individuals. For more details please see sub-section Progress towards Afghanistan Preliminary Target 1 in Section III.

2.8.4. Relevant Online Resources, Websites, and Documents

- *Publications by Wildlife Conservation Society (WCS) Afghanistan. https://afghanistan.wcs.org/*
- *Afghanistan's Environmental Law (2007). https://www.unodc.org/res/cld/document/afg/2007/environment_law_html/Environment_Law.pdf*

2.9. Vegetation and afforestation

Desertification in Afghanistan already affects more than 70 per cent of the total land area in northern, western and southern regions where widespread grazing and deforestation have reduced vegetation and catalysed accelerated land degradation. Based on the US Department of Agriculture world map, most of Afghanistan will be in the Very High-Risk category due to natural and human-induced desertification.

The Afghan government has set, therefore, a clear strategy to address desertification. Sustainable management of rangeland and medicinal plants through strengthening community-based practices for better local livelihood (herders and local people), reducing desertification and subsequently tackling the negative impact of climate change are key objectives of the Afghan government NRM Strategy. The country plans to improve 43,000 hectares of forest and further expansion of forests and urban greenery by 73,000 hectares. Furthermore, 493,870 hectares of rangeland will be degraded in the next five years. The area under medicinal plant cultivation will be increased by 2,500 hectares. Measures will be taken to control and tackle desertification in 20,000 hectares. The Afghan government in a joint effort with its development partners has established a clear policy objective to support sustainable management, conservation, restoration and improvement of rangelands and medicinal plants.

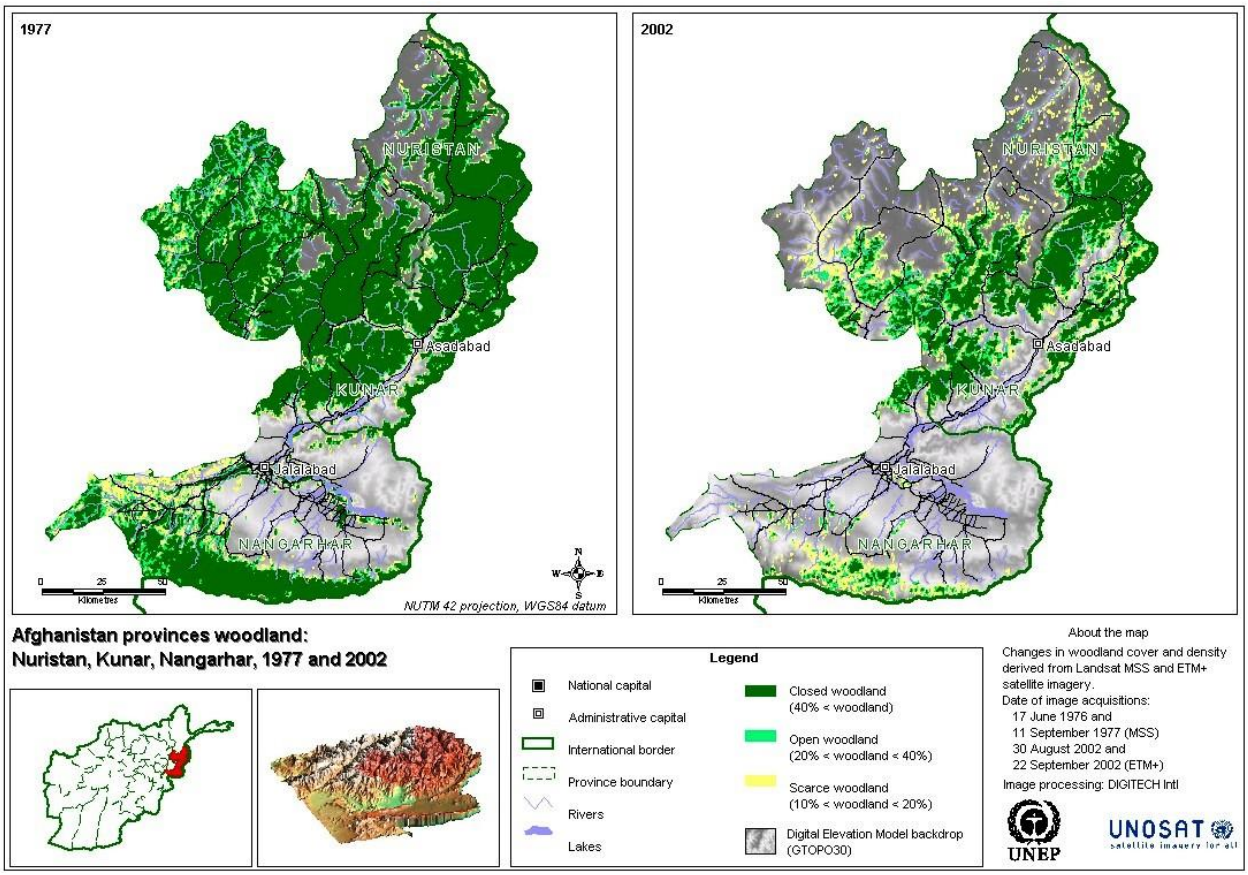


Figure 6: A map showing forest loss in the Eastern Forest Complex of Afghanistan in Nuristan, Kunar and Nangarhar provinces between 1977 and 2002 (source: UNITAR, accessed 23 November 2018, URL: http://www.unitar.org/unosat/map/27)

Afghanistan has established programs to actively conserve and maintain 210,000 hectares of rangelands by introducing rotational grazing practices. The objective of the government NRM strategy is to promote the engagement of local communities, through community-based natural resources management including the rangeland management. This will be done by establishing community-based organizations such as Rangeland Management Associations to undertake community-based rangeland assessment and develop rangeland management plans. Innovative approaches to engaging communities in watershed management and the establishment of local producer groups and associations will be undertaken through mobilization and capacity

building. Local communities will be capacitated to consider the importance of local knowledge and to know how adapting to climate change and combating desertification. In addition, 11 Forages Seed Production and Propagation Centres will also be set up for direct seeding in areas where vegetation has been entirely lost or is challenging to restore.

Many important previously provinces with forests such as Kunar and Nuristan as well as the Spingar districts of Nangarhar and Logar as well as Paktia and parts of Paktika and parts of the North such as Badghis are currently out of government control.

Relevant Projects and Programmes

- ***The Kabul Greenbelt*** *project is funded by the Afghan government and implemented by MAIL, aiming at ensuring environmental sustainability and providing a green future for the citizens of Kabul. Over a decade, the project will create green spaces in over 10,000 hectares' land focusing primarily on the slopes around capital mostly affected by deforestation. The local communities actively take part in the implementation of the project and will contribute to monitor and protect it as well. The Kabul Greenbelt project has covered during 2017 and 2018 670 hectares of land (in Asmai, Shir Darwaza, and Qargha hills and slopes) with cultivating different species of tree saplings.*

- ***The Community-Based Sustainable Land and Forest Management*** *is an ongoing project funded by GEF and implemented by the UN FAO in Badghis, Bamyan, Kunar, Paktia and Ghazni provinces. The objectives of the project are the conservation of natural resources such as forest and rangeland, raising awareness on environmental protection in the communities and strengthening coping mechanisms for climate change effects in Afghanistan. The project addresses the critical nexus between agriculture, rural development, and the environment and it will contribute to improving the management of 10,000 hectares of High Conservation Value Forests (HCVFs) and 20,000 hectares of other types of forest to increase biodiversity conservation and sequester about 1 million tons' carbon in Badghis, Paktia and Kunar Provinces. In addition, it will improve the management of 200,000 hectares of rangelands in order to reduce and degradation, increase biodiversity conservation and sequester 2.5 million tons of carbon in Badghis, Bamyan and Ghazni Provinces. At the same time, the project will build an NRM Centre of Excellence to coordinate knowledge management and capacity building.*

- *UN FAO's* ***Strengthened Approach for the Integration of Sustainable Environment Management (SAISEM)*** *project supported MAIL with policies, including developing the first-ever National Rangeland Management Plan and the National Forestry Management Plan. These two plans are aimed at providing a foundation for effective scientific-based management of natural resources. In addition, the project has a Community-Based Natural Resources Management (CBNRM) approach primarily in Herat, Badghis and Ghor provinces, where there is an extensive natural resources degradation due to over-harvesting of forests and over-grazing of rangeland. The project has supported women empowerment by establishing kitchen gardens in the targeted areas. The project discouraged cutting forests through the distribution of 16,000 of firewood saplings to farmers to plant around their gardens in Ghor province and 35,000 firewood samplings to pistachio farmers in Badghis province. Overall, SAISEM project trained more than 2300 members of CDCs, environmental committees and farmers on community-based natural resources management. It also has trained 270 staff members of NEPA to do large scale-environmental awareness campaigns using TV and Radio outlets.*

- ***Reducing Greenhouse Gases (GHGs):*** *Another important project implemented by the UN FAO, is Reducing Greenhouse Gases (GHGs) through Community Forests and Sustainable Biomass Energy. The project supports the Afghan government in strengthening national policies on sustainable biomass energy systems based on the CBNRM and in removing barriers to sustainable biomass energy. The project is based on the Dara-e-Nor of Nangarhar province and Salang district of Parwan province, which present severe forest degradation.*

2.9.1. For the Implementation Measure, Please Indicate to Which National or Aichi Biodiversity Target(s) it Contributes

- *Afghanistan Target 4, 5, 7*
- *Aichi Target 2, 5, 7, 8*

2.9.2. Assessment of the Effectiveness of the Implementation Measure Taken in Achieving Desired Outcomes

☐ *Measure taken has been effective*

☒ *Measure taken has been partially effective*

☐ *Measure taken has been ineffective*

☐ *Unknown*

2.9.3. Please Explain the Selection and Where Possible Indicate the Tools or Methodology Used for the Assessment of Effectiveness Above

No assessment is available; however, the effectiveness measure indicated above is based on the documents' reviews and numerous consultations during the preparation of this report.

2.9.4. Relevant Online Resources, Websites, and Documents

- *National Natural Resource Management Strategy (2017-2021). Ministry of Agriculture, Irrigation, and Livestock (MAIL). Afghanistan. PDF*

2.9.5. Obstacles and Scientific and Technical Needs Related to the Measure Taken

- *Afghanistan plans to regenerate at least 40 per cent of the existing degraded forests and rangeland areas (the area covered will be approximately 232,050 hectares for forestry and 5.35 million hectares for rangelands. In order to sustainably manage its forests and rangelands, Afghanistan needs better management tools. In addition, to raise awareness on the crucial importance of forest and rangeland conservation, the country needs to continue streamlining awareness programs into national development projects and programs;*
- *In order to reduce the unsustainable use of natural resources and in order to decrease the population dependence on fossil fuels in rural communities, Afghanistan needs to invest in behavioural change programs and seek opportunities to provide alternative sources of renewable energy. The country plans to increase rural renewable energy access by 25 per cent from the existing 15 per cent. Afghanistan needs to strengthen its sustainable energy governance and encourage public and private partnerships.*
- *The carbon reservoir in the forest biomass and soils is very large, therefore, tackling the destruction of forests is core to any concerted effort to combat climate change. Traditional approaches to halt forest loss have been overall unsuccessful, as proved by the fact that deforestation and forest degradation continue unabated. New incentives in the form of ecosystem-based adaptation (EbA), watershed management, REDD+ (reducing emissions from deforestation and forest degradation), etc. can represent an important turning point in comparison to the historic trends of increasing deforestation rates and greenhouse gases emissions.*
- *There is no research/study to assess the impact of climate change on the forests in Afghanistan, although it is likely that changing temperature, precipitation pattern and CO2 concentration will have a strong direct impact on them.*

Section III. Assessment of Progress Towards Each National Target

3.1. Progress Towards Afghanistan Preliminary Target 1

At least 10 percent of each ecological region effectively conserved, and areas of particular importance to biodiversity protected.

3.1.1. Category of Progress Towards the Implementation of the Selected Target:

☐ *On track to exceed the target*

☐ *On track to achieve the target*

☒ *Progress towards the target but at an insufficient rate*

☐ *No significant change*

☐ *Moving away from the target*

☐ *Unknown*

3.1.2. The Date the Assessment Was Done:

Not Applicable

3.1.3. Additional information

This assessment is based on the annual reports of NEPA, NRM/MAIL, biannual reports and numerous other reports and assessments by Wildlife Conservation Society (WCS).

Although Afghanistan has continued to face security challenges in the past several years, it has made quite satisfactory progress for effective management and expansion of its protected areas. The past four decades of persistent conflicts and natural hazards have had destructive impacts on ecosystems, biodiversity and natural resources in Afghanistan. The traditional and sustainable use of natural resources have been largely impacted and the conflicts have declined the ability of the state to resources governance and management.

There are 17 ecoregions in Afghanistan, yet the country's knowledge extends only over a few of them and only the parts extending over protected areas. Only three of these ecoregions have a significant portion of their Afghan extent in protected areas. In Afghanistan, ecoregion #10, 'Karakoram-West Tibetan Plateau alpine steppe' extends for 80% in Wakhan National Park. There have been no substantial degradation or loss of habitats within this ecoregion in the park since 2007. Ecoregion #12, 'Pamir alpine desert and tundra' extends for ca. 100% in Wakhan National Park. There have been no substantial degradation or loss of habitats within this ecoregion in the park since 2007. Finally, ecoregion #17 'Rock and Ice' extends for 80% in Wakhan National Park. There has been a substantial, steady and irremediable reduction of ice cover over the years as a result of climate change (glacier retreat). The level of ice loss is disconcerting. Glaciers retreat at an average rate of 7-10m/year. WCS does not know the level of global deterioration and/or loss in the 14 other ecoregions of Afghanistan.

Today Afghanistan has four key protected areas with functional management plans. These are Band-i-Amir National Park (613.3 km^2), Wakhan National Park, Kol-i-Hashmat Khan Waterfowl Sanctuary (1.91 km^2), and Shah Foladi (700 km^2). In addition to these, NEPA through WCS has conducted an assessment in Bamyan Plateau in order to announce it as one other protected area. The Plateau is an area of outstanding ecological value located in the remotest central part of Hindukush mountain range. Designation of the Plateau as a protected area will provide a legal basis for the management and protection of this rich ecological region. The wildlife of the proposed Plateau includes 12 species of mammals, 15 species of birds, four species of reptiles and amphibians, three species of freshwater fishes, two species of invertebrates, and nine species of flora.

The other protected areas (yet to be announced) include the Northwest Afghanistan Game Reserve, Hamun-e-Puzak Waterfowl Sanctuary (1,453.4 km^2), Registan Desert, Ab-e-Estada, Imam Sahib Wildlife Reserve, Nuristan, Ajar Valley Wildlife Reserve (400 km^2), and Darqad Wildlife Reserve (120 km^2), which all together make 381,129 km^2 or 5.8 percent of the total land area.

Table 2: Key indicators and their status

Indicator	Baseline (if available, any year)	Current Status	Description
National Terrestrial PA Coverage (%)	0.09% (2009); 1.77% (2014); 1.83% (2017)	Currently 1.83% but anticipated reaching 2.4% when Bamyan Plateau PA is declared	Band-i-Amir National Park; Wakhan National Park; Shah Foladi; Kol-e-Hashmat Khan (these four protected areas have an official status).
PA Coverage of Key Biodiversity Areas (%)	0.67% (2009); 7.89% (2014); 7.89% (2017)	Currently 7.89%	Band-i-Amir National Park; Wakhan National Park; Shah Foladi; Kol-e-Hashmat Khan (these four protected areas have an official existence.
PA Coverage of Each Terrestrial Ecoregion (%)		Ecoregion #1: 2.08, Ecoregion #7: 1.00%, Ecoregion #10: 79.16%, Ecoregion #12: 99.49%, Ecoregion #13: 1.33%, Ecoregion #17: 78.91%	Ecoregion #1: Afghan mountains semi-desert, Ecoregion #7: Ghorat-Hazarajat alpine meadow; Ecoregion #10: Karakoram-West Tibetan plateau alpine steppe; Ecoregion #12: Pamir alpine desert and tundra; Ecoregion #13: Paropamisus xeric woodlands; Ecoregion #17: Rock and ice
PA Connectivity with a Given Ecoregion (%)		Band-e-Amir and Shah Foladi protect a proportion of ecoregion #1 supporting some level of connectivity within this ecoregion. Wakhan NP insures key connectivity within ecoregion #12 globally.	
PA Management Effectiveness		Band-e-Amir: Effective management; Wakhan: Effective management over part of this PA, partially effective in the other part; Shah Foladi: No effective management (no management plan drafted); Kol-e-Hashmat Khan: Partially effective management	
Species Richness within PA Network (for particular species of interest)		In Wakhan National Park (2014), >50% of snow leopard population in Afghanistan, 100% of argali population in Afghanistan, >10% of Himalayan ibex population in Afghanistan, the population of brown bear (20-30 individuals).	

3.1.4. Indicators used in this assessment

☒ *National Terrestrial PA Coverage (%)*

☒ *PA Coverage of Key Biodiversity Area (%)*

☒ *PA Coverage of Each Terrestrial Ecoregion (%)*

☒ *PA Connectivity with a Given Ecoregion (%)*

☒ *PA Management Effectiveness*

☒ *Species Richness within PA Network (for particular species of interest)*

The other two indicators relevant to this target, namely the National Marine PA Coverage (%) and the protected area Coverage of Each Marine Ecoregion (%), are not relevant to Afghanistan since the country is landlocked with no access to the sea.

3.1.5. Please describe any other tools or means used for assessing progress

Relevant websites, weblinks, and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

3.1.6. Level of confidence of the above assessment

☐ *Based on comprehensive evidence*

☒ *Based on partial evidence*

☐ *Based on limited evidence*

3.1.7. Adequacy of monitoring information to support assessment

☐ *Monitoring related to this target is adequate*

☒ *Monitoring related to this target is partial (e.g. only covering part of the area or issue)*

☐ *No monitoring system in place*

☐ *Monitoring is not needed*

3.1.8. Please describe how the target is monitored and indicate whether there is a monitoring system in place

Afghanistan is yet to revise the NBSAP 2014-2017; NEPA is committed to developing SMART-ER targets with specified indicators. The revised NBSAP will also articulate a monitoring system for the targets; currently, there is no monitoring system for any of the NBSAP targets.

3.1.9. Relevant websites, weblinks, and files

(Please use this field to indicate any relevant websites, web links or documents where additional information related to the monitoring system can be found).

3.2. Progress Towards Afghanistan Preliminary Target 2

Populations of species of selected taxonomic groups restored, maintained or decline reduced; status of threatened species improved.

3.2.1. Category of Progress Towards the Implementation of the Selected Target:

☐ *On track to exceed the target*

☐ *On track to achieve the target*

☒ *Progress towards the target but at an insufficient rate*

☐ *No significant change*

☐ *Moving away from the target*

☐ *Unknown*

3.2.2. The Date the Assessment Was Done:

Not Available

3.2.3. Additional Information

The assessment includes Afghanistan's Protected Wildlife Species List and review of annual progress reports by NEPA and WCS. In 2014, NEPA has finalized the country's protected species of fauna and flora that includes eight species of plants, one insect (Pamir butterfly, Parnassius autocrator), four reptiles (including Afghan Tortoise, Testudo horsfieldii), one amphibian (Paghman Salamander, Afghanodom mustersi), 57 birds, 76 mammals, and two species of fish. This booklet not only provides information on protected species of Afghanistan that helps to raise awareness among Afghan public but also functions as a reference for different government agencies, including the Police and Customs department to ensure the conservation and protection of these species.

Afghanistan has a highly endemic avifauna, which has been lost and threatened due to lack of conservation activities. The Al-Gharafa Foundation has established a Falcon place, a breeding centre for birds and a lab for diagnosis and treatment of birds in Farah (a western province of Afghanistan) where Hubara (Chlamydotis undulate), Urial (Ovis orientalis) and Falcons (Falco) are conserved. This is in addition to the Balkh Captive Breeding and Conservation Centre that was inaugurated in 2012. Currently, in addition to Hubara and falcons, other animals and birds are kept for propagation, including deer, gooseberries, rabbits, ostriches, Indian goats or urial, crowned chickens, white Quebecois, peacocks, ducks, geese, pigeon, lunar, taro, and quail. Since 2014, hundreds of birds were treated, conserved and released to the nature of Farah province. In addition, this intervention has been a great platform for the exchange of ideas, knowledge, and expertise in captive breeding.

Assessments by Wildlife Conservation Society (WCS) indicate that most of the conservation activities in the protected areas have been effective. For instance, in Wakhan National Park the snow leopard (Panthera uncia) (VU) and Urial (Ovis orientalis) (VU) population have remained stable since 2010. In addition, the Argali (Ovis ammon) (NT) populations have been stable and 100 per cent of the Afghan population is protected in this park.

3.2.4. Indicators Used in this Assessment

☒ *Threatened Species Richness within Effective Protected Areas*

3.2.5. Please Describe Any Other Tools or Means Used for Assessing Progress

- *https://afghanistan.wcs.org/Publications/News/articleType/ArticleView/articleId/1348/WCS-Snow-Leopard-Project.aspx*
- *https://afghanistan.wcs.org/Wildlife/Marco-Polo-Sheep.aspx*
- *Relevant websites, weblinks, and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).*

3.2.6. Level of Confidence of the Above Assessment

☐ *Based on comprehensive evidence*

☒ *Based on partial evidence*

☐ *Based on limited evidence*

3.2.7. Adequacy of Monitoring Information to Support Assessment

☐ *Monitoring related to this target is adequate*

☒ *Monitoring related to this target is partial (e.g. only covering part of the area or issue)*

☐ *No monitoring system in place*

☐ *Monitoring is not needed*

3.2.8. Please Describe How the Target is Monitored and Indicate Whether There is a Monitoring System in Place

Afghanistan is yet to revise the NBSAP 2014-2017; NEPA is committed to developing SMART-ER targets with specified indicators. The revised NBSAP will also articulate a monitoring system for the targets; currently, there is no monitoring system for any of the NBSAP targets.

3.3. Progress Towards Afghanistan Preliminary Target 3

Genetic diversity of crops, livestock and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained.

3.3.1. Category of Progress Towards the Implementation of the Selected Target:

☐ *On track to exceed the target*

☐ *On track to achieve the target*

☐ *Progress towards the target but at an insufficient rate*

☐ *No significant change*

☐ *Moving away from the target*

☒ *Unknown*

3.3.2. The Date the Assessment was Done:

Not Available

3.3.3. Additional Information

Due to the absence of data, it was not possible to determine the extent to which Afghanistan advanced in achieving this target.

3.3.4. Indicators Used in this Assessment

Indicator(s)used in this assessment

☒ *No indicator used*

3.3.5. Please Describe Any Other Tools or Means Used for Assessing Progress

Relevant websites, weblinks, and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

3.3.6. Level of Confidence of the Above Assessment

☐ *Based on comprehensive evidence*

☐ *Based on partial evidence*

☐ *Based on limited evidence*

3.3.7. Adequacy of Monitoring Information to Support Assessment

☐ *Monitoring related to this target is adequate*

☐ *Monitoring related to this target is partial (e.g. only covering part of the area or issue)*

☐ *No monitoring system in place*

☐ *Monitoring is not needed*

3.3.8. Please Describe How the Target is Monitored and Indicate Whether There is a Monitoring System in Place

Afghanistan is yet to revise the NBSAP 2014-2017; NEPA is committed to developing SMART-ER targets with specified indicators. The revised NBSAP will also articulate a monitoring system for the targets; currently, there is no monitoring system for any of the NBSAP targets.

3.4. Progress Towards Afghanistan Preliminary Target 4

Biodiversity-based products derived from sources that are sustainably managed and production areas managed consistent with the conservation of biodiversity.

3.4.1. Category of Progress Towards the Implementation of the Selected Target:

☐ *On track to exceed the target*

☐ *On track to achieve the target*

☐ *Progress towards the target but at an insufficient rate*

☐ *No significant change*

☐ *Moving away from the target*

☒ *Unknown*

3.4.2. The Date the Assessment was Done:

Not Available

3.4.3. Additional Information

Due to the absence of data and monitoring system, it was not possible to determine the country's progress towards achieving this target.

3.4.4. Indicators Used in this Assessment

☒ *No indicator used*

3.4.5. Please Describe Any Other Tools or Means Used for Assessing Progress

Relevant websites, weblinks, and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

3.4.6. Level of Confidence of the Above Assessment

☐ *Based on comprehensive evidence*

☐ *Based on partial evidence*

☐ *Based on limited evidence*

3.4.7. Adequacy of Monitoring Information to Support Assessment

☐ *Monitoring related to this target is adequate*

☐ *Monitoring related to this target is partial (e.g. only covering part of the area or issue)*

☐ *No monitoring system in place*

☐ *Monitoring is not needed*

3.4.8. Please Describe How the Target is Monitored and Indicate Whether There is a Monitoring System in Place

Afghanistan is yet to revise the NBSAP 2014-2017; NEPA is committed to developing SMART-ER targets with specified indicators. The revised NBSAP will also articulate a monitoring system for the targets; currently, there is no monitoring system for any of the NBSAP targets.

3.5. Progress Towards Afghanistan Preliminary Target 5

Rate of loss and degradation of natural habitats decreased.

3.5.1. Category of Progress Towards the Implementation of the Selected Target:

☐ *On track to exceed the target*

☐ *On track to achieve the target*

☒ *Progress towards the target but at an insufficient rate*

☐ *No significant change*

☐ *Moving away from the target*

☐ *Unknown*

3.5.2. The Date the Assessment was Done:

Not Applicable

3.5.3. Additional Information

Afghanistan has four large geographical areas (biomes) with each having distinct climate and ecological features and plant and animal communities. The Afghanistan National Protected Area system plan divides each of these biomes into several ecoregions that include different communities of plants and animals. Refer to section VIII: Afghanistan Biodiversity profile for a complete list of these biomes. There are 17 ecoregions in Afghanistan. However, the country's knowledge extends only over a few of them and only on those parts of the regions that extend over protected areas.

Only three of these ecoregions have a significant portion of their Afghan extent in protected areas. In Afghanistan, ecoregion "Karakoram-West Tibetan Plateau alpine steppe" extends for 80% in Wakhan National Park (in the North-eastern part of the country). Since 2007, there have not been substantial degradation or loss of habitats within this ecoregion in the park. Similarly, the ecoregion "Pamir alpine desert and tundra" extends for ca. 100% in Wakhan National Park, with no substantial degradation or loss of habitats within this ecoregion too.

Finally, ecoregion "Rock and Ice" extends for 80% in Wakhan National Park. There has been a substantial, steady and irremediable reduction of ice cover over the years as a result of climate change (glacier retreat). The level of ice loss is disconcerting. Glaciers retreat at an average rate of 7-10m/year. Due to challenges persistent and relevant to Afghanistan, the government doesn't know the level of global deterioration and/or loss in the 14 other ecoregions of the country.

3.5.4. Indicators Used in this Assessment

☒ *No indicator used*

3.5.5. Please Describe Any Other Tools or Means Used for Assessing Progress

Relevant websites, weblinks, and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

3.5.6. Level of Confidence of the Above Assessment

☐ *Based on comprehensive evidence*

☐ *Based on partial evidence*

☒ *Based on limited evidence*

3.5.7. Adequacy of Monitoring Information to Support Assessment

☐ *Monitoring related to this target is adequate*

☒ *Monitoring related to this target is partial (e.g. only covering part of the area or issue)*

☐ *No monitoring system in place*

☐ *Monitoring is not needed*

3.5.8. Please Describe How The Target is Monitored and Indicate Whether There is a Monitoring System in Place

Afghanistan is yet to revise the NBSAP 2014-2017; NEPA is committed to developing SMART-ER targets with specified indicators. The revised NBSAP will also articulate a monitoring system for the targets; currently, there is no monitoring system for any of the NBSAP targets.

3.6. Progress Towards Afghanistan Preliminary Target 6

Pathways for major potential alien species controlled, and management plans for major alien species that threaten ecosystems, habitats or species in place.

3.6.1. Category of Progress Towards the Implementation of the Selected Target:

☐ *On track to exceed the target*

☐ *On track to achieve the target*

☐ *Progress towards the target but at an insufficient rate*

☐ *No significant change*

☐ *Moving away from the target*

☒ *Unknown*

3.6.2. The Date the Assessment was Done:

NA

3.6.3. Additional Information

Afghanistan NBSAP includes the target, however, there is not much information and data on this target; the NBSAP also fails to provide a rationale for selecting this target for the country. In addition, in MAIL and NEPA's report, there is not much reference on invasive alien species. So, there is not much to report about this target. Afghanistan's NBSAP ensures to develop and implement mechanisms for preventing damage to natural ecosystems from invasive alien species.

3.6.4. Indicators Used in this Assessment

☒ *No indicator used*

3.6.5. Please Describe Any Other Tools or Means Used for Assessing Progress

Relevant websites, weblinks, and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

3.6.6. Level of Confidence of the Above Assessment

☐ *Based on comprehensive evidence*

☐ *Based on partial evidence*

☐ *Based on limited evidence*

3.6.7. Adequacy of Monitoring Information to Support Assessment

☐ *Monitoring related to this target is adequate*

☐ *Monitoring related to this target is partial (e.g. only covering part of the area or issue)*

☐ *No monitoring system in place*

☐ *Monitoring is not needed*

3.6.8. Please Describe How The Target is Monitored and Indicate Whether There is a Monitoring System in Place

Afghanistan is yet to revise the NBSAP 2014-2017; NEPA is committed to developing SMART-ER targets with specified indicators. The revised NBSAP will also articulate a monitoring system for the targets; currently, there is no monitoring system for any of the NBSAP targets.

3.7. Progress Towards Afghanistan Preliminary Target 7

The resilience of the components of biodiversity to adapt to climate change maintained and enhanced; pollution and its impacts on biodiversity reduced

3.7.1. Category of Progress Towards the Implementation of the Selected Target:

☐ *On track to exceed the target*

☐ *On track to achieve the target*

☒ *Progress towards the target but at an insufficient rate*

☐ *No significant change*

☐ *Moving away from the target*

☐ *Unknown*

3.7.2. The Date the Assessment was Done:

NA

3.7.3. Additional Information

There is a growing understanding of the importance of integration of climate-sensitive natural resource management, conservation agriculture, and sustainable environmental management in Afghanistan (MAIL/NRM Strategy 2017-2022). Afghanistan does recognize that ecosystem-based adaptation that integrates the use of biodiversity and ecosystem services into climate change adaptation can provide a cost-effective approach that both maintains biodiversity and reduce negative impacts from climate change. (Second Communication to UNFCCC, 2017).

The Afghan government has strengthened coordination around climate change as an effort to manage natural resources supporting poverty reduction, minimizing land disputes, and reducing vulnerability to natural disasters. NEPA has developed national environment mainstreaming guidelines and established 18 Provincial Environment Advisory Councils (PEACs). The main role of the PEACs is to integrate environmental issues into provincial planning processes; as part of the PEACs, 21 Environmental Subcommittees (ESC) have been established at the district and village level aiming to raise local awareness about environmental issues and climate change.

Back in 2009 NEPA with support from UNEP implemented the National Adaptation Programs of Action for Climate Change and National Capacity Needs Self-Assessment for Global Environmental Management. The program identified the country's priority capacity needs and introduced further climate change programming.

This is an ecosystem-based adaptation that is applicable to Afghanistan reduction of habitat loss and fragmentation, habitat conservation through establishing protected areas, afforestation to stabilize slopes, enhance soil integrity and regulate water, promotion of agroforestry systems using diverse crops and plant species and sustainable management and restoration of watersheds. In different sections of this report, Afghanistan’s actions and measures regarding these different components are reported. For instance, for more information regarding some of the programs on climate change adaptation, refer to section II “NBSAP Implementation”.

3.7.4. Indicators Used in this Assessment

☒ *No indicator used*

3.7.5. Please Describe Any Other Tools or Means Used for Assessing Progress

Relevant websites, weblinks, and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

3.7.6. Level of Confidence of the Above Assessment

☐ *Based on comprehensive evidence*

☐ *Based on partial evidence*

☒ *Based on limited evidence*

3.7.7. Adequacy of Monitoring Information to Support Assessment

☐ *Monitoring related to this target is adequate*

☐ *Monitoring related to this target is partial (e.g. only covering part of the area or issue)*

☒ *No monitoring system in place*

☐ *Monitoring is not needed*

3.7.8. Please Describe How The Target is Monitored and Indicate Whether There is a Monitoring System in Place

Afghanistan is yet to revise the NBSAP 2014-2017; NEPA is committed to developing SMART-ER targets with specified indicators. The revised NBSAP will also articulate a monitoring system for the targets; currently, there is no monitoring system for any of the NBSAP targets.

3.8. Progress Towards Afghanistan Preliminary Target 8

The capacity of ecosystems to deliver goods and services maintained; biological resources that support sustainable livelihoods, local food security and health care, especially of poor people, maintained.

3.8.1. Category of Progress Towards the Implementation of the Selected Target:

☐ *On track to exceed the target*

☐ *On track to achieve the target*

☒ *Progress towards the target but at an insufficient rate*

☐ *No significant change*

☐ *Moving away from the target*

☐ *Unknown*

3.8.2. The Date the Assessment was Done:

Not Available

3.8.3. Additional Information

Due to the absence of data and monitoring system, it was not possible to determine the country's progress towards achieving this target.

3.8.4. Indicators Used in this Assessment

☒ *No indicator used*

3.8.5. Please Describe Any Other Tools or Means Used for Assessing Progress

Refer to Progress towards Afghanistan's preliminary target 1, 2 and 7; and two case studies in this section.

3.8.6. Level of Confidence of the Above Assessment

☐ *Based on comprehensive evidence*

☐ *Based on partial evidence*

☒ *Based on limited evidence*

3.8.7. Adequacy of Monitoring Information to Support Assessment

☐ *Monitoring related to this target is adequate*

☐ *Monitoring related to this target is partial (e.g. only covering part of the area or issue)*

☒ *No monitoring system in place*

☐ *Monitoring is not needed*

3.8.8. Please Describe How The Target is Monitored and Indicate Whether There is a Monitoring System In Place

Afghanistan is yet to revise the NBSAP 2014-2017; NEPA is committed to developing SMART-ER targets with specified indicators. The revised NBSAP will also articulate a monitoring system for the targets; currently, there is no monitoring system for any of the NBSAP targets.

3.9. Progress Towards Afghanistan Preliminary Target 9

Traditional knowledge, innovations, and practices protected, and rights of indigenous and local communities over their traditional knowledge, innovations, and practices, including their rights to benefits sharing, protected.

Afghanistan has had sound progress in establishing legal and policy frameworks that recognize and protect traditional knowledge and practices in natural resources management. In fact, recognition and establishment of a decentralized and farmer-centric system of management in principle is a great step towards the management of natural resources, protection of traditional knowledge and conservation of biodiversity. For instance, the country's Water Law (2009) establishes the practice of Integrated Water Resources Management (IWRM) and it recognizes that "water resources may be used … with due consideration for praiseworthy customs and traditions of the [Afghan] people to meet the needs for drinking water, …"; relevantly the government has established community-based organizations for local water management in Harirud Murghab, Kabul, Northern and Panj-Amu river basins –the four (out of five) key river basins of the country.

Likewise, the country's Environmental Law (2007) recognizes the importance of traditions and local practices in the management of natural resources. Paragraph 1 of Article 7 of the law under the Rights and Duties of Person states: "legally use natural resources in accordance with customary traditions and practices which encourage community-based natural resource management". Afghanistan is predominantly a rural society; about 80 per cent of the population relies on natural resources for livelihoods directly or indirectly. Recognizing the importance of a decentralized system of natural resources management is critical for preserving local knowledge and practices. The country's Natural Resources Management Strategy (2017-2021) acknowledges community-based natural resources management as a crucial principle, in which participation of the local and indigenous people through ownership is considered key for better protection and conservation. The strategy envisions the revival and conservation of ecosystems, related services, and relevant traditional knowledge as critical for the survival of local communities. The strategy ensures to consider local knowledge and know-how for adapting to climate change and combating desertification. During the implementation of the strategy, 11 Forages Seed Production and Propagation Centres will be set up for direct seeding in areas where vegetation covers have been entirely lost or have remained challenging to be restored.

One of the key strategic objectives of Afghanistan's NRM strategy (2017-2021) is community-based forest management (conservation, restoration, afforestation, development, sustainable harvesting and value addition) for resilient, climate adapted, sustainable economic and social development.

In addition, Afghanistan has established appropriate and important local governance structures that help with the realization of the rights of the local communities in sustainable use and conservation of natural resources. Those engaged in supporting community-based natural resources management include local Protection Committees, Natural Resources Management Committees (NRMCs), Provincial Environment Advisory Councils (PEACs), Village Environment Committees under the Community Development Councils (CDCs) at the village levels, Forest Management Committees (FMCs) and Rangeland Associations. CDCs, for instance, have a significant role in formulating guidelines for the use of natural resources at the local level. In Afghanistan, subsistence farmers and nomadic Kuchis use common rangelands where these local governance structures play a key role in the management and conflict resolution at the local level.

Furthermore, Afghanistan has established community bodies who take an active part in the conservation interventions in key protected areas. The Band-e-Amir Protected Area Committee (BAPAC) and Wakhan-Pamir Association (WPA) are registered community organizations that are collaboratively engaged in the management of the two key protected areas in Afghanistan. There are 17 villages within the boundary of Band-e-Amir National Park organized in 14 communities and nine CDCs. All major government management decisions are bound to consultation with these local communities.

3.9.1. Category of Progress Towards the Implementation of the Selected Target:

☐ *On track to exceed the target*

☐ *On track to achieve the target*

☒ *Progress towards the target but at an insufficient rate*

☐ *No significant change*

☐ *Moving away from the target*

☐ *Unknown*

3.9.2. The Date the Assessment was Done:

NA

3.9.3. Additional Information

NA

3.9.4. Indicators Used in this Assessment

☒ *No indicator used*

3.9.5. Please Describe Any Other Tools or Means Used for Assessing Progress

NA

3.9.6. Level of Confidence of the Above Assessment

☐ *Based on comprehensive evidence*

☐ *Based on partial evidence*

☒ *Based on limited evidence*

3.9.7. Adequacy of Monitoring Information to Support Assessment

☐ *Monitoring related to this target is adequate*

☐ *Monitoring related to this target is partial (e.g. only covering part of the area or issue)*

☒ *No monitoring system in place*

☐ *Monitoring is not needed*

3.9.8. Please Describe How The Target is Monitored and Indicate Whether There is a Monitoring System in Place

No monitoring system is in place for the target. Afghanistan has to revise its NBSAP 2014-2017; NEPA is committed to developing SMART-ER targets with specified indicators. The revised NBSAP will also articulate a monitoring system for the revised NBSAP implementation and its targets.

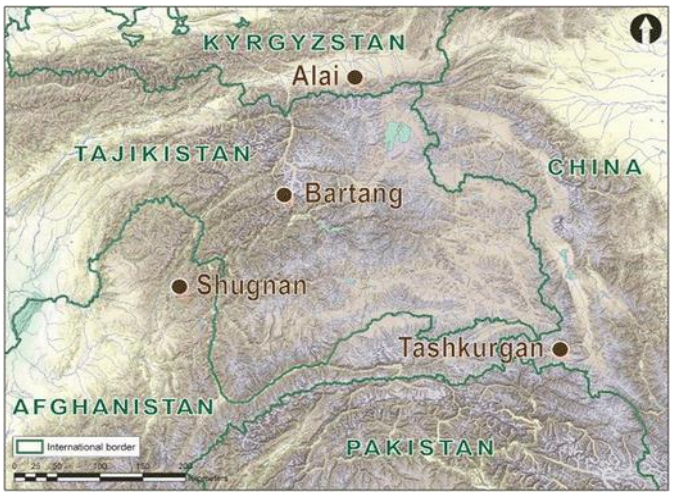
3.9.9. Relevant Websites, Weblinks, and Files

- *Afghanistan Water Law (2009). http://extwprlegs1.fao.org/docs/pdf/afg172372.pdf*
- *The Impacts of Water Sector Reforms on Agricultural Productivity in Afghanistan. July 2017. Afghanistan Research and Evaluation Unit (AREU). https://areu.org.af/wp-content/uploads/2017/07/1719E-The-Impacts-of-Water-Sector-Reforms-on-Agricultural-Productivity-in-Afghanistan1.pdf*
- *Afghanistan's Environmental Law (2007). https://www.unodc.org/res/cld/document/afg/2007/environment_law_html/Environment_Law.pdf*
- *Afghanistan's Natural Resources Management (NRM) Strategy (2017-2021). Ministry of Agriculture, Irrigation, and Livestock (MAIL).*
- *The Islamic Republic of Afghanistan. Band-e-Amir National Park Management Plan: 2016-2020. March 2016.*
- *Anticipating Climatic Variability: The Potential of Ecological Calendars. Karim-Aly S. Kassam and others. February 2018. https://link.springer.com/article/10.1007%2Fs10745-018-9970-5*
- *Ecological Calendars and Climate Adaptation in the Pamirs (ECCAP) https://www.belmontforum.org/wp-content/uploads/2018/05/ECCAP.pdf*

The following case studies are relevant and indirectly related to the Aichi Biodiversity Target 18 (traditional knowledge respected) and Afghanistan's preliminary target 9 (traditional knowledge, innovations, and practices protected, and the rights of indigenous and local communities over their traditional knowledge, innovations, and practices, including their rights to benefits, sharing protected).

Case Study 1: Climate Change and Revitalizing Ecological Calendars in the Pamir Mountains of Afghanistan and Broader Central Asia

While recognizing the importance of indigenous systems for the resilience of the local population, Afghanistan is part of a trans-boundary research program that encompasses not only Afghanistan but also China, Kyrgyzstan, and Tajikistan where the Pamir Mountains are located. The Mountains are considered a crossroads of time, culture and ecosystems. Called Ecological Calendars and Climate Adaptation in the Pamirs (ECCAP), the project aims to use scientific data and indigenous knowledge to revitalize Pamir's traditional calendars as a source of anticipatory capacity for climate change. The project tends to recalibrate time in the region which will allow local communities and indigenous people to better plan their food production and adapt to climate changes. In addition, the development of ecological calendars should be viewed as an opportunity to revitalize the fundamental relationship between people and their habitat, between diverse knowledge systems, and between indigenous rural communities and urban societies; revitalizing and strengthening such relationships is key for biodiversity protection.



Ecological calendars are knowledge systems that are comprised of seasonal indicators and are used to measure and give meaning to time based on close observation of one's habitat. Traditional ecological calendars were used by indigenous people, including those living in the Pamir mountains of Afghanistan and Tajikistan. Indigenous Kyrghis people of Pamir traditionally used ecological calendars to coordinate seasonal activities. These calendars were used for centuries. Such a traditional form of tracking time allowed the communities to track seasonal and environmental changes.

The indicators within an ecological calendar respond to climate and other seasonal processes that directly impact livelihood activities. The calendars were used to help with farming, herding, and hunting activities. Also known as calendars of the human body, these ecological calendars functioned as a knowledge mechanism showing complex connectivity between human and agriculture activities and ecological processes.

Climate change impacts the traditional systems important for biodiversity and sustainable management of natural resources. Warmer temperatures and melting glaciers have damaged indigenous and local practices, such as the use of these ecological calendars by indigenous Kirghiz people in the north-eastern part of Afghanistan, where part of the Pamir Mountains is located. Indigenous and rural communities that contributed least to the causes of anthropogenic climate change are now suffering its harshest impacts.

The region has been seeing increasingly rapid snow and glacial melt, as well as rising river levels. In addition, the character and intensity of precipitation have been changing. What once fell as snow now falls as rain, and rather than being spread out over 30 days, the rain may arrive all at once. Major landslides and lake bursts have happened at high elevations. Below, agricultural land is being flooded, and changing temperatures are affecting the fruit harvests.

An array of environmental shifts in the region, such as unusual weather events, untimely glacial melts, lake bursts, and changes in animal and bird migration patterns, have thrown the calendars so far off-kilter that most villagers no longer use them, and they struggle to reliably predict cues for planning agricultural and cultural activities.

In the Pamir Mountains, which span the border between Afghanistan and Tajikistan, small-scale farmers and herders are key food producers. Traditionally, they have used calendars based on historical climate cues, such as the first budding of a plant or the last day of snow cover, to anticipate weather patterns and coordinate planting and harvesting with seasonal cycles. These ecological calendars vary from valley to valley because they are well-tuned to small-scale elevation and geographic differences. As a result of colonialism and conflict throughout the twentieth century, ecological calendars fell out of use.

The Pamir villagers of Afghanistan recognize that calendars of the human body enabled their ancestors to synchronize their livelihood activities with seasonal changes. However, under the command economy of the

Soviet Union, these ecological calendars were suppressed and fell out of use. With the fall of the Soviet Union and increasing anthropogenic climate change, villagers expressed a strong desire to revitalize and recalibrate their ecological calendars as a source of anticipatory capacity for food security.

Revitalization and development of new ecological calendars is a promising innovative approach for climate adaptation anywhere in the world and provides meaningful climate services. ECCAP has a core policy objective to secure food and livelihood systems of the local communities and mountain societies. The participation of the local communities in the implementation of the research project facilitates specific outcomes:

1. *Transfer of knowledge among communities in different bioclimatic zones through workshops;*
2. *Hosting an international conference focusing on ecological calendars to improve food security and resilience; and,*
3. *Development of school curricula for intergenerational transfer of knowledge and continued adaptation of calendars;*

Case Study 2: Conservation Interventions and Kyrghyz Indigenous Population of Wakhan Valley

Afghanistan recognizes the important role of local communities and indigenous people in the conservation of biodiversity and protected areas. At policy levels, the country's NBSAP, the Environmental Law, and the management plans of the protected areas clearly reserve the rights of the local communities to participate and take an active role in the management and implementation of the conservation interventions. Notable community intervention is the participation of the Wakhi and Kyrghyz population in the conservation of Snow Leopards in Afghanistan.

There are around 10,574 people (1,331 households) living in the Wakhan/Pamir area of Badakhshan province in north-eastern Afghanistan. Of these, the Wakhi tribe encompasses 206 households and 1,130 individuals while the Wakhi population reaches 1,125 households and 9,444 people which includes farmers and herders inhabiting the main Wakhan strip between Ishkashem and Qala Panja and thereon up to the Wakhan Valley as far as Sarhad-e- Broghil. These herding families use the western valleys of the Big Pamir and the Little Pamir. The number also includes between 210 and 240 (depending on the source) households of the yurt- (domed felt tent) dwelling Kyrghyz herders, or an estimated total population of about 1,100 to 1,300. Of these, possibly as many as 140 households live in the north-eastern valleys of the Big Pamir, and approximately 100 households live in the Little Pamir.

The local population in Wakhan Valley (Afghanistan's second National Park) including Pamir areas are organized under the Wakhan-Pamir Association (WPA), a registered community organization. The WPA is involved in a co-management structure for the Wakhan protected areas. The association is registered with the Ministry of Justice as a legal entity. Members sitting on the Association Board of Directors are elected from village Community Development Councils (CDCs). The purposes of the WPA are to facilitate conservation and development endeavours, represent and secure community interests and work with other stakeholders for improving socio-economic conditions of communities through the sustainable use of natural resources.

The WPA helps to identify, plan, implement, and monitor alternative livelihood activities. The WPA is responsible for knowledge-sharing that improves the understanding of Snow Leopards to inform a sustainable landscape approach to conservation.

Community-level considerations were obtained through Wildlife Conservation Society's (WCS) deep and long-standing engagement with local communities and other civil society organizations in Wakhan District. Through the GEF project "Establishing integrated models for protected areas and their co-management in Afghanistan" and other work, WCS has established relationships with local communities and with the WPA through which training and capacity-building, as well as land-use planning and other activities, have been facilitated. This long-term experience and engagement with local communities have informed the project design.

Further stakeholder engagement will be ensured through consultations with the WPA, CDCs, men and women shuras[1] and other community organizations. Consultations will be undertaken in such a way that all vulnerable groupings (i.e. women; youth; elderly; people with disabilities; other marginalized groups) are engaged from the outset of project implementation. These engagements have supported planning, prioritization, design, and implementation of project activities, ensuring that they are culturally acceptable and tailored to the environmental and socio-economic context within Wakhan communities.

This approach of including community-based organizations – such as CDCs and women's shuras – in the design and implementation of project activities is currently considered a best practice in Afghanistan. By including communities and related organizations in the project, implementation ensures that project activities and actions are responsive to the needs and priorities of all marginalized and vulnerable groups. Engagement of local communities and indigenous people in such conservation interventions supports Afghanistan to facilitate not only conservation of species (in this case threatened Snow Leopards) but they also ensure preserving traditional knowledge and practices in the conservation of the protected area.

[1] *Shuras* are defined as a small consultative meeting of community members.

Case Study 3: First Record of Breeding Boreal Owl (Aegolius Funereus) in Bamyan Plateau

The full extent of the Boreal Owl (Aegolius funereus) range in Asia has not been documented, but it seems that south of the Asian boreal forests the species survives in isolated populations, as supported by the handful of documented breeding records in India, Pakistan, Kyrgyzstan, and Tajikistan. However, because the species is nocturnal and commonly found at relatively high elevation in remote habitats where fewer scientific surveys are conducted, it is possible that the species might be more widespread in the central Asian highlands than reflected in the current literature.

On 24 June 2018 in the morning (10:20) during an ornithological survey in Chapchal canyon (350, 20' N, 670,14'E) in the northeast of Bamyan plateau, Bamyan Province, Central Afghanistan, a small whitish –spotted dark chocolate- brown owl was observed flying from rocks to shrubs and producing alarm keek, keek, keek, calls.

The bird was not shy and was observed and photographed for more than 15 minutes. It had an overall dark brown colouration and the primaries and secondaries had whitish round spots. The tail was dark brown with three visible bars of whitish dots. Underparts were whitish with brown streaks. The head and neck were dark browns with a rather square facial disk surrounded by dark brown down feathers and the iris was yellow. It was identified as a juvenile Boreal Owl.

The Bamyan plateau is a 54000 km^2 mountainous landscape in the central Hindu Kush range of Afghanistan. The terrain is mostly arid and very remote with precipitous peaks rising to 4200 interspersed with gently rounded, vegetated mountaintops up to 3200 m in elevation. The boreal owl was found at an altitude of 2963m (GPS handheld unit) in the bottom of a deep canyon with cliffs more than 150 m high. The vegetation of the canyon was composed of grasses and canyon bottom shrub communities including Lonicera bracteolaris, Rosa beggeriana, Ephedra major and 1-3 m tall Ribes villosum bushes on which the bird was occasionally seen roosting. Scattered Juniperus excelsa trees grew on rock walls. Although the habitat used by the observed owl in Bamyan is remarkably different from the species, typical habitat normally characterized by rather extensive boreal, temperate or subalpine forest (mostly coniferous) of aged trees, its habitat in Bamyan seems relatively similar to subalpine juniper shrubs and stunted tree' habitat described for the nearest known record located 700 km to the east, in northern Pakistan, where a single calling male was recorded on February 1986. The elevation is allegedly the highest so far reported for the species in Asia 2008.

3.10. Progress Towards Afghanistan Preliminary Target 10

All-access to genetic resources in line with the Convention on Biological Diversity and its relevant provisions and benefits arising from the commercial and other utilization of genetic resources shared in a fair and equitable way with the countries providing such resources in line with the Convention on Biological Diversity and its relevant provisions.

3.10.1. Category of Progress Towards the Implementation of the Selected Target:

☐ *On track to exceed the target*

☐ *On track to achieve the target*

☐ *Progress towards the target but at an insufficient rate*

☐ *No significant change*

☐ *Moving away from the target*

☒ *Unknown*

3.10.2. The Date the Assessment was Done:

NA

3.10.3. Additional Information

(Please provide information on the evidence used in the assessment of this target, drawing upon relevant information provided in section II, including obstacles in undertaking the assessment).

3.10.4. Indicators Used in this Assessment

☒ *No indicator used*

3.10.5. Please Describe Any Other Tools or Means Used for Assessing Progress

Relevant websites, weblinks, and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

3.10.6. Level of Confidence of the Above Assessment

☐ *Based on comprehensive evidence*

☐ *Based on partial evidence*

☐ *Based on limited evidence*

3.10.7. Adequacy of Monitoring Information to Support Assessment

☐ *Monitoring related to this target is adequate*

☐ *Monitoring related to this target is partial (e.g. only covering part of the area or issue)*

☐ *No monitoring system in place*

☐ *Monitoring is not needed*

3.10.8. Please Describe How the Target is Monitored and Indicate Whether There is a Monitoring System in Place

Afghanistan is yet to revise the NBSAP 2014-2017; NEPA is committed to developing SMART-ER targets with specified indicators. The revised NBSAP will also articulate a monitoring system for the targets; currently, there is no monitoring system for any of the NBSAP targets.

3.11. Progress Towards Afghanistan Preliminary Target 10

New and additional financial resources and technology transferred to Afghanistan, to allow for the effective implementation of commitments under the Convention.

3.11.1. Category of Progress Towards the Implementation of the Selected Target:

☐ *On track to exceed the target*

☐ *On track to achieve the target*

☒ *Progress towards the target but at an insufficient rate*

☐ *No significant change*

☐ *Moving away from the target*

☐ *Unknown*

3.11.2. The Date the Assessment was Done:

NA

3.11.3. Additional Information

To attract new and additional finances, Afghanistan has developed and enacted a number of legislations, policies, and strategies. The country has established a sound legal framework and enhanced its institutional capacities. For example, the country has developed and adopted its Climate Change Strategy and Action Plan (CCSAP), Nationally Appropriate Mitigation Actions (NAMA), National Climate Change Committee (NCCC) that lead and coordinate the mainstreaming of climate change in Afghanistan and provide policy guidance and advice, and build the country's scientific, technical, informational, and human capacity with respect to climate change for the sustainable implementation of the UNFCCC.

In 2002 Afghanistan ratified UNFCCC and in 2013 ratified the Kyoto Protocol; as signatory Afghanistan has become eligible to take positions on various issues concerning climate change and now has access to opportunities for obtaining global support on various climate change issues. The country now has the opportunity to participate in the Clean Development Mechanism (CDM) – enabling Afghanistan to receive technical and financial support for its climate change programs from developed nations. CDM helps Afghanistan to control and reduce Greenhouse Gas Emissions (GHG) but it also helps the country with its sustainable development agenda. CDM helps Afghanistan to have access to financial support and the opportunity to scale up to new and state-of-the-art technologies, which is a strong incentive for Afghanistan as the net beneficiary from climate change adaptation and mitigation. Afghanistan has the least GHG emissions both in terms of per capita and overall gross emissions.

All of these actions are taken to prepare the country to access to financial and technical support from Green Climate Fund (GCF) and Global Environment Facility (GEF). Since 2003, Afghanistan has been able to attract dozens of projects on climate change adaptation and mitigation, biodiversity conservation, expansion of protected areas, resilience, sustainable agriculture, and natural resources management.

The Afghan government still has limited capacities – in terms of both technical and financial capacities – to effectively engage in biodiversity conservation interventions. Therefore, the government has largely relied on donor-funded programs and projects for biodiversity conservation. These projects and programs have mostly been effective in the preservation and conservation of protected areas and sustainable natural resources management. In addition, these interventions have helped with the transfer of knowledge and technology to the country and enhanced the knowledge base of the country on the status of its biodiversity.

Afghan government recognizes that technology transfer is a critical aspect to build its adaptive capacity to climate change. Afghanistan has successfully accessed Climate Technology Centre and Network (CTCN) that provided the country with technical assistance in identifying capacity and technological needs of the country in agriculture, energy and water sectors. NEPA is closely coordinating with its development partners including leading UN agencies to find appropriate ways to facilitate the development and transfer of such technologies to meet the local needs and requirements of the country for climate change adaptation and mitigation.

NEPA with the support from its partners developed the Intended Nationally Determined Contribution (INDC) in December 2015 in which technological capacity and financial needs of the country were identified. The report

prepared to fulfil the UNFCCC requirement, which estimated that the country needs $10.79 billion per year for climate change adaptation and $662 million per year for mitigating GHG emissions. In total, conservation-related projects have received approximately USD70,000,000 (70 million) in the past 14 years with more than USD20,000,000 (20 million) in the pipeline. There has also been good progress on the development of a suitable institutional framework that supports the effective implementation of projects.

It is estimated that Afghanistan needs $10.79 billion per year for its climate change adaptation programme and $662 million per year to mitigating GHG emissions.

Afghanistan Second National Communication to UNFCCC, Dec 2017; NEPA.

Afghanistan National Peace and Development Framework (ANPDF) is Afghanistan's five-years (2017-2021) strategic framework that outlines key development strategies and directions for the country's self-reliance and socio-economic development, in which considerable attention is given to the environment protection. ANPDF recognizes, for example, climate change as a serious threat to Afghanistan. Afghanistan strives for sustainable and environmentally sound development while it faces serious challenges including insecurity and poverty.

3.11.4. Indicators Used in this Assessment

☒ *No indicator used*

3.11.5. Please Describe Any Other Tools or Means Used for Assessing Progress

NA

3.11.6. Level of Confidence of the Above Assessment

☐ *Based on comprehensive evidence*

☒ *Based on partial evidence*

☐ *Based on limited evidence*

3.11.7. Please Provide an Explanation for the Level of Confidence Indicated Above

This information is based on reviews of GEF projects and programs implemented since 2003, review of NEPA's annual reports, NRM/MAIL's annual reports and numerous other reports and assessments and surveys of biodiversity by UNEP and WCS.

3.11.8. Adequacy of Monitoring Information to Support Assessment

☐ *Monitoring related to this target is adequate*

☐ *Monitoring related to this target is partial (e.g. only covering part of the area or issue)*

☒ *No monitoring system in place*

☐ *Monitoring is not needed*

3.11.9. Please Describe How The Target is Monitored and Indicate Whether There is a Monitoring System in Place

Afghanistan is yet to revise the NBSAP 2014-2017; NEPA is committed to developing SMART-ER targets with specified indicators. The revised NBSAP will also articulate a monitoring system for the targets; currently, there is no monitoring system for any of the NBSAP targets.

3.11.10. Relevant Websites, Weblinks, and Files

Not Applicable

Section IV. Description of the National Contribution to the Achievement of Each Global Aichi Biodiversity Target

4.1. Afghanistan National Contribution to Aichi Biodiversity Target 1:

By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably

Although security and development interventions have been a key priority for the Afghan government since 2002, major steps have been taken to ensure political will and widespread awareness of the values of biodiversity in Afghanistan. Since 2004, the Afghan government, with technical and financial support from its international development partners, has implemented numerous projects around environmental protection, conservation of nature, natural resources management, community forestry, expansion and conservation of protected areas, climate change adaptation and mitigation, etc. based on the needs of Afghanistan. Most of these projects included two key components: institutional support to government agencies both at national and local levels; and raising awareness of the values of biodiversity and protection of the environment.

Implemented by NEPA, Afghanistan has developed and implemented hundreds of workshops and conferences all over the country to ensure values of biodiversity are communicated to government officials, the private sector and other stakeholders. NEPA's Gender Department, which employs over a dozen women only in its Kabul office, has conducted capacity building workshops and seminars on environmental protection, climate change, protected areas and biodiversity conservation. Several awareness workshops have been held for border police and staff members of Afghan customs departments.

Since its establishment in 2005, NEPA's gender department has provided this training to over 6,000 women all over Afghanistan. In addition, around 40 women staff members of NEPA have benefited from scholarships abroad completing undergraduate or graduate studies in fields related to environmental sciences.

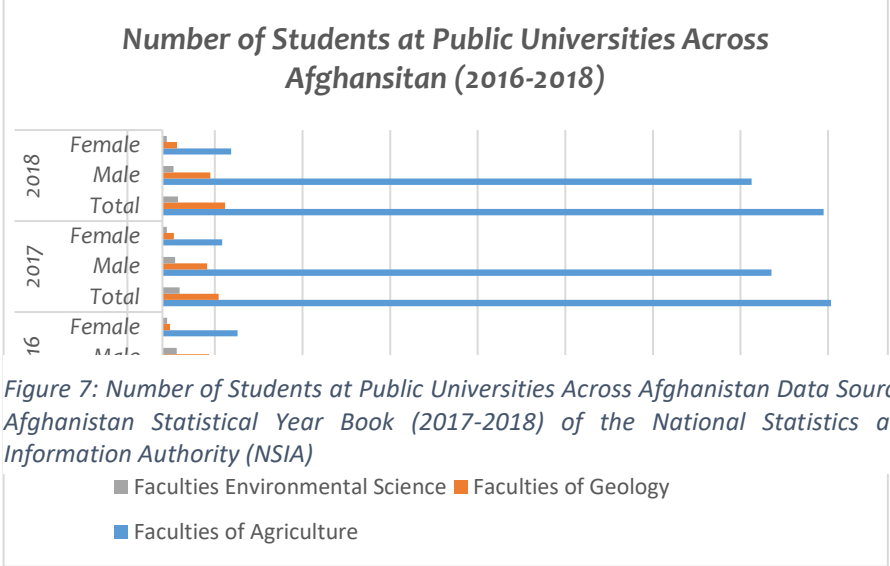


Figure 7: Number of Students at Public Universities Across Afghanistan Data Source: Afghanistan Statistical Year Book (2017-2018) of the National Statistics and Information Authority (NSIA)

The government has also ensured these are communicated to the population, especially the young population, through the education system. Currently, there are numerous public and private universities teaching a course on biodiversity and the environment. Afghanistan in total has 169 universities, including 38 public and 122 private universities. Afghanistan has established two Environmental Sciences faculties at Kabul and Herat universities; there were 442 (315 male and 127 female) students enrolled last year. In 2018, 135 undergraduates (108 male and 27 female) graduated from the faculties. Extensive courses on forestry, land management, geoscience, water issues, natural resources management, and climate change and resilience are taught at these universities. These universities pursue modern curricula that include subjects on environmental sciences and natural resources management.

The conservation programmes primarily in protected areas in Afghanistan have substantially raised awareness from the local authorities and communities on issues of conservation of the natural habitats and ecosystems. Today there is a growing genuine interest in the sustainable management of natural resources in the country due to these interventions. During the consultations with the local communities in Bamyan in December 2018,

local officials roughly estimated that around 30 per cent of the general public understands something about the importance of biodiversity and conservation of natural resources all over Afghanistan. However, this figure is twice as high in the provinces with a protected area designated; local communities from Shah Foladi and Band-e-Amir in Bamyan province talked about the social, economic and environmental importance of conservation of biodiversity and natural habitats.

In the past decade, Afghanistan has conducted dozens of environmental assessments, livestock surveys, biodiversity studies, reconnaissance surveys and wildlife surveys. These have been mainly conducted in the protected areas where security was relatively better than in other areas.

All of these interventions have contributed to increasing knowledge and awareness of the values of biodiversity.

Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional):

Several other interventions including agro-meteorology, Afghanistan Soil Information System, Afghanistan Biodiversity and establishing integrated models for protected areas projects (among others) have functioned as platforms to generate and disseminate data and knowledge on weather, climate change, environment and biodiversity that help the country move towards achieving the national and the Aichi target to make people aware of the value of biodiversity and sustainable use of its components.

4.2. Afghanistan National Contribution to Aichi Biodiversity Target 5:

Habitat loss halved or reduced: by 2020, the rate of loss of all-natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation are significantly reduced.

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

Afghanistan has four large geographical areas or biomes (for the list of Afghanistan's four biomes and 17 ecoregions refer to section VIII: Afghanistan Biodiversity Profile) with each having a distinct climate, ecological features, and plant and animal communities. The Afghanistan National Protected Area system plan divides each of these biomes into several ecoregions that include different communities of plants and animals. There are 17 ecoregions in Afghanistan; however, the country's knowledge extends to only a few of them and only to those parts of the regions that extend over protected areas.

Only three of these ecoregions have a significant portion of their Afghan extent in protected areas. In Afghanistan, the ecoregion 'Karakoram-West Tibetan Plateau alpine steppe' extends for 80% in the Wakhan National Park (in the north-eastern part of the country). Since 2007, there has not been substantial degradation or loss of habitats within this ecoregion in the park. Similarly, the ecoregion 'Pamir alpine desert and tundra' extends for ca. 100% in the Wakhan National Park, with no substantial degradation or loss of habitats within this ecoregion either.

Finally, the ecoregion 'Rock and Ice' extends for 80% in the Wakhan National Park. There has been a substantial, steady and irremediable reduction of ice cover over the years as a result of climate change (glacier retreat). The level of ice loss is disconcerting. Glaciers retreat at an average rate of 7-10 m/year. Due to challenges persistent and relevant to Afghanistan, the government doesn't know the level of global deterioration and/or loss in the 14 other ecoregions of the country.

4.3. Afghanistan National Contribution to Aichi Biodiversity Target 11

Protected Areas Increased and Improved: By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures and integrated into the wider landscape and seascape.

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

Afghanistan's preliminary target 1 is directly linked with Aichi Biodiversity Target 11. The preliminary target aims to effectively conserve at least 10 per cent of each ecological region and protect areas of particular importance to biodiversity. Afghanistan has a clear goal for conservation of protected areas: "to establish a national legacy of exceptional areas, preserving in perpetuity representatives of the nation's biodiversity, and natural and cultural features managed sustainably in cooperation with, and to the benefit of, local people." Afghanistan has established a clear objective under its ANPSAP to "by 2030, provide effective protection to at least 10 per cent of Afghanistan's land area and of the habitat of selected species in these areas; for each established protected area, local people will be effectively engaged in setting management direction; within 10 years of legal establishment of each protected area, the standard of living of people in and near protected areas will be improved."

Since 2014, Afghanistan has continued to build upon its institutional capacity for better management and conservation of its protected areas. During the past decade, the greatest success for Afghanistan has been in developing environmental policies, laws and procedures that effectively incorporate best current practices for conservation of biodiversity. For a complete list of existing policies, strategies and action plans relevant to biodiversity and protected areas refer to 'Annex 4: List of Biodiversity Legislation, Policies, Strategies, and Action Plans'.

Afghanistan recognizes that well-governed and effective management of protected areas is crucial for safeguarding both habitats and populations of species for delivering important ecosystem services. Afghanistan, both at the national level and local levels, has strengthened its institutional capacity to better govern the protected areas. At the local level, this includes Protected Areas Local committees and associations. For a list of other governing mechanisms at the national level that supports biodiversity conservation and management of protected areas refer to the section 'Sound Legislation and Governance for Biodiversity Conservation'. Afghanistan currently has four protected areas with improved and functional management plans; these management plans include those for the Wakhan National Park, Band-e-Amir, Kole-Hashmat Khan and Shah Foladi.

In order to have real impacts on biodiversity, the number and size of protected areas need to be increased; recognizing this, Afghanistan has identified 14 sites important for conservation activities in the country. It has officially announced several natural sites as areas requiring special protection. These are Band-e-Amir National Park, Wakhan National Park (including Big and small Pamir Wildlife Reserves), Teggermansu Wildlife Reserve, Shah Foladi and Kol-e-Hashmat Khan.

In 2014, the Afghan government announced Wakhan as the country's second national park while Band-e-Amir was announced as the country's first national park in 2009; both Band-e-Amir in Bamyan and Wakhan national parks are comparatively well-studied protected areas and a great deal of knowledge on the wildlife is available regarding these important landscapes.

During 2014 and 2018, the bulk of activities related to management and conservation of ecosystems, and assessments of flora and fauna have been implemented in the Band-e-Amir and Wakhan National Parks. This is because both areas are relatively secure, rich in biodiversity and local communities not only truly understand the importance of conservation but actively partake in such interventions.

In 2018, Afghanistan has proposed Bamyan Plateau as another area for protection. The Plateau covers an area of 5,500 km^2 and has an outstanding ecological value. Located in the remotest central part of the Hindukush Mountain Range, the area has relatively undisturbed habitat. A good population of ibex is documented in the area. It has high bird diversity with a rich assemblage of wild carnivores. See annex 5 for a list of identified wildlife in Bamyan Plateau.

Furthermore, the Priority Zones Assessment of the country identifies 28 sites holding rich biodiversity that require further investigations; however, the World Database on Protected Areas lists 12 protected areas for Afghanistan classifying only one of them as an officially designated protected area (Band-e-Amir). The other protected areas include the North-west Afghanistan Game Reserve, Hamun-e-Puzak Waterfowl Sanctuary (1,453.4 km^2), Registan Desert, Ab-e-Estada, Imam Sahib Wildlife Reserve, Nuristan, Ajar Valley Wildlife Reserve (400 km^2) and Darqad Wildlife Reserve (120 km^2), which all together make 381,129 km^2 or 5.8 per cent of the total land area.

4.4. Afghanistan National Contribution to Aichi Biodiversity Target 18:

By 2020, the traditional knowledge, innovations, and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

The Convention on Biological Diversity (CBD) has a key strategic goal to enhance implementation through participatory planning, knowledge management and capacity building. Afghanistan has taken some initial but key steps towards achieving Aichi biodiversity target 18. As briefly explained in section II, the country's biodiversity governance structures, environmental legislation and policies, and conservation activities in the protected areas all give considerate attention to revitalizing traditional knowledge and practices for sustainable natural resources management.

For details about interventions that help with conservation of traditional knowledge and practices and the engagement of the local communities and indigenous population in the conservation of biodiversity, refer to two notable case studies in section III: 'Case Study 1: Climate Change and Revitalizing Ecological Calendars in Pamir Mountains of Afghanistan and Broader Central Asia' and 'Conservation Interventions and Kyrghyz Indigenous Population of Wakhan Valley'.

4.5. Afghanistan National Contribution to Aichi Biodiversity Target 12:

Extinction prevented and species sustained: by 2020, the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description:

Afghanistan Wildlife Executive Committee (AWEC), which is a scientific authority at NEPA, produced the fourth and official list of threatened species in 2014 (for the complete list see annexe 5: Protected Wildlife Species of Afghanistan). This is an important step for Afghanistan to ensure meeting its preliminarily target 2 "population of species of selected taxonomic groups restored, maintained or decline reduced, the status of threatened species improved". This national target is aligned with Aichi Biodiversity Target 12. As a result, Afghanistan has taken different steps to ensure threatened species under the list are protected and conserved.

Conservation interventions, primarily in officially protected areas like the Band-e-Amir and Wakhan national parks have led to better conservation of the species in these two sites. Based on the UNDP and WCS reports, 100 per cent of the Argali (Ovis ammon) population in the Wakhan National Park is protected and since 2010 the population of snow leopards (Panthera uncia) (VU) and Urial (Ovis orientalis) (VU) in this national park has been recorded as stable.

Today, Argali population in the Wakhan National Park is completely protected and since 2010 the population of snow leopards (VU) and Urial (VU) in the park is recorded as stable.

In addition, recognizing the important role of the private sector in conservation activities, NEPA has provided an official license to the Al-Gharafa Foundation to help the country's captive breeding programmes. Afghanistan has a highly endemic avifauna, which has been lost and threatened due to a lack of conservation activities. The Foundation has established a Falcon place, a breeding centre for birds and a lab for diagnosis and treatment of birds in the Farah province where Hubara, Uriel and Falcons are conserved. This is in addition to the Balkh Captive Breeding and Conservation Centre that was inaugurated in 2012. Currently, in addition to mentioned species, other animals and birds are kept in these centres for propagation including deer, gooseberries, rabbits, ostriches, crowned chickens, white Quebecois, peacocks, ducks, geese, pigeon, lunar, taro and quail.

Since 2014, hundreds of birds have been treated, conserved and released to the nature of Farah province. Additionally, these interventions have been a great platform for the exchange of ideas, knowledge, and expertise in captive breeding and have provided additional support to NEPA's building of its institutional and technical capacities.

7. Section VII: Afghanistan Biodiversity Profile

Afghanistan is a landlocked and very mountainous country with a total area of 652,000 km^2 (64.4 million hectares). It has significant natural landscapes and natural resources, but very limited land and water resources (land and water remain the two top key reasons for rural conflict in Afghanistan). The natural resources of the country include forests, rangelands, wildlife, protected areas, medicinal plants and biodiversity. Natural resources have a significant economic, social and cultural value. Around 80 per cent Afghans depend directly or indirectly on natural resources to meet their livelihood requirements, therefore the biological resources and the ecological processes in Afghanistan are crucial for the survival of the local people.

Afghanistan is a country rich in biodiversity. The primary value of biodiversity to Afghan people lies in the tangible goods and services provided by the biodiversity, which includes direct uses of the components of biodiversity from traditional crops, fruits, grazing livestock, fuel, timber, fishing and hunting, soil fertility and erosion control, crop pollination and climatic stability. Afghanistan's stunning landscapes of mountains, deserts, woodlands and forests are home to a wide range of flora and fauna.

7.1. Land Cover

In 2016, Afghanistan (with support from FAO) produced an updated of the country's Land Cover Atlas. The Land Cover classifies the surface land of Afghanistan based on FAO's comprehensive Land Cover Classification System (LCCS) and it provides information on land cover distribution by administrative and sub-basin divisions. The Land Cover provides aggregated land in 11 classifications: Irrigated Agricultural Land (AGI), Rainfed Agricultural Land (AGR), Fruit trees (AGT), Vineyards (AGV), Barren Land (BRS), Sand Cover (BSD), Forest and Shrub (NFS), Rangeland (NHS), Permanent Snow (SNW), Built-up (URB), and Water Body and Marshland (WAT). Rangelands (47 per cent) represent the largest land cover type of the country, seconded by barren lands.

Out of the total land area of the country (64 million hectares), about 12 per cent of the total land area is arable land, from which 5.6 per cent (3.6 million hectares) is irrigated agricultural land, 5.8 per cent (3.7 million hectares) in rainfed agricultural land, and the remaining are either fruit trees, vineyards, or marginal agricultural land. Forests (open and closed natural needle-leaved forests) and high shrubs land make 2.8 per cent (1.7 million hectares) of the total area of the country. Afghanistan's rangeland (30.2 million hectares or 47 per cent of total land) is either grassland, forbs and or low shrubs. Rangelands are rich in medicinal plants and fodder, which is crucial for the protection of water and soil, biodiversity, protection of vegetation cover, food and habitat for wildlife, and is key for the protection of the environment. Bare areas including bare soil, rock outcrops, sand-covered areas and sand dunes makeover 34 per cent (22.2 million hectares) of the total land. The rest of the land is classified as built-up or permanent snow (500,000 hectares or 0.8 per cent of the total land).

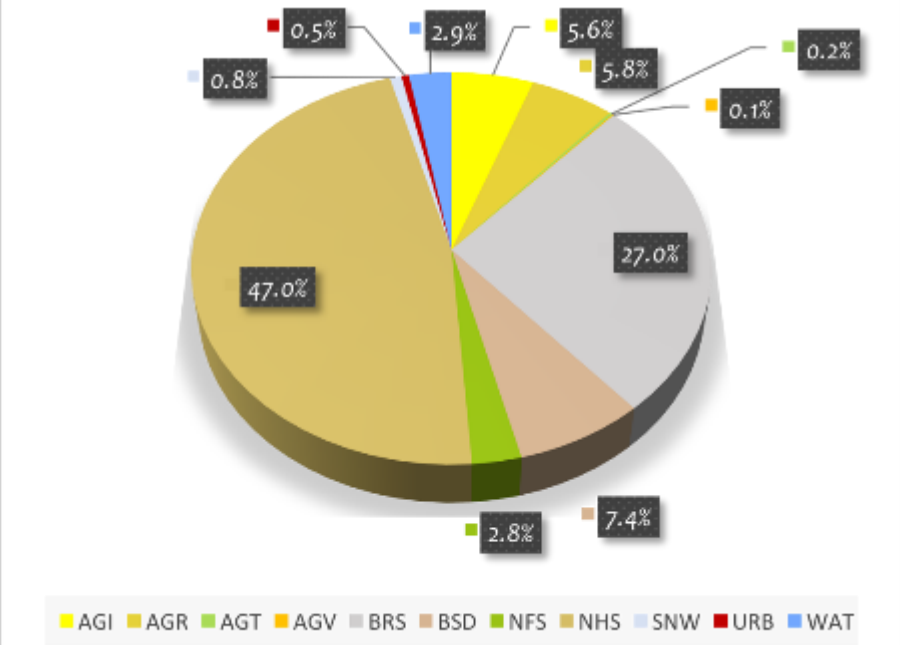


Figure 8: Afghanistan Land Cover in Per centages. Source: Afghanistan Land Cover Atlas (FAO, 2016)

Figure 9: A map showing Afghanistan Land Cover. Source: Afghanistan Land Cover Atlas (FAO, 2016)

7.2. Rivers and Water Bodies

Afghanistan has remarkable rivers as they are a strong agent of formation of fluvial landforms and their waters are critical lifeblood for the Afghan people (John F. Shroder, 2014). The larger rivers of arid Afghanistan form in the Hindukush and Pamir mountains, mainly from melting snow and glaciers and flow on fairly steep gradients to the lowlands. The maximal flows of the spring and summer meltwater river discharges are followed by minimal volumes registered in the fall and winter when some large rivers even dry up completely. As an upper riparian country, the water originating in Afghanistan flows into its neighbouring countries of Iran, Turkmenistan, Pakistan, Tajikistan and Uzbekistan. Most runoff originates from the melting of seasonal winter snow or older glacier ice. The vegetation flourishes in those areas of the country that receive summer monsoon rains. Therefore, Afghanistan's surface water availability is subject to climate change and fluctuating precipitation patterns and levels; the associated drought affects the vegetation cover in Afghanistan.

The country has five major river basins with an annual surface water flow of about 57 bcm (Duran, 2015). It possesses an estimated overall surface water availability of 2,775 cubic meters per capita per year. In terms of Afghanistan's total water availability, there are conflicting data. In reference to the mean annual surface water flow or total river discharge in Afghanistan, the total water discharge was recorded between 55 to 57 bcm, according to the older estimates from 1997; however, Favre and Kamal (2004) indicate Afghanistan has a total of 84 bcm mean annual water flow, while the average annual precipitations are estimated at 165 bcm. Regardless of the accuracy of the existing figures, based on figures provided by the Ministry of Energy and Water (MEW), the total surface water in Afghanistan in 2018 has declined to (something) around 48 bcm due to climate change and cycles of drought. The increasing population growth rate of the country, primarily in urban areas, further stresses the importance of water availability; for how urbanisation and water scarcity impacts Kabul's urban population vice versa please see case study 3 in this section.

Table 3: Mean annual surface water flow in Afghanistan (in billion cubic meters (bcm)). Source: Favre and Kamal. 2004.; after John F. Shroder, 2014..

River Basin	Surface Area (%)	Mean Annual Water Flow (bcm)	Total Annual Flow (%)
Amu Darya (River)	14	48	57

Kabul River	12	22	26
Helmand	43	9.3	11
Harirod–Murghab	18	3	4
Northern Basin	13	1.8	2

Afghanistan's water balance for the groundwater is estimated at 18 bcm per year (Duran 2015); while the recharge groundwater capacity is estimated at slightly more than 10 bcm by Uhl, Tahiri (2003). The current context is marked by the over-exploitation of groundwater resources, leading to increasing depletion of water levels. The increasing rate of consumption caused by the increasing population growth rate has led to severe competition for the already scarce water resources.

Table 4: Groundwater characteristics in Afghanistan (in million cubic meters (mcm) per year). Source: Uhl, Tahiri. 2003.; after, John F. Shroder. 2014

River Basin	Recharge (mcm)	Usage (mcm)
Kabul	1,920	530
Helmand	2,480	1,500
Harirod-Murghab	1,140	460
Northern Basin	2,140	210
Amu Darya (River)	2,970	100
Total	**10,650**	**2800**

As a result of persistent conflict and droughts, Afghanistan has either lost its water infrastructures or it has not been able to develop new ones. Therefore, Afghanistan has one of the lowest water storage capacity in the world. Afghanistan's water storage capacity is way behind its neighbouring countries. Though new estimates are not available, those based on the 1960s data show the total storage capacity of the country was around 135 m3/cap, while this figure for Pakistan is 150 m3/cap, for Iran 396 m3/cap, for Uzbekistan 801 m3/cap, for Turkmenistan 1240 m3/cap, for Tajikistan 4232 m3/cap, for Kyrgyzstan 4352 m3/cap, and lastly for Kazakhstan 5895 m3/cap (Duran 2017).

Table 5: Comparison of Water Storage Capacity in m3 / capita. Source: UNDP. 2011.; after Duran 2015.

Country/Region	Water Storage Capacity in m3/capita
USA	6,000
China	2,200
World	963
Iran	379
Asia	353
Pakistan	150
Afghanistan	140

Afghanistan's use of water includes 98% of the abstractions for the agriculture sector, 1% for municipalities and another 1% for industries (Duran 2015). On the other hand, about 80% of the Afghan population rely on agriculture and natural resources for livelihoods; water conservation is, therefore, a high priority for the Afghan government.

Great advances have been made in Afghanistan with respect to water conservation, particularly for irrigation through better conveyance and at on-farm application. Afghanistan has taken major steps towards its transboundary water resources. Key progress includes legal and institutional development. Afghanistan Water Law was finalized in 2009; the country today has a transboundary water policy, an established transboundary water management unit, as well as numerous improvements in the water management at the farm level that support the efficient use of water.

Since 2004, Afghanistan took several steps to reform the water sector by adopting Water Sector Strategy (WSS) and Water Law that have consequently led the country to formally adopt Integrated Water Resource Management (IWRM), River Basin Management (RBM) and Multi-Stakeholder Platforms (MSPs). All of these plans help the country to ultimately adopt a good water governance administration system. Additionally, on the policy reform, NEPA currently has drafted the first Sustainable Development policy that outlines the Afghan government position on sustainable water use, promoting efficient water use at the consumer level, harvesting surface-water and monitoring good water methods at the national level.

From an administrative point of view and based on Integrated Water Resources Management (IWRM), Afghanistan's water bodies are classified into five main river basins. Though several watershed basins do not hydrologically connect to these main river basins, they are classified in the same administrative basin. The five main river basins are as follows:

- **Harirod – Morghab River Basin (with 4 watersheds):** Kushk wa Kashan, Lower Harirod, Murghab and Upper Harirod jointly make up the Harirod – Morghab River Basin. The Harirod River Basin arises in Bamiyan province (central highlands of Afghanistan) and flows for 490 km, passing through Herat province (west of the country) before turning north to form the Afghan – Iran border. Murghab River Basin, however, arises in the north-western Hindukush mountains range and flows west before turning north (joining the Harirod River Basin) and flowing into Turkmenistan. The Harirod-Morghab river basins dry up near Merv (Turkmenistan). The basin covers 303,564 hectares of irrigated agricultural land, which is 3.9 per cent of the total irrigated land in Afghanistan (Afghanistan Land Cover, 2016).
- **Northern River Basin (with 7 watersheds):** In the Northern River Basin the surface water availability is 900 litres per capita per year (Duran 2017). The Basin covers Balkhab, Khulam, Sar-e-Pul, Sherin Tagab districts in northern Afghanistan, which represents 8.6 per cent (606, 833 ha) of total agricultural irrigated land of the country (Afghanistan Land Cover, 2016). Unlike other River Basins, the Northern River Basin is the only basin that does not flow to any other neighbouring country. The basin arises in the central highlands and has the smallest annual discharge contribution to Afghan river basins (around 1.88 bcm).
- **Panj – Amu River Basin (with 7 watersheds):** The Amu River Basin originates in the Wakhan Corridor of Afghanistan. The Abi Pamir and Abi Wakhan drainages join in the Wakhan to make the Panj River in

the Pamirs near the Chinese border as the Pamir and Wakhan Rivers. The Amu Darya River forms the northern border of Afghanistan for 1,300 km before it flows into Turkmenistan. At one time, it flowed into the Aral Sea (in Kazakhstan), but it now dries up in the delta. Nowadays, the Ara Sea is dried up (especially its eastern basin) and is considered one of the planet's worst environmental disasters.

Numerous rivers flow north into the Amu River from the northern Hindukush. In the Panj – Amu river basin, the surface water availability is over 6000 litres per capita per year (Duran 2017). Around 30 per cent of the Amu Darya originates in Afghanistan (about 60 per cent in Tajikistan), while Afghanistan currently uses less than 10 per cent of its contribution (1.5 – 2 km^3) and only about 2 per cent of the total discharge. The average discharge of the Amu River appears to be around 2000 m^3/s per year (John F. Shroder, 2014). Panj-Amu River Basin covers Kokcha, Lower Kunduz, Lower Panj, Shor Tepa, Taloqan, Upper Kunduz and Upper Panj, and provides surface water for around 4.5 per cent (427, 960 ha) of total agricultural irrigated land (Afghanistan Land Cover, 2016).

- **Kabul – Indus River Basin (with 10 watersheds):** Ghorband, Gomal, Kunar, Laghman, Logar, Lower Kabul, Lower Panjshir, Shamal and Khuram, Upper Kabul and Upper Panjshir are tributaries of Kabul River Basin. The Basin arises in the mountains of central Afghanistan west of the capital, Kabul (the Paghman Mountains) and it covers 7 per cent (496,577 ha) of total agricultural irrigated land of the country (Afghanistan Land Cover, 2016). It joins the Indus at Attock 350 km downstream. The Major tributaries of the Kabul – Indus basin are the Panjshir, Laghman, Logar and Kunar Rivers. The Kabul River Basin covers 76,908 km^2 or 12 per cent of Afghanistan's surface and (it) contains approximately 25 per cent of the country's surface water. The Basin is the country's most populated basin with around 11.6 million people (37 per cent) of the Afghan population. In the Kabul river basin, surface water availability is estimated at around 1,160 litres per capita per year (Kabul River Basin, 2017). The increasing rate of urbanisation, mainly in Kabul, and climate change hazards such as drought have created a water crisis in Kabul city; the river supports 300,000 ha of intensively irrigated areas and high-value crops in Afghanistan (after, John F. Shroder, 2014). In the past, the river has had a discharge rate of 33-460 m3/s, but in recent drought years, it has run nearly completely dry several times in the city. Given the mountain snow and glacier meltwaters, the Panjshir and Kunar tributaries provide the bulk of flow in the lower Kabul where it can flow with a mean annual discharge of 700 m3/s before it enters Pakistan (after, John F. Shroder, 2014). To read more about this, see the case study next page: Case Study 3: Urbanisation and Water Stress in the Kabul River Basin.
- **Helmand River Basin (with 9 watersheds):** Helmand River Basin arises in the Koh-e-Baba Range not far from the source of the Kabul River Basin. It flows southwest for 1,300 km before turning north and emptying into the marshes and salt flats of Hamun-i-Helmand, mostly located in Iran (west of Afghanistan). The Helmand River Basin is the largest basin in Afghanistan, draining about 40 per cent of the country's area (UNEP, 2003).

  Afghanistan completed the Salma Dam (also called Afghanistan – India Friendship Dam ~ since it was funded and constructed by India) on the Harirod River Basin and opened it in June 2016. The hydroelectric and irrigation dam located in Chesht-i-Sharif district of Herat province in western Afghanistan has increased Afghanistan's storage capacity to another 22 m^3/cap at the time; the Afghan Ministry of Energy and Water (MEW) estimates the real and potential storage capacity of the dam between 100 – 110 m^3/cap. This is a substantial development in the water sector in this country. The hydroelectric plant produces 42 Mega Watts (MW) of power and provides irrigation for a total of 75,000 hectares of agricultural land. Before the completion of the dam, there were around 35,000 hectares of land irrigated by the river (mainly in the downstream part of the dam) and it is estimated that the dam will facilitate irrigation of an additional 40,000 hectares of land.

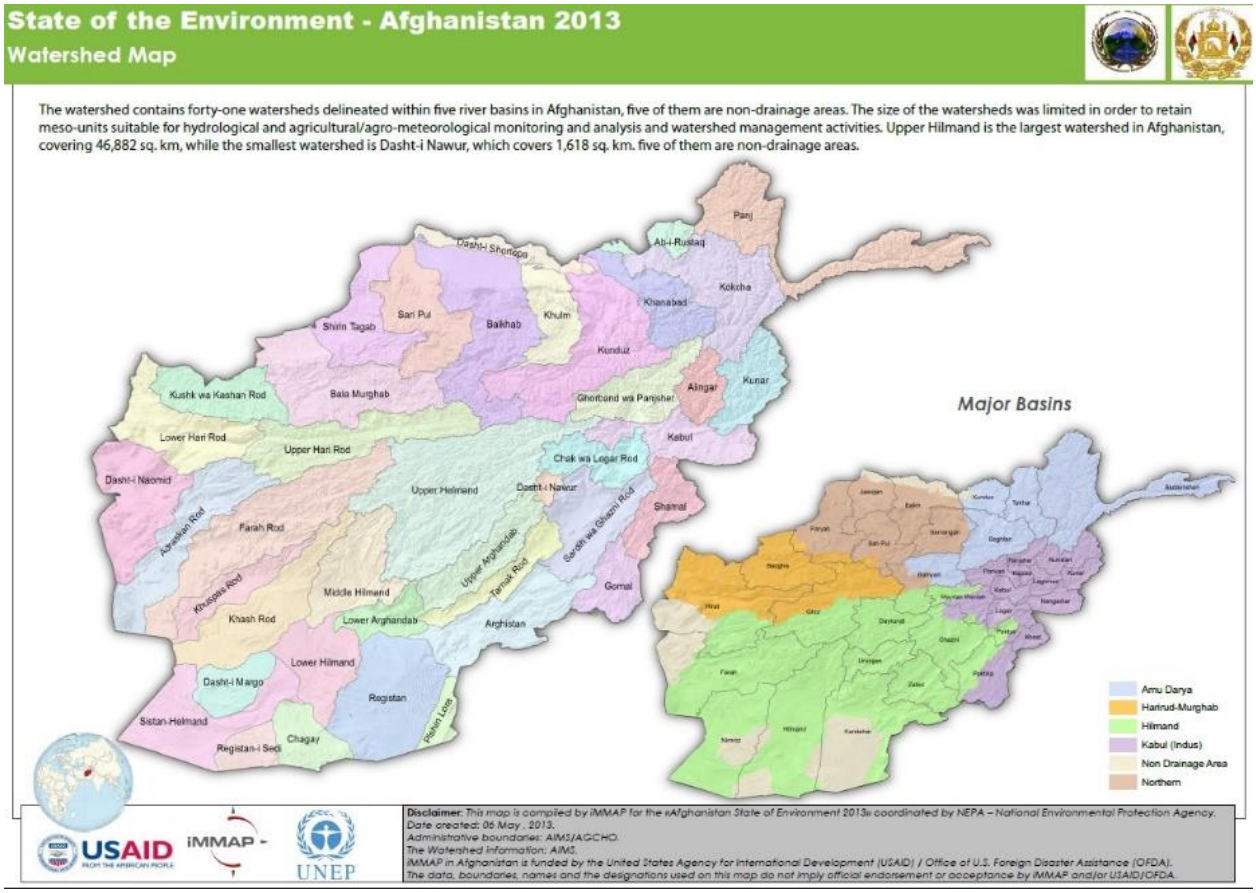


Figure 10: A map showing the River Basins of Afghanistan (Source: after Afghan Spatial Data Centre, accessed 22 November 2018, URL: http://asdc.immap.org/documents/3527

7.3. Wetlands

Afghanistan's wetlands also support underground water improvement, the formation of water ecosystem and habitat, for a significant population of migratory birds. These wetlands are of use to resident communities as well. Many wetlands have been impacted by drought as well as decades of conflict. Band-e-Amir (also the country's first National Park) consists of a chain of six lakes in Bamyan of the western Hindukush. These lakes are known for their scenic beauty and are also home to several water birds.

The Dasht-i-Nawar lake lies in a vast depression at high altitude in the Koh-e-Baba range, an offshoot of the Hindukush range. Formerly a perennial lake with a huge area of mudflats and numerous islands, it dried up in 1999 as a result of drought. The lake provided breeding grounds for the Greater Flamingo Phoenicopterus (ruber) roseus and a base for thousands of migratory waterbirds of various species. The Government of Afghanistan had declared the lake a Waterfowl and Flamingo Sanctuary in 1974. The Kole- Hashmat Khan, in the south-eastern outskirts of Kabul, is situated at an elevation of 1 973 m and has an area of 191 ha. The lake was formerly a royal hunting ground and was declared a Waterfowl Reserve by King Zahir Shah in the 1930s. Over 150 species of migratory birds have been recorded in the area and the lake has supported as many as 30,000-35,000 water birds. This lake also dried out in 1999 due to the severe drought in the region. The Gardez, Ghazni and Mahara rivers and a few unclassified streams drain into a large depression in the Koh-e-Baba and Koh-e-Paghman foothills of the Hindukush and form the large saline lake of Ab-i-Estada. This lake was a Waterfowl and Flamingo Sanctuary prior to the war in 1979.

Case Study 4: Urbanization and Water Stress in the Kabul River Basin

Kabul (the capital of Afghanistan) has a population density of 1000/km^2 (NSIA, 2016-2017). The Afghan government estimates the total population of the province at around 4.7 million, with 85% urban population living in Kabul city (NSIA, 2017-2018). By 2050, the population of the province is expected to reach 8 million. The total population of the Kabul Metropolitan Area (KMA) is projected to be 6.74 million by 2025 with 1.5 million in the new city. The water demand in the new city is projected to be 96.1 million cubic meters (mcm) per year

including industrial water use. The KfW study estimated 123.4 mcm per year of water demand for the Kabul city in 2015. The study estimates the groundwater potential at approximately 44 mcm, capable to cover only 2 million inhabitants at a modest per capita consumption of 50 Litre Per Capita Per Day (LCDP).

Kabul is the fifth fastest-growing city in the world and one of the most water-stressed cities. Kabul River Basin is the country's most populated basin with around 11.6 million people (37 per cent) of the Afghan population. The surface water availability is estimated at around 1,160 litres per capita per year in the basin (Duran 2017). During the drought years, little precipitation causes little or no groundwater recharge. It is reported the groundwater-level decreased with 4–6 m in Kabul during the drought period of 1998–2002 and as much as 10 m in some areas. Groundwater-level decreases of 6–7 m was reported between the 1960s and early 2000s for some parts of the city. The population growth rate and the associated increased level of water use cause a decreased level of the surficial sedimentary aquifer in Kabul city.

According to the US Geological Survey, the groundwater level in Kabul from 2004 to 2012 fell by an average of 1.4 meters per year, as the groundwater extraction rate was faster than the recharge rate due to periods of below-average precipitation and increased water consumption. Asian Development Bank (ADB) report shows that the groundwater levels are declining in many areas from 30 m to around 70 m in some parts of Kabul city. This is largely due to the lack of effective regulation and overuse of groundwater due to the increased urban population in the city. In addition, the surface water analysis between 1992 to 2013 in the upper Kabul River Basin shows a decline in the annual river flow of 38 per cent and 25 per cent in the Logar and Maidan rivers (the tributaries of Kabul River Basin) respectively.

The water resources in Kabul city face several challenges, including a water shortage for a growing population, sharply declining groundwater levels and unpredictable policies. The present groundwater extraction is estimated to be more than 120,000 m^3/day, exceeding the average groundwater replenishment rate of 77,500 m^3/day, which is unsustainable. The World Bank projected scenarios in 2010 based on a decision-support model of the basin, indicating that water use per capita will significantly increase as the standard of living improves and the population grows by 6–8 million until 2020.

On the other hand, in addition to the existing groundwater facilities and completion of the Shatoot dam, a technical solution offers four potential water sources for the urban water supply in Kabul. The Panjshir Fan Aquifer (subsurface water and/or groundwater), the Panjshir River (surface water), and two planned storage dams, the Gulbahar Dam and the Salang Dam. The Shatoot dam and the four options above can address the water supply issues for the Kabul Metropolitan area, including the Kabul New City. The Kabul city master plan estimates that the Shatoot dam and the local groundwater will provide 87.2 and 33.2 mcm per year respectively, like drinking or potable water sources. The main concern regarding the dam today is the huge upfront cost of the Shatoot dam and the installation of the water treatment plant next to the dam. It will take a minimum of five years to complete the construction if no other obstacles arise.

7.4. Afghanistan's Agricultural Biodiversity

Agricultural biodiversity, which is the variability in species of crops and livestock used by farmers, is key for environmental resilience and adaptation because it provides farmers with the flexibility to adapt to changing conditions. With traditional farming, early farmers had to plant many varieties of each crop so at least something could be harvested through the drought, flood and disease during the growing season.

Afghanistan along with its immediate neighbouring countries has been one of the important centres of crops (origin) and original home of bread wheat, rye, barley, chickpeas, peas, flax, alfalfa, clover, apple, pear, pomegranate, quince, sweet cherry, melons, grapes, pistachio and some vegetables (Breckle & Rafiqpoor 2010). Preserving the genetic diversity of these wild ancestors of humanity's crop species is therefore crucial for the country. The value of genetic variability encompassed by farmer-developed landraces of crop plants has long been known in Afghanistan. Consequently, there are many seed banks around the world that preserve as wide a diversity of genetic adaptations as possible. Prior to the war, Afghanistan had a world-renowned crop seed collection. Unfortunately, the Kabul University collection was destroyed between 1992 and 1994 by factional conflicts. Researchers then re-collected samples of the country's major food and cash crops. During the Taliban era, scientists quietly stockpiled hundreds of seed samples and hid these collections in private homes, which indicates how the conservation of agriculture diversity been affected by decades of war and conflict.

There are varying estimates on Afghanistan's plant species. Based on some estimates, the country has between 3,500 and 4,000 species of vascular plants, of which 30 per cent to 35 per cent are considered endemic to the

country (if we confine the endemism to this particular region). Other estimates show that the country has about 5,000 of plant species, of which 25 per cent to 30 per cent are endemic (Breckle & Rafiqpoor 2010). Agricultural species diversity in Afghanistan includes varieties of fruits and nuts, vegetables, cereals, pulses, fodder and forage. The country is believed to have more native bread wheat varieties than anywhere else in the world. Grapes, for example, are believed to have been first domesticated in Herat province (western part of the country). Today there are about 70 varieties found in the Herat region and some of these landraces have been used by other plant breeders such as those in the US to develop new varieties.

In Afghanistan, most crop production is limited to pockets of irrigable lands, with some rainfed areas in the north and at high-altitudes. Most of the rest is extensive grazing, desert or high mountain with permanent ice. By far, the greatest part of the land surface of Afghanistan is extensive grazing land-desert, semi-desert or high or steep mountains; only about 40 per cent is said to be suitable for winter grazing. See annexe 8 for vegetation types in Afghanistan.

Afghanistan has very old traditional farming and pastoral systems that have been shaped by the harsh physical, mixed geology, topography and climatic environment of the country (Anthony Fitzherbert, 2014). Field crops and wild plants have always been used by the farming and pastoral households to feed their livestock throughout centuries. The most ancient crops, wheat and barley (in particular the wheat) form the basis of all Afghan cropping system, feeding both people and livestock. Afghanistan has more native bread wheat varieties than anywhere else in the world (UNEP, 2003). N.V. Vavilov (the pioneering Russian plant geneticist, agronomist and botanist, 1887-1943) collected 110 landraces of wheat from Afghanistan. The Vavilov Institute in Moscow currently records 1,721 varieties from Afghanistan while the U.S. Department of Agriculture's Genetic Resources Information Network (GRIN) database lists 1,892 accessions from Afghanistan (UNEP 2003). However, today it is unknown how many of these varieties still exist. For Afghanistan's diversity of agricultural species, fodder and forage and wild plants refer to annexe 4: Species Diversity of Afghanistan's Agricultural and farming system, Fodder and Forage.

Medicinal plants that account for around 20 per cent of exports of Afghanistan have great potential for further contribution to the national economy of the country. Global import trends show continuous growth of demand for medicinal plants particularly for Liquorice and ferula for which Afghanistan is a major producer. The regional and international demand for these plants is estimated at around 20,000 tons per year. Thanks to the high quality, Afghanistan's medicinal plants have good markets internationally. The global market conditions for Liquorice, ferula assafoetida, and other herbal plants look promising. Afghanistan's trading partner for its medicinal plants, especially for its liquorice, ferula and other wild medicinal plants, are Pakistan, India, USA, UAE, EU (notably the UK, Italy, France, Spain, The Netherlands and Germany), Japan and Israel.

According to the Ministry of Commerce and Industries (MoCI), Afghanistan exports varieties of medicinal plants that include flowers, seeds, roots, leaves and gums. Afghanistan is an important exporter of medicinal plants, each year more than 45 different species are being exported to different countries. Reports show that during 2014 about 20 different medicinal plants (3,022,419 tons) with a total value of USD 94,006,324 have been exported. Between 2014 to 2018, Afghanistan's value for exported medicinal plants was around USD 330 million (NSIA, 2018). Liquorice, ferula and assafoetidae are the major export items of the country and is mainly exporting roots and extracts, but not with consideration of value chain and processing inside the country. Global imports showed continuous growth over the last five years and medicinal plants (under which Liquorice and ferula) enjoy wider recognition for the application possibilities in the pharmaceutical and confectionary industry.

Table 6: Some of the Traded and Important medicinal Plants of Afghanistan. Source: MoCI. 2013. after, MAIL NRM Strategy (2017-2021).

Flowers:	*marshmallow (Althaea officinales), hollyhock (Alcea rosea), and rose (Rosa centifolia)*
Seeds:	*cumin (umin cyminum), caraway (Carum caravi) and alfalfa (Medicago sativa), watermelon (itrullus vulgaris), clover (Trifolium species), sesame (Sesamum indicum, coriander (Coriandrum sativum) and fennel (Nigella sativa)*
Roots:	*liquorice (Glycyrrhiza glabra), knapweeds (Centaurea species), alkanet (Alkanna tinctoria), and akarkara (Anacyclus pyrethrum)*
Gums:	*asafetida (erula assafoetida) and milkvetch (Astragalus)*
Leaves:	*dill (Anethum graveolens), peppermint (Mentha piperita L), endives (Cichorium endive), tobacoo (Nicotiana tobacum) and thyme (Thymus afghanicus)*

Among the many important economic plants in the country, cumin (Carum bulbocastranum) is one of the

principal spices that are exported internationally. The valleys of Badakhshan produce the highest quality cumin in the world and the seeds of this herb have been exported along the ancient Silk Road trade route for thousands of years.

As an agrarian country, the livelihoods of more than 80% of the country's population (World Bank 2014) are either directly or indirectly related to agriculture and livestock. Agriculture is the second largest sector after services, employing about 44.32% of the total national workforce (World Bank 2014). Wheat is the main agricultural crop in the country, which represents between 70% – 80% of total cereal production. The horticulture extends to about 360,000 ha, almost 14% of the country's irrigated land area.

Livestock contributes 15% to the agriculture Gross Domestic Product (GDP) and creates 1.1 million full-time equivalent jobs. It is estimated that there are currently 16.5 million animals belonging to 655,000 farming families. Products from livestock, particularly dairy, are a mainstay of Afghan diet. For the population of rural and sub-urban areas, livestock is an important asset for livelihoods. The latest available official statistics show that in 2015 there were 3.4 million cattle, 21.8 million sheep, goats 9.8 million, oxen and yaks 413 thousand, horses 76 thousand, and chickens 10.3 million (ALCS 2016-2017).

Table 7 Livestock, by animal type and by survey/census (in thousands). Source: Afghanistan Living Condition Survey - ALCS (2016-2017)

Animal Type	Census 2002-2003	NRVA 2011-2012	ALCS 2013-2014	ALCS 2016-2017
Cattle	3,715	2,854	2,850	3,371
Oxen, yaks	n.d.	474	463	413
Horses	142	102	93	76
Donkeys	1,588	1,519	1,751	1,650
Camels	175	481	239	284
Goats	7,281	10,445	10,265	9,754
Sheep	8,772	18,018	21,629	21,813
Chickens	12,156	13,176	12,221	10,341
Other Poultry	1.022	1,367	942	894

Baluchi, Panjshir Gadik, Wakhan Gadik, Ghiljai, Hazaragi, Kandahari, Karakul, Afghan Arabi and Turki are the nine known landraces of sheep raised in the country; in addition, there are eight breeds of cattle (Kabuli, Badakhshani Bouy, Badakhshani Dasnier, Kandahari, Konari, Shankhansurri, Systani and hybrids of Friesian, Jersey and Brown Swiss), seven breeds of goats (Asmari, Kabuli, Kandahari, Kashmiri, Rahnama, Tajjiki, and Watani), six breeds of horse (Herati, Mazari, Qatgani, Turkistani, Waziri and Yabu), and four varieties of chickens (Khasaki, Kulangi, Rangin and Sabw).

The MAIL natural resources strategy is considered as a tool not only for the development of the agriculture sector but also for promoting conservation and building adaptive capacity of rural communities. The strategy focuses on conservation agriculture as a policy tool to ensure sustainable development of the much vital sector to the development of Afghanistan's economy. In addition, the strategy document is an attempt to lay down the plans of the ministry for the next five years in undertaking a variegated approach of short- and long-term measures in the areas of sustainable forest management, maintaining and improving rangelands, improving production and strengthening value chains for medicinal plant cultivation, enforcing protected areas and indigenous wildlife.

The implementation of this strategy will result in the improvement of 43,000 hectares of forest and further expansion of forests and urban greenery by 73,000 hectares. Furthermore, 493,870 hectares of rangeland will be improved; the area under medicinal plant cultivation will be increased by 2,500 hectares. Measures will be taken to control and combat desertification in 20,000 hectares. Five additional areas, adding to the total area of 134,500 hectares, will be declared protected areas; Afghanistan plans to expand the horticulture sector to 400,000 ha by 2024. By 2021, Afghanistan will have eight designated and declared protected areas (currently four).

In recent decades, agriculture has been adversely affected by unpredictable and slightly decreasing precipitation levels, as well as overgrazing, leading to exposure of the topsoil and increasing run-off with resulting loss of soil cover. Over time, vast tracts of the country's agricultural lands have been moderately or severely degraded. Since 1978, the total irrigated land area has declined to around 60 per cent.

The 2018 drought left Afghanistan without adequate wheat and livestock fodder and it caused population displacement and increased the level of food insecurity in the country. Drought is likely to be regarded as the norm by 2030, rather than as a temporary or cyclical event. Based on these predictions, the flood impact will likely be amplified by more rapid spring snowmelt combined with a greater runoff associated with land degradation, loss of vegetative cover and land mismanagement.

Increased soil evaporation, reduced river flow from earlier snowmelt and less frequent rain during peak cultivation seasons will all impact agricultural productivity and crop choice availability. Crop failures will probably increase in frequency, while areas of abandoned, uncultivated land will likely increase. Crop choices will shift to more drought-hardy species and by 2060 agriculture will likely become marginal, without significant investment in water management and irrigation.

7.5. Afghanistan's Ecological Regions

Afghanistan has four large geographical areas, each of them having distinct climate, ecological features, plant and animal communities. Afghanistan National Protected Area system plan divides each of these biomes into several ecoregions that include different communities of plants and animals. The following table lists the country's four biomes and 17 ecoregions.

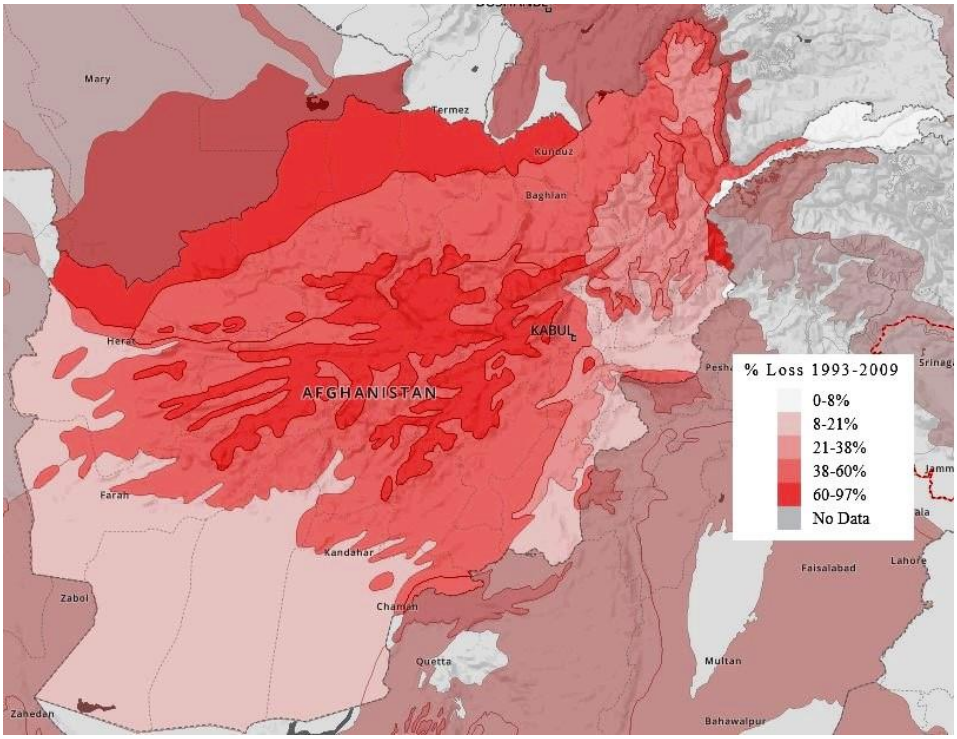


Figure 11: A map of Ecoregion loss in Afghanistan during the period 1993-2009 (source: UN Biodiversity Laboratory, accessed 25 November 2018, URL: https://www.unbiodiversitylab.org/)

Table 8: Afghanistan's Biomes and Ecoregions. Source: NPASPA. 2009.

Desert and semi-desert (252,044 square km)	*Open woodlands (240,745 square km)*	*Closed woodlands (47,354 square km)*	*Alpine and Subalpine (106,584 square km)*
4 Ecoregions:	*4 Ecoregions:*	*3 Ecoregions:*	*6 Ecoregions:*
Registan-North Pakistan sandy desert	*Central Afghan xeric woodlands*	*Baluchistan xeric woodlands*	*Ghorat-Hazarajat alpine meadow*
Badghis and Karabil semi-desert	*Sulaiman Range alpine meadows*	*East Afghan montane conifer forests*	*Karakoram-West Tibetan Plateau alpine steppe*
Central Persian desert basins	*Paropamisus xeric woodlands*	*Western Himalayan subalpine conifer forests*	*Hindukush alpine meadow*
Afghan Mountains semi-desert	*Gissaro-Alai open woodlands*		*North-western Himalayan alpine shrub and meadows*
			Pamir alpine desert and tundra Rock and Ice

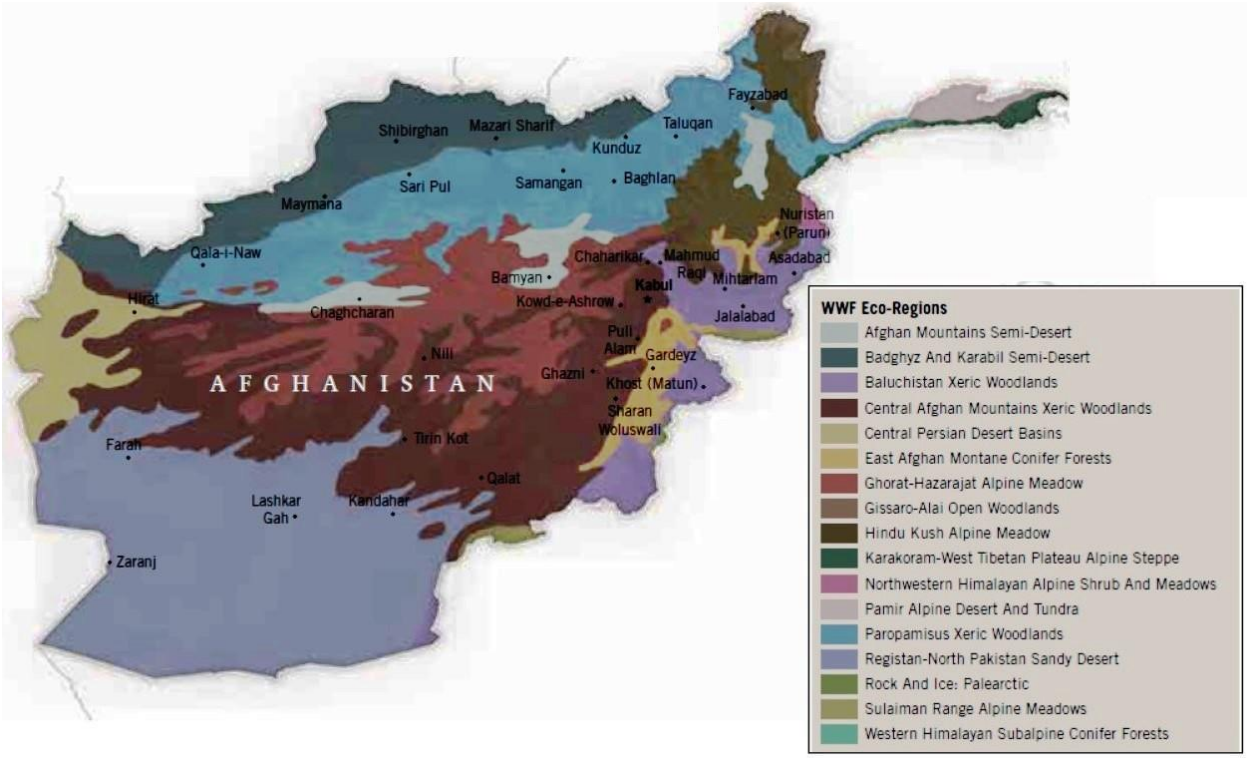


Figure 12: A map of Ecoregions in Afghanistan (source: after the Islamic Republic of Afghanistan, 2014, National Biodiversity Strategy and Action Plan 2014-207, p. 27)

7.6. Afghanistan Population

Population estimates vary in Afghanistan. Official records estimate 29 million in 2017 (ALCS, 2016-2017), while UN estimates about 34 million. NSIA recently announced the total population of the country to be about 32 million. Afghanistan has had high fertility and population growth rates, 5.3 and 3.3 per cent respectively in 2017. The increasing population growth rate is perhaps the major challenge for the country's biodiversity conservation; it puts pressure on the amount of available arable land (already limited), particularly irrigated land. Increasing pressure on land results in land fragmentation. Afghanistan's statistical surveys show that the

average irrigated land size per household has decreased from 1.3 hectares in 2014 to 0.9 hectares in 2017 (ALCS, 2016-2017).

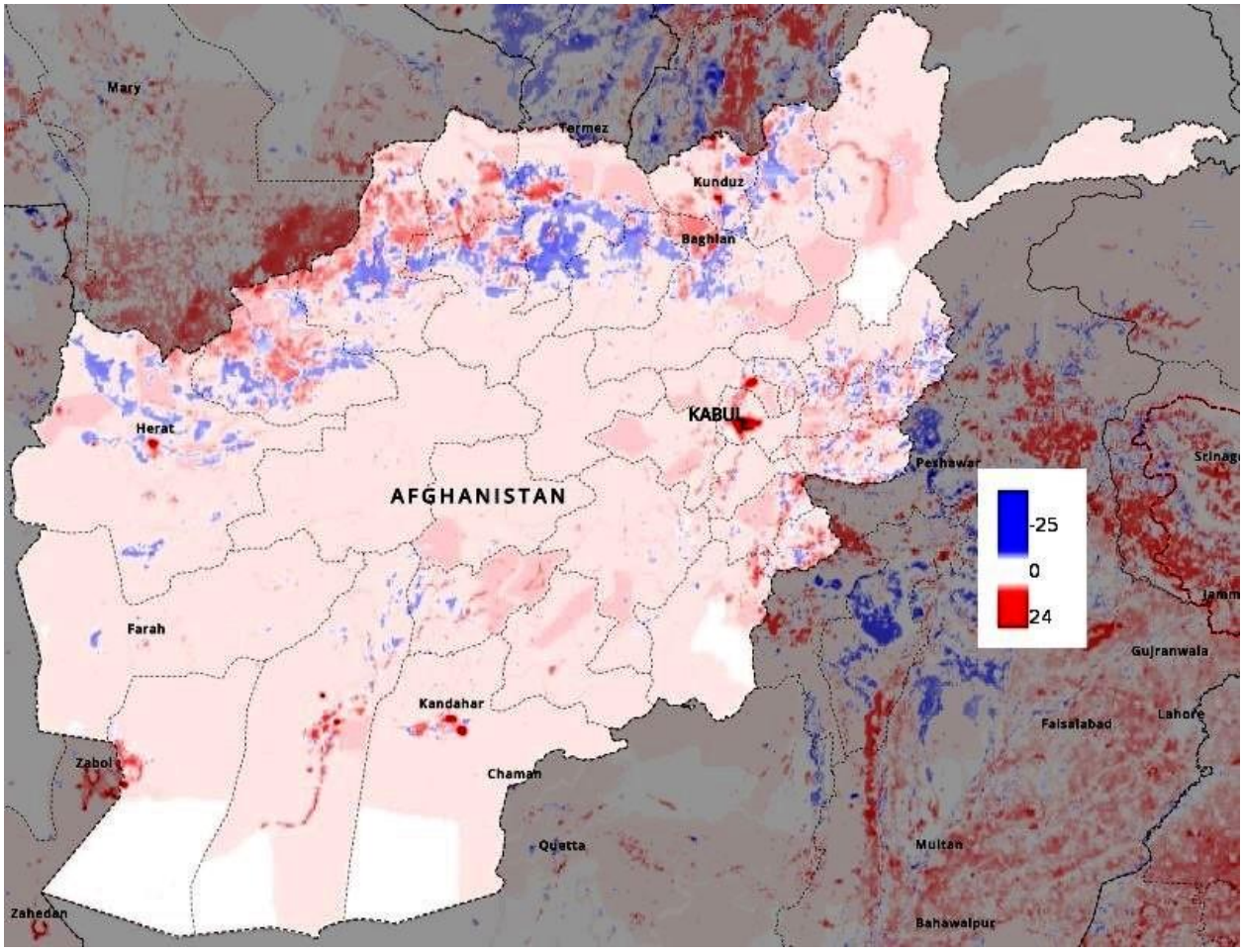


Figure 13: A map of the human footprint difference in Afghanistan for the period 1993-2009 (source: UN Biodiversity Laboratory, accessed 25 November 2018, URL: https://www.unbiodiversitylab.org/)

High population growth, poverty, overdependence of rural populations on natural resources, coupled with a low level of awareness about natural resource management and climate change are the biggest challenges for the protection and management of natural resources and biodiversity in Afghanistan. The reduction of the country's natural resource repository during the years marked by the armed conflict has reduced the livelihood options for local communities, making them even more dependent on the existing degraded natural resource base for meeting their daily requirements.

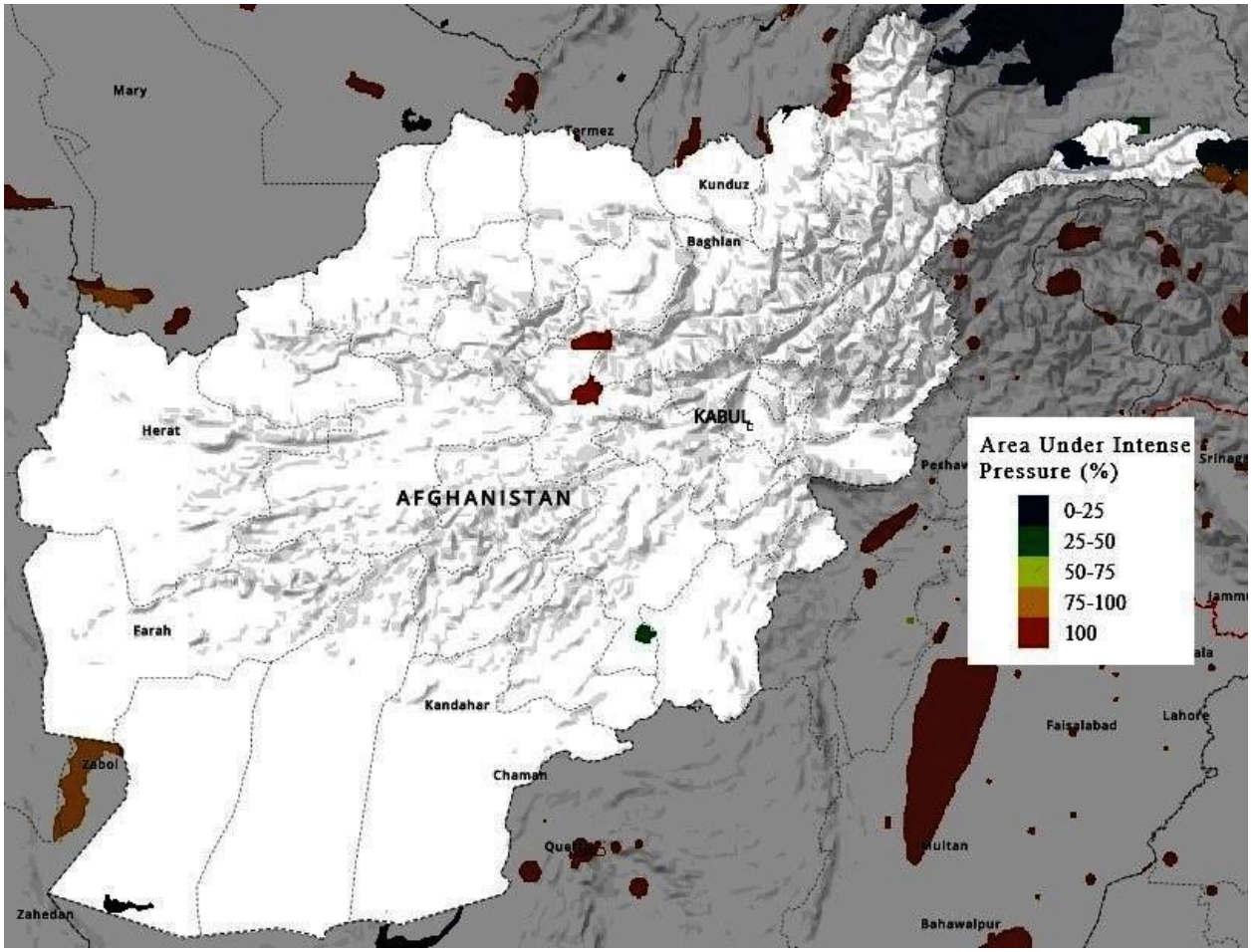


Figure 14: A map of the level of human pressure on protected areas in Afghanistan (source: UN Biodiversity Laboratory, accessed 25 November 2018, URL: *https://www.unbiodiversitylab.org/*)

Table 9: Afghanistan's Population Profile. Source: Afghanistan Living Condition Survey – ALCS 2016-2017.

Indicator	*2014*	*2017*
Total Population (million)	*26.5*	*29.1*
Urban population (million)	*6.4*	*6.90*
Rural population (million)	*20*	*20.7*
Kuchi (nomad) population (million)	*…*	*1.5*
Population density (persons per km^2)	*40.7*	*42.4*
Population Growth Rate (%)	*2.0*	*3.3*
Total Fertility Rate (children per woman)	*4.98*	*5.3*
Dependency ratio	*100*	*101*
Sex ratio	*105.3*	*103.9*
Youth literacy rate (15-24 years) (%)	*51.7*	*53.6*
Literacy rate of population age 15 and over (%)	*34.3*	*34.8*
Gender Parity Index in tertiary education	*0.41*	*0.32*
Population using solid fuels (%)	*75.9*	*74.8*
Households owning irrigated land (%)	*36.6*	*37.9*
Households owning rain-fed land (%)	*16.3*	*19.4*
Households owning garden plot (%)	*12.6*	*13.1*
Mean of irrigated land size owned by households (Jerib)	*6.1*	*4.9*
Mean of rainfed land size owned by households (Jerib)	*13.2*	*12.1*
Mean of Garden plot size owned by households (Jerib)	*1.9*	*1.9*

7.7. Key Threats to Biodiversity in Afghanistan

7.7.1. Natural Hazards and Biodiversity

Afghanistan is highly vulnerable to natural hazards, and a changing climate is likely to exacerbate their impacts. As a very mountainous country with an arid and semi-arid climate, Afghanistan is exposed to several natural hazards that impact biodiversity and people. Based on the World Bank, every earthquake, for example, causes more than 500 fatalities. Around 800,000 people are exposed to flood and drought, causing damage of US$ 280 million to the country's agriculture and farming systems. In addition, landslides expose 130,000 private buildings and dwellings, and avalanches damage 10,000 km or roads in the country (World Bank, 2017).

In addition to climate change-induced hazards, such as droughts and floods, other threats to biodiversity in Afghanistan include rapid urbanisation, hunting and illegal trade, over-grazing, deforestation, over-hunting, shrub collection, dry-land farming and desertification.

Floods and droughts are two water-related disasters Afghanistan has been facing. Deforestation in upper catchment leads to soil degradation and erosion, resulting in raised riverbeds and increased flood risks; degradation of rangelands can lead to increase run-off and soil erosion; improper engineered irrigation systems lead to over-irrigation, increased siltation and flood damage; and lack of policy and regulations on land use has led to encroachment on flood-prone lands in rural and urban areas.

7.7.1.1. Climate Change Hazard

Afghanistan is highly sensitive to climate change. For Afghanistan, the main climatic hazards include periodic drought, floods due to untimely and heavy rainfall, flooding due to the thawing of snow and ice, and temperature rise. The environmental effects and impacts of the climatic hazards include ecosystem degradation, biological diversity and forestry, and water availability, quality, and accessibility; this is in addition to impacts such as loss of lives and livelihoods, health problems, food security and agriculture issues.

Current models indicate significant warming across all regions of Afghanistan. The average predicted increases in temperature will be between 2°C and 6.2°C by 2090s, dependent on global emissions scenarios. Warming is most rapid in spring/summer with this trend being more significant in the north and central plains of Afghanistan. These increases are consistent with the regional temperature trends in Central Asia. All projections also indicate substantial increases in the frequency of 'hot' days and nights in the context of the current climate, particularly during summer months. The mean annual temperature is projected to increase by 1.4 to 4.0°C by the 2060s, compared to 1970 - 1999 averages. The range of projections by the 2090s under any emissions scenario is around 1.5 to 2.5°C. It must be noted that the range of potential annual temperature increases is noticeably influenced by global emission scenarios (Savage et al 2009).

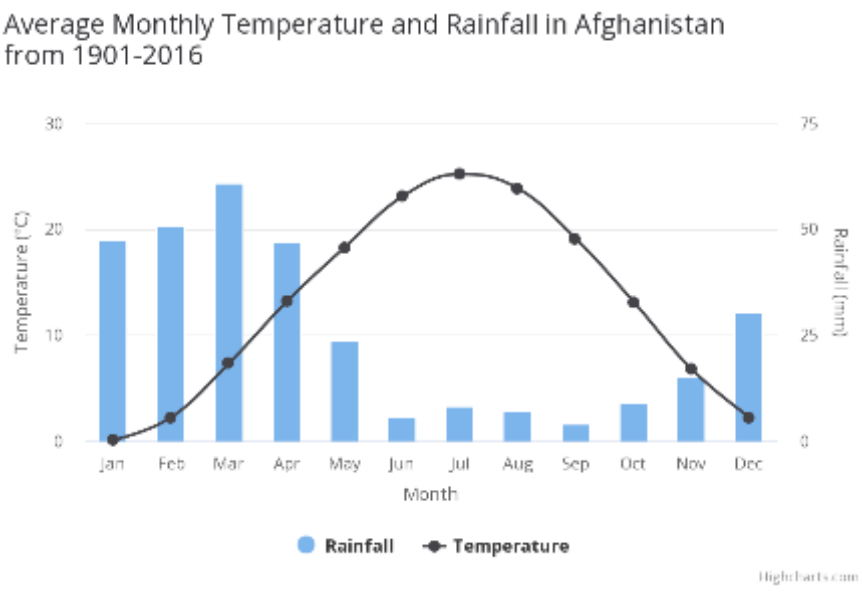


Figure 15: Average monthly temperature and rainfall in Afghanistan (1901-2016. Source: World Bank, Climate Change Knowledge Portal, https://climateknowledgeportal.worldbank.org/country/afghanistan

The average rainfall is projected to show a small increase, although by little more than about 10-20mm, in the short term. In the 2090s, the mean annual rainfall changes indicate generally drier conditions (by between 10-40 mm) through most of Afghanistan. This drying is attributed to spring rainfall. The South will experience significantly drier winters. Projections for mean annual rainfall from a range of models are consistent about the decreases (Savage et al 2009).

Rural communities already have a good understanding of local climate patterns, including inter-annual and intra-annual variability, and are accustomed to dealing with them. However, an important consequence of climate change is that the future climate will be less familiar, more uncertain and, possibly, more extreme. The implication of this aspect is that current local practices, processes, systems and infrastructure, which have been more or less adapted to current climate variability, could become increasingly unsuitable as the climate changes. Vulnerability assessments indicate that climate change in Afghanistan will have serious consequences for natural resources in the country.

Afghanistan is highly vulnerable to climate change and a changing climate exacerbates its vulnerability. The mean annual temperatures in Afghanistan have increased by 0.6°C since 1960 or about 0.13°C per decade. The mean rainfall has decreased slightly at an average rate of 2 per cent per decade, mainly due to decreases in spring precipitation (Savage et al. 2009). It is predicted that Afghanistan will be confronted by a range of increased climatic hazards (Savage et al. 2009). These are likely to be primarily drought-related and associated with increased desertification and land degradation.

Afghanistan's GHG emission is one of the lowest in the world. For instance, the main source of the CO2 gas emissions in urban areas is energy generation, vehicles and transportation, and biomass combustion for heating. Based on the World Bank's data, per capita emissions were around 0.3 tons CO2 per year in 2014. During 2004-2014, on an annual average, the country's carbon dioxide emission per capita was one of the lowest in the region (0.03 per cent), while Afghanistan has disproportionally suffered from the impacts of climate change hazards.

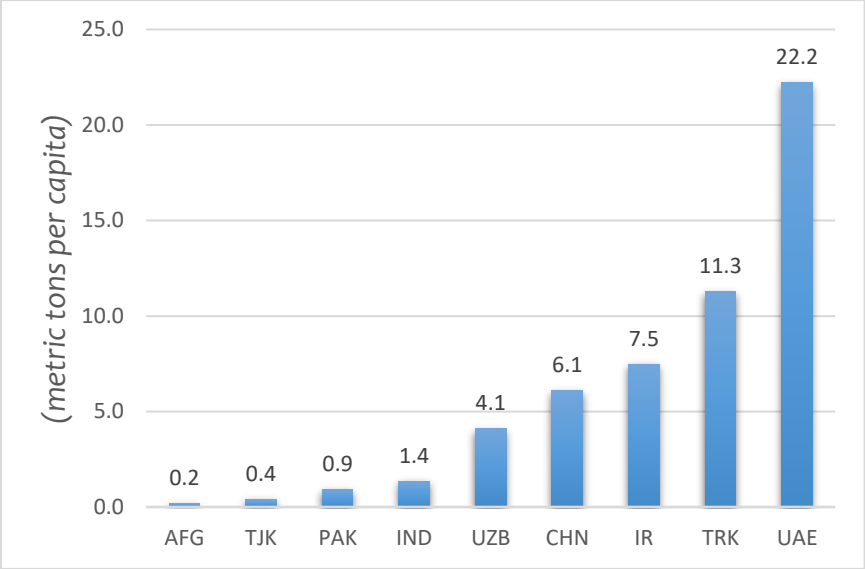


Figure 16: CO2 Emissions Per Capita: Afghanistan and the Region (2004-2014). Source: World Bank Data (Accessed, November 2018)

7.7.1.2. Drought, Agricultural Productivity and Food Security

Afghanistan has historically experienced climate cycles of about 15 years, of which 2-3 are generally drought. In recent years, however, the drought cycle has been more frequent than the historical model predicted. Since 1960, the country has experienced major droughts in 1904-1908, 1923-1927, 1946-1949, 1963-64, 1966-67, 1971-1973, 1987- 2006 and 2017-2018. The country has suffered from the hottest years in 2012, 2015, 2017 and 2018.

The 2018 drought left Afghanistan without adequate wheat and livestock fodder: it caused population displacement and increased the level of food insecurity in the country. Drought is likely to be regarded as the norm by 2030, rather than as a temporary or cyclical event. Based on these predictions, the flood impacts will likely be amplified by more rapid spring snowmelt combined with greater runoff associated with land degradation, loss of vegetative cover and land mismanagement.

In 2015, 16 million of Afghans lived in poverty. The proportion of the population living below the national poverty line increased from 34 per cent in 2007-2008 to 54 per cent in 2016-2017. In the same year, 48 per cent (ALCS. 2016-2017) of the Afghan population were children under age 15, creating a very high dependency ratio of 101. Poverty in Afghanistan is particularly severe in rural areas. The rural population faces not only low productivity and poor access to markets, but it is also prone to natural shocks. Natural resource degradation contributed to deforestation and over-grazing, impacting the population food insecurity.

Natural disasters and prolonged conflict have exacerbated food insecurity among the Afghan people. Drought and flooding have increased the vulnerability of the severely food-insecure population around rural Afghanistan, primarily those living in remote areas. Climate change-induced natural disasters and poor natural resource management impact rural livelihoods and make people more food-insecure.

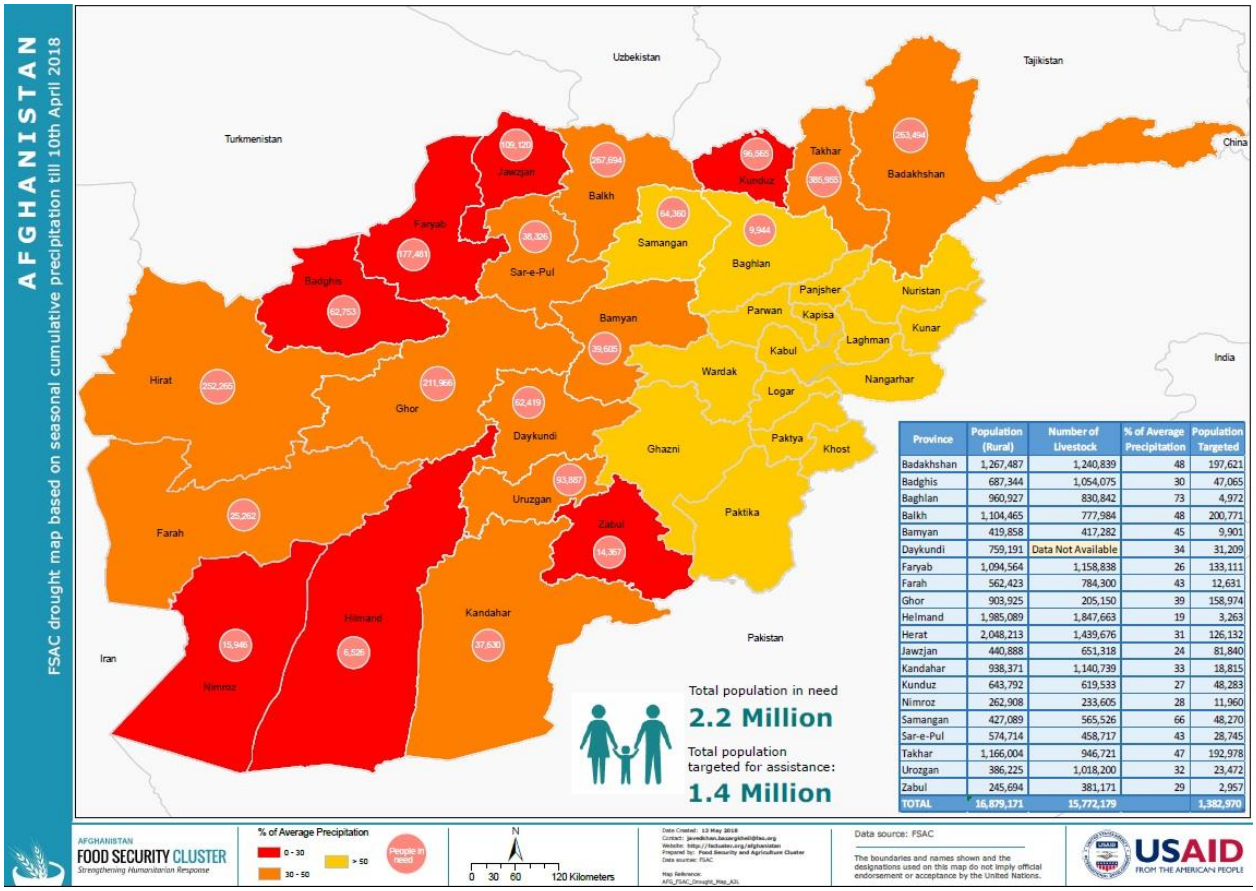
Food and nutrition security challenges also arise from environmental conditions and climate change that affect food production and availability, access to food, and lead to short- and long-term instabilities in food supplies. These factors have contributed to a severely aggravating situation in recent years, as stated in a NEPA/ UNEP Report. [SEP]"The disruption of traditional practices that have resulted from insecurity, migration, a breakdown of social structures poverty, population pressure and natural disasters have led to overexploitation of the natural resource base. Today, we can observe a situation of biodiversity loss, land degradation, denudation of bio-physical protection which accelerates wind and water erosion, and a real lack of productivity in the arid zones. Impoverished soils are reducing carrying capacity, resulting in overstocking, use of unsuitable land for cultivation, and exposure of soils to wind and water erosion. Conflicts are generated by competing for land uses and decreased natural resource and water availability. The consequences have included severe flooding, soil and

wind erosion, deforestation, desertification, loss of pastures and reduced pasture quality, reduction of wildlife populations, air pollution, decrease in the quality and quantity of water for irrigation and drinking, and so on, all compounded by macro-level climatic changes, especially those related to precipitation."

Food security is further threatened by climate change and poor natural resource management. Already much of the land in Afghanistan is degraded due to overuse and conflict. As trees, shrubbery and natural soil embankments are torn away, the land does not hold water, which leads to erosion of valuable topsoil, vulnerability to climatic shocks and an inability to produce food. This is not just a future threat to Afghanistan - this is a very real issue in many provinces today.

Food insecurity also results in mass migrations, including IDPs, which puts pressure on cities when the populations migrate to them for seasonal labour. Food insecurity also produces international migrants, who can unintentionally cause increases in the tension between regional neighbours. Finally, food insecurity drives farmers to illicit forms of agriculture, such as opium poppy, which grows with less water and lower quality soils, and bring in higher profits than many food crops.

The low level of precipitation during winter 2017-2018 caused a severe drought in 2018 that impacted the lives of millions of Afghan people. 2/3 of the country (22 provinces) were affected by the drought in 2018. A considerable drought-driven population displacement happened in 2018 alone, as almost 250,000 people were displaced in Afghanistan due to drought. The drought was particularly severe in the western, northern and southern regions of the country. About 9.8 million people are facing crises levels of food insecurity, of which 2.6 million are facing emergency levels nationwide (FAO Afghanistan). The increased level of food insecurity and poverty puts extra pressure on the habitats and biodiversity.



Province	Population (Rural)	Number of Livestock	% of Average Precipitation	Population Targeted
Badakhshan	1,267,487	1,240,839	48	197,621
Badghis	687,344	1,054,075	30	47,065
Baghlan	960,927	830,842	73	4,972
Balkh	1,104,465	777,984	48	200,771
Bamyan	419,858	417,282	45	9,901
Daykundi	759,191	Data Not Available	34	31,209
Faryab	1,094,564	1,158,838	26	133,111
Farah	562,423	784,300	43	12,631
Ghor	903,925	205,150	39	158,974
Helmand	1,985,089	1,847,663	19	3,263
Herat	2,048,213	1,439,676	31	126,132
Jawzjan	440,888	651,318	24	81,840
Kandahar	938,371	1,140,739	33	18,815
Kunduz	643,792	619,533	27	48,283
Nimroz	262,908	233,605	28	11,960
Samangan	427,089	565,526	66	48,270
Sar-e-Pul	574,714	458,717	43	28,745
Takhar	1,166,004	946,721	47	192,978
Urozgan	386,225	1,018,200	32	23,472
Zabul	245,694	381,171	29	2,957
TOTAL	16,879,171	15,772,179		1,382,970

Figure 17: A map of the population affected by drought in Afghanistan as of May 2018 (source: after Afghanistan Food Security Cluster, accessed 22 November 2018, URL: https://fscluster.org/afghanistan/document/fsac-afghanistan-drought-map-based)

Case Study 5: : Climate Change Induced Glacial Lake Outburst Flood (GLOF)

Puzhghor, Panjshir, Afghanistan

July 2018

Lakes of glacial origin in Afghanistan number in the thousands and range from small ephemeral ponds to large bodies of water many square kilometres in size. They are most plentiful from high in the eastern Pamirs of the Wakhan and the eastern Hindukush, to the western-most range of the Koh-e-Baba mountains south of Bamiyan (Shroder. J. F, 2014). In July 2018, Afghanistan experienced a catastrophic glacial lake outburst flood (GLOF); the flood event occurred in Puzhghor in Panjshir province. Puzhghor drainage area has approximately 5 km length and 4 km width, covering a total area of 20 km^2, of which about 70 to 80 per cent is made up of underground glaciers at a height of 6-6.5 meters. The drainage area is surrounded by high snow mountains from the north, south and west sides. On the eastern side, the drainage is surrounded by glacial masses and large metamorphic rocks. The metamorphic rocks have a higher capability of absorbing sunlight than any other kinds of rocks.

Afghanistan's high mountains have a significant role in storing and saving snow throughout the winters. The winter snowfalls provide much-needed water during the spring and summer that Afghan farmers use for irrigation agriculture. Due to climate change and global warming, drastic and instantaneous rains - instead of snowfalls - cause glaciers, including glacial lakes, to melt faster and therefore create floods; when that occurs, the GLOFs have destructive impacts on the habitat, causing ecological changes, destruction of agriculture and livestock, and damages rangelands and soil.

Afghan government assessments showed that the speed of the Puzhghor flood was 6 meters per second, which was unprecedented in the history of the mountainous hydrology of the country. Based on a technical assessment of the Ministry of Energy and Water (MEW) and NEPA, the instantaneous flood peak was around 560 m3/s, the direct flow of flood was about 392 m3/s and the approximate time of instantaneous flood peak was 40 minutes. As a result, the volume of instantaneous flood peak was calculated to be about one million cubic meters.

Climate change and temperature rise lead to the rapid melting of the glaciers, snow deficiency, and the settlement of the area to a depth of 4 meters, which are considered key causes of glacial lake outburst and flood events in Panjshir Province. The foremost reason for settlement at this area was the rapidly melting and degradation of underground glaciers, the increases of the temperature degree that can melt glaciers faster, as a result of the excessive aggregation of the water formed, which later caused the breakage of the east wall of the glacial lake. Based on the assessments, warmer temperatures due to climate change have been considered the primary cause of the outburst.

According to NEPA's assessment, the outburst caused great social and economic losses to the local people; it destroyed agricultural land, gardens, animals or livestock, houses, vehicles, and rural infrastructures such as small hydroelectric projects, and water supply canals. The GLOF destroyed 125 homes, 15 small hydrometric projects, 100 hectares of agricultural land, four water canals, and 4 key bridges. The GLOF killed 4 men and 2 women. In addition, it killed over 1,000 livestock, causing huge damage to the local economy of the people.

The probability of flooding caused by the melting of glaciers and seasonal/permanent snow will also accelerate glacial floods in the future. Currently, glaciers are melting rapidly: based on a field survey of SEW, about 25 to 30 per cent melting factor is much higher than the international norms, which shows intensive effects of climate change; losing water resources will cause the reduction of surface and underground water overtime and challenge the country's water resources management. Historically, climate change and the warmer temperature reduced the total glacial lakes area of the province by 39 per cent. Back in the 1990s, there were 97 glaciers covering a total area of 20.2 km2, while this number got reduced to 69 glaciers covering 12.3 km2 in 2015.

Therefore, it is necessary for Afghanistan and the international community to plan and take steps to manage water resources, climate change, raise public awareness, reduce greenhouse gas emissions and protect the environment. On the other side, lack of public awareness and lack of facilities that anticipate and control such occurrences causes more human damage for people living at the downside of the flooding area.

7.7.1.3. Urbanization, Pollution and Environmental Health

Based on NSIA Statistical Yearbook (2017-2018), there are 7.1 million (out of a total of 29 million) Afghan people living in urban areas. In mid-2019, however, NSIA announced a total population of Afghanistan of about 32 million. Around 50 per cent (3,984,343) of the Afghan urban population lives only in the capital (Kabul). The capital, together with other key regional cities like Herat, Kandahar, Mazar-i-Sharif, and Jalalabad, is home for

around 69 per cent of the Afghan urban population. The rate of urbanisation in Afghanistan is estimated to be between 3 to 5 per cent per year (World Bank 2014). Since 1980, Afghanistan's population has grown by 275% and this could double by 2045.

Although data are unavailable on the current trends of habitat loss and resource use in relation to urbanisation in Afghanistan, it is recognized that the increasing human population in this country puts indeed pressure on the already limited natural resources and it has remained one of the key issues for biodiversity, species and habitat loss. Demands regarding the natural environment are increased by more people, which leads unavoidably to a decline in biodiversity. This rapid increase in the population of the country is an underlying challenge to biodiversity conservation. Rapid urbanisation can put pressure on scarce water, natural resources, energy and food resources, and can lead to political instability. The conversion of agricultural land in peri-urban areas, and the demand for wood, water and other resources for construction, and basic essentials have resulted in the loss of forests and wetlands, as well as other natural and semi-natural habitats across the country.

In the past decades, cities in Afghanistan have expanded rapidly. Back in 1950, only 1 out of every 20 Afghans lived in the cities. In 2014, 1 out of every 4 lived in the cities. By 2060, however, it is estimated that 1 out of every 2 Afghans will live in the cities. The large urbanisation in Afghanistan has been informal in the absence of better city governance structures. The absence of formal land and housing has resulted in informal and low-density sprawl that has created environmental challenges, including pollution. One of the key challenges facing the country today is how to balance urban and rural development. Urbanisation, due to better economic opportunities in the cities, is an inevitable transition, however, ensuring environmental protection and sustainable use of land for housing and agriculture remains a key challenge in the cities in Afghanistan.

Land grabbing, inefficient use of land, tenure insecurity primarily in informal settlements, and limited access to well-located land for housing in the case of low-income households are some of the challenges in land administration in urban areas in Afghanistan. In fact, many of the country's urban challenges are linked to land issues.

Solid waste in urban areas is one factor of air pollution in Afghanistan. Due to the lack of strong institutional capacities and funding, solid waste management is a visible municipal governance deficiency. Currently, the existing means and methods for solid waste collection and disposal systems by municipalities in major cities like Kabul are neither sustainable nor in compliance with environmental protection, and the country does not have a comprehensive plan on municipal solid waste management and a clear long-term strategy to deal with the growing waste management problems.

Based on Kabul municipality, there are around 3000 tons of solid waste generated each day in Kabul. Fugitive dust, emissions and smoke from waste hauling and vehicles, open waste bins and waste burning, all contribute to air pollution in urban cities in Afghanistan. Improper waste management also results in land and soil degradation due to open dumping of waste, leachate from unlined landfills contaminating groundwater. Solid waste also affects natural water bodies and streams due to the leachate from waste dumping sites during monsoon flowing. All of these result in health issues both to human and animals, causing respiratory infections and communicable diseases to humans and damage to the intestines of grazing animals. Based on the State of Global Air (2018), a report from the Health Effects Institute, there are 406 deaths per 100,000 people, attributable to air pollution in Afghanistan, which is the highest in the region; the report estimates that air pollution was responsible for 51,600 deaths in Afghanistan in 2016.

Air quality, especially in cities in Afghanistan, has been progressively deteriorating over the years as vehicles, smokestacks, brick–kiln emissions and blowing dust add to the pollutant load. Late autumn and winter are the worst, particularly during days of temperature inversion when warm air aloft traps lower, and colder air beneath as in a stable lid in the mountain-bounded valleys that are so common in Afghanistan. At these times, the common wood cooking fires further decrease the air quality to the point where more and more people choose to wrap their nose and mouth in masks or layers of cloth to breathe through. Polyaromatic hydrocarbons (PAHs) are the chief worrisome culprit in air pollution as they are implicated in lung cancers. The PAHs bind with dust particles which prevent them from escaping upward into the higher atmosphere.

Air pollution is one of the largest environmental risk factors that contribute to death in Afghanistan. Particulate matter less than or equal to 2.5 micrometres in aerodynamic diameter or $PM_{2.5}$ is one of the components of air pollution that is ranked as one of the risk factors for early death in Afghanistan. PM2.5 is the most consistent and robust predictor of mortality from cardiovascular, respiratory and other diseases in studies of long-term exposure to air pollution.

7.7.1.4. Hunting, Trapping, and Trade

Though recognizing the disadvantages, there are local communities that engage in illegal logging and felling trees mainly due to economic reasons and lack of livelihood choices. Unemployment and lack of access to other economic opportunities force local people to cut trees for household fuel needs.

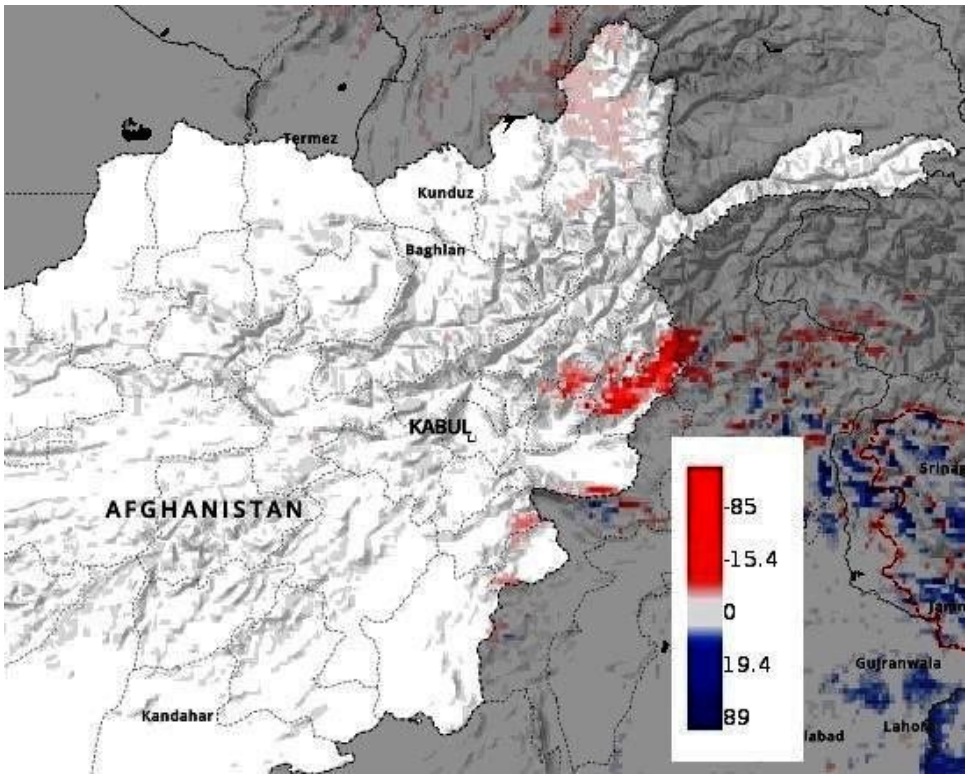


Figure 18: A map of tree canopy change in Afghanistan during the period 1982-2016 (source: UN Biodiversity Laboratory, accessed 25 November 2018, URL: https://www.unbiodiversitylab.org/)

Afghanistan's timber trade is a significant contributor to the country's economy. Measured against its gross domestic product, the Kabul timber trade alone is the equivalent of 2 per cent of the country's economy. Sale statistics from other parts of the country and cross border trade with Pakistan would add significantly to this figure, making timber trade one of the more important single resource used in the country. The National Environmental Protection Agency (NEPA) estimates that roughly half of all energy needs in the country are met by firewood. Even though and unlike before, trucks with wood clearly destined for sale in Pakistan cannot travel freely on the highways since the government and border police enforce the law and prohibit smuggling of timber, the trade continues as of today.

There remains a thriving fur trade in Kabul, Mazar-e-Sharif and other centres. Many of the species represented are not native and clearly imported. It remains unclear what proportion of native species actually originate from Afghanistan. There are active bird bazaars in Kabul and Mazar-e-Sharif, as well as other Afghan centres that trade a wide variety of wild-caught native species and captive-bred imports. Falcon-trapping is extensive with most of the desirable species (e.g., Saker Falcons (Falco cherrug), Peregrine Falcons (Falco peregrinus)) being sold to middlemen in neighbouring countries who in turn sell them to wealthy people in some Arab states of the Persian Gulf. Falconry in Afghanistan is practised largely with lower-value species such as sparrow hawks (accipter nissus). Chukar Partridges (alectoris chukar) is extensively trapped and commonly kept for fighting and show, while small birds are trapped or netted for food.

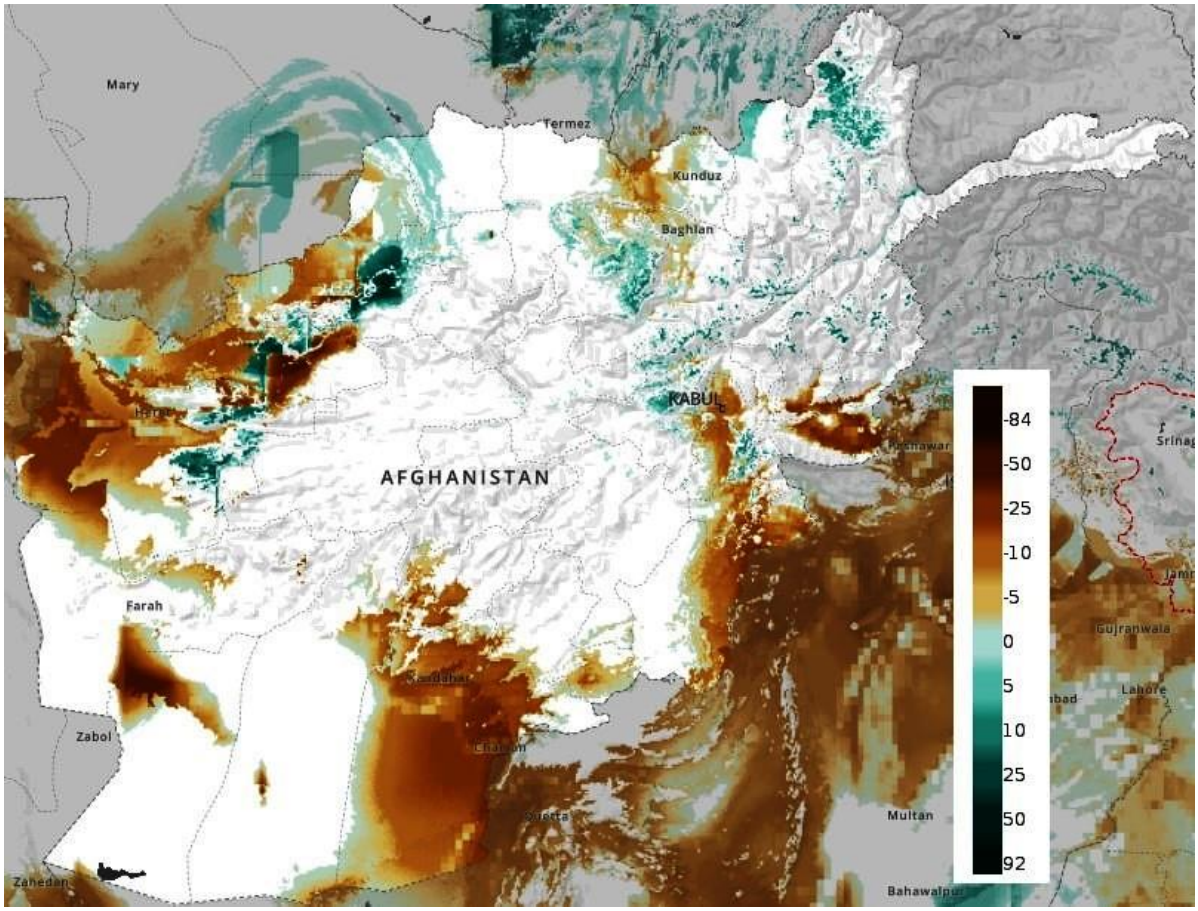


Figure 19: A map of the estimated change in crop suitability in Afghanistan for the period 2011-2100 (source: UN Biodiversity Laboratory, accessed 25 November 2018, URL: https://www.unbiodiversitylab.org/)

Furthermore, there is a demand for falcons, e.g., Saker Falcons (Falco cherrug) and Peregrine Falcons (Falco peregrinus)]. The demand comes from the affluent in selected Arab states and is sold to them through middlemen. Falconry is still practised in Afghanistan but the demand here is for relatively low-value species such as sparrow hawks (Accipter nissus). Chukar Partridges (Alectoris chukar) is trapped for fighting, a popular sport, and also for food. A Fauna Conservation and Hunting Regulation is under development which will regulate hunting, but it may be several years before it is approved by the Cabinet and even longer before it can be effectively implemented (NEPA 2014).

Hunting and trapping of large mammals and birds continue to this day, despite much improved national government and community conservation capacity. During the war years, wildlife suffered as heavily armed individuals were dispersed widely throughout the countryside and depended partially on wild meat for subsistence. Today, waterfowl hunting is widely practised, especially in the winter months, while large mammals hunting is undertaken for sport by the elite in some places or opportunistically by local people. However, large animals are so rare now that many once keen hunters have given it up.

Through a presidential decree, Afghanistan banned hunting in 2005. The Fauna and Hunting Regulation is yet at a draft stage and not finalized.

7.7.1.5. Overgrazing and Rangeland Degradation

In Afghanistan, overgrazing continues to reduce vegetation cover and exposes soils to erosion. Afghanistan is being grazed by sheep, cattle and goats, and plant communities have accordingly adapted to heavy grazing pressure. Due to the arid to semi-arid climatic nature of Afghanistan, most of the rangelands of the country have very low fodder productivity, producing on average only 0.4-1.5 tons/hectare of dry matter (NRM/MAIL). The animal number in Afghanistan has been fluctuating over the years. However, even at its lowest time, the total number of animals is still very high compared to the total fodder production from natural rangelands. In 2003, for example, according to FAO, Afghanistan had roughly 43 million sheep Livestock Units (sheep, not excluding

a significant amount of poultry). If each animal needs 1.5kg dry matter per day, this would need a total fodder supply of at least 23 million tons (NRM/MAIL). This requires average fodder productivity of around 0.8 tons/hectare, which is hardly the case in Afghanistan. As a result, most of the rangelands are overused.

In general, in Afghanistan, any area within reach by shepherds and hooved animals is commonly overgrazed, mostly by sheep and goats, as well as exploited for fodder plants (Breckle et al., 2010) and uprooted shrubs for fuel that are transported offsite. This also applies to remote deserts, as well as the high mountain valleys and alpine meadows that are used seasonally as rangeland by the nomadic Kuchis and seminomadic shepherd tribes. As a consequence of this pervasive grazing pressure, the structure and floristic composition of most rangelands in Afghanistan have been changed, with an increase of unpalatable, poisonous or spiny species, even in the better-watered monsoonal border areas with Pakistan.

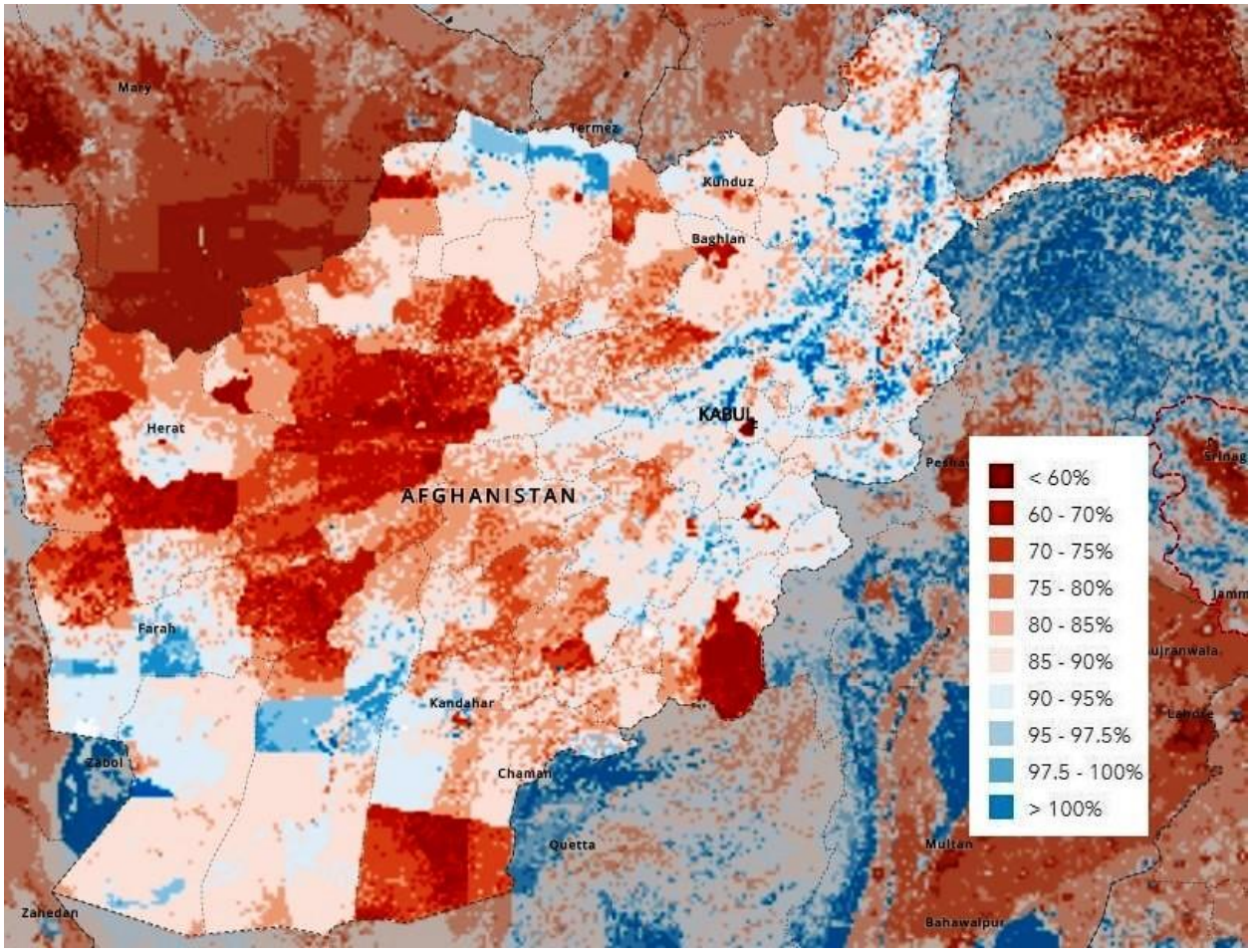


Figure 20: A map of the biodiversity intactness index in Afghanistan for 2016 (source: UN Biodiversity Laboratory, accessed 25 November 2018, URL: https://www.unbiodiversitylab.org/)

During drought years, the resulting erosion can be increased mainly by wind deflation, but strong episodic rains or heavy snowmelt will cause dramatic loss of soil by erosion as well, with a complete and partially irreversible change of habitat conditions. After many centuries of this activity, as has happened over the many millennia in Afghanistan, soils above bedrock that have taken many thousands of years to form are progressively stripped away to leave only the underlying rock exposed on the surface. Little will continue to grow there with no soil into which new vegetation can become rooted. The extensive rocky wastelands that dominate Afghanistan are the result.

It should be noted that due to the highly variable annual rainfall in Afghanistan, most of the rangelands in Afghanistan are not in equilibrium, its system dynamics being mainly controlled by climatic factors such as frequent drought or low temperature. In such cases, the usefulness of policies and management measures based on conventional terms such as ‘overgrazing”, ‘degradation” and “carrying capacity”, has to be questioned and cautiously applied. However, it also contributes to rampant overgrazing, especially along mountain slopes and

rangelands. This leads to deforestation and further exacerbates the process of land degradation, making natural afforestation more complex (NEPA 2015).

7.7.1.6. Dry-land Farming

According to MAIL, conversion of rangelands into rain-fed farming lands either for fodder production or for other speculative production purposes has become common in recent years. This practice has caused a visible decrease in the available rangeland area and is also bringing about serious erosion problems. By some estimates, only about 25 percent of cropland is currently irrigated with the remainder being dry-land or rain-fed farming (World Bank 2007). However, FAO (2013) reports that this figure is 59 percent. In the arid and semi-arid Afghan environment, dry-land farming is usually a risky undertaking and often an act of desperation borne of food insecurity.

Conversion of rangelands into rain-fed farming lands either for fodder production or for other speculative production purposes is common in recent years. This practice has caused a visible decrease in the available rangeland area and is also bringing about serious erosion problems. “In fact, the widespread cultivation of what had historically and traditionally been upland seasonal grazing / pasture-land for un-economic barely subsistence rain-fed crops of wheat (desperation agriculture) has seriously damaged a very vulnerable environment over a vast area of upland Afghanistan. It continues to be a serious problem quite as serious, possibly even more so because it is so widespread than the physical destruction of 'forest' land. Although this has been and continues to be very serious indeed in all regions were in the past there was tree cover. In turn, this has also lead to greater pressure being put on such seasonal grazing as remains and is causing erosion problems on a massive scale.” Anthony Fitzherbert (author’s personal communication). Unfortunately the whole rural environment in Afghanistan is under such immense pressure due to a combination problems, including population and economic pressure on viable land resources, conflict and insecurity, cyclical drought and almost certainly climate change and let it be said also in some instances the adoption of inappropriate systems of agricultural and the inappropriate use of modern methods including mechanization.

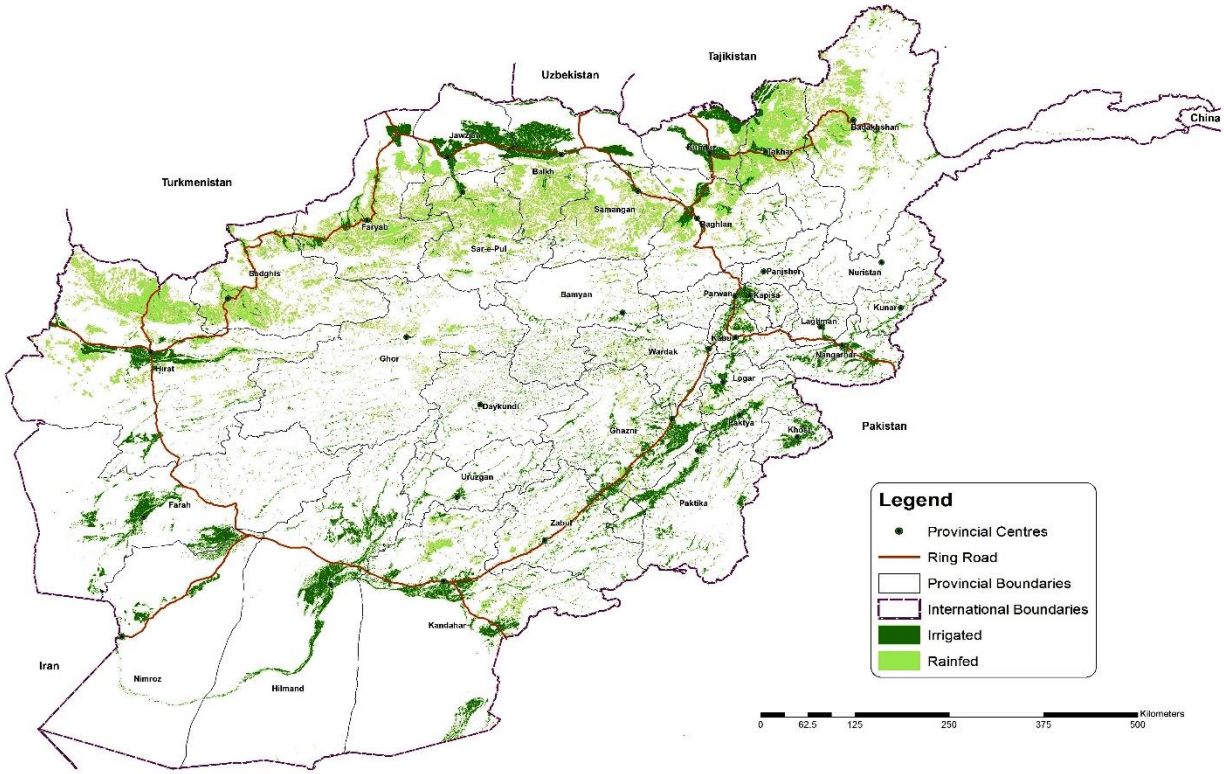


Figure 21: Map of irrigated and rainfed land in Afghanistan in December 2015 (source: Afghanistan Ministry of Agriculture, Irrigation, and Livestock)

7.7.1.7. Water Diversion and Loss of Wetlands

Persistent conflict and natural hazards including drought have impacted many wetlands in Afghanistan. The wetlands support underground water and they are key habitats for a significant population of migratory birds. Afghanistan has few lakes, water bodies and wetlands relative to its neighbouring countries and many of those that exist are increasingly at risk from a combination of water diversion and drought. There is little systematic data available to determine the extent of this threat. Anecdotal information is however available for some of the better-known wetlands.

The Kol-e-Hashmat Khan is a seasonal wetland located within Kabul city; it is situated at an elevation of 1973 m and has an area of 191 hectares. It is an important staging area for waterfowl and was used as a hunting ground for Afghan royalty for nearly 500 years. Water diversions from the Logar river have reduced the amount of water reaching the lake impacting biodiversity and wildlife. The lake was declared a Waterfowl Reserve by King Zahir Shah in the 1930s (NBSAP 2041-2017). Over 150 species of migratory birds were recorded in the area and the lake has supported as many as 30,000-35,000 water birds. The lake dried out in 2018 due to the severe drought.

Band-e-Amir consists of a chain of six lakes in the Central Highlands of the western Hindukush, in Bamyan Province. These lakes are known for their scenic beauty and are also home to several water birds. The Dasht-i-Nawar lake lies in a vast depression at high altitude in the Koh-e-Baba range, an offshoot of the Hindukush. Formerly a perennial lake with a huge area of mudflats and numerous islands, it dried up in 1999 as a result of drought. The lake provided breeding grounds for the Greater Flamingo Phoenicopterus (ruber roseus) and a base for thousands of migratory waterbirds of various species.

Dams on the Gardez and Ghazni rivers and tube-wells threaten the viability of Ab-e-Estada (290 km^2) saline wetland in Ghazni Province. Ab-e-Estada was once a staging area for the Critically Endangered Siberian Crane (Grus leuco- geranus); the male crane is known to have been shot and no Siberian Crane has been seen since 2006. Although there are no recent data, Ab-e-Estada was once an important breeding area for greater Flamingos (Phoenicop- terus roseus). The Sistan wetlands on the Afghanistan - Iran border is a water bird area of international importance. The entire system of shallow lakes essentially dried up in the period 2000-2004 (UNEP Post-Conflict Branch 2006).

In the future, the problem of wetland loss can be expected to worsen as Afghanistan diverts more water for irrigation, hydroelectric and flood control, as wetlands are drained for agriculture and urbanisation and as drought becomes more common through climate change.

7.7.1.8. Desertification

Afghanistan is highly vulnerable to climate change-induced hazards such as drought and floods making Afghanistan highly susceptible to desertification. It is believed that the process of desertification is advancing in several areas of Afghanistan's arid northern, western and southern regions. The vulnerability of the surfaces and their sensitivity to desertification was first estimated by the United States Department of Agriculture (USDA) on the basis of a scientific study (ESWARAN, et al. 2000). The study shows that about 70 per cent of the country's total land area is considered to be highly vulnerable to desertification and only 20 per cent of the total area is not influenced by this process. In addition to these natural processes, the desertification process has even got intensified as a result of warfare (Breckle & Rafiqpoor 2010).

Table 10: Vulnerability to Desertification. Source: Field Guide Afghanistan: Flora and Vegetation (2010).

Total Area (km^2)	**Vulnerabiltiy to desertification**							
	Low	%	Moderate	%	High	%	Very High	%
652,089	**2,954**	**0.46**	**39,088**	**6.04**	**43,838**	**6.77**	**436,480**	**67.41**

Rangelands are at particular risk from desertification, where widespread grazing has reduced vegetation cover and exposed soils to erosion. Many communities have had to reduce or dispose of livestock because of the reduced quality of rangelands. Even though there is an increasing recognition that the reduced ecosystem functions of the rangelands may partly be due to the climatic variability characterized by frequent droughts, it is also the inadequate management that has impacted these ecosystems. Due to desertification, Afghanistan land areas continue to be degraded, losing its water bodies and wildlife.

Owing to their significance as a basic resource base for the socio-economic development of Afghanistan, problems related to rangelands have been extensively discussed by a range of stakeholders, academicians and policymakers. Severe degradation of rangeland ecosystem continues to remain a major cause for concern.

Afghanistan is highly susceptible to desertification. It is believed that the process of desertification is advancing in several areas of Afghanistan's arid northern, western and southern regions. Rangelands are at particular risk from desertification, where widespread grazing has reduced vegetation cover and exposed soils to erosion. Many communities have had to reduce or dispose of livestock because of the reduced quality of rangelands. Even though there is an increasing recognition that the reduced ecosystem functions of the rangelands may partly be due to the climatic variability characterized by frequent droughts, it is also inadequate management that has impacted these ecosystems. NRM Strategy (2017-2020).

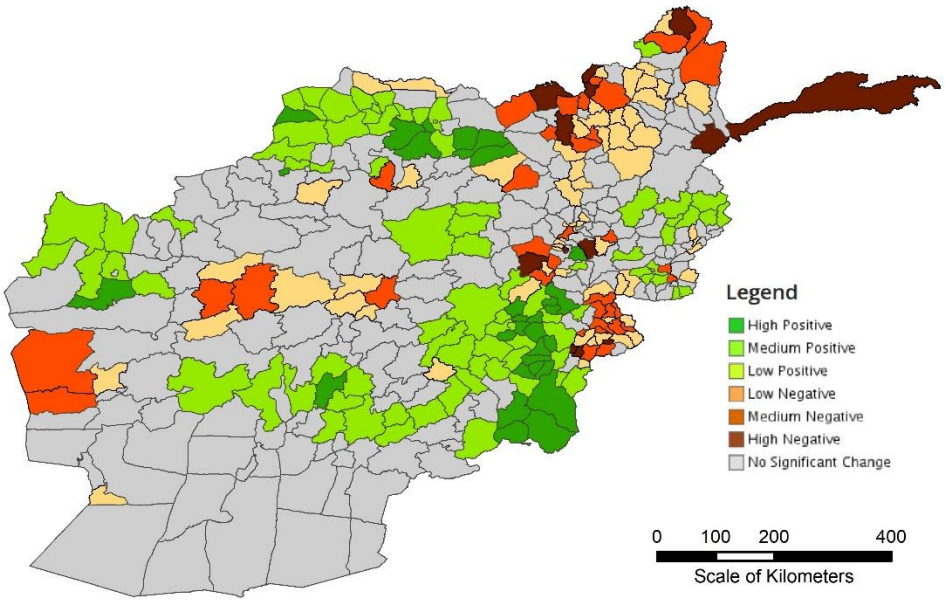


Figure 22: A map of Afghanistan showing districts in terms of their negative or positive level of land cover change during the period 2001-2012 (source: after WFP Geonode, accessed 22 November 2018, URL: https://geonode.wfp.org/layers/geonode%3Aafg_ica_landdegradation_geonode_20160617)

This figure shows the land cover change (or degradation) in Afghanistan by districts during the period 2001-2012. Negative land cover change implies a loss of vegetation and is progressively coloured darker brown to indicate this, whereas positive land cover change implies growth in vegetation and is coloured increasingly greener to indicate greater vegetation. From this map, it can be seen that the districts of most concern are generally in the north-east of the country.

The removal of trees in Afghanistan is a quite serious situation. We do know from archaeological studies and writings in antiquity (Emperor Babur's memoirs, Babur Nama, among others) that parts of Afghanistan were covered with deep, cedar-rich forests well into the Mughal period, which dates back about 500 years ago (Ponting, 1990; Anon, 2003). Only a few centuries in the past, deciduous and coniferous forests covered some 5 per cent of the current land area of the country, with about 1 million ha of oak and 2 million ha of pine and cedar, growing mostly in the eastern portions of the country (Anon, 2008).

These trees grow mainly between altitudes of 2500–3300 m (Figure 17.9), being replaced mainly by juniper above that. The highly fragrant wood of the deodar cedar is the main tree that has been extracted from these forest areas, mainly for illegal export to Pakistan (~66 per cent). During the times of the Mujahideen and Taliban in the 1980s and 1990s, local government officers reported that up to 200 timber trucks per day were operating on the main road in Kunar Province (Figure 17.10). Because each truck could carry a volume of timber representing 5–10 trees, or ~44 m3 of wood, this represents an off-take of up to 200ha/day (assuming a density of 20 mature trees per hectare). By 2003, even with government decrees against uncontrolled logging, a range of 25–50trucks/day were still removing logs. Forest officers and local people had estimated that the loss of forest was in the range of 50–70 per cent so that UNEP used satellite imagery for 1977–2002 to obtain better estimates. The results showed the following figures: 71 per cent for Nangarhar Province, 53 per cent for Nuristan and 29 per cent for Kunar. Similar losses were estimated for the provinces of Paktia, Khost and Paktika (Anon, 2003).

In the northern provinces, open savanna woodlands with pistachio, almond and juniper trees originally covered some 32 million ha for about 48 per cent of the country as well. Tree numbers were something like 20–

100trees/ha. At the present time, most of the forests have retreated or gone entirely in places where they once flourished. For example, some 40 years ago, the north-eastern Badghis, Takhar and Badakhshan provinces held the most continuous and productive pistachio woodlands in the country. Above 1500 m altitude, the pistachio woodlands increasingly gave way to juniper. In these areas, an estimated 50–70 per cent of the trees have been lost through combinations of fuel-wood stockpiling during the Soviet occupation and military forces cutting trees indiscriminately for fuelwood, as well as to reduce hiding and ambush opportunities for opposing forces. UNEP (Anon, 2003) has estimated that woody shrubs and dung meet about 50 per cent of a family's fuel needs for a year in that region, with pistachio trees supplying the remaining per centages. Calculations show that this amounts to 20–40 trees per family annually, which because the nuts are harvested also, as well as the land, being heavily grazed over; collectively, this eliminates regeneration possibilities so that no new seedlings have been observed in recent years. With help from USAID and the Afghanistan government, some 18 forest regeneration sites were established by 2003.

7.7.1.9. Shrub Collection

The natural ecosystems of Afghanistan have been heavily degraded except for a few inaccessible or uninhabitable areas. As noted, the forests have been relentlessly exploited for timber and fuel. Woodlands, shrublands and even the scarce vegetation of the arid semideserts were also thinned out over the years and then increasingly devastated and destroyed as the search for firewood and brushwood has gone on unceasingly for cooking and warmth.

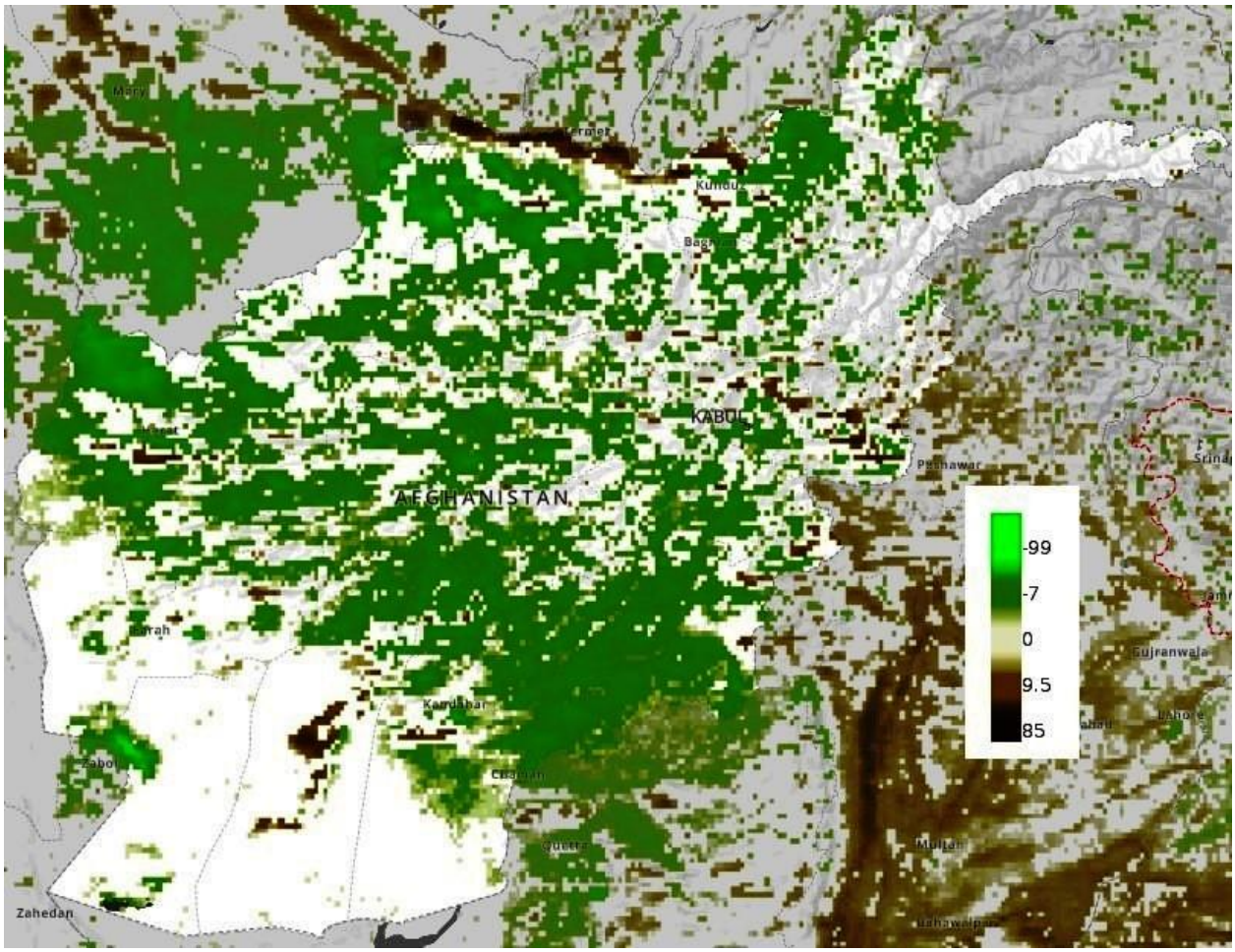


Figure 23: A map of short vegetation change in Afghanistan during the period 1982-2016 (source: UN Biodiversity Laboratory, accessed 25 November 2018, URL: https://www.unbiodiversitylab.org/)

Together with dried dung, shrubs are the major source of fuel in much of rural Afghanistan. Shrubs are dug up by the roots and burned for bread-making, general cooking and heating. As settlements grow, ranges near inhabited areas are becoming denuded of shrub vegetation and shrub collectors are being forced to travel further afield. Little information is available on recovery rates of shrub vegetation. Loss of shrubs is of particular

concern because their dense, thorny matrix provides protection from grazing for a vast number of native herbaceous and grass species, many of which are endemic. Shrub loss also increases soil erosion by wind and water. According to some communities, catastrophic landslides and floods associated with spring rains and snowmelt have become increasingly common in recent years. Much of Afghanistan is dominated by thorny cushion-shaped shrubs. This vegetative community itself results from thousands of years of livestock grazing on a landscape that may have been mostly grass – Artemisia steppe.

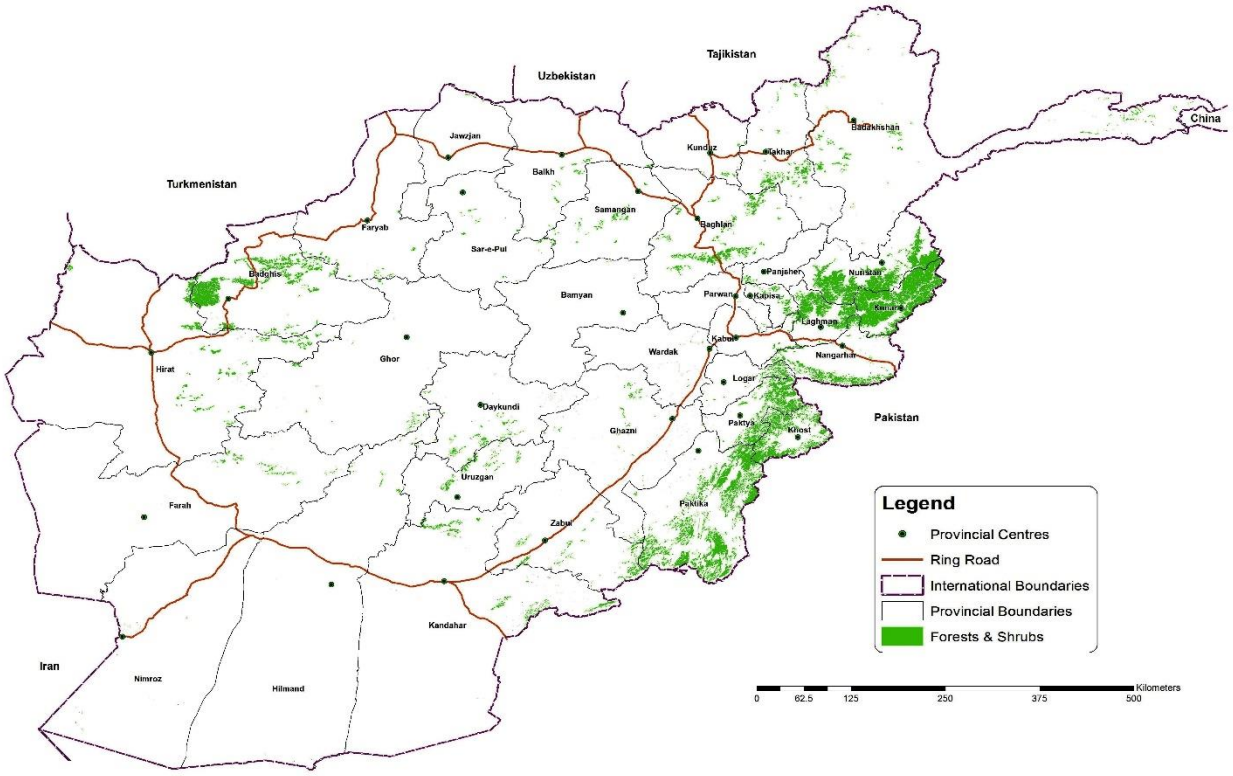


Figure 24: Map of forests and shrubs in Afghanistan at December 2015 (source: Afghanistan Ministry of Agriculture, Irrigation and Livestock)

The fuel shortage is a critical issue in rural Afghanistan. More than 60 per cent of Afghanistan's population lives in rural areas and have no access to modern forms of energy, such as electricity, gas and liquid fuels. Most of them depend on traditional energy sources such as firewood, cow dung, agricultural crop residue, and kerosene for cooking, heating and lighting. NEPA estimates that roughly half of all energy needs in the country are met by firewood. An Asian Development Bank (ADB) reference study claims that as much as 85 per cent of Afghanistan's energy demand is met by wood. In Kabul alone, each year over 580,000 cubic meters of firewood is traded.

The increasing demand for energy arising from a growing population has created increasing pressure on traditional rural energy sources, particularly on fuelwood and rangeland shrubs. Because of the long winters and cold climate of the country, Afghan people have to use large amounts of fuelwood for survival. Data from a survey (ICIMOD 2007) indicated that, on average, a rural family requires 800 kg of fuelwood per month in the summer and 1,200 kg in the winter. Such tremendous pressure on fuelwood has created serious pressure on forests. There is a visible increase in recent years in the use of solar energy, but mostly for communication. For space heating and cooking, firewood is still the main form of energy in the countryside.

Reduced fuelwood use has been registered in some parts of the country. WCS distributed more than 500 fuel-efficient stoves to households in Band-e-Amir, provided 365 solar cookers to families in 2016 and built attached solar greenhouses in 100 households in 2017. Some families reported that the use of fuel-efficient stoves had decreased their wood shrub consumption substantially (UNDP in Band-e-Amir).

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Annexes

Annex 1: Number of Species Known to Exist in Afghanistan

Item	*Known Species*	*Uncertain Species*	*Estimates*	*Endemics*
Mammals	*137*	*13*		
Birds	*428*	*87*		*Afghan Snow Finch (Montifringilla [Pyrgilauda] theresae)*
Reptiles	*92*	*20*		*Leviton's Gecko (Asiocolotes levitoni), Cyrtopodion voraginosus, Eremias aria, Point-snouted Racerunner (Eremias afghanistanica) [Uncertain in Afghanistan]*
Amphibians	*6*	*2*		*Paghman Mountain Salamander (Batrachuperus mustersi)*
Fish	*101*	*38*		*Triplophysa farwelli*
Insects			*10s of 1,000s*	
Vascular Plants			*3,500-4,000*	*Estimated at 20-30% of 3,500-4,000 species*
Lichens	*208*			
Fungi			*1,000s*	

Annex 2: Protected Species of Afghanistan

Mammals			
Scientific Name	*English Name*	*Scientific Name*	*English Name*
Rhinolophus mehelyi	*Mehely's Horseshoe Bat*	*Vulpes cana*	*Blanford's fox*
Capra falconeri	*Markhor*	*Capra sibirica*	*Siberian Ibex (Bamyan Population)*
Caracal caracal	*Caracal*	*Acinonyx jubatus*	*Asiatic Cheetah*
Lepus capensis	*Cape Hare*	*Lynx lynx*	*Eurasian Lynx*
Canis lupus	*Wolf*	*Moschus cupreus*	*Musk Deer*
Otocolobus manul	*Pallas Cat*	*Ovis orientalis*	*Urial*
Panthera pardus	*Common Leopard*	*Prionailurus bengalensis*	*Leopard Cat*
Ovis ammon polii	*Argali*	*Felis chaus*	*Jungle Cat*
Uncia uncia	*Snow Leopard*	*Ursus arctos*	*Brown Bear*
Ursus thibetanus	*Asiatic Black Bear*	*Felis silvestris*	*Wildcat*
Vulpes corsac	*Corsac Fox*	*Barbastella leucomelas*	*Eastern Barbastelle*
Cervus elaphus bactrianus	*Bactrian Deer*	*Gazella bennettii*	*Indian Gazelle*
Gazella subgutturosa	*Goitered Gazelle*	*Hyaena hyaena*	*Striped hyaena*
Martes foina	*Stone marten*	*Asellia tride ns*	*Trident Leaf-nosed Bat*
Canis aureus	*Golden Jackal*	*Eptesicus bottae*	*Botta's Serotine*
Eptesicus gobiensis	*Gobi Big Brown Bat*	*Eptesicus nasutus*	*Sind Serotine Bat*
Eptesicus serotinus	*Serotine*	*Equus hemionus*	*Asiatic Wild Ass*
Felis margarita	*Sand Cat*	*Hipposideros fulvus*	*Fulvus Leaf-nosed Bat*
Lutra lutra	*Otter*	*Megaderma lyra*	*Greater False Vampire*
Miniopterus fuliginosus	*Eastern Bent-winged Bat*	*Myotis blythii*	*Lesser Mouse-eared Bat*
Miniopterus schreibersii	*Schreiber's Long-fingered Bat*	*Myotis bechsteinii*	*Bechstein's Myotis*
Myotis bucharensis	*Bokhara Whiskered Bat*	*Myotis emarginatus*	*Geoffroy's Bat*
Myotis formosus	*Hodgson's Bat*	*Myotis longipes*	*Kashmir Cave Bat*
Myotis muricola	*Nepalese Whiskered Bat*	*Myotis nipalensis*	*Nepal Myotis*
Nyctalus leisleri	*Lesser Noctule*	*Nyctalus montanus*	*Mountain Noctule*
Otonycteris hemprichii	*Desert Long-eared Bat*	*Pipistrellus javanicus*	*Javan Pipistrelle*
Pipistrellus pipistrellus	*Common Pipistrelle*	*Rhinolophus lepidus*	*Blyth's Horseshoe Bat*
Pipistrellus savii	*Savi's Pipistrelle*	*Rhinopoma hardwickii*	*Lesser Mouse-tailed Bat*
Pipistrellus tenuis	*Least Pipistrelle*	*Rhinopoma microphyllum*	*Greater Mouse-tailed Bat*
Pipistrellus coromandra	*Coromandel Pipistrelle*	*Rhinopoma muscatellum*	*Small Mouse-tailed Bat*
Pipistrellus kuhlii	*Kuhl's Pipistrelle*	*Scotophilus heathii*	*Greater Asiatic Yellow House Bat*
Rhinolophus blasii	*Blasius' Horseshoe Bat*	*Tadarida aegyptiaca*	*Egyptian Free-tailed Bat*
Rhinolophus bocharicus	*Bokhara Horseshoe Bat*	*Tadarida teniotis*	*European Free-tailed Bat*
Rhinolophus ferrumequinum	*Greater Horseshoe Bat*	*Taphozous nudiventris*	*Naked-rumped Tomb Bat*
Rhinolophus hipposideros	*Lesser Horseshoe Bat*	*Vespertilio murinus*	*Particoloured Bat*
Vormela peregusna	*Marbled Polecat*	*Petaurista petaurista,*	*Common Giant Flying Squirrel*
Vulpes rueppellii	*Rupell's Fox*	*Martes flavigula*	*Yellow- throated Marten*
Eoglaucomys fimbriatus	*Small Kashmir Flying Squirrel*	*Funambulus pennantii*	*Northern Palm Squirrel*
Amphibian			
Scientific Name	*English Name*	*Scientific Name*	*English Name*
Batrachuperus mustersi	*Paghman Salamander*		
Reptiles			
Scientific Name	*English Name*	*Scientific Name*	*English Name*
Eublepharis macularius	*Leopard Gecko*	*Testudo horsfieldii*	*Afghan Tortoise*
Uromastyx hardwickii	*Indian spiny tailed Lizard*	*Varanus bengalensis*	*Bengal Monitor*
Birds			
Scientific Name	*English Name*	*Scientific Name*	*English Name*
Falco pelegrinoides	*Barbary Falcon*	*Chlamydotis macqueenii*	*MacQueen's Bustard*
Falco peregrinus	*Peregrine Falcon*	*Grus leucogeranus*	*Siberian Crane*
Falco subbuteo	*Eurasian Hobby*	*Phoenicopterus roseus*	*Greater Flamingo*
Falco tinnunculus	*Common Kestrel*	*Falco cherrug*	*Saker Falcon*
Falco vespertinus	*Red-footed Falcon*	*Acrocephalus orinus**	*Large-billed Reed Warbler*
Glaucidium brodiei	*Collared Owlet*	*Aquila heliaca*	*Eastern Imperial Eagle*
Gypaetus barbatus	*Lammergeier*	*Falco naumanni*	*Lesser Kestrel*
Gyps fulvus	*Griffon Vulture*	*Pelecanus crispus*	*Dalmation Pelican*
Gyps himalayensis	*Himalayan Vulture*	*Gyps bengalensis*	*White-Rumped Vulture*
Haliaeetus albicilla	*White-tailed Eagle*	*Oxyura leucocephala*	*White-headed Duck*
Hieraaetus fasciatus	*Bonelli's Eagle*	*Vanellus gregarius*	*Sociable Lapwing*

Hieraaetus pennatus	*Booted Eagle*	*Haliaeetus leucoryphus*	*Pallas' Fish Eagle*
Milvus lineatus	*Black-eared Kite*	*Marmaronetta angustirostris*	*Marbled Teal*
Milvus migrans	*Black Kite*	*Neophron percnopterus*	*Egyptian Vulture*
Otus brucei	*Pallid Scops-owl*	*Accipiter badius*	*Shikra*
Otus scops	*Common Scops-owl*	*Accipiter nisus*	*Sparrowhawk*
Pandion haliaetus	*Osprey*	*Aegypius monachus*	*Cinereous Vulture*
Pelecanus onocrotalus	*Great White Pelican*	*Anas formosa*	*Baikal Teal*
Strix aluco	*Tawny Owl*	*Aquila chrysaetos*	*Golden Eagle*
Otis tarda	*Great Bustard*	*Aquila clanga*	*Greater Spotted Eagle*
Lophophorus impejanus	*Himalayan Monal*	*Aquila nipalensis*	*Steppe Eagle*
Montifringilla theresae	*Afghan Snow Finch*	*Asio flammeus*	*Short-eared Owl*
Circus aeruginosus	*Western Marsh-harrier*	*Asio otus*	*Long-eared Owl*
Circus cyaneus	*Northern Harrier*	*Athene noctua*	*Little Owl*
Circus pygargus	*Montagu's Harrier*	*Aythya nyroca*	*Ferruginous Duck*
Circus macrourus	*Pallid Harrier*	*Bubo bubo*	*Eurasian Eagle-owl*
Falco columbarius	*Merlin*	*Buteo buteo*	*Common Buzzard*
Falco jugger	*Laggar Falcon*	*Buteo rufinus*	*Long-legged Buzzard*
Circaetus gallicus	*Short-toed Snake Eagle*		
Insects			
Scientific Name	*English Name*	*Scientific Name*	*English Name*
Parnassius autocrator	*No common name*		
Plants			
Scientific Name	*English Name*	*Scientific Name*	*English Name*
*Taxus contorta***	*Himalayan Yew*	*Corydalis hindukushensis*	*No common name*
*Ulmus wallichiana****	*Himalayan Elm*	*Corydalis adiantifolia*	*No common name*
Pinus gerardiana	*Jalghoza Pine*	*Abies spectabilis*	*East Himalayan fir*
Pinus wallichiana	*Himalayan White Pine*		
Fish			
Scientific Name	*English Name*	*Scientific Name*	*English Name*
Acipenser nudiventris	*Fringebarbel Sturgeon*	*Pseudoscaphirhynchus kaufmanni*	*Amu Darya Shovelnose Sturgeon*

Source: Protected Wildlife Species of Afghanistan, NEPA, 2014

Annex 3: Species Diversity of Afghanistan's Agricultural and Farming system, Fodder and Forage

PLANT NAMES			
SCIENTIFIC CLASSIFICATION	ENGLISH	SCIENTIFIC CLASSIFICATION	ENGLISH
Grain Crops			
Triticum aestivum	Wheat		Rice
Hordeum vulgare	Barley		Rye
Avena sativa	Oats	Oryza sativa	Rice (Asiatic)
Zea mays	Maize	Panicum miliaceum Setaria italic	Common Millet Foxtail Millet
LEGUMES & PULSES			
Medicago sativa	Lucerne / Alfalfa		Lentils
Trifolium Resupinatum	Persian Clover	Cicer arietinum	ChickPea
Trifolium Alexandrinum	Berseem Egyptian Clover	Vicia faba	Broad (Faba) Bean
Vigna radiate	Mung Bean Green Gram	Vicia spp mainly Vicia ervilia	Vetches mainly Bitter Vetch
Phasiolus spp mainly P. vulgaris	Phasiolus Beans Green Beans	Lathyrus sativus	Grass Pea
Pisum sativum	Field & Cow Peas	Trigonella foenum-graecum	Fenugreek
Lens culinaris Medic	Green Lentil		
OILSEED CROPS			
Brassica spp B. arvensis, B.rapa, B. napus etc	Mustard / Charlock / Oilseed Rape + hybrids	Sesamum Indicum	Sesame
Raphanus spp	Raddish family	Carthamus Tinctorius	Safflower
Arachis hypogaea	Peanut / Groundnut	Glycine max (L) Merr	Soya Bean
Elianthus annuus	Sunflower	Papaver somniferum L.	Opium Poppy
Gossypium Hirsutum	Cotton	Olea europaea	Mediterranean Olive
Linum Usitatissimum	Flax / Linseed		
SOME CROP WEEDS			
Lolium temulentum etc.	Many kinds of grasses	Alhagi spp	Camel Thorn
Avena fatua	Wild Oats	Chenopodium Spp	Fat Hen etc
Elymus spp	Wild Rye	Cuminum cyminum	White Cumin
Brassica spp	Charlock / Wild Mustard	Glycyrrhiza Glabra	Liquorice
Rumex spp	Dock		
MEADOWS AND GARDENS			
Agropyron spp Hordeum spp Alopercurus spp Aegilops spp Festuca spp	Many kinds of grasses	Trifolium spp (T. repens,T. pretense) Medicago spp Lotus spp (Lotus	various Clover, Lucerne / Medic, Trefoils, Sweet Clover, Vetches, Milk

Lolium spp *Setaria spp* *Poa spp* *and others*		*corniculatus)* *Melilotus spp* *Vicia spp* *Astragalus spp* *Onobrychis spp* *Psoralea spp* *and others*	*Vetch, Sainfoin* *& Pitch Trefoil*
Fabaceae (Leguminosae)			
Mentha spp	*Mint*		
WILD PLANTS OF THE MOUNTAINS & PLAINS			
Apiaceae (Umbellifera)			
Heracleum Afghanicum	*Afghan Hogweed*	*Prangos spp*	*Prangos*
Ferula spp	*Fennel Species*	*Asafoetida*	
Polygonaceae (Rhubard)			
Rumex spp	*Rhubarb family*	*Echium spp*	*Bugloss family*
Compositae (Asteraceae)			
Cousinia spp *Circium spp*	*Thistle family*	*Aster spp*	*Aster family*
Centaurea spp	*Knapweed /* *Cornflower* *Family*	*Brassica spp*	*Mustard family*
Anthemis spp	*Camomile*	*Winkleria silaifolia*	
Artemisia spp	*Wormwood*	*Borago spp*	*Borage family*
Senecio spp	*Cineria*		
Fabaceae (Leguminosae) refer to weeds & meadows above			
FRUIT & NUTS			
	Figs		*Plums*
	Bananas		*Dates*
	Pears		*Peaches*
	Apricots		*Mulberries*
	Grapes		*Pomegranates*
	Apples		*Quince*
	Oranges		*Cherries*
	Strawberries		*Walnuts*
	Almonds		*Pine nuts*
	Pistachio nuts		*Jujube*
	Loquat		*Persimmon*
	Mandarin		*Lemon*
VEGETABLES			
	Beets		*Sesame*
	Spinach		*Radish*
	Pumpkin		*Potatoes*
	Lettuce		*Cabbage*
	Garlic		*Leeks*
	Turnips		*Asparagus*
	Brussels		*Sprouts*
	Eggplants		*Squash*
	Cauliflower		*Garden pea*
	Onions		*Mustard*
	Cucumbers		*Carrots*
	Watermelons		*Tomatoes*
	Melons		*Pepper*
	Sunflowers		*Broccoli*

	Artichoke		*Cabbage*

Source: Fitzherbert, Anthony; An Introductory Guide to Sources of Traditional Fodder and Forage and Usage; 2015.

Annex 4: List of Biodiversity Legislations, Policies, Strategies, and Action Plans

Sector/Area	*National Legislation, Policies, and Planning*	
Climate Change Adaptation and Mitigation	*Law*	*None*
	Framework	*None*
	Strategy	*Afghanistan Climate Change Strategy and Action Plan (2016)*
	Policy	*None*
	Plan	*National Adaptation Plan*
	Other	*Nationally Determined Contribution*
Agriculture	*Law*	*Rangeland Law (O.G. 795)*
		Improved Seed Law (O.G. 1005)
		Agriculture Cooperative Law (O.G. 958)
		Agricultural Pesticide Law (O.G. 1229)
		Land Management Law (O.G. 958)
		Law of Land Survey, Verification, and Registration (O.G. 346)
		Law on Land Expropriation (O.G 794)
		Veterinary Services Law (O.G. 1229)
		Law on Food Security (O.G. 1222)
	Framework	*National Agriculture Development Framework (NADF)*
	Strategy	*None*
	Policy	*None*
	Plan	*None*
	Other	*Wheat Strategy Regulation (O.G. 998)*
		Regulation on Grains and Root Crops Reserve (O.G. 998)
		Regulation on Imports, Distribution, and Application of Pesticides (O.G. 795)
Biodiversity and Ecosystems	*Law*	*Environment Law (2007; O.G. 912)*
		Wildlife Conservation and Hunting Law (O.G. 795)
		Nature Conservation Law (O.G. 795)
		Law on Conservation of Plant Diversity (O.G. 1229)
		Plant Quarantine Services Law (O.G. 795)
	Framework	*None*
	Strategy	*National Biodiversity Strategy and Action Plan (NBSAP 2014-2017)*
		National Environment Strategy
		Natural Resource Management Strategy
	Policy	*National Environmental Impact Assessment Policy*
		National Bird Policy
		National Waste Management Policy
	Plan	*National Environmental Action Plan (NEAP)*
		National Snow Leopard Ecosystem Protection Plan (2013)
		National Protected Area System Plan of Afghanistan (2009)
	Other	*Clean Air Regulation (O.G. 991)*

		Environmental Impact Assessment Regulations (O.G. 939)
		Plant Quarantine Services Regulation (O.G. 795)
		Afghanistan Protected Areas Interim Procedures
		Regulation on Reduction and Prevention of Air Pollution (O.G. 991)
		Regulations on Controlling Materials Destructive to Ozone Layer (O.G. 894)
Energy	*Law*	*Minerals and Hydrocarbons Law (O.G. 972)*
		Mining Law (O.G. 1143)
		Law on Managing Electricity Energy Service (O.G. 1231)
		Nuclear Energy Law (O.G. 1182)
		Afghanistan Renewable Energy Law
	Framework	*None*
	Strategy	*Energy Sector Strategy*
		Rural Renewable Energy Strategy
		Energy Efficiency Strategy [draft]
	Policy	*Power Sector Strategy [draft]*
		National Energy Policy
		National Renewable Energy Policy (NREP)
		Rural Renewable Energy Policy (RREP)
		National Mining Policy
	Plan	*None*
	Other	*Mining Regulation (O.G. 1007)*
		Procedures Related to Renewable Energy Policy [draft]
		Regulation on Fuel Consumption of Agricultural Machinery (O.G. 667)
Land, Forests, and Rangelands	*Law*	*Law on Managing the Jungle Affairs (O.G. 1087)*
		Law on Managing Land Affairs (O.G. 958)
		Rangeland Law (O.G. 795)
		Wildlife Conservation and Hunting Law (O.G. 795)
	Framework	*None*
	Strategy	*None*
	Policy	*Policy and Strategy for Forest and Range Management*
		Sub Sector National Forestry Management Policy (NFMP)
		National Land Policy (2007)
	Plan	*Sustainable Rangeland Management Plan [draft]*
	Other	*None*
Resilience and Disasters	*Law*	*Law on Disaster Response, Management, and Preparedness (O.G. 1089)*
	Framework	*None*
	Strategy	*Disaster Management Strategy*
	Policy	*Food Management Policy and Strategy [draft]*
	Plan	*National Disaster Management Plan*
		Strategic National Action Plan for Disaster Risk Reduction (SNAP)
	Other	*National Emergency Guidelines*
Water	*Law*	*Water Law (O.G. 980)*
	Framework	*Strategic Policy Framework for the Water Sector*
	Strategy	*Water Sector Strategy*
	Policy	*Draft policies on Groundwater, Trans-boundary Water and Capacity Building for*

		Water Sector are being developed
	Plan	*Procedures for Developing National Water Master Plan and River Basin Master Plan [draft]*
	Other	*Regulation on Water Usage in Agriculture (O.G. 500)*
		Regulation on control and safeguarding water quality (O.G.1212)
		Water Resource Territory and Infrastructure Regulation (O.G. 1178)

Annex 5: List of Flora & Fauna in Bamyan Plateau

No	Mammals	Birds	Reptiles/amphibians	Freshwater fish	Invertebrates	Flora
1	Persian leopard	the bearded vulture (Gypaetus barbatus)	sand boa (Eryx elegant)	Transcaspian barb (Capoeta capoeta heratensis)	Coleopteran (beetles)	Artemisia–Acantholimon steppe
2	Himalayan ibex	Himalayan vulture (Gyps himalayensis)	Laudakia caucasia	brown trout (Salmo trutta)	Lepidoptera (butterflies)	semidesert shrub
3	Urial (Ovis orientalis	saker falcon (Falco cherrug	agama lizard	Tibetan loach (Tripophyza stoliczkai)		Juniper steppe
4	Wolf (Canis lupus)	Egyptian vulture (Neophron percnopterus	green toad (Bufo viridis)			canyon-bottom complex
5	Eurasian lynx (Lynx lynx)	Himalayan snowcock (Tetraogallus himalayensis)				Cynoglossum cynogloides
6	Pallas's cat (Otocolobus manul)	Hume's Short-toed lark (Calandrella acutirostris)				Iris porphyrochrysa
7	Wild cat (Felis lybica)	red-tailed wheatear (Oenanthe chrysopygia)				Tanacetum bamianicum
8	Red fox (Vulpes vulpes)	sulfur-bellied warbler (Phylloscopus griseolus)				Juniperus excelsa
9	Stone marten (Martes foina)	brown accentor (Prunella fulvescens)				
10	Long-tailed marmot (Marmotta caudata)	grey-necked bunting (Emberiza buchanani)				
11	Afghan pika (Ochotona rufescens)	Afghan snow finch (Pyrgilauda theresae)				
12	Hare (Lepus sp)	white-winged snowfinch (Montifringilla nivalis)				
13		Sinai rosefinch (Carpodacus synoicus)				
14		Blyth's Rosefinch (Carpodacus grandis)				
15		great rosefinch (Carpodacus rubicilla)				

Source: Proposed and Justification to establish a protected area in Bamyan Plateau (December 2018)

Annex 6: Afghan Species Listed on the IUCN Red List of Threatened Species

Afghan Species on the IUCN Red List of Threatened Species

Class: MAMMALS

#	Species Listing	Subspecies Listing	Common Name	Threat
1	Ovis ammon		Argali	VU

2		Ovis ammon ssp. poli	Marco Polo Argali	VU
3	Ovis orientalis		Urial	VU
4		Ovis orientalis ssp. cycloceros	Afghan Urial	VU
5	Panthera leo		African Lion	VU
6		Panthera pardus ssp. saxicolor	North Persian Leopard	EN
7	Panthera tigris			EN
8		Panthera tigris ssp. virgata	Caspian Tiger	EX
9	Rhinolophus mehelyi		Mehely's Horseshoe Bat	VU
10	Uncia uncia		Snow Leopard	EN
11	Ursus thibetanus		Asiatic Black Bear	VU
12	Vulpes cana		Afghan Fox	VU
13	Acinonyx jubatus		Cheetah	VU
14	Capra aegagrus		Wild Goat	VU
15		Capra aegagrus ssp. aegagrus	Wild Goat	VU
16	Capra falconeri		Markhor	EN
17		Capra falconeri ssp. Heptneri	Tadjik Markhor	CR
18		Capra falconeri ssp. megaceros	Straight-Horned Markhor	EN
19	Cervus elaphus			
20		Cervus elaphus ssp. bactrianus	Bactrian Deer	VU
21	Gazella subgutturosa		Goitered Gazelle	VU
22	Eptesicus nasutus		Sind Bat	VU
23	Meriones zarudnyi		Zarundny's Jird	EN
24	Myotis emarginatus		Geoffroy's Bat	VU
25	Myotis longipes		Kashmir Cave Bat	VU

Class: BIRDS

#	Species Listing	Subspecies Listing	Common Name	Threat
1	Numenius tenuirostris		Long-Billed Curlew	CR
2	Otis tarda		Great Bustard	VU
3	Oxyura leucocephala		White-Headed Duck	EN
4	Pelecanus crispus		Dalmatian Pelican	VU
5	Saxicola macrorhyncha		Stoliczka's Bushchat	VU
6	Vanellus gregarius		Sociable Lapwing	CR
7	Anas formosa		Baikal Teal	VU
8	Anser erythropus		Lesser White-Fronted Goose	VU
9	Aquila clanga		Greater Spotted Eagle	VU
10	Aquila heliaca		Imperial Eagle	VU
11	Chlamydotis undulata		Houbara Bustard	VU
12	Columba eversmanni		Pale-Backed Pigeon	VU
13	Falco cherrug		Saker Falcon	VU
14	Falco naumanni		Lesser Kestrel	EN
15	Grus leucogeranus		Siberian Crane	VU
16	Gyps bengalensis		Asian White-Backed Vulture	CR
17	Gyps indicus		Indian Vulture	CR
18	Haliaeetus leucoryphus		Band-Tailed Fish-Eagle	VU

19	Marmaronetta angustirostris		Marbled Duck	VU

Class: REPTILES				
#	**Species Listing**	**Subspecies Listing**	**Common Name**	**Threat**
1	Testudo horsfieldii		Afghan Tortoise	VU

Class: AMPHIBIANS				
#	**Species Listing**	**Subspecies Listing**	**Common Name**	**Threat**
1	Batrachuperus mustersi		Afghani Brook Salamander	CR

Class: INSECTS				
#	**Species Listing**	**Subspecies Listing**	**Common Name**	**Threat**
1	Parnassius autocrator		None	VU

Class: PLANTS				
#	**Species Listing**	**Subspecies Listing**	**Common Name**	**Threat**
1	Ulmus wallichiana		Himalayan elm	VU

Annex 7: Afghan Species Listed on Appendices I and II of the Convention on the Trade in Endangered Species (CITES)

Afghan Species on CITES Appendices I and II

Class: MAMMALIA (Mammals)

#	Common Name	Scientific Name	Appendix	Notes
1	Rhesus Macaque	Macaca mulatta	II	
2	Wolf	Canis lupus	II	
3	Blandford's Fox	Vulpes cana	II	
4	Brown Bear	Ursus arctos isabellinus	I	
5	Asiatic Black Bear	Ursus thibetanus	I	
6	Common Otter	Lutra lutra	I	
7	Cheetah	Acinonyx jubatus	I	Extirpated in Afghanistan
8	Caracal	Caracal caracal	I	
9	Jungle Cat	Felis chaus	II	
10	Sand Cat	Felis margarita	II	Unconfirmed from Afghanistan
11	Wildcat	Felis silvestris	II	
12	Lynx	Lynx lynx	II	
13	Pallas's Cat	Otocolobus manul	II	
14	Leopard	Panthera pardus	I	
15	Tiger	Panthera tigris	I	Extirpated in Afghanistan
16	Leopard Cat	Prionailurus bengalensis	II	
17	Snow Leopard	Uncia uncia	I	
18	Onager or wild ass	Equus onager	II	O. e. onager and O.e . khulan occur in Afghanistan. O. e. khur occurs in India and Pakistan and is Appendix I. Considered Equus hemionus by Duff and Lawson (2004).
19	Himalayan Musk Deer	Moschus chrysogaster	I	
20	Bactrian Deer	Cervus elaphus bactrianus	II	Subspecies only, probably extirpated in Afghanistan
21	Wild Yak	Bos mutus	I	
22	Markhor	Capra falconeri	I	Unconfirmed from Afghanistan
23	Goral	Naemorhedus goral	I	Only O. a. poli in Afghanistan
24	Argali	Ovis ammon		
25	Urial/Mouflon	Ovis vignei [orientalis]	II	The Afghan subspecies (cycloceros) is considered O. orientalus by IUCN and Duff and Lawson (2004). Considered O. vignei by CITES.

Class : AVES (Birds)				
#	**Common Name**	**Scientific Name**	**Appendix**	**Notes**
1	Dalmatian Pelican	Pelecanus crispus	I	
2	Black Stork	Ciconia nigra	II	
3	Eurasian Spoonbill	Platalea leucorodia	II	
4	Lesser Flamingo	Phoenicopterus minor	II	Unconfirmed from Afghanistan
5	Greater Flamingo	Phoenicopterus ruber	II	
6	Baikal Teal	Anas formosa	II	Unconfirmed from Afghanistan
7	White-headed Duck	Oxyura leucocephala	II	
8	Osprey	Pandion haliaetus	II	
9	Shikra	Accipiter badius	II	
10	Northern Goshawk	Accipiter gentilis	II	
11	Eurasian Sparrowhawk	Accipiter nisus	II	
12	Cinereous Vulture	Aegypius monachus	II	
13	Golden Eagle	Aquila chrysaetos	II	
14	Greater Spotted Eagle	Aquila clanga	II	
15	Steppe Eagle	Aquila nipalensis	II	
16	Imperial Eagle	Aquila heliaca	I	
17	White-eyed Buzzard	Butastur teesa	II	
18	Eurasian Buzzard	Buteo buteo	II	Uncertain for Afghanistan
19	Rough-legged Hawk	Buteo lagopus	II	
20	Long-legged Buzzard	Buteo rufinus	II	
21	Short-toed Eagle	Circaetus gallicus	II	
22	Western Marsh-Harrier	Circus aeruginosus	II	
23	Northern Harrier	Circus cyaneus	II	
24	Pallid Harrier	Circus macrourus	II	
25	Montagu's Harrier	Circus pygargus	II	
26	Lammergeier	Gypaetus barbatus	II	
27	White-rumped Vulture	Gyps bengalensis	II	
28	Eurasian Griffon	Gyps fulvus	II	
29	Himalayan Griffon	Gyps himalayensis	II	
30	Indian Vulture	Gyps indicus	II	Unconfirmed from Afghanistan
31	Pallas's Fish-Eagle	Haliaeetus leucoryphus	II	
32	White-tailed Eagle	Haliaeetus albicilla	I	
33	Bonelli's Eagle	Hieraaetus fasciatus	II	Cited as Milvus migrans by Dickinson (2003)
34	Black Kite	Milvus lineatus [migrans]	II	Cited as Milvus migrans by Dickinson (2003)
35	Egyptian Vulture	Neophron percnopterus	II	
36	European Honey-buzzard	Pernis apivorus	II	Unconfirmed from Afghanistan
37	Amur Falcon	Falco amurensis	II	Unconfirmed from Afghanistan
38	Saker Falcon	Falco cherrug	II	
39	Merlin	Falco columbarius	II	
40	Laggar Falcon	Falco jugger	I	
41	Lesser Kestrel	Falco naumanni	II	
42	Barbary Falcon	Falco pelegrinoides	I	

43	Eurasian Hobby	Falco subbuteo	II	
44	Eurasian Kestrel	Falco tinnunculus	II	
45	Peregrine Falcon	Falco peregrinus	I	
46	Himalayan Monal	Lophophorus impejanus	I	
47	Common Crane	Grus grus	II	
48	Demoiselle Crane	Grus virgo	II	Anthropoides virgo in Dickinson (2003)
49	Siberian Crane	Grus leucogeranus	I	
50	Houbara Bustard	Chlamydotis undulata	I	
51	Great Bustard	Otis tarda	II	
52	Little Bustard	Tetrax tetrax	II	
53	Alexandrine Parakeet	Psittacula eupatria	II	
54	Slaty-headed Parakeet	Psittacula himalayana	II	
55	Rose-ringed Parakeet	Psittacula krameri	II	Not listed for Afghanistan by CITES.
56	Short-eared Owl	Asio flammeus	II	
57	Long-eared Owl	Asio otus	II	
58	Little Owl	Athene noctua	II	
59	Eurasian Eagle-Owl	Bubo bubo	II	
60	Collared Owlet	Glaucidium brodiei	II	
61	Pallid Scops-Owl	Otus brucei	II	
62	European Scops-Owl	Otus scops	II	
63	Tawny Owl	Strix aluco	II	
64	Scaly-bellied Woodpecker	Picus squamatus flavirostris	II	

Class : REPTILIA (Reptiles)

#	Common Name	Scientific Name	Appendix	Notes
1	Afghan Tortoise	Testudo horsfieldii	II	
2	Iranian Uromastyx	Uromastyx asmussi	II	
3	Indian Spiny Tail Lizard	Uromastyx hardwickii	II	
4	Bengal Monitor	Varanus bengalensis	I	
5	Desert Monitor	Varanus griseus	I	
6	Elegant Sand Boa	Eryx elegans	II	
7	Indian Sand Boa	Eryx johnii	II	
8	Dwarf Sand Boa	Eryx miliaris	II	
9	Tartary Sand Boa	Eryx tataricus	II	
10	Oriental Rat Snake or Whipsnake	Ptyas mucosus	II	
11	Central Asian Cobra	Naja oxiana	II	

Class : ACTINOPTERYGII (Bony Fishes)

#	Common Name	Scientific Name	Appendix	Notes
1	Fringebarbel sturgeon	Acipenser nudiventris	II	
2	Dwarf sturgeon	Pseudoscaphirhynchus hermanni	II	
3	Amu Darya sturgeon	Pseudoscaphirhynchus kaufmanni	II	

Class: FLORA (PLANTS)				
#	**Common Name**	**Scientific Name**	**Appendix**	**Notes**
1	No Common Name	Sternbergia fischeriana	II	
2	Elephant's foot	Dioscorea deltoidea	II	
3	No Common Name	Dactylorhiza hatagirea	II	
4	Southern Marsh Orchid	Dactylorhiza majalis majalis	II	
5	No Common Name	Eulophia turkestanica	II	
6	No Common Name	Habenaria josephii	II	
7	No Common Name	Orchis latifolia	II	
8	Himalayan yew	Taxus wallichiana	II	

Annex 8: The Main Vegetation Types in Afghanistan

Name	Types
Desert Vegetation	*The deserts of the north, west and south, in Registan and Dasht-e-Margo (Helmand and Nimruz provinces), contain active sand dune areas and dunes fixed by rather open vegetation. The vegetation of the deserts is characterized by: Haloxylon persicum, Calligonum spp., perennial Aristida spp, Chenopodiaceae, Haloxylon salicornicum, Salsola spp., Ephedra scopar, a and Tamarix spp.*
Semi-desert Vegetation	*The flora and vegetation of these areas largely depend on humidity, length of winter, sand composition, wind force and grazing pressure. The semi-desert vegetation in Afghanistan are the most important grazing areas. In the west and south the semi-deserts are dominated by open vegetation of Artemisia herba-alba. In areas west of Herat with cold winters and in some parts in the north, Artemisia spp. and Ferula spp. dominate along with geophytes like Iris songarica, Tulipa, Iris and Allium spp.*
Arid Sub-tropical Woodlands and Savannah	*Perennial grasses, thorny evergreen shrubs and small trees predominate in the lower Kabul valley, which experiences hot summers with few occasional monsoon rains and moderate winters. Heavy grazing and fuel wood collection have reduced the shrubs and led to an increase of annuals. In the Paktia province the dwarf palm Nanorhops ritchieana also occurs, the leaves of which are heavily used for furniture and wattlework. Between 700 m and 1,300 m there is sometimes a Reptonia buxifolia and Olea ferruginea woodland, which is heavily utilized for fodder and as pasture land.*
Pistacia Woodlands	*To the north of the Hindukush on the extensive loess plains between 600 and 1,600 m woodlands of Pistacia vera (4a) with some Amygdalis bucharica and in the northeast, remnants of Cercis griffithii are characteristic.* *On the lower slopes of the Hindukush, open Pistacia woodlands replace the Amygdalus community in higher parts in the south, resp. the Juniperus woodlands in the north. The southern slopes of the Hindukush are characterized by 4-6 m high Pistacia atlantica (cabulica, khinjuk) (4b) and are rich in herbs like Gagea, Anemone and Allium spp. On valley slopes, Pistacia khinjuk and Cercis griffithii are sometimes found, especially in the Kabul and Logar Valleys. In the last century Cercis woodlands were much more common all-around Kabul, and also around Herat.* *The Pistacia vera and Juniperus excelsa woodlands are heavily exploited for charcoal production.*
Amygdalus and Juniperus Scrublands	*The upper part of the forest belt on the northern slopes of the Hindukush is formed by an open mixed woodland dominated by Juniperus excelsa, intermixed with other Juniperus species (5a).* *On the same elevation between 2,000 and 3,000 m and in areas with more than 400 mm of precipitation in the south, a 2.5-6 m high Amygdalus community (5b) is dominant; many scrub species and geophytes such as Eremurus, Corydalis, Rheum, Gagea, Tulipa, Iris, Allium spp. also, occur in both types. Amygdalus scrublands are often intermixed with the Pistacia woodlands and can be intermediate between the semideserts of the south and west and the woodlands of the Hindukush. These areas are important for winter pasture. These woodlands are heavily used and badly degraded.*
Himalayan type Evergreen Forests in East Afghanistan	*Between 1,200 and 2,200 m, the oak Quercus baloot (6) dominates a forest that is up to 15 m high; it has a rich undergrowth and several tree species including almonds Amygdalus kuramica and Pistacia khinjuk. It is heavily utilized for fodder, fruits and fuel-wood and large parts have been destroyed to provide fuel for the main cities. The remnants of Qu. baloot forest in the Panjshir valley, north-east of Kabul, form the westernmost extension of the Himalayan forest belt. A few trees even occurred near Top Dara in the Koh-e-Daman Plain near Charikar. Formerly also at the Latahband pass (some 25 km east of Kabul), there were Qu. baloot remnants. In very humid places with high summer rainfall in the higher mountain belts, Qu. baloot is replaced by Qu. dilatata and between 2,400 and 2,900 m by semecarpifolia. Azonal associates in river valleys are Juglans regia, Acer turkestanicum, and Pyrus pashia.*
Temperate Coniferous Forests of East Afghanistan	*The forest belt between 2,200 and 2,500 m in moderately humid parts is a 512 m high Pinus gerardiana woodland with local stands of Betula. A thorny Cotoneaster-Sophora-Rosa scrubland colonizes the areas after the pine has been felled. Between 2,500 and 3,100 m, the Cedrus deodara forest is found. Depending on soil and humidity the cedars may be up to 30 m high and form a very dense forest. Large parts of the Cedrus forest have been exploited and replaced by a stable Artemisia community. Logging has now reached even the western parts of Nuristan.* *In the humid areas the upper belt of the forest, up to an altitude of 3,300 m, is formed by a 20-25 m high Picea smithiana-Abies webbiana forest, varying from the valley to valley. In the dry areas, a 10 m high Juniperus seravschanica-J. semiglobosa woodland is found. However, most areas have been cut for fuel-wood and mature stands are rare. The herbaceous ground cover, especially along the streams is heavily grazed.* *It is very interesting to note that fossil conifer needles (similar to Pinus roxbourgii) and many other fossil leaves from rather humid vegetation have been found in marl sediments at the Latahband Pass (Breckle 1967), probably being from about early Quaternary. This indicates that the monsoonal climate has reached far to the west.*
Krummholz	*In areas of the east with monsoonal summer rains a dense 0.5-1 m high vegetation of Juniperus squamata, Rosa spp., Ribes spp. and Rhododendron spp. develops between 3,000 and 3,500 m, but only a few sites are left. On deep soils, Salix spp. may dominate this community. On lower sites, at the tree line, the very rare Rhododendron afghanicum occurs but is extinct now (Breckle 1972).* *In parts of the Hindukush, a Juniperus nana community with many thorny dwarf shrubs occurs. Between 3,600 and 4,000 m in the dryer central and northern Hindukush, there is a cushion scrubland with many different species of Acantholimon,*

	Artemisia, Astragalus, Cousinia, Ephedra, and Onobrychis. Similarly, thorny cushion shrubland, with very varying species composition changing from mountain ridge to mountain ridge, is found in many of the Central Afghan high mountain areas (Paghman, Western Hindukush, Koh-e-Baba). Many endemics occur in this area.
Subalpine thorny cushions, semideserts and deserts, and meadow vegetation	*On mountain ridges, above the tree line at about 3,300 m subalpine and alpine shrublands, alpine heaths and meadows, which offer good range forage for domestic animals, occur. The subalpine and alpine vegetation of the Hindukush on dry sites is open and poor in species, but each slope may have another species pattern. This belt is therefore typical for high and endemic biodiversity. On wet sites (melting snow water, etc.), a closed meadow canopy rich in species may occur. That of the Pamirs and Eastern Hindukush is often somehow denser with a great variety of herbs. Usually, the alpine meadows, dominated by grasses and a variety of herbs, are heavily utilized during two months as summer pastures by nomads and the pastoral people. Studies on flora and ecology of vegetation have been performed by Breckle 1971b, e, 1973, 1974, 1975, 1988, 2002, 2004, Breckle & Frey 1974, 1976a, b. Additional data on the Wakhan and Pamir area are given in Agakhanjanz & Breckle 1995, 2002, 2004, Ahmadov et al. 2005, Breckle 2003, Breckle & Wucherer 2005, Breckle et al. 1969.*
Nival Vegetation	*In the Pamirs and in Central and Eastern Hindukush, the boundary with the nival zone is 4,900 m on the northern exposed slopes and 5,300-5,400 on the southern exposed slopes. The higher peaks and ridges are not dominated by alpine heaths (Ericaceae), as it is sometimes wrongly recorded, but by a low and very open, very frost resistant herbaceous and semifruticose vegetation. The highest record of a vascular plant in Afghanistan is the beautiful Primula macrophylla in the central Hindukush at 5,600 m. Sibbaldia cuneata is also known from about 5,500 m. There are 37 species recorded from above 5,000m (Breckle 1974). Mosses and lichens occur even higher, up to the highest peaks on the rocky surface.*
Azonal vegetation: Rivers, Lakes	*These systems have been drastically altered by human activity. The original forests of major river valleys have been replaced by irrigated crops. Dense vegetation is found in regularly flooded areas. This is dominated by Tamarix spp., Salix spp. and reeds (Phragmites australis, Typha) and depending on the frequency of inundation, species such as Populus spp. Myricaria spp., Berberis spp., Crataegus spp. and Hippophaë.* *Along the river beds (11b) on well-drained areas with deep soils, many of the wild ancestors of cultivated fruit trees occur. These include the apple (Malus spp.), pear (Pyrus spp.) and almond (Amygdalus spp.) as well as grapes (Vitis spp.). Trees of Fraxinus spp., Acer spp., and Platanus spp. are also found here. But undisturbed natural riverine vegetation cannot be found today.* *Little information is available on the vegetation of the lakes (11b) but Hamun-e-Puzak and Kol-e- Hashmat Khan are covered with reeds. One of the few higher plants in the Ab-e-Istada lake is the pondweed Ruppia maritima with colonies of Taraxacum monochlamydeum forming conspicuous vegetation on mudflats around the lake. Some Characeae occur in Dasht-e-Nawar, as well as in Band-e-Amir.*
Azonal vegetation (saline flats)	*Deserts are arid areas, where salinity close to the erosion basins is a common natural phenomenon. By irrigation without drainage in agricultural areas, salinity is also enhanced, and after a few decades, those fields are unproductive and have to be abandoned. They are taken over by halophytic vegetation. The irano-turanian floristic region is very rich in halophytic species (Breckle 1986, 2000, 2002, Mirazai & Breckle 1978). It is an evolutionary center for Chenopodiaceae. Some of the above mentioned endorrheic lakes (Hamun-e-Puzak and Kol-e-Hashmat Khan, Ab-e-Istada, Dasht-e Nawar etc.) are in part huge salt swamps, where a rich halophytic vegetation occurs with Salsola spp., Suaeda spp., Halocnemum strobilaceum, Halostachys caspica, spp., Halocharis spp., Halimocnemis spp., Gamanthus ssp., Seidlitzia rosmarinus and many other genera from Chenopodiaceae, but also Limonium spp., Zygophyllum, Nitraria, Frankenia spp., Tamarix spp., Reaumuria spp., Cressa cretica, etc. are common.*

Source: adopted from Breckle & Rafiqpoor 2010.

Information Concerning the Reporting Party and preparation of the Sixth National Report

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