Afghanistan

Capacity Development for Natural Resource Management

Rangelands and Forests in Afghanistan:
The Foundation of Sustainable Rural Development

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ENV
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The Foundation of Sustainable Rural Development

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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>ANDPF</td>
<td>Afghanistan National Peace and Development Framework 2017-2021</td>
</tr>
<tr>
<td>GD-NRM</td>
<td>MAIL’s General Directorate of Natural Resource Management</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization</td>
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<td>FAO-AF</td>
<td>FAO Afghanistan Country Office</td>
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<td>GHG</td>
<td>Greenhouse Gas</td>
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<tr>
<td>MAIL</td>
<td>Ministry of Agriculture, Irrigation, and Livestock</td>
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<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
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<tr>
<td>NTFP</td>
<td>Non-Timber Forest Products</td>
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<td>NRM</td>
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<td>WBG</td>
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EXECUTIVE SUMMARY

Why Rangelands and Forests Matter for Afghanistan

Rangelands and forests are of paramount importance to a large proportion of Afghanistan’s population and economy. With an estimated USD 562 in GDP per capita in nominal prices in 2016-17, Afghanistan is one of the world’s poorest nations. It is predominantly rural, with 72 percent of people living in rural areas, and 79 percent of the country’s labor force occupied within the agricultural sector. Agriculture accounts for 25 percent of the GDP and agro-processing makes up almost 90 percent of the manufacturing sector. Rangelands and forests provide goods and services for agriculture, energy, construction, mining and other sectors of the economy. They sustain livelihoods for 80 percent of Afghan households, conserve and protect soils, regulate water flow, and prevent landslides and flash floods. Thus, sustainable management of these resources is important for rural livelihoods, food security, as well as for addressing natural disaster risks and climate change.

Rangelands and forests support Afghanistan’s rural economy by providing essential resources – forage, water, fuel, timber, and non-timber forest products. Rangelands, which cover 30.2 million hectares (47 percent) of the land area, directly support extensive and intensive agribusinesses, supplying 75 to 80 percent of animal fodder for the majority of the country’s livestock. They are also responsible for moderating surface water flows; it is estimated that rangelands nourish nearly 4 million hectares of irrigated lands in Afghanistan. Forest and shrublands cover 1.8 million hectares (2 percent) of land area and supply timber, fuelwood, and non-timber forest products, all considered very valuable in the local and international markets (see Figure 1). Construction timber and fuelwood are two major categories of forest goods, besides non-timber forest products (NTFP), which include fodder, fruits, nuts, berries and mushrooms. Wildlife and biodiversity resources offer an additional resource base for related economic activities, in the areas of travel and tourism. Ecosystem services provided by rangelands and forests protect the population and businesses from natural disasters and climate-related threats. The protective services generated by Afghanistan’s pastures and forests are both under-appreciated and under-valued. The scope and economic value of these services is immense, potentially in several billion US dollars per year. Enhanced vegetation cover in Afghanistan will decrease climate and related natural disaster vulnerability, losses of property and life, and improve functioning of watersheds.

Sustainable management of renewable natural resources is one of the key development priorities for the Government of Afghanistan and is an integral part of its poverty reduction and sustained growth strategy. Afghanistan has been transitioning towards economic self-reliance since 2014. Development, growth, and optimal use of available resources are becoming critical for each and every sector of Afghanistan’s economy. The Government of Afghanistan adopted the National Peace and Development Framework (ANPDF) for the period of 2017-2021, which sets the priorities for achieving peace, stability, and sustained growth based on export-oriented inter-regional trade, agriculture, and mining. Natural resource management is linked to several national priority programs, including private sector development, justice sector reform (land administration), agriculture development, mineral and resource development, and human capital development.
Figure 1: Rangelands comprise majority of Afghanistan’s land cover. Forests are concentrated in the North and North East of the country.¹
With a fast-growing population (more than 2 percent per year) and 62 percent of the country's population being below 24 years of age, it is imperative that Afghanistan must improve job creation and food security. Indeed, the labor force participation was estimated at only 53.9 percent and food insecurity affected 44.6 percent of population in 2016-17. Improving the stewardship of rangelands and forests offers a sustainable path towards improving this challenging situation in rural areas.

These vital resources are under increasing stress

The collapse of traditional management systems, growth in human population, and conflict over the last three decades have dramatically increased pressure on the natural resource base in Afghanistan. In addition to these factors, rapid urbanization has put great pressure on water, timber, energy, and food resources. The effective management of natural resources in Afghanistan hinges on the resolution of several challenges, including weak governance and corruption, the ongoing insurgency, land tenure issues, policy gaps, ineffective institutions, and limited finance.

While data on the use and quality of rangelands and forest resources in Afghanistan is limited, anecdotal evidence suggests their severe overuse and degradation. From the available evidence, it can be seen that Afghanistan’s rangelands suffer from desertification and conversion to other land uses. According to the 2006 MAIL National Report, desertification in Afghanistan affects more than 75 percent of the total land area in the northern, western and southern regions where widespread grazing and deforestation have reduced vegetation cover and have catalyzed accelerated land degradation. Conversion of rangelands into rain-fed farming lands is common. Total forest area declined from 5 to 2 percent of the land area, with natural forest cover dramatically reducing over the last four decades to 867,000 hectares, mostly in the north and east of the country. Between 1990 and 2005, Afghanistan lost 33.8 percent of its forest cover (around 442,000 hectares). It is highly likely that this trend will continue if proactive management of (already) very scarce forest resources is not urgently introduced.

Water is the single largest natural factor limiting Afghanistan’s socio-economic development, particularly in agriculture. Afghanistan is not water scarce; however, access to water at the right time in the right place is still the single most serious challenge hampering the socio-economic development of Afghanistan, especially in rural areas. Losses of healthy forests and rangelands have cumulative landscape- and watershed-level impacts on water supply, ultimately negatively impacting agricultural productivity. Forecasts indicate that, by 2060, the agricultural economy will become marginal unless there is substantial investment in water management and irrigation.

Afghanistan is ranked among the most vulnerable countries in the world to adverse impacts of climate change and natural disasters and is projected to continue to remain vulnerable. A retrospective study ranks Afghanistan as a top three country in the region and within the top twelve globally in terms of weather-related losses during 1996-2015. A global ranking of vulnerability of 170 countries to the impacts of climate change over the next 30 years (to populations, ecosystems and business environment) ranks Afghanistan in the eighth place. Afghanistan is highly prone to natural disasters with most of the country’s population reliant on natural resources for their livelihoods; for example, drought is a natural hazard that affects Afghanistan on a regular cycle. Since the 1980s, Afghanistan has experienced annual losses from disasters such as earthquakes, landslides and flooding that are estimated to be at an annual average of USD 478 million, with most
losses attributed to multiple hazards (USD 147 million), followed by earthquakes and floods (USD 92 million). It is clear, therefore, that sustainable development in Afghanistan cannot be achieved unless climate and natural disaster risks are reduced.

**Land tenure and property rights issues are serious, systemic, and lack modern dispute resolution mechanisms.** Conflict over grazing rights for seasonal rangelands leads to resource degradation, in addition to the factors mentioned earlier. A major limitation has been the absence of the legal recognition of communal property until very recent amendments to the Rangeland Law of 1970. Widespread and chronic conflict over land, conflicting land tenure systems, the failure of state or customary dispute resolution are all serious and unresolved issues. The situation is exacerbated by displaced people and returnees - about 5 million people since 2002.

**Key policies and regulations that are expected to significantly enhance sustainable resource management are still new or not fully adopted yet; they will require capacity development for their implementation and enforcement.** The Environment Law was adopted in 2007, the Water Law came into force in 2009, and the Rangeland Law 1970 is being amended to recognize communal custodianship. The Forest Law, which was enacted in 2013, introduces the concept of community-based management, and the Minerals Law 2010 defines ownership and control of mineral deposits and their use. The Temporary Protected Areas Management By-Law was prepared for effective management of protected areas, biodiversity conservation, and the prohibition of illegal hunting. A Wild Animal Conservation and Hunting Management Law was prepared in 2017 and is pending review and approval. A Protected Areas Management Law is being prepared. Cross-sectoral legislation further provides opportunities for better coordination and management of natural resources and includes the Water Hygiene and Sanitation Policy 2010 and the Law on Disaster Response, Management, and Preparedness 2012.

**Conclusions and Recommendations**

Rangelands and forest resources are important for the economic development of Afghanistan, but they are increasingly degraded due to ongoing conflict, poor management, and lack of community ownership. Climate change poses additional threats and risks with serious implications for poverty, food security, as well as loss of property and life. There is a pressing need for a renewed emphasis on managing rangelands and forests to benefit the rural poor and the economy. The NRM Strategy is a welcome step in the right direction; however, broader policy and institutional issues, including limited capacity, should be addressed soon to reverse the trend of resources degradation.

**The National Natural Resource Management Strategy 2017–2021 (NRM Strategy), prepared by the Ministry of Agriculture, Irrigation and Livestock (MAIL) in collaboration with other agencies and partners, offers the promise of substantial gains for rural development.** The policy sets agriculture and natural resources among the top priorities for growth and job creation within Afghanistan’s seven National Priority Programs. It’s implementation aims to generate

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1 The National Priority Programs are: Private Sector Development Program and the Citizen’s Charter; Justice Sector Reform Program (land administration); Comprehensive Agriculture Development Program; National Mineral and Resource Development Program; Human Capital Development Program and Women’s Economic Empowerment Program.
roughly 16.7 million man-days of unskilled labor and create 1,500 skilled jobs over the course of five years, impact more than a million households, and generate 30,000 forestry-related jobs. Planned pistachio forests (about 21,000 hectares) aim to generate an annual income of USD 713 million after 7 to 10 years. Similarly, forest plantations of Chilgoza pine (13,800 hectares) aim to generate annual production of about USD 356 million after 15 years. The strategy also aims to generate market-wide impacts through improved rangelands, which will create employment and support the development of secondary sectors, such as wool and leather production and dairy products.

**Strengthened focus on rangelands and forests to support their commercial development can provide a triple winning scenario:** it will enhance viable jobs, boost economic growth (income), and support a sustainable food production approach that goes beyond emergency management. At the same time, improved vegetation cover will reduce vulnerability to weather-related events and a changing climate that costs Afghanistan an average of USD 478 million a year in economic losses from droughts, floods, loss of property and lives. Near-term priorities for the sector’s reform include completing development, enactment and operationalization of priority policies and rules, such as the Rangeland Law and Forest Law, enhancing rangelands management for increased fodder production and increased livestock numbers, supporting commercial development of other natural resources, especially in peri urban areas connected to the markets, and investing in an integrated landscape and watershed planning and management for enhancing environmental and protection services.
INTRODUCTION

1. Afghanistan has been in conflict and internal turmoil since the early 1970s, which has resulted in loss of life, insecurity, ethnic division, and wide-spread damage to the environment and natural resources. As citizens of one of the poorest nations in the world with an increasing poverty level that reached 55 percent in 2016-17, 80 percent of Afghans depend on natural resources for their daily subsistence. Fodder for livestock, fuel wood for heating and cooking, water for agriculture and consumption, medicinal plants and wildlife provide scarce means for survival and limited trade.

2. The Government of Afghanistan is giving agriculture and natural resource management utmost priority for development. Current policies link natural resources management to private sector development, justice sector reform (land administration), agriculture development, mineral and resource development, and human capital development programs. It is understood that peace and stability is partially dependent on clarified land tenure and resolution of associated conflicts, especially over rangelands and community-used natural resources.

3. Rangelands and Forests in Afghanistan: The Foundation of Sustainable Rural Development is a World Bank paper that highlights the importance of the rangelands and forest resources for the country’s sustainable development. The paper explains the status and role of rangelands and forest resources for the country’s mostly rural population. It describes the importance of the sector for boosting agricultural productivity, addressing climate change and weather-related natural disasters, and contributing to rural jobs creation. It further offers some recommendations on how to revitalize the natural resources management sector that is critically important in the context of rural development and Afghanistan’s economy, and is yet often overlooked and broadly neglected.

4. This paper is part of a programmatic World Bank support towards helping Afghanistan manage its critical renewable natural resources. It is further supplemented with a second paper – Managing Afghanistan’s Rangelands and Forest Resources: An Assessment of Institutional and Technical Capacity Constraints – that focuses on assessing and addressing policy and institutional issues limiting implementation of the National Natural Resource Management Strategy 2017–2021.
THE ROLE OF RANGELANDS AND FORESTS IN AFGHANISTAN’S RURAL LIFE AND ECONOMY

5. Prolonged conflict and turmoil in Afghanistan since the early 1970s have caused loss of life, insecurity, poverty, ethnic division, and damage to the environment and natural resources, which contributes to the livelihoods of four-fifths of Afghanistan’s population. Poverty rates have sharply increased from 38 percent in 2011-12 to 55 percent in 2016-17. With declining growth rates alongside an increasing population growth of 3 percent a year, GDP per capita has steadily declined, and in 2016, stood at only USD 562 – a hundred USD below its 2012 level. Data suggests that, even during the years of high economic growth, poverty rates failed to drop, implying that the growth model was not pro-poor. Rural poverty rates are almost twenty percentage points higher than urban, reaching 59 percent (see Figure 2). Geographically, the poorest areas are in the East, Northeast, and West-Central regions. Poverty, especially in these regions, is closely intertwined with natural and anthropogenic risks and is negatively influenced by mountainous terrain, poor connectivity and greater reliance on subsistence, livestock grazing, and rain-fed agriculture. In these areas, more than half of the population is poor and has the lowest per capita consumption. In Afghanistan, poor people have higher unemployment and under-employment levels and are more likely to work in agriculture or in the informal sector, as compared to the non-poor. Poor people are also less likely to have access to electricity, safe drinking water, and sanitation. These facts further highlight the fact that the poorest of the poor have very limited access to the monetary economy and are greatly dependent on available natural resources.

Rangelands Sustain the Economy but are under Increasing Stress

6. Afghanistan has been a traditionally agrarian country. Agriculture accounts for about 25 percent of the GDP, but its contribution has been steadily declining (see Figure 5) from over 40 percent in the early 2000s with increasing share of services and reconstruction in the economy. Agriculture also employs about 40 percent of the national taskforce and offers additional potential for jobs creation, prospects for raising labor productivity, opportunities for benefitting women, the poor, the landless, and nomads, along with contributing to reducing poverty and food insecurity in rural areas. However, food insecurity affects 45 percent of the population, an increase from 30 percent in 2011-12. Factors affecting food production include climate change and related droughts and floods, expanding desertification, population growth and migration of displaced people, in addition to poverty and poor management of rangelands and forests.
7. **Rangelands occupy by far the largest proportion of Afghanistan’s territory – up to 47 percent of Afghanistan’s land area – and are used by over 80 percent of Afghan households.** Livestock production based on the extensive use of the rangelands is an essential component of the local farming system and is also a part of the livelihood strategies. In addition, large areas of barren land (17.4 million hectares) are also used for opportunistic grazing seasonally - bringing the total area used for extensive grazing up to about 75 percent of the total land area in Afghanistan (see Figure 3).

![Figure 3: Rangelands and barren land together – 75 percent of the country’s area – are used for livestock grazing. Forests and shrubs cover another 2.8% of the country.](image)
Figure 4: Rangelands comprise most of Afghanistan’s land cover.

8. **Rangelands in Afghanistan are defined as land with the predominant vegetation consisting of grasses, herbs, shrubs, and low-growing trees.** In biological terms, rangelands resources include vegetation, wildlife, open forests (with canopy cover less than 30 percent), soils and minerals. Rangelands are also a source of medicinal plants, which provide significant income for some rural people. Beyond that, they serve as wildlife habitat and a source of fuel supply for communities, and also help preserve soil and sequester carbon.

Rangelands also help moderate surface water flows. In wet years, healthy rangelands act like sponges, reducing peak run-off, soil erosion, siltation, and flood damage. In normal and drier years, the rangelands help retain rainwater and release it slowly, maintaining stream flows during these drier periods. It is estimated that rangelands nourish nearly 4 million hectares of irrigated lands through their water regulation function (see Figure 4).

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![Sectoral Contribution as % of GDP](image)

**Figure 5: Agricultural contribution to the GDP has been declining.**

9. **The World Bank estimates that, in order to increase rural incomes based on the current population growth rate, agriculture has to grow by at least 6 percent per year.** The National Agriculture Development Framework envisions achieving these goals through activities around four key pillars: agricultural production and productivity, economic regeneration, natural resources management, and change management. Further economic analysis shows that irrigated wheat, horticulture and livestock products can be produced at a competitive level with imports or could be exported, in some cases. So far, however, livestock has been contributing marginally to the agricultural sector and the country’s GDP (see Figure 6). Better management of rangelands towards greater fodder production for the livestock would imply bigger contribution to the economy.
10. **Rangelands supply 75-80 percent of animal fodder for the majority of livestock.** Livestock numbers have fluctuated greatly in Afghanistan, having been reduced between 1977 and 2004 due to conflict, lack of access to summer grazing areas in Central Afghanistan, and drought (see Figure 7). Livestock numbers have increased since 2004, but overall numbers are unclear since Afghanistan has not done a livestock census. In the more recent past (2008-2017), livestock numbers have remained stable, according to Afghanistan’s government estimates.

11. **Recent WBG analysis of the economic potential of horticulture** estimates that these resources and sector generate 34 percent of agricultural GDP, 7 percent of national GDP, and 50 percent of Afghanistan’s export earnings. Medicinal plants are becoming highly valued commodities harvested from the rangelands in the wild and cultivated locally. It is estimated that medicinal plants generate 19 percent of the total export value (2015), equaling that of carpets’ export value (19 percent) and totaling two-thirds of the dried fruits and nuts export value (30 percent) [see Box 3]. Tourism activities are impeded due to the insurgency and lack of relevant infrastructure; however, the potential of domestic tourism is defined as a priority development area.
in the National Peace and Development Framework for generating income and overcoming the legacy of conflict.

Afghanistan’s rangelands are vulnerable and are in crisis

12. **Rangelands are at risk from desertification, particularly in the more arid parts of the country.** According to the 2006 MAIL National Report, desertification in Afghanistan affects more than 75 percent of the total land area in the northern, western and southern regions where widespread grazing and deforestation have reduced vegetation cover and catalyzed accelerated land degradation. Desertification is advancing in several areas of Afghanistan’s northern, western and southern regions. In less arid areas, conversion of rangelands into rain-fed farming lands has been common. This practice has caused a visible decrease in available rangelands area in recent years. Although empirical data on the extent and impact of desertification in Afghanistan is lacking, broad indicators show that the detriment to rangelands due to desertification in Afghanistan is large and increasing. Poor agricultural practices, loss of forests, changed traditional livestock grazing patterns due to conflict, land claims and droughts, and irrigation systems affected by siltation and flooding exacerbate this process. There is unanimity in the expert opinions in Afghanistan that mismanagement of rangelands, especially through overgrazing and conversion to rain-fed wheat production, is resulting in extensive desertification.

13. **Livestock industry in Afghanistan is based on two distinct production systems: mixed mostly with cereal production by sedentary farmers and livestock production by the nomadic Kuchi.** Sedentary farmers usually have a small amount of cattle, sheep and goats integrated with largely cereal and horticultural crops, producing mostly for household consumption. Nomadic Kuchi people focus on sale of animals and their products for their livelihoods, and depend upon seasonal rotations of often large flocks of sheep and goat between summer and winter grazing rangelands.

14. **The 2003 Livestock Census conducted by the FAO (the latest livestock census available for Afghanistan) underscored the limitations placed on the livestock sector by feed and forage production.** While supplementing with cultivated fodder crops is preferable, the lack of sufficient fodder causes livestock owners to rely heavily on natural pasture for many months of the year (see Table 1). This is an especially significant problem during the winter months, when fodder quantities are low. Low fodder quantities, combined with poor pasture quality, lead to a “winter feed gap” in Afghanistan, which effectively determines the maximum number of livestock that can be supported.

<table>
<thead>
<tr>
<th>Feed Source</th>
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<tr>
<td></td>
<td>East</td>
</tr>
<tr>
<td>Pasture Grazing</td>
<td>8.76</td>
</tr>
<tr>
<td>Stubble Period</td>
<td>2.16</td>
</tr>
<tr>
<td>Supplementation Period</td>
<td>6.64</td>
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</table>

15. **Solid data on the quality of Afghanistan’s rangelands is lacking, but a great deal of anecdotal evidence points to poor quality and a high degree of overgrazing.** The 2003 livestock census demonstrated that many livestock holders did not think the rangelands were sufficient as a feed source (see Table 2). Further, respondents noted higher preferences for mountain grass, and vegetation harvested from rangelands, according to the greater presence of this forage at higher
elevations. The FAO report associated with this census notes that “…this regional differentiation reflects on the state of rangelands. There is simply no surplus to be harvested on rangelands in most of Afghanistan.”

Table 2: Livestock owner responses to sufficiency of feed and pasture supply showed the insufficiency of rangelands areas in much of the country, but did show that the effects of drought on pasture resources had begun to abate in 2003

<table>
<thead>
<tr>
<th>Feed Supplies (% of respondents)</th>
<th>Agro-ecological region</th>
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<tr>
<td></td>
<td>East</td>
</tr>
<tr>
<td>Enough Feed 2002</td>
<td>44.6</td>
</tr>
<tr>
<td>Enough Feed 2003</td>
<td>45.4</td>
</tr>
<tr>
<td>Pasture Sufficient 2002</td>
<td>16.3</td>
</tr>
<tr>
<td>Pasture Sufficient 2003</td>
<td>17.9</td>
</tr>
</tbody>
</table>

Forests Offer Potential for Diversification But are Being Rapidly Depleted

16. **Rural people depend upon Afghanistan’s forests for timber, fuelwood, and charcoal.** Some of these forest products are consumed locally and some are traded for other goods and services. There is demand for quality timber inside the country, notably in the markets in and around the capital city of Kabul. Additionally, there is demand across the border in Pakistan and Iran. Forests also produce valuable non-timber products, notably medicinal plants, pistachios, walnuts, and pine nuts. Forests also provide critical ecosystem services. High mountain forests slow the melting of winter snows and moderate the water flows for communities in the valleys below. Forests also provide wildlife habitat, combat soil erosion, and sequester carbon.

17. **At one point in time, deciduous and evergreen forests covered 5 percent of Afghanistan’s land area, and woodland consisting of pistachio, almond and juniper trees were located across one-third of the country**

   There are two basic types of forest in Afghanistan: closed oak and coniferous forests in the east and open pistachio woodlands around the mountains. Pistachio forests are a valuable source of

   **Box 1: “Ecosystem services”**

   Forests and related biodiversity perform a crucial role in sustaining natural ecological balance and provide non-monetary assets and services such as soil retention, erosion control, water flow and climate regulation, crop pollination, and aesthetic and intrinsic values. These assets and ecosystem services are essential to sustain key economic sectors and services, including agriculture, livestock production, irrigation, energy, infrastructure and sanitation, and tourism.

   **Box 2: “Hidden harvest”**

   Forests provide direct and indirect benefits in the form of employment, forest products, contribution to livelihoods, as well as providing ecosystem services that sustain economies. Rural households living near forested areas derive a significant part of their income from forest sources. Half of this income comes in non-cash form and includes food, fodder, energy, building materials, and medicine. This non-cash contribution or “hidden harvest” is especially important for the extremely poor.

pistachios but have been heavily degraded for firewood. Other valuable species include Oak, Sweet Almond, Acacia, Olive, Pine, Birch, Deodar, Spruce, Fir, and Juniper.

18. A large variety of goods are produced by forests and used and traded within Afghanistan and also exported (see Box 3). Forests generate timber and non-timber forest products. Construction timber and fuelwood are two major categories of forest goods. Fodder, fruits, nuts, and berries, and mushrooms constitute non-timber forest products. These goods are widely used in Afghanistan, often unregistered through sustenance use but are also traded and exported, given the high economic value and demand for certain goods. Wildlife and biodiversity resources offer a resource base for related economic activities, such as travel, tourism, lodging, trade, hunting, and bird and animal watching through its utilitarian and intrinsic values.

19. Natural forest cover has been dramatically reduced in Afghanistan over the last 4 decades of armed conflict - the current total is 867,000 hectares, mostly present towards the north and east of the country. In total, between 1990 and 2005, Afghanistan has lost 33.8 percent of its forest cover, or around 442,000 hectares. Population growth, which includes returning refugees, drives the demand for fuel wood and building materials. These factors, coupled with inadequate management, illegal harvest, and smuggling during the 20 years of conflict in Afghanistan, have led to over-exploitation of forests. Forest harvest is exceeding reforestation, leaving an estimated loss of about 30,000 hectares of forest per year (Azimi 2007). While deforestation has slowed down over the past two decades, Afghanistan’s forests have now been reduced to only 2 percent of the country’s land area. The example of the conifer forests in Nangarhar, Kunar, and Nuristan provinces showcase how they were halved during the period 1978-2002.

20. Water is the single largest natural factor limiting Afghanistan’s socio-economic development, particularly when it comes to agriculture. Even though Afghanistan, as a whole, is not water scarce, at least in terms of per capita water volume, lack of access to water at the right time in the right place is still the single most serious challenge hampering the socio-economic development of Afghanistan, especially in rural areas. Precipitation varies across the regions significantly, and mostly happens through the winter and spring time. Water shortage continues to remain one of the major causes for food insecurity in the country. Of Afghanistan’s water resources, 80 percent originate in the Hindu Kush Mountains. The Amu Darya Basin holds about 60 percent of the water flow.

21. Losses of healthy forests and rangelands will have cumulative landscape- and watershed-level impacts. Agricultural productivity and choice of crops will be limited by increased soil loss and
Climate Change Further Threatens Afghanistan’s Population & Property

22. **Afghanistan is ranked among the most vulnerable countries in the world where the adverse impacts of climate change are concerned.** A global ranking of the vulnerability of 170 countries to the impacts of climate change over the next 30 years (to populations, ecosystems and business environment) ranks Afghanistan in the eighth place. A retrospective study looking at weather-related losses (fatalities and property losses due to storms, floods, heat waves, etc.) ranks Afghanistan as the third most-affected country in the region and the twelfth globally during 1996-2015 (see Table 3). Extreme and frequently recurring natural hazards such as flooding, earthquakes, avalanches, landslides, and droughts, brought on by its geographical location and years of environmental degradation, result in the frequent loss of lives, livelihoods, and property in Afghanistan. Since 1980, disasters caused by natural hazards have affected 9 million people causing over 20,000 fatalities. It is also anticipated that ongoing climate change will most likely increase the incidence of extreme weather events, including heat waves, floods, and droughts and climate-induced disasters such as Glacial Lake Outburst Floods, avalanches and rainfall-induced landslides.\textsuperscript{xv}

<table>
<thead>
<tr>
<th>Country</th>
<th>Regional Rank</th>
<th>Global Rank</th>
<th>Fatalities Annual Average per 100,000</th>
<th>Fatalities Annual Rank per 100,000</th>
<th>Loss per unit GDP Average in %</th>
<th>Loss per unit GDP Rank in %</th>
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<td>0.04</td>
<td>145</td>
<td>0.01</td>
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</tr>
</tbody>
</table>

*Table 3: Afghanistan ranks in the top three countries in the region and among the top twelve globally on Global Climate Risk Index during 1996-2015 (fatalities and losses).*

23. **Documented data confirms that Afghanistan is already beginning to experience the adverse impacts of climate change.** The documented increase in the country’s mean annual temperature since 1960 reached 0.6 °C; precipitation patterns changed - decreasing during March-May by 40.5 mm and increasing by 30 mm during June-November. Projections\textsuperscript{xvi} suggest that Afghanistan will face an overall strong increase in mean annual temperatures, considerably higher than global mean projections, from an “optimistic” model for 2.5 °C to a “pessimistic” model for 7 °C, by the year 2100.

24. **Increasing temperatures, changing precipitation patterns and duration of the growing season have negative effects on rangelands and forests and affect people’s livelihoods.** A recent
national study, for example, examined four climate hazards which posed the largest risk to livelihoods in Afghanistan over the last 30 years\textsuperscript{xvii}. It concludes that climate change has major implications and impacts on millions of people, their livelihoods and food security in Afghanistan. Droughts related to changing patterns of rain-fall mostly affect the North and parts of the Central Highlands’ rainfed farming and pasture lands, impacting food production and income. Droughts caused by changing snowmelt patterns primarily affect the densely populated areas of Kabul and surrounding regions, affecting production of the country’s vegetables, fruits and cereals. Floods caused by heavy spring rainfall events have increased by 10 to 25 percent in the past thirty years, affecting livelihoods dominated by agriculture and pastoralism. Riverine floods caused by increased spring snow-melt are concentrated along rivers in the eastern part of the Helmand river basin. Other studies suggest that higher temperatures can exacerbate tree water stress and increase widespread, high levels of tree mortality, called forest die-off\textsuperscript{xviii} with major implications on regeneration, survival and productivity of forest ecosystems.

25. **Sustainable development cannot be achieved unless climate change and natural disaster risks are reduced.** A recent global assessment\textsuperscript{xix} estimates the annual global loss from disasters such as earthquakes, tsunamis, cyclones and flooding as now reaching an average of USD 250-300 billion each year. This annual average number reached USD 478 million a year in Afghanistan between 1980 and 2012, with most losses attributed to multiple hazards (USD 147 million), followed by earthquakes and floods (USD 92 million). In terms of frequency of the natural disasters in Afghanistan, floods occur in 54 percent of cases, followed by earthquakes (20 percent) and landslides (11 percent) according to records over the last 25-year observation period. Earthquakes are the deadliest disasters in Afghanistan with 53 percent of deaths attributable to them, followed by floods (26 percent) and extreme temperatures (another 12 percent). In terms of the economic losses, the most devastating impacts come from droughts (57 percent of the attributed economic losses), followed by the floods (34 percent) and earthquakes (8 percent).

26. **Drought is a natural hazard that affects Afghanistan on a regular basis.** From 1998 to 2005/2006, the country went through the worst drought in known climatic history in terms of duration and strength. Between 2000 and 2003, over 4 million Afghans were severely affected by this drought. As most of the population (85 percent) relies on agriculture for their livelihood, droughts pose a serious threat to livelihoods, income, and poverty reduction efforts. Extensive disaster risk is magnified by badly planned and managed urban development, environmental degradation, poverty and inequality, vulnerable rural livelihoods and weak governance.

27. **Internally displaced people and the poor are among the worst affected by climate change and natural disasters and are adding to the existing stress and conflict.** Continuous armed conflict, insecurity, violations and recurrent disasters created a coping pattern for Afghans over the last four decades. Estimates suggest that the number of internally displaced people in Afghanistan is increasing: as of December 2016, the total number was 1.5 million, with new 653,000 people displaced due to conflict and another 7,400 due to natural disasters in 2017\textsuperscript{xix}. There are also millions of Afghan refugees living in Pakistan and Iran, and a large number seeking asylum in Europe and Australia. However, asylum acceptance rates dropped sharply in 2016, and Europe, Iran and Pakistan are now returning Afghans back to their home country. About 600,000 returnees arrived back in the second half of 2016 and this trend continues.
OPPORTUNITIES TO IMPROVE THE SECTOR’S PERFORMANCE

28. Looking forward, there are several opportunities to improve the resource base and enhance the performance of the sector, by embracing the challenges that have been causing unsustainable use and degradation of the rangelands and forests and constraining the sector development.

Resolving Land and Use Rights Conflicts

29. **Conflicts over land rights have been contributing to resource degradation.** Local disputes, especially in remote areas, are related to conflicting claims over land and resource rights. Over the last decades, millions of displaced people fled from their land and property, which was then occupied or sold. Now, on returning home, people demand restitution and, thereby, add to the existing tensions over land and natural resources use. Several factors contribute to the instability: disputes-related resettlement of internally displaced people and refugees, conflict over control of rangelands and water resources, and participation in the illegal opium economy.

30. **Land tenure and property rights issues are serious, systemic, and lack suitable dispute resolution mechanisms.** Traditionally, under Islamic Law, all non-tilled land belongs to the king or state. Conversion of rangelands to cropland was prohibited. It is the government’s responsibility to protect and improve the rangelands. The absence of legal recognition for communal property (until very recent amendments to the Rangeland Law 1970) was the major serious limitation. In addition, ongoing insurgency leads to degradation of traditional communal management systems, land- and property-grabbing, punishment to people for cooperation with the authorities, as well as conflicts between the displaced and returning people (around 5 million since 2002) and the settled population over land and property. Conflict over rangelands use rights in the central highlands has been a long-standing issue requiring extended mediation and negotiation efforts, as well as support to strengthen community groups and their control over the resources. Traditionally, forest resources were owned and managed communally but pressures from demand for timber are now threatening these institutions; accordingly, forests are being sold to timber traders or local commanders. Rapid urbanization puts additional pressure on water, timber, energy, and food resources and further adds to instability and unsustainable harvests.

31. **Conflict over grazing rights further degrades seasonal rangelands.** Pastoralists are dependent upon central highlands for summer rangelands, where there is a long history of tensions between the *Kuchi* nomads and settled *Hazaras* over the grazing and control rights over rangelands. These conflicts are between families, communities, and settled communities and nomads; it results in people being killed and injured, homes burned, and herds being stolen. Rangelands are treated as a free resource and their condition is deteriorating. The Central Government has a key role to perform to facilitate resolution of this conflict, which is in part fueled by the Taliban (which arms pastoralists). Facilitated mediation and strengthening of community control and negotiations between nomads and settled communities over the grazing rights have been attempted in recent years with some success.

32. **The so-called timber mafia (Afghan and Pakistan tribes, as well as exporters) are engaged in illegal logging and smuggling of valuable timber, thereby, causing deforestation and
degradation by affecting the forests’ protective functions against soil erosion and landslides. Controlled by the Taliban, warlords, and tribal leaders, the illegal logging of deodar, fir, blue pine, and oak fulfills increasing consumer demands for timber, fuel, and fodder. Timber is logged in the southern and eastern parts of the country and smuggled for trade in-country and across the borders. Given the porous borders, weak security, and high profitability of timber, (for example, the value of the Himalayan cedar timber increases on the way to the Gulf States by 3000 percent), the illicit activities continue unabated.

Adopting and Implementing New Policies

33. **Enhanced management of rangelands and forests will be dependent on updated policies governing their use, as well as on capacity development supporting their implementation.** The Government of Afghanistan is in the process of updating its policies; these are expected to clarify the use rights and management arrangements of natural resources, including rangelands and forests. The sector-specific policies, such as the Rangeland, Forest, Land Management Laws and several others, together with relevant cross-sectoral legislation like the Environment Law or the Water Policy will require extensive efforts for their implementation, as well as better coordination between the key government players. Capacity in terms of training of management and staff, outreach, extension and dispute resolution services for communities, increased enforcement and coordination between the center and district offices and communities, as well as increased resources, will change the status quo.

34. **Key policies and regulations that are vital for better management of rangelands and forests are either new or not fully adopted yet.** The Water Law came into force in 2009 and regulates ownership, fees, rights, permits, and usage with respect to water. The Environment Law adopted in 2007 addresses issues relating to rehabilitation of the environment, conservation, and sustainable use of natural resources, living and non-living organisms. The Rangeland Law 1970 is being amended to recognize communal custodianship. The Forest Law was enacted in 2013 through Afghanistan’s Parliament and Senate and introduces the concept of community-based management. The Minerals Law promulgated in 2010 defines ownership and control of the State over mineral deposits and their use. The temporary Protected Areas Management By-Law was prepared under the Environment Law (2007) and the Forest Law (2013) for effective management of protected areas, biodiversity conservation, prohibiting illegal hunting. A stand-alone Wild Animal Conservation and Hunting Management Law was prepared in 2017 and is presently with the Office of H.E the President for review and approval. The main goal of this law is to promote sustainable use and manage wildlife resources, combat wildlife extinction and promote participatory wildlife management in Afghanistan. The owner of this Law will be MAIL. Another law, Protected Areas Management Law, is being drafted to establish legislation for effective management of protected areas and national parks, improved conservation of biodiversity. Land Management Law (2017), Land Acquisition Law (2017) and National Land Policy are pending Cabinet approval. These policies have the potential to dramatically improve and resolve the issues of land tenure, access to land, and remove other constraints in land management in Afghanistan.

35. **Cross-sectoral legislation further provides opportunities for better coordination and management of natural resources.** The Environment Law (2007), which was the first legal
instrument related to the country’s environment, was based on international standards and established a regulatory framework for the sustainable use and management of Afghanistan’s natural resources, while providing a framework for the conservation and rehabilitation of the environment towards achieving the country’s social, economic, reconstruction, and ecological development goals. The Water Hygiene and Sanitation Policy (2010) embodied the Government’s commitment to improve the quality of life of people in the rural areas of the country through their enhanced access to safe, convenient, sustainable water and sanitation services, and increased adoption of hygienic practices at the personal, household and community levels. The Law on Disaster Response, Management, and Preparedness (2012) focuses on regulating preparedness for natural disasters. It outlines preparedness activities and defines preventive measures against land degradation, such as protection of areas, their vegetation and land cover.

36. **However, policies require additional bylaws, capacity, and resources for their implementation and enforcement.** The existing Rangeland Law (1970) is being amended with the aim to recognize and formalize the custodianship, management, and use rights of communities and other users. Amendments would establish a legal framework for bringing all rangelands under community custodianship, and to define the regulatory, advisory, and mediating role of the Government of Afghanistan in relation to rangelands. Separately, the Medicinal Plants Management Law (2017) was prepared to cover the gaps in conservation and use of medicinal plants and is under review now. The Rangeland Management Plan was prepared in 2012 to provide a framework and roadmap for the rehabilitation and protection of the country’s rangelands and to ensure that they are used in a productive, sustainable, and equitable manner by both sedentary farmers and nomads. The National Forestry Management Plan (2012) aims for the sustainable management of Afghanistan’s forest resources and advocates for the creation of community-based Forest User Groups, that balance the needs for environmental protection with agricultural development, using ecosystem and watershed-level approaches.

37. **Climate risks and considerations need to be better integrated into natural resource management, planning, design and implementation of development activities.** A recent risk assessment identified the vulnerability of Afghanistan’s regions to weather- and climate-induced disasters, such as fluvial floods, flash floods, drought, landslides, snow avalanches, and seismic hazards. It recommends increasing vegetation cover for better water management so as to reduce water shortages during droughts, as well as developing reforestation and landslides retention structures to reduce the triggering of landslides during heavy rain or earthquakes. Increased vegetation cover is also recommended for reducing the risks of flooding- the most frequently occurring natural hazard in Afghanistan. Flooding in rivers mainly occurs as a result of heavy rainfall coupled with rapid snowmelt, the lack of vegetation and denudation of the mountain areas.

**Promoting Gender Inclusiveness**

38. **The growth of the Afghan economy depends, in part, on the availability of a larger, healthier, and better equipped national workforce.** Women have two critical roles in this context: both as paid workers themselves and as key actors in raising a healthier and better prepared future generation of workers. These roles are especially important for the women living in the remote rural areas, that are dependent on farming and use of natural resources. Without recognizing and
supporting these roles of women in the economy, Afghanistan will struggle with economic growth. Generally, there are three challenges that influence effective women’s participation in employment in Afghanistan: proximity to home and security, the gender identity of those delivering services to women, as well as geographic disparities between urban and rural areas, and different regions.

39. The NRM sector has traditionally low numbers of women in paid employment; this is true for both the region and Afghanistan. Current estimates suggest that, from the 536 people employed under the GD-NRM, less than 2 percent are women. The rate of women participation in paid jobs is higher in Kabul and lower in the provinces. MAIL and its different Directorates (Horticulture and Livestock, NRM, Animal Husbandry) recognize this issue and try to increase the engagement with different social groups, including women. Traditionally, in Afghan society, women are active in poultry rearing, animal husbandry, kitchen gardening, processing fruits (at small scale and community level), weeding, and agribusiness (small scale). By strengthening women’s organizations (Community Development Councils - the women part), the Government aims to improve their skills and provide them with further opportunities to play a greater role in paid jobs, as well as to promote women entrepreneurship. For example, the Afghanistan Rural Enterprise Project funded by the World Bank, focused on enhancing capacity in rural areas relevant to NRM and agribusiness. It set up and enhanced SMEs for processing fruits and vegetables. In another engagement, WB helps the NRM Directorate to improve and rehabilitate degraded forest areas by engaging poor households, especially widows, for raising millions of tree saplings and selling them to the Ministry.

40. Increased participation of women in the NRM sector can be achieved by addressing several critical factors. Among these are: engaging women in work that is in closer proximity to their homes and securing their physical work areas better; employing more women for extension services and as trainers for reaching out to other women; identifying culturally and geographically specific regions with traditionally low women participation and developing culturally-specific strategies for their engagement.
POLICY IMPLICATIONS AND RECOMMENDATIONS

41. The National Peace and Development Framework 2017-2021, which outlines the plan to achieve self-reliance and increase the welfare of the nation, sets agriculture and natural resources among the top priorities for economic growth and jobs creation. The Framework introduces the priorities for achieving peace, stability, and sustained growth based on export-oriented inter-regional trade, job creation, agriculture, and mining. The success of reforms will depend on how effective the Government will be in tackling conflict, corruption, criminality, and unemployment.

42. One of the national priority programs of ANDPF, the Comprehensive Agriculture Development Program, calls for greater agricultural productivity and identifies required multi-sectoral investments; the success of this program cannot be achieved without the sustainable management of rangelands. The conservation and sustainable management of rangelands plays a critical role in improving water regulation and soil protection functions - both necessary for greater agricultural productivity. Significant investments are needed in irrigation, watershed management, improved planting material, enhanced value chains, and expanding the depleted livestock to provide food security for the country. This program envisages expanding of the land under irrigation from 2.2 to 2.7 million hectares and investing in rehabilitation of more than 1,000 irrigation schemes and building small water reservoirs; improving livestock management and rangelands; increasing horticulture capacity from 180,000 to 230,000 hectares, supporting value chains, establishing export certification, and supporting women-owned agribusinesses; expanding agroforestry and reforestation with over 60,000 hectares to support environmental conservation and income generation for farmers; decentralizing the MAIL for better connectivity with farmers and increasing services delivery as well as their effectiveness.

43. Rangelands and forest resources are important for the rural, as well as the broader economic, development of Afghanistan; however, realization of their full potential will require a more coordinated and collective set of actions, policy and institutional reforms, and increased investments in their better and more sustainable management and restoration. Natural resources are degraded due to ongoing conflict, poor management, and lack of community ownership. Climate change poses additional threats and risks with implications to poverty, food security, and loss of property and life. There is a pressing need for a renewed emphasis on managing rangelands and forests to benefit the rural poor and the economy. The NRM Strategy is a welcome step in the right direction; however, broader policy and institutional issues, including limited capacity, should be addressed to reverse the trends of resource degradation.

44. Climate adaptation opportunities include policies and actions aimed at reducing the socio-economic risks associated with these natural hazards: increasing efficient irrigation (e.g. drip); land and water management at the watershed level (i.e. to stabilize slopes); implementing terracing, agro-forestry, and agro-silvo-pastoral systems that will reduce soil erosion and runoff from steep slopes; implementation of an early warning system; and hazard mapping. Despite Afghanistan’s very low per capita GHG emissions, as its economy strengthens, mitigation opportunities can focus on energy, land use, land-use change and forestry (LULUCF), agriculture, transport, waste management, and industries.

45. Strengthened focus on supporting the commercial development of rangelands and forests can provide a triple winning scenario: it can create viable jobs, boost economic growth (income), and support a more sustainable food production approach that goes beyond emergency management.
At the same time, improved vegetation cover will reduce vulnerability to weather-related events and a changing climate that costs Afghanistan an average of USD 478 million a year in economic losses from droughts, floods, loss of property and lives.

Near-term priorities include:

1. **Completing development, enactment and operationalization of priority policies and rules**, most importantly, the Rangeland Law and the Forest Law. This will modernize the outdated policies and legitimize new management approaches, including recognition of communal custodianship and its support.

2. **Boosting livestock production to increase GDP, jobs, food security by increasing fodder production in rural areas**. This will require addressing issues of land tenure, property rights, access to the rangelands and forest resources for incentivizing long-term private investments, effective resolution of disputes, increasing quality of rangelands through better watershed and land management, and providing better early disaster warning systems, including hazard mapping, risk management, and adaptation.

3. **Supporting commercial development of other natural resources, especially in peri-urban areas** connected to markets (e.g. horticulture, forests); doing so will boost jobs creation and income generation. This will require better watersheds management, improved early warning systems, resolved land tenure issues, and community-based approaches, harnessing legal commercial use of forest resources for fuelwood, timber and non-timber resources, as well as for exports and jobs.

4. **Investing in integrated landscape and watershed planning and management**, including improved periodic resource inventories and monitoring. This will stabilize slopes, reduce soil erosion and runoff, regulate water release and increase crops and rangelands productivity.
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