ADAPTATION FUND

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category:	Regular-sized project concept
Country:	Afghanistan
Title of Project/Programme:	Climate change resilient livelihoods advanced in rural Afghanistan (UNDP PIMS 6340)
Type of Implementing Entity:	Multilateral Implementing Entity
Implementing Entity:	United Nations Development Programme
Executing Entity/ies:	Ministry of Rural Rehabilitation and Development (MRRD)
Amount of Financing Requested:	9,432,556 (in U.S Dollars Equivalent)

PROJECT / PROGRAMME BACKGROUND AND CONTEXT:

Geographical and Socioeconomic Context

1. Afghanistan is a land-locked, mountainous and semi-arid country, bordered by China, Iran, Pakistan, Tajikistan, Turkmenistan and Uzbekistan. The country's area of 652,000 square kilometres is administratively divided into 34 provinces (*wilayat*).
2. The climate in Afghanistan is semi-arid to arid continental with hot dry summers and cold winters. Precipitation varies over the country, is generally small, of high variability and can in some regions be concentrated to just few days in the rainy season. Rainstorms can yield the whole rainfall of a month within few hours, often causing flash floods, erosion and landslides. Highest rainfall amounts of up to 1000+ mm per annum are received in the highest mountain regions. About 50 percent of precipitation occurs in winter (January to March), much of which falls as snow in the central mountainous regions. A further 30 percent falls in spring (April to June). The Central plateau and mountains of Koh-e Baba, Tierband-e Turkestan and Feroz Koh receive low to moderate precipitation of 300-500 mm p.a. The lowlands in the North and in the South-east have rainfall of only 100-200 mm or in the country's southwestern provinces even less than 50 mm per annum. Temperature patterns in Afghanistan are subject to altitudinal gradients and show high inter-seasonal differences. Annual mean temperatures vary between -5 and 25°C without consideration of the high mountains. Mean July temperatures in large parts of the country are between 15 and 35°C, while mean January temperatures are between -15 and 20°C[1]. More details on the climate patterns in Afghanistan and in the project regions are provided in Annex 1.
3. Although Afghanistan is located in a semi-arid environment, it is still rich in water resources mainly because of the high mountain ranges such as Hindu Kush and Baba, which are covered with snow. Over 80 percent of the country's water resources originate in the Hindu Kush mountain ranges at altitudes of over 2,000 m. The mountains function as natural water storage, with snow during the winter and snowmelt in the summer that supports perennial flow in all the major rivers[2]. The total ground water recharge in entire Afghanistan is estimated with 16.4 km³ or 10% of the average total

[1] Summarized based on Breckle, S.-W. and Rafiqpoor, M.D. (2010). Field Guide Afghanistan–Flora and Vegetation, Bonn, Scientia Bonnensis.
[2] ICARDA. 2002. Needs assessment on soil and water in Afghanistan. Future Harvest Consortium to rebuild agriculture in Afghanistan. International Center for Agricultural Research in the Dry Areas.

precipitation amount. This would be a high percentage by international standards but can be realistic due to the concentration of rainfall in form of snow, which can often find ready access to ground water when it melts. Groundwater extraction is estimated at about 2.8 km³, of which 99% is used for agriculture. Of this 1.2 km³ comes from *karez* systems (subsurface tunnels), 1.0 km³ from springs and the remaining from shallow and deep wells[3]. Historically, groundwater withdrawal has been largely limited to water from shallow unconfined aquifers abstracted using *karez* and traditional wells from which water is drawn using animal power (*arhad*). More recently, deeper confined aquifers are being developed for domestic and municipal water supply using modern well-drilling techniques[4]. It is not fully known how much of the groundwater can be extracted without leading to an excessive decline in groundwater levels, which may result in a stage of 'water mining'[5]. Problems with over-drafting of groundwater may arise in the Kabul and Eastern Helmand river basins. More details on the surface and groundwater in Afghanistan are provided in Annex 8, sections 3.8 and 3.9.

4. Land-use in Afghanistan is largely determined by the climate conditions and by the availability of surface and ground water for irrigation. The dominant land-use type in Afghanistan is rangeland used for extensive livestock grazing. The second largest land-use category is irrigated arable land, followed by rain-fed arable land. Important irrigated crops include rice, other cereals and fruit trees. Irrigated agriculture is restricted to river valley and alluvial fans at the bottom of mountain ranges. Rain-fed farming depends on sufficient precipitation during the winter and spring season and is accordingly concentrated in the north of the country, where climate is most suitable. The dominant crop is wheat, of which 80 percent is sown as a winter crop. More details on the current land-use patterns in Afghanistan are provided in Annex 8, section 3.11.

5. The population was 34.7 million in 2016[6], of which 73 percent reside in rural areas[7]. About 63.7 percent of the population is under age 25[8]. Afghanistan has a high annual population growth rate with 2.5% in 2017[9] due to a high average birth rate per woman. The rapid population growth (+200% since 1985, +45% since 2005[10]) combined with the post-war situation as well as economic and environmental conditions are among the reasons for high poverty level, lack of perspectives, especially of young people and resulting civil conflict and emigration.

6. Approximately 80% of the Afghan population is engaged in agriculture directly or in secondary or tertiary activities, with the estimated ratio of irrigation and rain-fed farming around 4:1.[11] With 69% of households owning any type of livestock, farming households in Afghanistan are generally threatened by temperature increases and erratic rainfall. Afghanistan's 2012 Risk and Vulnerability Assessment estimates that 36 percent of people have been affected by natural disasters.

7. Considering that agriculture accounts to almost a quarter of the Afghan national economy, there are also financial costs to consider. Based on World Bank data, drought causes an average of US$280 million in damages to agriculture each year, and an extreme event such as a continuous drought could cost over US$3 billion.[12] A combination of inadequate awareness, limited technical and functional capacity, and limited economic resilience and infrastructure capacities calls for immediate

[3] ADB (2015). Preparation of the Afghanistan Water Resource Sector Development Strategy. Volume 2 Annexes. TA-7994 AFG.
[4] Rout, B. 2008. Water management, livestock and the opium economy. How the water flows: a typology of irrigation systems in Afghanistan. Afghanistan Research and Evaluation Unit Issue Paper Series.
[5] Qureshi, A. S. 2002. Water resources management in Afghanistan: the issues and options. International Water Management Institute.
[6] 29.7 million as per national statistics, of which 1.5 million are nomads; 36.4 million as per http://www.worldometers.info/world-population/afghanistan-population/
[7] World Bank data
[8] UNFPA, http://afghanistan.unfpa.org/en/node/15227. According to World Bank data, 44 percent are under 14
[9] http://www.worldometers.info/world-population/afghanistan-population/
[10] http://www.worldometers.info/world-population/afghanistan-population/
[11] This ratio was calculated based on the estimated cultivated land in Afghanistan for 2018 in Islamic Republic of Afghanistan Central Statistics Organization 2018. Afghanistan Living Conditions Survey 2016-17. However, this ratio does not imply for each region. Based, on the findings of the Emergency Food Security Assessment the ration differs region to region, while ratio of irrigation and rainfed farming in non-drought areas is around 4:1, whereas in drought affected areas it is 3:2.
[12] Addressing Challenges with Water Scarcity, Food Insecurity and Famine Risk in Afghanistan, World Bank, Kabul, 2018

humanitarian assistance often, causing deflection of donor attention to climate change and environmental management.

Climate Vulnerability

8. Afghanistan is among the most vulnerable countries (ranked in terms of vulnerability 171th of 181 and ND-GAIN Index, composed of vulnerability and readiness, 173 of 181[13]) to climate change impacts due to the high sensitivity and the low coping capacity of human systems. Climate change scenarios for Afghanistan suggest[14] temperature increases of 1.4-4.0°C by the 2060s (from 1970-1999 averages), and a corresponding decrease in rainfall and more irregular precipitation patterns (see fig. 1 and 2). Climate projections available for Afghanistan suggest a future cycle of higher temperatures[15], reduced rainfall and higher evapotranspiration, and an increased frequency of extreme events such as droughts, storms, floods, landslides and avalanches. Satellite data show the decline in mountain glaciers in eastern Afghanistan, with 77 % of glaciers retreated between 1976 and 2007[16]. Droughts are likely to be the norm by 2030, leading to land degradation and desertification. Decreasing snow cover leading to depletion of water resources; drier conditions and rising temperatures adversely affecting agricultural pattern and yields; aggravating the damage to forests and rangelands already caused by overgrazing of livestock and fuel wood needs.

9. The impact of ongoing and projected climate change poses a significant threat to people's sources of livelihoods, considering that 44% of households depend on agriculture (households engaged in farming and/or animal husbandry) as their major source of income. FAO even estimated that 80% of Afghanistan's population relies on agriculture.[17] Climate change impacts agriculture through a number of partly interrelated factors. Agricultural crops are highly dependent on specific climate conditions, and changes to the climate can have both positive and negative impacts on the ways that crops are cultivated. For instance, a warmer climate could increase the duration of the growing season and accelerate plant growth. But for many grain crops, faster growth may reduce the amount of time that seeds have to grow and mature, resulting in lower crop yields. Furthermore a warmer climate increases evapotranspiration and thus the requirements of moisture supply for plant growth. A warmer climate could also alter the range of pests and diseases, presenting additional challenges for crop species that previously would not have encountered such infestations or outbreaks. With a changing climate, rain-fed agriculture will be particularly vulnerable, possibly resulting in a widespread decrease in agricultural production and increase in need for irrigation. [18]

10. There is evidence that the agriculture sector in Afghanistan is in particular highly vulnerable to increased temperatures and changes in rainfall/snowfall patterns and snow melt. Increased soil evaporation (resulting in moisture stress), reduced river flow and less frequent rain during peak cultivation seasons are already affecting agricultural productivity and crop choice options. Crop failure level is increasing due to insufficient rainfall in rain-fed areas and water shortages in irrigated areas. Water availability in some areas has already been drastically reduced both in terms of surface and ground water. Changes in precipitation and flow patterns (coupled with inefficient water use) pose a serious threat to ecosystem productivity, and food production. The cumulative effects of disappearance of glaciers, more frequent and intense droughts on surface water and groundwater could threaten the water supply for entire communities, leading to a range of humanitarian crises, including disease, population displacement and conflict. Rises in winter and spring temperatures will lead to more rapid and earlier snow melt, increasing the risk of flash flooding.

[13] Vulnerability and ND GAIN Index rank in: https://gain.nd.edu/our-work/country-index/rankings/
[14] Landell Mills 2016. Feasibility Study for the Panj-Amu River Basin Project (DCI-ASIE/2015/361-001) Draft Final Report, Supplementary Document 13 Climate Risk Assessment and Management Report.
[15] Temperatures have already risen by 6 degrees Celsius since 1960.
[16] Islamic Republic of Afghanistan Chief Advisor Office on Agriculture & Development 2017. Karez Action Plan.
[17] UNEP 2015. Climate change and Governance in Afghanistan. 65 p.
[18] Islamic Republic of Afghanistan Central Statistics Organization 2018. Afghanistan Living Conditions Survey 2016-17

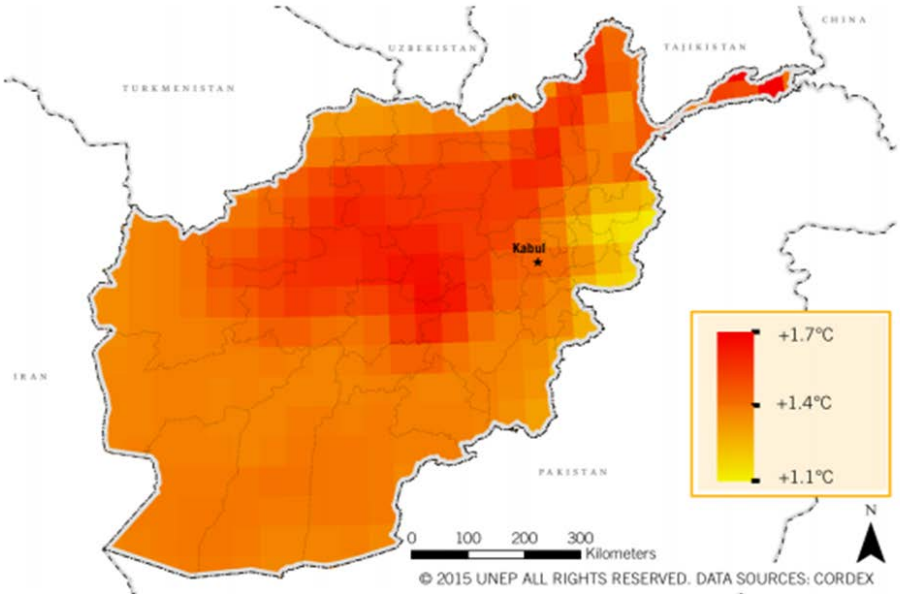


Figure 1: Difference in mean annual temperatures between a near future period (2021-2050) and the base period (1985-2006) using RCP 4.5. All grids of all models show a trend of increase[19].

11. Previous years have shown high volatility of agricultural production–including years of sharply negative growth-driven by agriculture's reliance on weather conditions. Climate change is impacting the crop calendar, crop water needs, and leading to the degradation of soils, upland forests and rangelands–major livelihood sources for the rural poor. Besides the rain-fed agriculture, cultivation of crops on irrigated lands is especially affected.

12. It is estimated that 80% of Afghanistan's economic losses are caused by climate-induced disasters – such as (flash) floods and prolonged dry spell cyclically progressing into drought(s) in combination with extreme winters.[20]

13. Inadequate irrigation and rainfall water shortage have been recently identified as one of the three main reasons threatening the land cultivation.[21] Water scarcity in complementarity with meagre water management on the national and local level is having a significant impact on agriculture production, be it reduction of the cultivated land, reduction of grazing land, decrease of water for livestock or contamination of water storages by floods and grey water. Water storage per capita is the lowest in the region and 3 of 5 river basins are water scarce.

[19] UNEP 2015. Climate change and Governance in Afghanistan. 65 p.
[20] For further information, see: www.unisdr.org/archive/31685.
[21] Afghanistan Food Security and Agriculture Cluster 2018. Emergency Food Security Assessment in Rural Afghanistan - Key Findings. Draft version, August 2018.

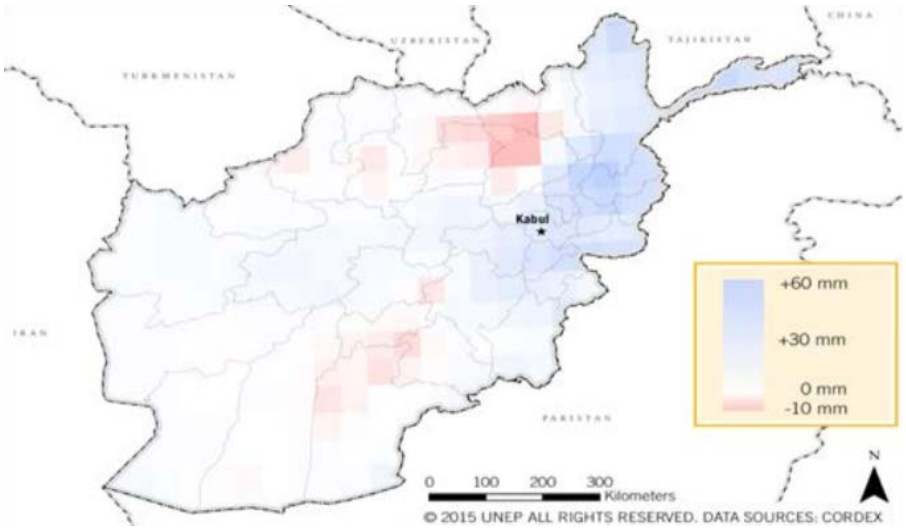


Figure 2: Difference of annual precipitation between a near future period (2021-2050) and the base period (1985-2006) as mean of eight different regional climate models for the representative concentration pathway 4.5[22]. Projected local precipitation increase will be outweighed in terms of aridity by temperature increases.

14. The rehabilitation and expansion of Afghanistan's large and medium irrigation systems have in the last decade been addressed by international financial and technical assistance projects, e.g. by The World Bank[23], Asian Development Bank[24], USAID[25], FAO[26] and others. Asian Development Bank[27] has implemented a project aiming at community-Based irrigation rehabilitation and development in four target provinces in Northern Afghanistan.

15. However, a large portion of small-scale village and inter-village irrigation schemes has not yet been rehabilitated and is in urgent need of being adapted to the expected climate change. These systems consist of small canals, wells and/or underground irrigation canal(s), the *karez*, used since centuries in Afghanistan and allowing for a cost-efficient irrigation. In such a *karez* the groundwater is first captured at the bottom of the mountains by digging a vertical shaft, from where it will be led to the irrigation areas through long tunnels where it is protected from evaporation. (See fig. 7)

16. These *karez* systems in 1978 supplied 168,000 ha with irrigation water. FAO in 2004 reported 9,370 *karez* of which 3,404 or 36% had dried out and the remaining with flow reduced since the multiyear drought that began in 1998.[28] So, currently there might still be at least 150,000 ha, possibly more than 200,000 ha, of arable lands that depend on *karez*[29]. The *karez* irrigation suffers from poor maintenance and neglect, but is also impacted by climate change, leading to insufficient recharge of the groundwater. This has caused economic losses calculated by the Chief Advisor Office on Agriculture & Development as USD 44.3 million lost value of *karez* construction and annually USD 81.7 million from missed opportunity of cultivated yield (if wheat were cultivated). Projects under Ministry of Rural Rehabilitation and Development (MRRD) from 2002-2016 have addressed 2,204

[22] UNEP 2015. Climate change and Governance in Afghanistan. 65 p.
[23] http://projects.worldbank.org/P122235/irrigation-restoration-development-project?lang=en
[24] https://www.adb.org/countries/afghanistan/overview
[25] https://2012-2017.usaid.gov/results-data/success-stories/rehabilitation-irrigation-systems-afghanistan-0
[26] http://www.fao.org/news/story/en/item/122556/icode/
[27] https://www.adb.org/projects/36222-013/main; https://www.adb.org/countries/afghanistan/overview
[28] Islamic Republic of Afghanistan Chief Advisor Office on Agriculture & Development. Karez Action Plan 2018-2030.
[29] Based on 25 ha/karez, in Islamic Republic of Afghanistan Chief Advisor Office on Agriculture & Development 2017. Karez irrigation system in Afghanistan (Challenges and Opportunities)

karez[30] and the Government of Afghanistan has established a program[31] for the full rehabilitation of all suitable *karez* systems, including aquifer recharge, *karez* rehabilitation and water distribution. The latter program expresses the needs and intentions of the GoA, but no budget is allocated for its implementation and the program is entirely relying on donor support.

17. The Afghanistan government declared drought as of April 2018, spotting the light on the vulnerability of the local agriculture sector, and the massive impact that climate change can have on local population. In the year 2018, based on current statistics, nearly 12 million Afghans and their livelihoods were directly affected by the drought. As an example, the cultivation of wheat declined in 2018 by 6% compared to the previous year, 71 % in rain-fed areas and over 6 % in irrigated areas.[32] The reduced yield directly impacts on the shrinking cereal stock for household consumption, which has reduced by over one third compared to 2017.[33]

18. Farmers and especially vulnerable families are highly exposed to impacts of precipitation deficiency, resulting in water scarcity and loss of their income generation assets. The 2018 drought is estimated to reduce farmers' income by 18 percent as reported by 66 percent of farmers interviewed in a recent FAO assessment.[34] Based on the recently conducted Emergency Food Security Assessment (EFSA), over 1.2 million inhabitants are severely and 5.4 million moderately food insecure in the 20 drought affected provinces.[35] In total, over 12 million inhabitants and their livelihoods have been directly affected by the drought. With nearly 100% of population in the affected areas having food consumption score poor or borderline, over half of interviewed households identified that over 75% of their expenditures are used to cover solely food items. Diminishing labour opportunities (especially seasonal agricultural work) and a high number of applied negative copings strategies were registered, such as spending overall household savings (48% of cases), selling animals (45%), significant reduction of expenditures for agricultural inputs (41%), selling productive assets (26%) or selling property (21%). Over 4.5 million heads of livestock were identified as vulnerable, counting additional 1 million heads of livestock lost, as a result of disease and/or malnutrition.[36]

19. Climate induced disasters exacerbate an already existing situation of fragility and instability within Afghanistan, being impacted by ongoing conflict and limited economic growth and has further implication on the ongoing socio-economic status of Afghan society. Climate change is likely to compound existing chronic and acute food security issues. Direct effects of this will be more pronounced on populations who depend on agriculture for their livelihood and economic activities, but increases in food prices will also affect other vulnerable groups. More than 1.7 million Afghans are internally displaced[37], and more than 2 million have been returning to Afghanistan (mostly from Pakistan and Iran) since 2015, generating high humanitarian needs. The number of people displaced by the drought is estimated to be 249,000 people, with largest concentration of drought induced IDPs in the Western Region.[38]

20. Based on the latest indicators, poverty has increased from 38 percent in 2011/12 to 55 percent in 2016/17[39]. Protracted conflict for almost thirty-five years and continued insurgency in parts of the country both have taken a serious toll on Afghanistan's development process. Disputes over land

[30] Islamic Republic of Afghanistan Chief Advisor Office on Agriculture & Development 2017. Karez irrigation system in Afghanistan (Challenges and Opportunities).
[31] Islamic Republic of Afghanistan Chief Advisor Office on Agriculture & Development 2017. Karez Action Plan 2018-2030.
[32] MAIL 2018. Agriculture Prospect Report.
[33] MAIL 2018. Agriculture Prospect Report.
[34] Afghanistan Food Security and Agriculture Cluster 2018. Emergency Food Security Assessment in Rural Afghanistan - Key Findings. Draft version, August 2018.
[35] Afghanistan Food Security and Agriculture Cluster 2018. Emergency Food Security Assessment in Rural Afghanistan - Key Findings. Draft version, August 2018.
[36] Afghanistan Food Security and Agriculture Cluster 2018. Emergency Food Security Assessment in Rural Afghanistan - Key Findings. Draft version, August 2018.
[37] https://www.unocha.org/afghanistan
[38] OCHA 2018. Humanitarian Snapshot November 2018
[39] Islamic Republic of Afghanistan Central Statistics Organization 2018. Afghanistan Living Conditions Survey 2016-17

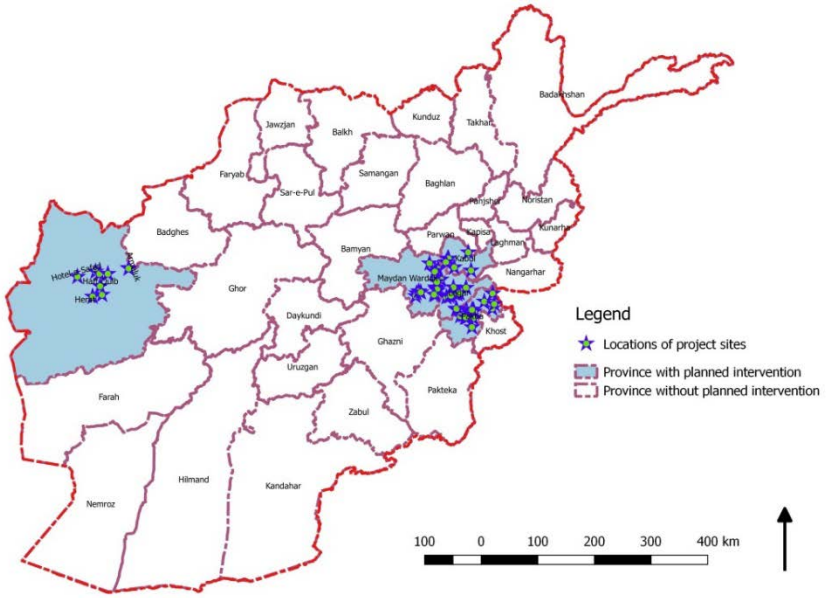
and water are already a major cause of local insecurity, and the situation is set to deteriorate. Since 1978, the arable area has declined by about 60 percent, leaving only 12% of the land now suitable for farming.[40] There has been a trend of decreasing land size of households engaged in irrigation farming. Based on the analysis of the Afghanistan Living Condition Survey, "the limited availability of arable land in combination with very high population growth inevitably results in increasing pressure on farm land and fragmentation of land holdings and is a likely contributor to the observed increasing poverty in the country". Unless action is taken to strengthen the resilience of communities and reduce disaster risk, Afghanistan risks to lose recent development gains and see more people pushed into poverty.

Overview of the project areas

21. The project sites were selected by the Ministry of Rural Rehabilitation and Development (MRRD) in consultation with key stakeholders at national, sub-national and district level. The selection of provinces was based on several criteria: 1) the presence of baseline activities; 2) the presence of most vulnerable populations to climate change impacts; 3) food insecure provinces; 4) areas that have so far not received significant development assistance and low investment per capita; and 5) geographic representation. In the target provinces, the experts from MRRD in field surveys during the development of this full proposal assessed 1) the existence of small-scale, community-level irrigation systems, which are affected by ongoing and projected climate change; 2) particular vulnerability of the local population that is dependent on irrigation affected by climate change; 3) the availability of suitable arable lands; and 4) the readiness and interest of the respective communities.

22. The project activities will be implemented in five (5) provinces of Afghanistan. Out of these, Herat province is located in the country's northwest and belongs to the drainage areas of Hilmand and Harirod-Murghab. The Kabul, Logar, Paktia and Maidan Wardak provinces are in the eastern part and belong mainly to the Kabul drainage area, which is part of the Indus catchment. Smaller sections of Paktia and Maidan Wardak drain into the Hilmand drainage.

23. In total, sixty (60) project sites have been selected with seven to seventeen sites in each of these provinces.



[40] Ibid.

Figure 3: Provinces where project activities will be implemented

24. In **Herat province** more than half of the land area is classified as bare soil. Among the productive landscapes, rangelands dominate. Arable areas are mainly rain-fed lands. Most of them are located in the north of the province, in the sub-basin of Harirod (Herat) River. Irrigated lands are concentrated along the Harirod River and in smaller extent along rivers in Kharumrod basin and in the sub-basin of Murghab River. Furthermore, there are hundreds of small-scale irrigated areas away from larger rivers and typically relying on local sources of irrigation water.

25. The total irrigated area was approx. 250,000 ha in 1997[41]. Out of these irrigated areas 150,000 are intensively cultivated and produce one crop per year. Only 350 ha intensively cultivated lands produce two crops per year. Close to 100,000 of irrigated lands are intermittently cultivated. Fruit trees and gardens do not cover substantial irrigated areas, but small household plots are of importance for subsistence.

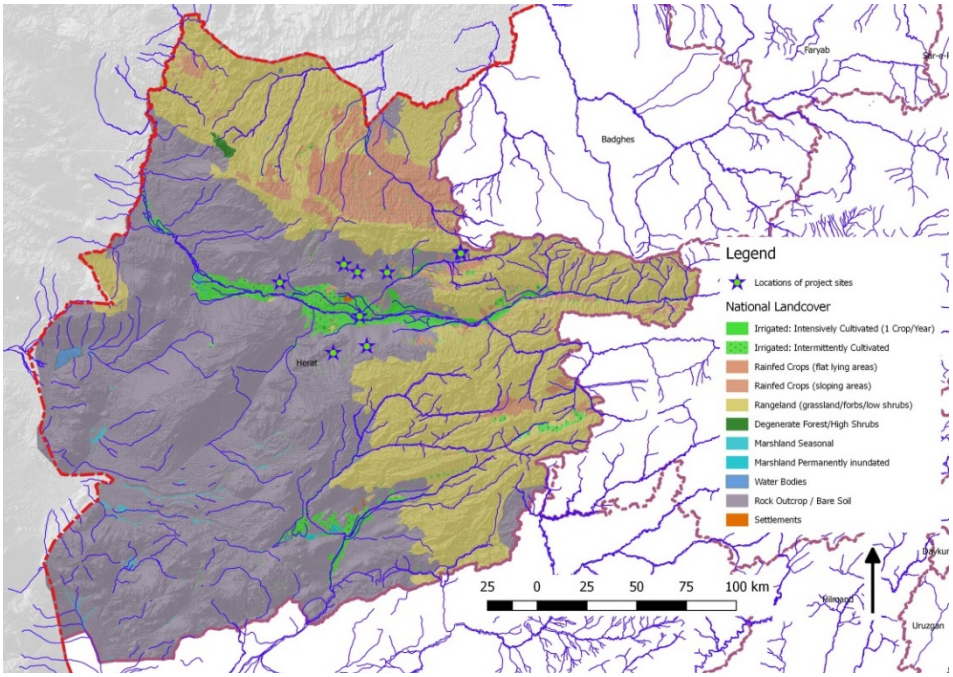


Figure 4: Land cover in Herat province with project sites[42]

26. The project sites are located in the districts Zindajan, Guzra, Injil and Karukh. These districts are dominated by large areas of bare land, but also have larger irrigated areas in the valley of Herat. All project sites except one are located in areas with small irrigated lands only.

27. The largest areas in **Kabul province** are rangelands. Arable lands make up a high proportion with irrigated areas dominating, mostly in the basin of Kabul River and its tributaries. Rain-fed areas are less important. Kabul province, the most urbanized province in Afghanistan, and the groundwater resources in Kabul basin are particularly affected by extraction above the natural recharge.

28. The total irrigated arable land was about 70,000 ha in 1997[43]. Out of these 43,000 ha were intensively cultivated areas with one crop per year and 26,000 ha had been intermittently cultivated.

[41] GIS data by Afghanistan Information Management Service 1997

[42] GIS data by Afghanistan Information Management Service 1997

[43] GIS data by Afghanistan Information Management Service 1997

Only 2,000 ha are mapped as fruit trees, mainly in the north of the province, but subsistence gardens in small scale exist all over the province.

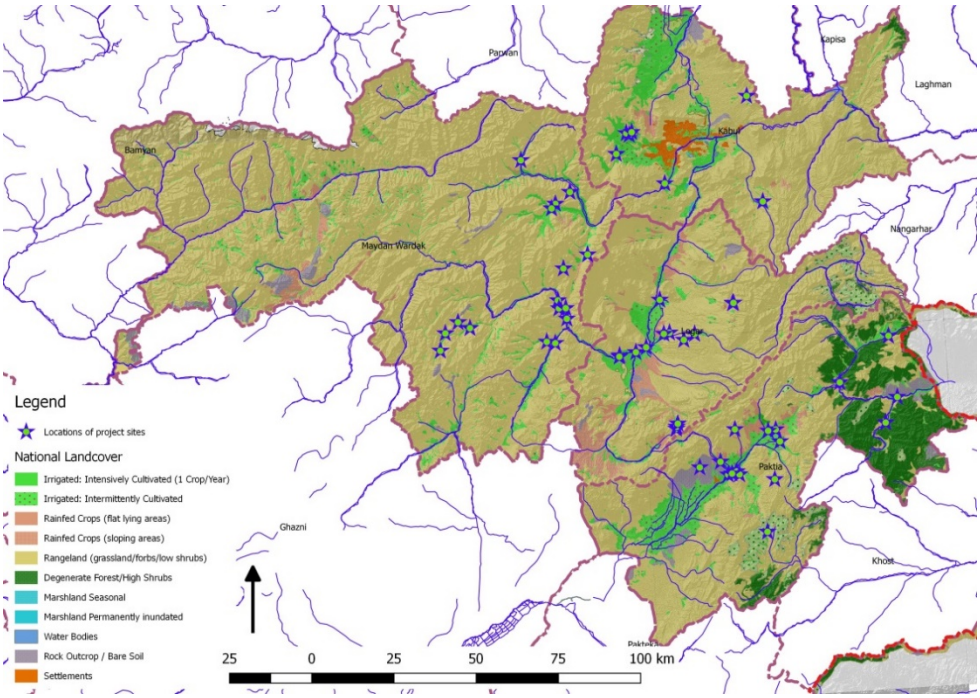


Figure 5: Land cover in Kabul, Logar, Paktia and Maidan Wardak provinces with project sites[44]

29. Project sites in Kabul provinces are located in the districts of Khak-i Jabar, Dehsabz, Paghman and Char Asiab. Khak-i Jabar, Dehsabz and Char Asiab are dominated by rangelands, and project sites are located in small irrigated areas. Paghman has a higher share of irrigated arable lands and accordingly the project sites are embedded in larger irrigated lands, but address small, local irrigation schemes.

30. Land cover in **Logar province** is dominated by rangelands in all catchment areas. Rain-fed and irrigated lands make up about the same share of arable lands. Irrigated areas are located in the valleys of the rivers Murghab and Djudsa. Rain-fed areas are concentrated in the south-west and central as well as northern parts of the province. In the eastern part of Logar province some areas are covered by open woodlands and degraded forests.

31. Out of the total irrigated area of 37,000 ha in 1997[45] 22,000 ha had been used as intensively cultivated areas with one crop per year and 13,000 ha as intermittently cultivated areas. Areas of 1,700 ha had been classified as fruit trees and gardens in the land use map.

32. The project sites are located in the three districts Pule Alam, Barky Barak and Khoshy. In Pule Alam with its larger massifs of irrigated arable lands two projects sites are located at the edges of larger irrigated areas and two projects in small irrigated areas. In Barky Barak the projects address small irrigation schemes within larger irrigated lands, which make up a substantial share of the land use in the district. In Khoshi the project sites are small irrigated lands within the rangelands, dominating the district.

[44] GIS data by Afghanistan Information Management Service 1997

[45] GIS data by Afghanistan Information Management Service 1997

33. While **Paktia province** is also dominated by rangelands, there are as well larger forested areas, open woodlands and degraded forests in the eastern part of the province. Rain-fed arable lands cover much smaller areas than irrigated lands. Most irrigated lands are located in the upper part of Hilmand river basin, smaller areas belong to the Kabul (Indus) basin.

34. The total area of irrigated lands had been 68,000 ha in 1997[46]. Among these intermittently cultivated areas dominated with 36,000 ha followed by almost the same area of 32,000 ha intensively cultivated areas with one crop, exceptionally two, per year.

35. Project sites in Paktia are distributed over the seven districts of Aryoub Zazi (Jaji), Chamkani, Sayid Karam, Gardiz, Ahmad Aba and Shwak, representing the variety of land use patterns within the province: Gardiz, Ahmadaba and Sayid Karam are dominated by rangelands with substantial areas of irrigated and/or rain-fed arable lands. Project sites are located within larger complexes of irrigated lands or in small irrigated lands within areas not suitable for arable farming. Shwak is dominated by woodlands used mainly for livestock grazing. The project site there covers a small irrigated area. The districts Aryoub Zazi and Chamkani have higher shares of forests and rangelands, but little irrigated arable lands in river valleys, where the project sites are located.

36. **Maidan Wardak province** is dominated by rangelands. Some rain-fed arable lands are cultivated in the western part of the province. There also many comparably small areas with irrigated lands, mainly intermittently cultivated can be found, which depend on small and medium scale irrigation schemes, many of them supported by *karez*. Substantial irrigated intensively cultivated areas with one crop per year are found in larger river valleys along the rivers Lalandar and Djudsa and their tributaries the east of the province, belonging to Kabul river basin. The overall irrigated area had been 68,800 ha in 1997[47], half intensively cultivated with one crop per year, half intermittently cultivated.

37. The project sites are all located in the eastern part of the province, in the districts of Sayed Abad, Jalriz, Narkh and Chak. These districts are all dominated by rangelands and the small irrigated arable lands are mainly located in river valleys, where the project sites have been determined.

PROJECT / PROGRAMME OBJECTIVES:

Problems and barriers

38. Given the multitude and complexity of the identified climate change induced problems, the proposed programme can only address a set of prioritized issues in the selected project sites. Due to the dependence of the people on irrigated agriculture and the vulnerability of their livelihoods to the impacts of ongoing and predicted climate change, making more resilient irrigation systems towards these impacts is a priority need. So far, these small scale systems have not yet been addressed by any sound rehabilitation beyond the limited maintenance by local land users. Furthermore, ongoing and expected climate change impacts would have to be specifically addressed in the rehabilitation of such irrigation systems, which so far had not been the case.

39. Failing of these irrigation systems and the livelihoods depending on these would have disastrous consequences for the local people in these areas. Out-migration from areas not longer suitable for irrigation into other areas would cause further social problems in an already volatile situation, potentially leading to unrest and violence. Falling out of agricultural use of more irrigated areas also has impacts on food security beyond the immediately affected areas and cause raising food prices, which particularly affect a large portion of the population, which is below the poverty line, but also households, considered as mid-income.

[46] GIS data by Afghanistan Information Management Service 1997

[47] GIS data by Afghanistan Information Management Service 1997

40. In many rural areas sources of irrigation water and of drinking and household water either coincide or are in some extent interchangeable. Where sources of clean drinking water dry out or fail, people use irrigation water for their household needs. But also water supply from clean wells, typically used for drinking and household needs is sometimes used for the irrigation of household gardens in absence of other sources of irrigation water. This climate change impact on small-scale irrigation systems is typically linked with impacts on other livelihoods, in particular the availability of clean drinking water and water for other household needs.

41. Furthermore, climate change can increase the risk (frequency, intensity, formerly unknown locations) of natural events like avalanches, flash floods and debris flows, which can destroy irrigation systems or make them more prone to breaks, which can become the source of secondary disasters, e.g. if a breaking irrigation canals causes the flooding of houses.

42. The program will tackle these problems by addressing the following set of barriers:

    1. The local governments and communities and their institutions so far have limited understanding on the impacts of climate change and the specific vulnerabilities and risks associated with them. So far there are no effective extension services that can deliver climate information and skills training to strengthen resilience of farmers. Water and land users often insufficiently understand the interrelations between issues throughout all elements of the irrigation schemes, from upper catchment areas to on-farm irrigation practices and technologies.

    2. This lack of understanding of climate change and its specific impacts, which either already can be experienced but are usually not yet perceived by the people as representing a larger trend, or which can be predicted for the future, hampers the district administrations, the local communities and their institutions to assess potential courses of action, to determine the specific actions for achieving resilient results and to plan and implement these accordingly. Mapping of water sources and planning for integrated management at the level of community and inter-village irrigation schemes from upper catchments to irrigated farms are insufficient to address the climate change related changes in amounts, temporal and spatial patterns of water availability. Village development planning so far does not consider climate change impact and the interrelations between the different elements of the small-scale irrigation systems, including upper catchment conditions and management, groundwater replenishment, water losses in irrigation canals and *karez*, efficient on-farm water management and the quality, quantity and reliability of yields as well as the level of disaster risk proneness. No information is available among farmers and the wider agricultural supply chain of best adaptation practices and technologies in irrigation in the context of increasingly frequent drought.

    3. Within the local communities and beyond these there are traditionally and newly developed institutions and mechanisms for the use and maintenance of irrigation systems and the management of water distribution between and within the communities. Such institutions have proven being sustainable and efficient in delivering day-to-day water distribution and arrange basic maintenance. However, they do not yet possess the technical skills to deal with the new challenges of climate change and to manage adapted systems for addressing these challenges. As there is a lack of climate change proof irrigation sites for demonstration and training facilities peer to peer learning and skills transfer are hampered.

    4. The implementation of measures for climate change proof rehabilitation of small-scale irrigation system is further hampered by financial and technical limitations. The provincial and district governments have limited if any financial capability to support, coordinate and invest into sustainable community water management and to climate change resilient

infrastructure. This is also related to the prioritization of large irrigation schemes towards traditional and informal water management systems with regards of public spending.

5. At community and inter-community level there are very limited technical and financial resources available to address impacts of climate change to water resources. Communities, inter-community institutions and local governments have limited access to alternative, innovative water catchment technologies/approaches for semi-arid land. Furthermore, in some areas poor management and over exploitation additionally impact traditional ground water extraction, management and use methods. Interventions with small funding from the communities and land-users, but also from small NGO programs tend to allow only for local repair or rehabilitation of single elements of irrigation schemes, but neither for addressing entire schemes from upper catchments to on-farm water use in a holistic way and making them resilient against ongoing and predicted climate change impact.

43. The Theory of Change in figure 6 provides an overview of the main problems and barriers in the project sites, addressed by the proposed programme.

Specific needs to be addressed and proposed solutions

44. Both, government and local communities play a key role in addressing climate change impact in Afghanistan. While at national level capacity is already well developing, the capacity of local decision makers must be developed to allow them to take informed decisions and to implement immediate and long-term solutions. Rural communities need greater awareness of the impacts of climate change and the degradation of their environment from unsustainable land-use practices. They need assistance in the development of land-use and livelihoods, which are sustainable under the conditions of climate change. The program will therefore assist with awareness creation, facilitation and technical expertise for participatory assessment and planning and in the development of sustainable institutional capacity.

45. Local communities for the implementation of the necessary interventions, determined in the frame of participatory assessment and planning processes need external assistance. There is a need for providing technical expertise for tailoring interventions to the site specific conditions and the needs and opportunities of the communities. For successful implementation of the interventions, in particular of the structural measures required to make small-scale irrigation systems climate proof from the upper catchments to the on-farm irrigation water use, suitable technologies, machinery and materials are needed. These are neither available nor affordable for the local communities. Therefore the program will assist in these aspects, while the communities will contribute labour and locally available materials.

46. Figure 6 sets out the theory of change for the proposed project.

Project objective:

47. This project's overall objective is the increased resilience to climate change impact of the livelihoods of rural communities depending on irrigated arable farming by ensuring the supply of irrigation water under changing climate conditions. The project will achieve this in selected rural communities by implementing two interrelated components resulting in two outcomes:

    1. Strengthened individual and institutional capacity of rural communities to assess, plan, maintain and use climate change resilient irrigation infrastructure; and
    2. Irrigation systems at community level are rehabilitated and climate change resilient.

48. In the long term, it is expected that lessons learnt will be applied to other parts of Afghanistan and result in improved adaptive capacity there as well.

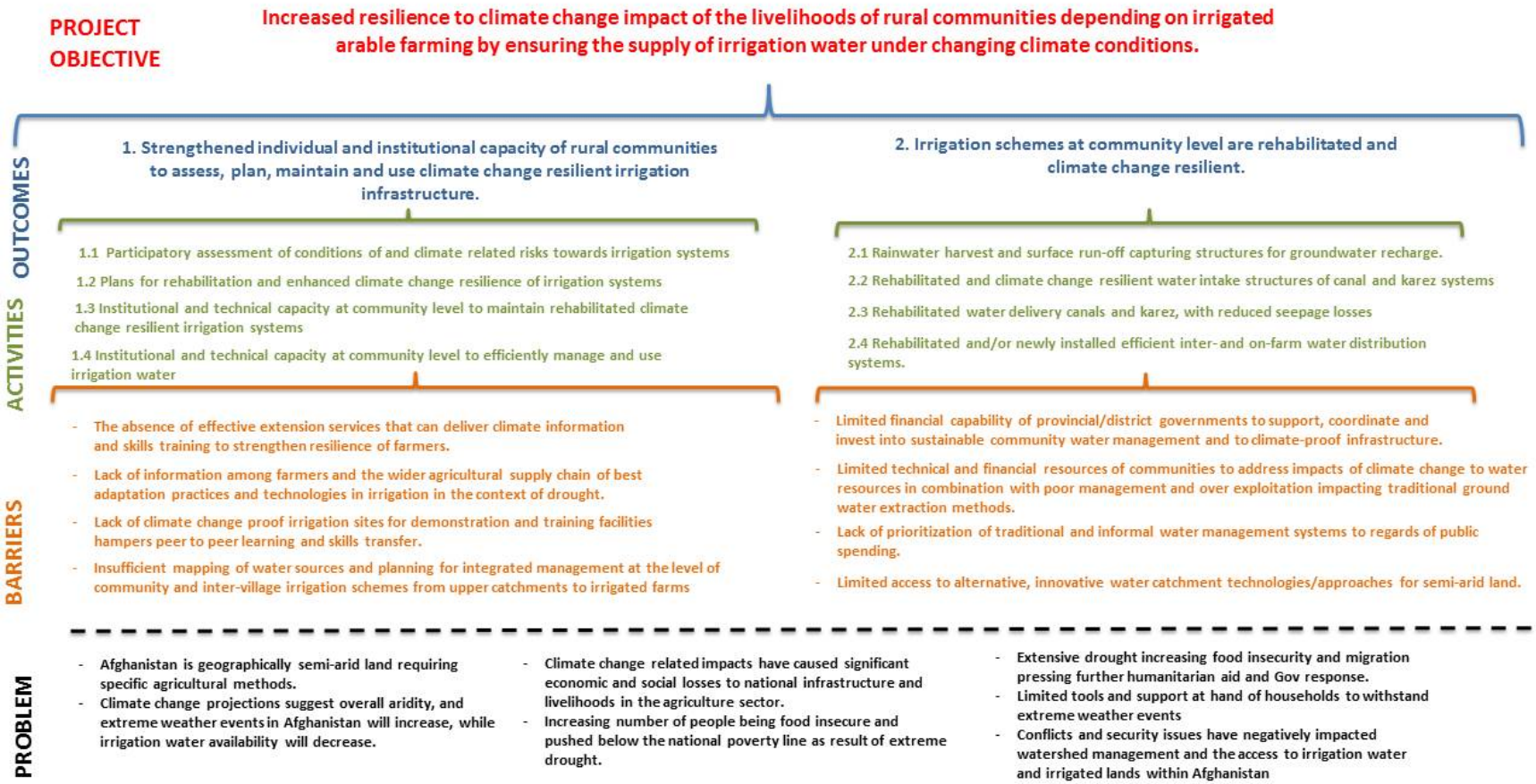


Figure 6: Theory of Change for the proposed project

Project / Programme Outcomes and Financing:

Project/Programme Components	Expected Concrete Outputs	~~Activities~~ Expected Outcomes	Amount (US$)
1. Strengthened individual and institutional capacity of rural communities to assess, plan, maintain and use climate change resilient irrigation infrastructure.	1.1 Participatory assessments of irrigation systems and their climate related risks conducted 1.2 Plans for rehabilitation and climate-proofing of existing irrigation systems prepared. 1.3 Institutional and technical capacity at community level to maintain rehabilitated and climate proofed irrigation systems 1.4 Institutional and technical capacity at community level for efficient management of irrigation water.	Capacities to plan, deploy, use and maintain climate resilient irrigation infrastructure of local community institutions and individuals developed.	$1,906,023
2. Irrigation systems at community level are rehabilitated and climate change resilient.	2.1 Rainwater harvesting and surface run-off capturing structures for water collection and groundwater recharge in place. 2.2 Water intake structures of canal and *karez* systems rehabilitated and climate proofed. 2.3 Rehabilitated water delivery canals and *karez*, lined for reduced seepage losses 2.4 Rehabilitated and/or newly installed efficient farm water distribution systems	Irrigation schemes at community level rehabilitated by improving groundwater recharge, reconstruction of water abstraction, delivery systems, inter-farm and on-farm distribution networks.	$6,004,200
3. Project/Programme Execution cost			$783,377
4. Total Project/Programme Cost			$8,693,600
5. Project/Programme Cycle Management Fee charged by the Implementing Entity			$738,956
Amount of Financing Requested			$9,432,556

Projected Calendar:

Indicated dates for the milestones in the proposed project/program is given in the below table.

Milestones	Expected Dates
Start of Project/Programme Implementation	June -2020
Mid-term Review (if planned)	June -2022
Project/Programme Closing	June -2024
Terminal Evaluation	Feb-2024

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

Technical context:

49. Insufficient availibility of irrigation water is a key factor limiting the size of irrigated farming and the yields from actual irrigated lands. The availability of and demand for irrigation water are influenced by climate change in various ways, causing shortage and/or shifting and unreliable availability of irrigation water. The background has been explained in paragraphs 8 till 20.

50. Direct impacts of climate change on availability of water in the project sites include: an overall aridification, changing seasonal patterns of precipitation with erratic and unreliable rainfall, insufficient infiltration from heavy rainfalls during dry periods caused by hardened, impermeable soils, reduced snow cover, accelerated melting of glaciers. These factors all affect patterns and amounts of surface runoff and groundwater replenishment. These changes will have a tremendous impact on availability of irrigation water resulting in severe water shortage as well as flood events threatening irrigation infrastructure.

51. In 2011, the area actually irrigated was an estimated 1,896,000 ha[48] counting for 24% of Afghanistan's arable lands of 7,793,000 in 2009[49]. The total harvested irrigated cropped area was even higher because of multiple crops per year on some irrigated lands. Irrigated arable lands produce much higher yields per hectare (estimated threefold) compared to rain-fed agriculture. Therefore, the importance of irrigated arable lands for livelihoods and food security is even much higher than their share in the land surface area. Pre-war, irrigated land produced 77 percent of all wheat and 85 percent of all food and agricultural crops. This share is likely still similar or even higher, given the increasing incidence of drought causing yields on rain-fed arable lands to decline and become more unreliable. Sustaining and increasing productivity on irrigated land is therefore essential for the overall food security of Afghanistan[50].

52. Irrigation systems can be divided into small or medium scale schemes (sometimes called "informal") and large scale ("formal") schemes. "Formal" systems are large-scale irrigation schemes that have been developed with central government assistance, financing, management, operation and maintenance. They are not to be addressed under this project due to the typically high investment needs, which are to be provided by projects of international financial institutions.

53. At present, there are twelve large-scale schemes totaling an area of 330,000 ha[51] or about 17 percent of the irrigated land in 2011. In the provinces where the proposed program will take place the majority of irrigation systems in terms of number and size are small or medium scale schemes at community and inter-village level. By focusing on these schemes, the proposed project will complement the ongoing and partly finalized rehabilitation of large scale irrigation systems by other donors, like World Bank, Asian Development Bank, USAID, FAO and others.

54. Centuries-old and traditionally developed and managed by local communities "informal" systems within the constraints of local resources have undergone social and physical changes. They expand or

[48] FAO Aquastat 2012. Irrigation in Central Asia in figures.
[49] FAO Aquastat 2012. Irrigation in Central Asia in figures.
[50] FAO Aquastat 2012. Irrigation in Central Asia in figures.
[51] National Irrigation Strategy 2017-2030 – 90% of all irrigation systems.

contract based on water availability or other challenges. These local small and medium scale systems account for 83 - 88 percent of the country's irrigated area[52][53]. These systems can be divided into four categories[54] by the way water is sourced.

55. *Surface water systems*: These are the most common systems. They capture water from rivers and streams and use it on adjacent arable lands, usually along river terraces and alluvial plains. Their key infrastructure typically includes:
    - diversion structures (*sarband*);
    - main, secondary and tertiary canals (predominantly made of unlined earth);
    - control structures (weirs, *sehdarak* bifurcators, offtakes and spillways);
    - conveyance structures (siphons, aqueducts, superpassages and culverts);
    - protection structures (embankments as well as gabion and retaining walls); and
    - access and ancillary structures (water mills, bridges and access points).

56. Some schemes include small retention dams and waterharvesting structures. Many of these systems have been established for centuries and their operation and maintenance was institutionalized in the communities and between villages.

57. *Karez*: The 9,000+ *karez* in Afghanistan have the potential of supplying 168,000 ha[55] with irrigation water and provide domestic water supply to villages there. These systems date back several millennia. They comprise an unlined underground gallery in the hillside that brings water by free flow from underground aquifers to be used for surface irrigation. Although most are shorter than 5 km, the length of the *karez* can run up to 16 km; the longest Afghanistani *karez* is 70 km long. Average irrigated area per *karez* is 25 ha, but size of irrigated lands supplied by one *karez* ranges from less than 10 ha to more than 200 ha. *Karez* irrigation is common in the south and southwest of the country and less in the north. Most *karez* systems are located within the Helmand river basin[56]. The *karez* provide sustained perennial flow and good quality water and so typically together with supplying irrigation water are also of key importance for household and drinking water needs. They have the advantage of being relatively immune to natural disasters and human destruction in war.

58. *Karez* are operated by local communities, traditionally under a *karezkan*, a local specialist responsible for construction and maintenance of subsurface sections; a *mirab* (water master) oversees surface distribution operations. For the construction and maintenance, comunities have set aside plots, so called *harim*, of 10 m width at each side of the karez. These lands allow access for maintenance and the storage of dug out materials.

[52] Rout, B. 2008. Water management, livestock and the opium economy. How the water flows: a typology of irrigation systems in Afghanistan. Afghanistan Research and Evaluation Unit Issue Paper Series.
[53] National Irrigation Strategy 2017-2030 – 90% of all irrigation systems.
[54] FAO Aquastat 2012. Irrigation in Central Asia in figures.
[55] Islamic Republic of Afghanistan Chief Advisor Office on Agriculture & Development 2017. Karez Action Plan.
[56] Rout, B. 2008. Water management, livestock and the opium economy. How the water flows: a typology of irrigation systems in Afghanistan. Afghanistan Research and Evaluation Unit Issue Paper Series.

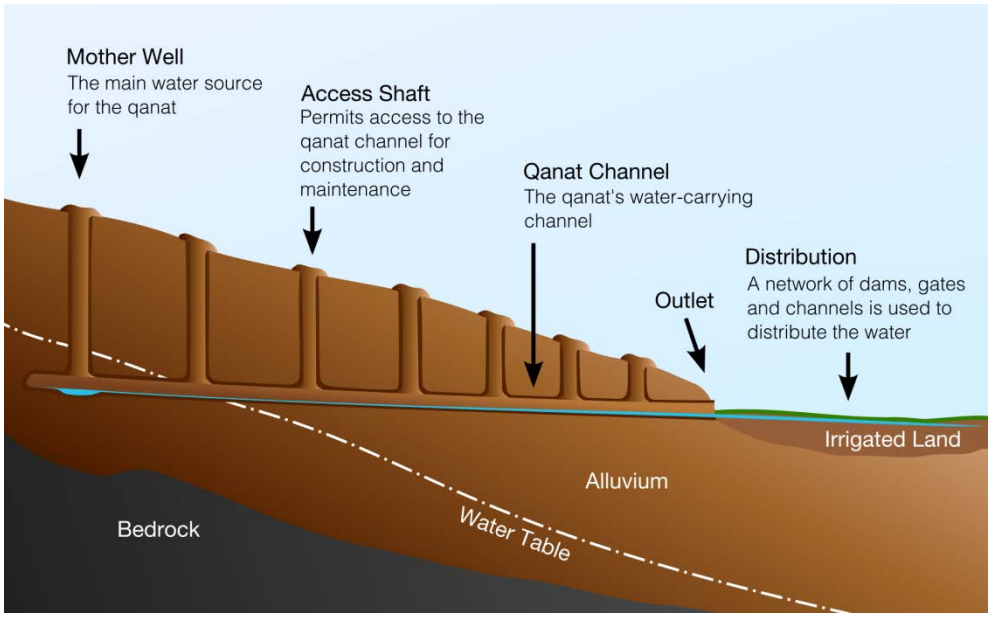


Figure 7: Schematic drawing of karez[57]

59. *Springs*: Many rural communities depend on the nearly 5,558 spring-fed systems estimated to irrigate approximately 187,000 ha. The relatively low flow rate of springs means that the systems are often supplemented by diverted surface water flows when available. The systems are commonly found in upper and tributary catchments and are concentrated in the more mountainous central and southeastern provinces[58]. When the groundwater level falls such as during drought years, the result is reduced outflow from springs. This is why some of the worst drought-stricken areas of the country are located in regions where farmers depend heavily on spring water for irrigation.

60. *Wells*: The total number of shallow wells in Afghanistan is 8,595, which irrigate around 12,000 ha of land. Groundwater is lifted from large diameter shallow wells with the help of a wheel (*arhad*), animal power supplies irrigation water to an individual farmer's fields. The irrigated land does not exceed 3 ha. In recent years, however, the use of modern well-drilling and pumping technology has become more widespread, considerably increasing the number of wells and their capacity[5960], but causing in some areas large scale ground water depletion[61]. In some areas wells powered by pumps have so caused the ceasing of waterflow in *karez* systems supplied by the respective groundwater reservoirs, resulting in local conflict. In the development of groundwater systems for irrigation and other uses precaution must be taken to avoid adversely affecting users of existing systems. Therefore this program will not support interventions based on wells.

61. The functioning of many of these irrigation system is threatened by climate-change and other factors like limitations in awareness and institutional capacities. These problems are exacerbated by problems of over-use of water resources and deterioration of irrigation infrastructure.

62. Ongoing and predicted climate change has impacted and will impact the small-scale irrigation systems in various ways. Surface water supplied systems face challenges caused by direct impact in form of changes in the amounts and dynamics of water discharge in the rivers and streams. Reduced snowmelt

[57] By Samuel Bailey (sam.bailus@gmail.com) - Own work, CC BY 3.0, https://commons.wikimedia.org/w/index.php?curid=8650678
[58] Rout, B. 2008. Water management, livestock and the opium economy. How the water flows: a typology of irrigation systems in Afghanistan. Afghanistan Research and Evaluation Unit Issue Paper Series.
[59] ICARDA. 2002. Needs assessment on soil and water in Afghanistan. Future Harvest Consortium to rebuild agriculture in Afghanistan. International Center for Agricultural Research in the Dry Areas.
[60] Rout, B. 2008. Water management, livestock and the opium economy. How the water flows: a typology of irrigation systems in Afghanistan. Afghanistan Research and Evaluation Unit Issue Paper Series.
[61] ADB (2015). Preparation of the Afghanistan Water Resource Sector Development Strategy. Volume 2 Annexes. TA-7994 AFG.

and shrinking glaciers are main causes of changes in amount and dynamics of waterflow. In the result during critical periods of the vegetation season water availability can be insufficient, diversion and intake structures can become dysfunctional. Furthermore, there are indirect impacts like an increasing incidence of sudden highwaters, changes in river courses and increased sediment load in the rivers and streams as a result of changing precipitation patterns, accelerated melting of snow and glaciers and vegetation degradation due to drought. These events often affect intake structures or cause the siltation of canals. Furthermore, open canals and pipes are increasingly frequently damaged by avalanches, landslides, erosion and debris flows, which are more severe and sometimes occur in locations that have not experienced such events.

63. Systems relying on groundwater supply, i.e. *karez*, spring and wells, are impacted by the reduced groundwater recharge. This is caused primarily by trends of temperature increase and resulting higher evaporation leading to an increasing overall aridity, and changes in precipitation amounts and patterns. Less total precipitation, less precipitation as snow or snowfall during extended cold periods causing sublimation of most snow, rainfall in few heavy events after long drought, extremely low amounts of rain per rainfall event and rainfall during untypical season are common and all directly lead to reduced groundwater recharge. For instance, less snow and faster snowmelt shortens the time of water infiltration in the ground. Heavy rainfall after a period of drought the soil is dried out and not permeable for water, which would be lost as surface runoff, often causing damage by erosion. Shorter periods of waterflow in riverbeds lead to reduced contribution to aquifer recharge.

64. A secondary climate change impact on all types of irrigation systems is the increasing demand of crops for irrigation water caused by an increasing aridity, in particular by higher daily temperatures during the growth season.

65. Years of conflict, displacement and social change combined with population increase, in some areas exacerbated by influx of internally displaced people and returning refugees, have affected the functionality of traditional irrigation management institutions. Awareness about the factors impacting functioning, resilience and sustainability of irrigation water supply is often weak and new challenges caused by climate change as well as related land degradation in watersheds are insufficiently understood. Also technical knowledge about construction, operation and maintenance of infrastructure and water efficient irrigation techniques is insufficient.

66. Many of the small and medium irrigation systems are in technically poor shape, causing insufficient water supply and substantial losses. They are not adapted to the reduced supply and increasing water demand caused by climate change. Canals are typically not lined and have substantial seepage losses. Most *karez* do not have mechanism to stop or capture water flowing during winter, or when there is no need for irrigation, causing about 25% of total annual volume of water not being effectively captured. Many *karez* face problems such as collapse of subsurface infrastructure, water flow in underground galleries being blocked by sediment, water losses and insufficient groundwater recharge. Also springs and wells are heavily affected by insufficient recharge and/or depletion of groundwater. The reduction of available ground water is caused by insufficient infiltration of water from precipitation and also by overdrafting in some areas. Recharge of groundwater can be insufficient because of different factors, which often occur in combination – reduced overall precipitation, reduced share of snow in the precipitation and higher share of rain, which contributes less to recharge, degradation of vegetation and soil causing higher surface runoff and others. An estimate shows that 3,406 (36%) out of 9,370 karez have dried up with the remaining experiencing a water flow reduction by up to 83%[62].

67. The proposed adaptation project will address primarily the climate change related problems at different levels, while at the same time taking into consideration and addressing awareness, capacity and institutional barriers. AF funds will support the rehabilitation and climate proofing of existing, and the

[62] Islamic Republic of Afghanistan Chief Advisor Office on Agriculture & Development 2017. Karez Action Plan.

construction of, new climate change resilient small and medium irrigation systems. These interventions cover all components of the irrigation systems, starting in the catchment areas to increase aquifer recharge, improve water retention and reduce disaster risk by the rehabilitation of the upper catchments, addressing the functionality of canals and *karez* to reduce losses and improving the on-farm water supply and use to ensure highest efficiency of use of limited water resources. As a result, the farmers' will be more resilient to climate change induced droughts and disaster risks, thus stabilizing and improving the livelihoods, social-economic and health conditions for the beneficiary population.

Target areas:

68. The project interventions will be implemented in 58 communities and inter-village irrigation schemes in 21 districts of five (5) provinces - Herat, Kabul, Logar, Paktia and Maidan Wardak.
69. An overview of project site locations and the land use context in the respective districts has been provided in paras 25, 28, 31, 34 and 36. Table 1 below of para 126 provides an overview of the planned project sites and beneficiaries.

Proposed Activities:

70. The proposed project activities are grouped into two components: 1) Strengthened individual and institutional capacity of rural communities to assess, plan, maintain and use climate change resilient irrigation infrastructure; and 2) Irrigation schemes systems at community level rehabilitated and climate change resilient. The activities under these components are summarized below.

71. Each of the activities will include knowledge management and dissemination. All activities will be documented in a manner, which allows for understanding of the approaches, technical detail and lessons learnt. Dissemination materials will be prepared in the local languages Dari and Pashto. They will be accessible in a style and content for target groups in national and sub-national government structures, CDCs and implementing organizations. Knowledge management and dissemination will use existing web-based platforms, a project website, printed materials, videos, radio and TV broadcasts and special dissemination events at national and sub-national level. Additionally the project will facilitate and support study and exchange visits.

Component 1: Strengthened individual and institutional capacity of rural communities to assess, plan, maintain and use climate change resilient irrigation infrastructure

Output 1.1 Participatory assessments of irrigation systems and their climate related risks conducted

72. The activities under this output will be used to raise awareness among the community members, their CDCs and the local governments about the interrelations between climate change impact and other factors influencing local livelihoods, based on irrigated farming. The assessment will also include the relevant barriers, such as insufficient institutional and individual capacity to maintain irrigation systems, unsustainable practices of land use in catchment areas, such as overgrazing, deforestation, expansion of rain-fed farming into unsuitable areas at the expense of rangelands, which in addition to the climate change impact reduce water retention and groundwater recharge capacity and contribute to irrigation water shortage. It will also take into consideration the risk of natural hazards and disasters and the way current land use contributes to them and climate change is expected to increase these risks.

73. Through the participatory assessment and planning process, including local Climate Vulnerability and Risk Assessments (CVRA, see description in Annex 5) local people will better understand the impact of climate change. This understanding allows them to adapt their livelihoods and enhance their resilience to climate change impacts and to manage disaster risk within their socioeconomic and environmental context. The assessment will include:

- groundwater recharge and storage potential of upper catchments and related aquifers and the factors currently and in the future limiting the renewal of groundwater resources;
- current and predicted availability, use and losses of irrigation water;
- the conditions and efficiency of technical elements of irrigation systems and their vulnerability to climate change impact;
- and the efficiency of on-farm irrigation water use.

74. Under this output, the assessment will include the influence of barriers, like limited institutional and individual capacity to efficiently maintain irrigation systems, unsustainable practices and extent of land-use in catchment areas, like overgrazing, deforestation, expansion of rain-fed farming into unsuitable areas at the expense of rangelands, which all lead to reduced water retaliation and groundwater recharge capacity and contribute to irrigation water shortage.

75. This process will further analyse how rural communities take decisions, build (maintain) their resilience and react to stress. Keeping in mind that natural disasters is reoccurring during unpredictable time intervals, it is important to further understand the behavioural aspects of affected population, applying traditional coping mechanisms at the area of their origin. This information will help communities to strengthen their coping mechanisms to climate change risks and also focus on local based solutions. The project will support awareness raising campaigns with specific sessions for women and children.

76. The understanding from the assessment process will provide one basis for the participatory planning of climate proofing activities. The assessment process will complement participatory elements by technical expertise on climate change, hydrology, agriculture, disaster risk management and other related topics. While the assessment is implemented under the responsibility of MRRD, NEPA will be involved with own and external specific expertise in both capacity development and assessment by covering topics of climate change, ecosystem functions and management, vegetation, biodiversity and others. NEPA may involve Kabul University and provincial universities for using and developing the capacities in the respective faculties. The assessment will make use of both local traditional knowledge and state of the art technical expertise. Technical assessments will be conducted of potentials, risks, requirements and the feasibility of construction of new and rehabilitation of existing irrigation infrastructure, which will be resilient against climate change. It will be able to take into account and address local observations and perceptions while considering available scientific evidence, projections and predictable impact of climate change.

77. Key activities under output 1 are as follows:

Activity 1.1.1: Capacity development of district local governments and target communities through training sessions and hands-on involvement in participatory assessment of small and medium scale irrigation systems;

Activity 1.1.2: Participatory, expert-supported assessments of small-scale irrigation systems, covering current conditions of the systems, climate change related vulnerabilities and risks, and water availability;

Activity 1.1.3: Technical assessments of potential, risks, requirements and feasibility of construction of new, and rehabilitation of existing, irrigation infrastructure to make them climate resilient;

Activity 1.1.4: Preparation of assessment results in accessible formats for sharing within and beyond the communities and as basis for community-level planning.

Output 1.2 Plans for rehabilitation and climate proofing of existing irrigation systems are prepared

78. Based on the participatory assessment of the irrigation systems, local communities, assisted by a group of technical experts, will participate in the detailed planning process for construction, rehabilitation, climate proofing of irrigation infrastructure. This planning process will consider the use of traditional

knowledge, modern technical and ecosystem based (EbA) adaptation approaches when designing and implementing the elements of the adaptation measures that are being undertaken in Component 2. The planning process will cover entire catchment-irrigation area systems. It will take into consideration the current potentials and risks in form of availability, seasonality and reliability of irrigation water supply and the catchment area specific changes, which are to be expected under climate change scenarios in the near and medium future.

79. The planning process will consider current climate change impact, ongoing changes and the predicted impact of projected climate change. Planning for climate change resilient irrigation infrastructure will consider:
    - the sustainability of available water sources;
    - measures to manage catchment areas and achieve sustainable land-use to ensure optimum storage of surface and groundwater and availability of irrigation water, including the enhanced recharge of groundwater aquifers through structural measures and rehabilitation and sustainable use of vegetation in upper catchment areas;
    - the effective capture, delivery, distribution and on-farm use of irrigation water;
    - the balancing of needs of water users across irrigation systems and local basins as well as
    - the avoidance, minimizing and mitigation of risks of natural hazards and disasters.

80. The planning process will also include the review of other barriers identified in the participatory assessment under the previous activity, including:
    - institutional and individual capacity to manage catchment areas and irrigation systems;
    - equitable irrigation water distribution between and within communities;
    - sustainable land-use (rangeland and woodland management, reduction of unsustainable, erosion prone rain-fed farming) to ensure optimum storage and availability of irrigation water from surface and groundwater, including the enhanced recharge of groundwater aquifers;
    - and regular maintenance of technical elements of irrigation systems.

81. The project will make use of lessons learnt from respective previous and ongoing activities implemented by other projects and organizations such as the *On-Farm Water Management Project* (OFWMP), funded by Afghanistan Reconstruction Trust Fund (ARTF), where villagers were trained in sustainable irrigation practices[63]. The MRRD as the IE of the proposed program is aware of the multitude of potentially occurring not climate change related factors and has extensive successful experience in addressing these in particular through its activities for support of sustainable community-level institutions (CDCs) under the Citizen Charter National Priority Program, a 500 Million USD project of The Afghanistan Reconstruction Trust Fund, implemented from 2016 till 2020. MRRD will also involve NEPA with regard to the inclusion of Ecosystem-based Adaptation approaches in the planning and related capacity development.

82. Key activities under output 2 are:

    Activity 1.2.1: Participatory, expert-supported village level plans for rehabilitation and enhancing climate change resilience of irrigation systems;

    Activity 1.2.2: Discussion of community-level plans with district authorities and approval; Sharing of approved plans within the respective communities and provision of access for interested audiences;

    Activity 1.2.3: Compilation of proposed specific intervention options by experts, technical feasibility and economic assessments and presentation to district level authorities;

    Activity 1.2.4: Detailed participatory and technical planning of implementation of specific interventions with contribution by the local communities.

63 http://www.worldbank.org/en/news/feature/2016/12/14/afghan-villagers-learn-sustainable-irrigation-practices-through-on-farm-water-management-project

Output 1.3 Institutional and technical capacity at community level to maintain rehabilitated and climate proofed irrigation systems

83. This activity will improve the capacity of rural people to maintain climate resilient irrigation infrastructure while addressing related challenges of institutional and technical capacity at community level to maintain rehabilitated climate proof irrigation systems, from upper catchment areas and structures for improved infiltration and ground water recharge to the on-farm use of irrigation water.

84. Maintenance of climate resilient irrigation systems includes the protection of vegetation and soil for the prevention of siltation and the maintenance of erosion prevention and water retention structures in the upper catchment areas.

85. Capacity needs to be strengthened for the maintenance of all elements of the physical infrastructure of the irrigation water delivery and distribution systems. This will require both, technical as well as institutional capacity. Mechanisms will be set up to build up the necessary financial savings for investment in future larger repair activities. There are already functioning examples in Afghanistan, where Irrigation Associations collect contributions from land users, depending on irrigated area size, build up funds and are able to obtain loans from banks for financing larger repair activities and ensure timely delivery of irrigation water, e.g. after damage caused by natural disasters. The program in this activity will build on such mechanisms where existing, expand their scope and area coverage where needed and possible, and develop new such mechanisms based on proven best practices and under consideration of lessons learnt where no suitable institutions are in place. The capacity development will also include the cost calculation, business planning, contracting of materials and services, accounting and other related economic aspects.

86. The development of capacity will build on traditional community institutions of irrigation infrastructure maintenance like the *karezkan* (in charge of organizing *karez* maintenance), *mirab bashi* (in charge of entire canal systems) and *mirab* (in charge of single canals or canal sections). These are elected community representatives in charge of the respective elements of irrigation systems. Further the institution of *hashar*, community voluntary work for construction and maintenance activities, will be a major element of the development and strengthening of institutions.

87. These traditional institutions will be integrated into the current community decision making and organization structures, in particular in the Community Development Councils (CDC) at village level and for inter-village systems the District councils. Furthermore, there are Irrigation Associations, established with support and coordinated by MAIL, which are in charge of the maintenance of larger canals typically in large-scale irrigation systems. At the level of local sub-basins Water User Associations, established with support and coordinated by MAIL, coordinate water use for different irrigation schemes. These institutions – where existing – will be involved in the capacity development activities in particular regarding the coordination between different level of river basin and irrigation system management, communities and land users.

88. All these institutions are coordinated and linked with their respective government institutions, in particular the district and province level representatives and offices of MRRD, MEW and MAIL. These linkages and coordination will be further developed and strengthened by involving representatives of these government structures in the capacity development activities under this activity.

89. Key activities under Output 1.3 are:

Activity 1.3.1: Strengthening economic and technical capacity of existing traditional institutions for the operation and maintenance of new and rehabilitated climate resilient irrigation systems; and facilitate its replication where no institutions exist

Activity 1.3.2: Institutional, economic and technical capacity development of new and existing institutions for institutionalizing of irrigation system operation and maintenance mechanisms.

Output 1.4: Institutional and technical capacity at community level for efficient management of irrigation water.

90. This activity will focus on the capacity development of target communities to efficiently manage and use irrigation water. Awareness in the entire community will be developed about the limitations and expected trends of irrigation water availability, ways how irrigation water distribution can account for priorities and the need for efficient water use. In schemes where irrigation water is also used for household needs, in particular for drinking water, local people will be made aware about water quality, its maintenance, health risks and how to address these.

91. The farmers will get knowledge on how to prevent irrigation water losses, how to avoid damage caused by oversupply of irrigation water, how to cope with the risk of natural disasters, opportunities of water saving cultivation and crops and how to apply irrigation water best on their crops for sustainable, climate resilient livelihoods. Improved on-farm water management, reducing the current practice of over-irrigation, will leave more water in the canals for the benefit of users located in the middle and tail end of the canals.

92. The program will base its technical and institutional capacity development activities at the community institutions like *karezkan*, *mirab bashi*, *mirab* and the CDC as well as Irrigation Associations and Water User Associations, where they exist. These activities will aim at increasing their awareness about climate change related challenges for irrigation water use and associated risks. This will lead to better understanding of specific vulnerabilities and risks and address these in the frame of their mandate and in a collaborative way. The institutional capacity development will cover the sustainability and future maintenance of climate resilient infrastructure and water use. This will be achieved through development of existing or establishment of new systems of financial (eg.water fees) and in-kind contributions (e.g. community labor *hashar*) within the community-level and inter-community institutions.

93. Key activities under Output 1.4 are:

Activity 1.4.1: Institutionalising in community-based organizations mechanisms for effective irrigation water management and its efficient and equitable use; and

Activity 1.4.2: Development of awareness and technical capacity of household heads about the rules and mechanisms of effective, efficient and equitable irrigation water management.

<u>Component 2: Irrigation systems at community level are rehabilitated and climate resilient</u>

94. This component will consist of activities, which will directly improve the efficiency and resilience of rural productive infrastructure to better withstand to climate change induced droughts, floods and other direct and indirect climate change impact. In parallel it will address factors related to awareness and capacity building to ensure that all interventions become effective and sustainable.

95. Following the approved Afghan National Irrigation Policy, National Comprehensive Agricultural Development Priority Programme (2016-2021) together with the MRRD Water Supply, Sanitation and Irrigation Program innovative and synergetic community-based techniques will be introduced and tested by the communities.

96. The proposed program plans to rehabilitate in a climate change resilient way the currently not or not optimal functioning community irrigation canals and *karez* systems through the participatory irrigation management (PIM) approach by involving Community Development Councils (CDCs) to speed up the

rehabilitation process. Currently land users do not have direct access to government support in this regard and the government is not able to assist individual land users and communities. By working through the CDCs this gap is effectively bridged to jointly address climate change related challenges in irrigation water provision and use. Besides reducing the existing costs of rehabilitation below the approximately USD 600/ha in fully donor funded projects, the local communities' involvement will eliminate or substantially reduce security risks and will spread the program to all parts of the country. The program design follows a holistic approach. Thereby it will in each project site consist of sets of interventions targeting all elements of the full irrigation system in accordance to the site-specific needs identified preliminarily during the elaboration of this full proposal and further refined and translated into detailed planning in the frame of the participatory assessment and planning process under the program's Component 1.

97. The proposed activities include interventions targeting the following elements of the irrigation systems:
    - Upper catchment areas, where surface run-off supplying streams and rivers forms and groundwater is recharged, which supplies *karez*, springs and wells (Activity 2.1);
    - Water intake structures of canals and feeding sections of *karez* (e.g., mother wells, subsurface dams, galleries) for effective, reliable and resilient intake of irrigation water, regulated under consideration of resource sustainability, needs of other water users and ecological requirements (Activity 2.2);
    - Delivery structures like canals and *karez*, which transport irrigation water from the intakes to the command areas at a minimum loss (Activity 2.3);
    - Farm water distribution systems, which allow for equitable and fair water distribution between farms and for effective and efficient water use on-farm (Activity 2.4).

98. The following workflow of MRRD will be adopted by the program to implement simple and low cost climate proofing and rehabilitation of small-scale irrigation systems through community involvement. Steps 1 to 5 have already been conducted within the preparatory phase and further detailed planning will be integrated in Output 1.2 under Component 1:
    1. Developing site selection criteria based on:
        A) Ground water situation; B) Population; C) Poverty; D) Crop Status;
    2. Reviewing the initial list of interventions, provided by the participatory assessment and planning process under Component 1 and by regional offices;
    3. Determine together with the respective CDCs the prioritized list of interventions;
    4. Arrange joint site visits to carry out the following activities:
        I. Confirm site suitability through visit;
        II. Conduct technical/topographic survey including assessment of climate change vulnerability;
        III. Digging of test pits;
        IV. Assessment water storage capacity / potential of aquifer recharge;
        V. Assessment of river discharge and needs of downstream users and environmental flow;
        VI. Assessment of design flow of karez or canal and of water needs for command areas.
    5. Implementation planning:
        I. Preparation of topographic maps;
        II. Investigation of data on geology, geomorphology and sub-surface substrates;
        III. Doing hydrological analysis and water balance studies taking into account water availability and needs of command areas as well as downstream users and environmental flow;
        IV. Technical design of all physical structures;
        V. Planning of vegetation recovery and adapted land use regulations;
        VI. Preparation of supervision & maintenance plan;
    6. Agreement with CDCs on non-structural works and vegetation management;
    7. Contracting with CDCs and provision of assistance in contracting technical expertise, physical works/machinery and materials, which are not available in the communities;
    8. Handing over the projects.

99. All elements of the outputs of Component 2 will ensure resilience to future impacts of climate change. The design of upper catchment interventions will take into account expected site-specific changes in rainfall amounts and patterns to achieve the optimum level of surface runoff reduction, water retention and groundwater recharge. Upper catchment interventions aiming at revegetation of slopes aim at reducing slope erosion from intensive rainfall event and related siltation of rainwater harvesting structures. Water intake structures of canals will be designed in a way, which makes them resilient against predicted climate change related increase in frequency and severity of floods as well as impacts of related increased sediment loads. Canals and *karez* might be affected by future climate change related increase in severity and new locations of gully erosion, floods, debris flows and avalanches. They will be made resilient against the impact of such events by careful selection of site, where new structures or elements of such structures are built as well as be resilient design and protective measures as appropriate. Irrigation water distribution structures and on-farm irrigation systems will also be designed in a way that makes them as resilient as possible against direct and indirect impacts of climate change. For instance, where higher sediment loads are expected, special sedimentation ponds will be integrated to avoid siltation of these structures and ensure their effective functioning.

100. The outputs of this Component also address other related factors like the maintenance of the entire systems and other technical, institutional, economic and social factors in the frame of the individual and institutional capacity development under Component 1 and by the development of ownership by the communities through the implementation measures that include the leading role of CDCs as contracted implementors and the substantial contributions by the community members to the actual implementation.

Output 2.1 Rainwater harvesting and surface run-off capturing structures for water collection and groundwater recharge in place.

101. The upper catchments are of key importance for the functioning of irrigation systems. At the same time these areas are heavily affected by degradation of vegetation and soil caused by observed climate change driven factors such as increase in aridity and more frequent and prolonged droughts, shift from snow to rain, reduced period of snow cover and loss of glaciers. This causes reduced water retention and infiltration and accelerated surface runoff, leading to erosion, flash-floods, landslides and insufficient replenishment of groundwater aquifers. This is further exacerbated by related factors of deforestation, overgrazing and transformation of rangelands into rain-fed arable lands exacerbate these effects. An effective catchment management strategy is one of the approaches to address these challenges.

102. Upper catchment interventions aim at capturing, diverting, and storage of rainwater to reduce immediate surface runoff, to raise water table, store water for later use and improved irrigation water availability. They allow maximizing the use of available precipitation to stabilize water flow in rivers and streams supplying surface irrigation systems and to recharge aquifers supplying *karez* systems, springs and wells, while at the same time these measures contribute substantially to the reduction of disaster risk in form of flash floods and debris flows.

103. These measures at the same time address the climate change impact as well as the non-climate change related factors. The implementation and operation of the rainwater harvesting and other upper catchment interventions will be community-based to ensure commitment, effective addressing of land use related factors and long-term sustainability of the interventions.

104. The site-specific selection of the most suitable upper catchment interventions will take place in the frame of the participatory assessment and planning process with involvement of technical experts under Component 1. This process will be facilitated and be embedded in comprehensive capacity development at community level to ensure the awareness about the importance of the upper catchment interventions and their maintenance for the climate change resilient sustainability of the entire irrigation

system and for creation of ownership of the upper catchment interventions and structures among all community members. This awareness and ownership will be of particular importance as there will be a need to a) set aside areas of community-used lands for physical structures and potentially planting activities and b) to agree among upon certain regulations and restrictions on land use, which might affect the functioning, effectiveness and sustainability of the water retention and groundwater recharge.

105. Key activities in upper catchments under Output 2.1 are:

Activity 2.1.1: Construction of physical structures as rainfall-snowmelt harvesting schemes, which will all contribute to an increasing percentage of rainwater being temporarily stored or infiltrated for recharging aquifers, depending on specific site conditions consisting of percolation ponds, small earthen dams, check-dams, mini-dams, weirs, and/or similar structures (Technical descriptions and drawings of such structures are provided in Annex 5);

Activity 2.1.2: Terracing where suitable to reduce surface runoff and to increase infiltration;

Activity 2.1.3: Regulation of grazing and wood harvest for preservation and rehabilitation of vegetation, which improves water retention and infiltration;

Activity 2.1.4: Revegetation and reforestation with native climate resilient shrubs and trees that will reduce surface runoff, improve retention of water from rain and snow and will improve infiltration into the soil and subsoil.

Output 2.2 Water intake structures of canal and karez systems rehabilitated and climate proofed

106. Climate change causes changes in the amounts and seasonal dynamics of river discharge and thus of water availability at the intakes. Also the change of flow dynamics due to climate change causes more intensive lateral and vertical erosion of the riverbeds but also sedimentation. Many water intake structures at rivers and streams are therefore not any longer able to capture the optimum amounts of water for the irrigation systems supplied by them. Additionally, many of these structures are in technical poor shape and require rehabilitation.

107. This activity will therefore include the reconstruction of diversion weirs, headworks and other intake structures under consideration of current and future (climate change impacted) flow dynamics of the respective rivers and taking into account the water needs of downstream located users. The program will implement site-specific interventions, planned in detail under consideration of the participatory assessment and planning process complemented by technical expertise under Component 1.

108. Changing groundwater tables at the feeding sections of many *karez* have caused a reduction of water intake into these irrigation systems. Also structural deterioration of the intakes (mother wells) of many *karez* reduces their effectiveness in capturing groundwater. Furthermore, *karez* drain groundwater from aquifers independent of the actual need for the water, including in winter time.

109. The rehabilitation of the feeding sections of the *karez* (mother wells, sometimes several shafts and tunnels) as main intake structures will be required for the improved water supply and where feasible for increasing groundwater use efficiency. For making use of existing knowledge, experience and best international practice, the program will seek support and collaboration in research, training and technology transfer with UNESCO's International Centre on Qanats and Historic Hydraulic Structures[64].

110. Integration of water-tight gates or other water blocking structures in the mother wells can prevent the 25% wastage of *karez* water during the winter season. This measure to avoid water losses from aquifers outside of the irrigation season depends on the technical feasibility, which is mainly determined by the geological and geomorphological situation and the resulting permeability and water resistance

[64] http://icqhs.org/

of the substrate. Such structures are feasible only under exceptional favourable circumstances. In other cases storage of at least some water outside the irrigation season might be achieved by building reservoirs (*hauz*) or expanding and improving existing ones at *karez* exits (Activity 2.3.10).

111. The following key activities are planned, which can be implemented separately or combined. While interventions have been identified in the preparatory phase further specific determination and detailed planning will depend on the site conditions and resulting technical feasibility:

Activity 2.2.1: Installation of ground sills in the riverbed to stabilize the water level at intakes where needed, technically feasible and cost effective;

Activity 2.2.2: Making river intakes and canal headworks climate change resilient by sets of measures, including:

- Relocation of river intakes and strengthening of their structures to ensure reliable water withdrawal under conditions of changing flow patterns and to minimize risk of damage by riverbank erosion;
- Strengthening of existing or installation of new headworks, which will be able to withstand anticipated flood events, which may increase in frequency and intensity due to climate change;
- Relocation of canal headworks at safe locations, e.g., at a distance of at least 50 meters downstream of the river intake, to protect the structure from the worst erosional effects of large floods;
- Installation of regulated headworks to enable a better control of water inflows into the canals, protecting the canals from excessive flows during floods, while allowing a more equitable distribution of available water resources during low flows and droughts.

Activity 2.2.3: Cleaning from sediments and structural improvements of mother wells and associated feeding structures, taking into account dynamics of groundwater tables;

Activity 2.2.4: Integration of water-tight gates or other water blocking structures in the mother wells where technically feasible.

Output 2.3 Rehabilitated water delivery canals and karez, lined for reduced seepage losses

112. Reduced water availability from rivers, streams and groundwater caused by climate change impact causes irregularities and overall shortage of irrigation water. The seepage and irregular discharge losses from long and medium distance delivery structures, i.e. canals and *karez*, are therefore increasingly and substantially impacting on the availably of water on farm. To achieve an efficiency that allows for meeting current and future irrigation needs under conditions of predicted reduced water availability, the targets are to control more than 50% losses, improve efficiency up to 70%, reduce time for water to reach to the farm and prevent overtopping of side banks by irrigation water.

113. Different technical approaches will be applied based on the results of the participatory planning process, which is complemented with technical expertise and implemented under Component 1, all taking into account and preventing potential negative impact of climate change and related increased disaster risk.

114. Increasing the climate change resilience of canals will include sets of measures for increasing their effectiveness and efficiency in delivering irrigation water, reducing proneness to natural disasters like flash floods, debris flows, gully erosions and avalanches. At the same time canals are to be fixed to prevent them from becoming the reasons and starting points of gully erosion caused by leakages, overflows and breaks. The ecological and economic function of vegetation along canals will have to be maintained by providing a controlled and limited supply of water.

115. Karez adaptation and rehabilitation aims mainly at securing smooth water flows in the gallery unblocked by debris and, where necessary and feasible, the reduction of losses through infiltration. The

shaft wells for maintenance, depending on their condition may require repair and temporary or permanent structural improvement. Also in this set of activities for karez rehabilitation the program will seek support and collaboration in research, training and technology transfer with UNESCO's International Centre on Qanats and Historic Hydraulic Structures.

116. The following key activities will be implemented in a site specific and adapted manner depending on the site conditions and resulting technical feasibility:

Activity 2.3.1: Increasing the efficiency of canals by reducing seepage losses and improving the physical resistance of canals by sets of measures, including:

- Earthen improvement of canals (clay lining), which by this measure can sufficiently be made effective and efficient;
- Lining of canals by applying different lining technologies such as brick lining, PCPS (Pre-cast Parabolic Segment), in-site concrete lining and clay lining;
- Partly or complete demolishing of inefficient and leaking canal sections, which cannot be improved;
- Reconstruction of earthen canals as per engineering standards (straightness & shaping) with clean compacted soil (clay) to enhance conveyance efficiency & optimize water use;
- Construction of canals or canal sections in areas where earthen canals are technically either not feasible or not sufficiently effective and efficient by applying different technologies (brick, PCPS (Pre-cast Parabolic Segment), in-site concrete);
- Rehabilitation of land and vegetation at sites upstream or at slopes above irrigation infrastructure to reduce risk of damage by disasters and thus reduce repair and maintenance costs;
- Installation of pipelines in sections where canals are not possible to be built with reasonable effort or are prone to be destroyed by natural disasters;

Activity 2.3.2: Integration into the canals of regulated outlets, which avoid uncontrolled water losses into secondary or tertiary canals or on-farm irrigation systems, where appropriate with integration of flow measurement devices;

Activity 2.3.3: *Karez* (water channel and access shafts) rehabilitation includes cleaning and proper lining by community work with involvement of and guidance by experienced experts;

Activity 2.3.4: Construction at *karez* outlets of small reservoirs/ponds (*hauz*) or the expanding and improving existing ones, allowing for the accumulation and storage of water during times, when not needed for irrigation.

Output 2.4 Rehabilitated and/or newly installed efficient farm water distribution systems

117. Efficient inter- and on-farm water distribution and use requires the installation of necessary water control structures, which reduce the impact of future climate change related water shortage on irrigated farming, its agricultural production and resulting food security and economic situation.

118. The available techniques have been identified in the preparatory phase, but as their acceptance, adoption and sustainable maintenance require a high level of ownership and consideration of site conditions, the specific structures will be further determined and planned in detail during the expert supported participatory assessment and planning under Component 1.

119. Irrigation Demonstration Sites will be established to determine productivity per amount of irrigation water ("More Crop per Drop"). Suitable technologies and their technical and economic feasibility will be determined during the expert supported participatory assessment and planning process in close coordination with MAIL Extension Department.

120. Depending on the specific site conditions and local systems of water use governance and management key activities will consist of:

Activity 2.4.1: Construction of field turnouts, culverts, drop structures, siphon/aqueducts to ensure control flow throughout the irrigation network;

Activity 2.4.2: Integration of devices for measuring flow into distribution structures, where considered appropriate in the local water use governance and management system, e.g. for overall monitoring of water use and/or as a basis for payments of contributions by water users (strengthened or developed under Component 1);

Activity 2.4.3: Construction of ponds (*hauz*) or installation of storage tanks at farm level enabling the accumulation and storage of water over shorter periods of low flow amounts for more efficient supply, e.g. of drip irrigation systems, will be installed for the supply for smaller sections of command areas or individual farms, depending on the local circumstances;

Activity 2.4.4: Introduction of adaptation measures such as changes to the cropping calendar and adjusting cropping methods to match agricultural needs with changing availability of irrigation water;

Activity 2.4.5: Establishment of Irrigation Demonstration Sites for piloting water-efficient cropping and irrigation techniques, such as:

- laser land levelling;
- raised-bed cultivation; and
- drip irrigation.

B. Describe how the project / programme provide economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

Economic benefits

121. Climate variability and change is expected to have an impact on Afghanistan's performance in the agricultural sector, which accounts to almost a quarter of the Afghan national economy. According to World Bank data, drought causes an average of US$280 million in damages to agriculture each year, and an extreme event such as a continuous drought could cost over US$3 billion. Approximately 80% of the Afghan population is engaged in agriculture directly or in secondary or tertiary activities, with the estimated ratio of irrigation and rain-fed farming around 3:2. Irrigated land produces 85% of the total Afghanistan agriculture production and almost 80-85% of the land is irrigated by canal systems.

122. Farmers and especially vulnerable families are highly exposed to impacts of precipitation deficiency, resulting in water scarcity and loss of their income generation assets. Also, other climate change impacts affect farming and rural livelihoods in general. The results are diminishing labour opportunities in the agricultural sector and food processing. Other sectors of the rural economy are indirectly affected by reduced purchasing power of the rural population. Increasing food prices and influx of rural people in search of labour into urban areas cause social and economic distortions and increase tension. An estimated 263,330 people have been displaced by the recent drought, with largest concentration of drought induced IDPs in the Western Region.[65]

123. The proposed project will enhance the resilience of communities and ecosystems to the impacts of climate change by making the supply of irrigation water more climate change resilient and increase the efficiency of its distribution and use. These immediate project results will benefit farmers (13,620 households) as they will have more secure and increased yield and income. As a further indirect impact

[65] Afghanistan Food Security and Agriculture Cluster 2018. Emergency Food Security Assessment in Rural Afghanistan - Key Findings. Draft version, August 2018.

these secure and higher yields will support livelihood chains such as sorting, packaging, processing and transportation of vegetables, fruits, and their products. This will enhance the living standard of indirect beneficiaries by the creation of additional jobs, more secure and higher incomes.

124. Furthermore, the entire communities in the target areas will benefit from reduced disaster risk achieved by the implementation of upper catchment management with erosion prevention measures.

125. The stabilized and increased productivity of irrigated agriculture will contribute to the prevention of excessively growing food prices and reduce the migration from rural areas into urban places in search of income. This will contribute to a general stabilization of the social and economic situation in the respective provinces and in the country and reduce tension and conflict beyond the immediate intervention areas.

Social benefits

126. Stakeholders from all parts of the water and irrigation system will benefit from increased community awareness, social capital and increased capacity of their water management institutions.

127. The selection of project sites and thus of the beneficiary population was made by MRRD in consultation with key stakeholders at national, sub-national and district level. The selection of provinces was based on the following criteria: 1) the presence of ongoing or planned baseline activities, to which the proposed program interventions would be complementary by addressing the specific climate change related issues; 2) the inclusion of provinces with the most vulnerable populations to climate change effects; 3) those areas that have so far not received significant development assistance and low investment per capita; 4) geographic representation of each major region in the country and 5) food insecure provinces. Within the target provinces the experts from MRRD in field surveys during the development of this full proposal assessed 1) the existence of small-scale, community-level irrigation systems, which are vulnerable to water scarcity and drought and thus affected by ongoing and projected climate change, but have the potential of being made climate change resilient; 2) the particular vulnerability of the local population to climate change impact on irrigated agriculture, expressed, e.g., by low coping capacity, in particular due to the dependence on the arable lands and the observed and predicted impact of climate change on its irrigation water supply; 3) the availability of suitable arable lands and their size and quality and the positive impact achievable on these lands through the proposed sets of interventions; and 4) the readiness and interest of the respective communities to participate in this program and to make own contributions to it.

128. The experts of MRRD selected as intervention areas five provinces (Herat, Kabul, Logar, Paktia and Maidan Wardak), with in total 22 districts and 56 villages. The total population of these villages is 97,023 people in 13,620 households (for details see Annex 3).

129. The beneficiaries of the project interventions will be all rural community members in the target areas, which are directly or indirectly dependent on irrigated agriculture, use upper catchment areas for grazing and harvest of wild-growing plants and wood, and are potentially affected by natural disasters. In the project areas all households of the villages are involved in arable farming as main or secondary occupation, keep some livestock and rely on natural resources, like water, forage and fuel from the surroundings of the villages and/or from upper catchments. All target provinces are multi-ethnic and the project will facilitate equitable access to its benefits independent of ethnicity with special attention that marginalized minorities are adequately addressed.

130. Marginalized minorities may include internally displaced persons, returning refugees, people with disabilities, families of war victims, nomadic groups and others. Marginalized groups have been identified during proposal development and their specific vulnerabilities, needs and potentials were assessed for inclusion in the project activities.

131. Ethnic minority groups as well as indigenous people do not exist in Afghanistan. All ethnic groups are equally recognized as part of the Afghan nation. Because Afghanistan has never been colonized and the currently present ethnic groups have settled here since many centuries the concept of "indigenous people" is not applicable. UNDP's Standard 6 on Indigenous Peoples was consulted in the context of this project and it was verified that the nomadic *kuchi* communities do not fall under the broad terms in that standard. The project areas have been identified in a non-discriminatory way, without discrimination by ethnicity or religious affiliation. Singling out project sites by such criteria might have resulted in tension and animosity towards UNDP, MRRD as IE and the immediately involved staff.

132. The field teams during proposal preparation identified as marginalized and vulnerable groups:

- Internally displaced persons (IDP): Currently no IDP are present in any of the project areas. As IDP typically only temporarily reside in the escape area they do not own land and are therefore not directly involved in agricultural activities. However, in the case that IDP appear in any of the project areas, they would benefit from labour opportunities on climate resilient farms and from the contributions of these farms to overall food security, local economies and price levels of food items.
- Returning refugees: Several of the project sites had been for different periods of time been fully or partly abandoned, due to war or drought related impossibility of agricultural activities. At these project sites people have returned, but are facing enormous challenges in rehabilitating and securing their agriculture-based livelihoods. The program activities will assist them in overcoming these challenges in the context of rehabilitation of climate change resilient irrigation systems and thus enable them to revive their livelihoods, including subsistence farming, production of market crops, rehabilitation of household gardens and safe and clean household and drinking water.
- People with disabilities are mainly those injured in war and other violent incidents: People with specific needs are resident in most project sites. These people will benefit from improved irrigation systems and easier and closer access to safe and clean household water. In the frame of Component 1 the program will facilitate planning processes and individual and institutional capacity development, in the frame of which such people will find particular consideration both in terms of access to benefits from the program interventions as well as with regard to their involvement in specific functions in the future management and maintenance of the climate resilient, rehabilitated irrigation systems.
- Widows and families of war victims are resident in most project areas: Often such women and families are disadvantaged by the lack of male work power in agriculture and rely on assistance by relatives and other community members. The climate resilient irrigation system and household and drinking water supply reduce the related heavy workload. This marginalized group will benefit through improved agricultural production, water availability and reduced reliance on help by others, which will also contribute to their self-esteem.
- Nomadic groups (*kuchi*) seasonally move through several of the wider project areas: These groups are sometimes considered marginalized as they rely on increasingly restricted access to rangelands during migration and by their lifestyle cannot benefit of the amenities of modern live. On the other hand, this lifestyle enables them to raise large livestock herds and accumulate substantial wealth. They are not involved in arable farming and settle typically outside of the villages for short periods during migration between seasonal pastures. They will, however, benefit from the results of the project by having access to drinking water and water for livestock (both in the command areas and in upper catchments). Furthermore, during migration they often used harvested and fallow fields for their livestock grazing in crop residues and weeds. The improvement of irrigated arable farming will thus contribute to a better forage base for their livestock. On the other hand livestock herds of *kuchi* on transit can potentially damage crops, irrigation infrastructure and have negative impact on the conditions of upper catchments. The interests and needs of the *kuchi* and the avoidance of potential conflicts with the sedentary farmers will become an integral part of Component 1 by identifying issues in the frame of the participatory assessment and addressing these in the context of planning and institutional capacity development.

133. Social cohesion will be strengthened by joint work and community contributions to the construction and rehabilitation of irrigation systems, benefiting the entire community. This experience of successful joint community action can be a powerful catalyst for further action to improve the livelihoods of local groups. Addressing water distribution within communities and between villages, with improved and stabilized water supply for downstream users, by joint assessment, planning and action will improve collaboration within and between communities and reduce conflict over resource access. The improved dialog, networking and collaboration among stakeholders will be a major contribution to local development.

134. The construction and rehabilitation of irrigation systems is expected to prevent internal displacement of the local people with resulting adverse social impact, as more people will be able to make a living in the areas where their land is. As described above the project site will stabilize and improve the livelihood opportunities and social situation of people, which have returned or intend returning to their previously destroyed and abandoned rural areas. The specific project interventions will make the livelihoods of these people climate resilient. The additionally stored groundwater will reduce impacts from droughts. Revitalized *karez* systems and stable flow from springs and wells also provide reliably clean household water. Reduced frequency of crop failure and increased yields improve food security. Better yields together with short and long term job opportunities will allow for increased rural income. Reduced environmental degradation has direct and indirect positive impact on the people's wellbeing and health. Prevention of natural disasters and coping with their effects avoids losses of property, health and lives.

135. Despite these expected generally positive effects, it is likely that in some areas the gap between available water and land resources and the needs of the growing population cannot fully be overcome. Realistic participatory assessments at early stages will be used to identify resource limitations and to develop coping strategies. The current level of use of water and land resources, including arable land and rangelands, is clearly not sustainable and the rural population and their needs already several times exceed the capacity of the land, which is predicted to be further reduced by climate change impacts.

136. The project will implement a facilitated communication and coordination process to minimize conflicts potentially arising from discrepancies between expectations and needs on the one hand and achievable results on the other hand. The program will use its opportunities to ensure an equitable distribution of benefits within the communities and particular consideration of the vulnerable. The program will foster the established mechanism of land and water access in the frame of the CDCs and the related grievance and compliance mechanisms established in the hierarchy of district, provincial and national MRRD as well as on the traditional community institutions. The program will in the frame of Component 1 strengthen the institutional capacity of the CDCs and the entire communities in this regard. Furthermore, the project will work with provincial and national government staff in order to facilitate equal access to benefits to the extent possible. Additionally, the program will establish its own grievance mechanisms, which are described in Annex 8 in the ESIA and ESMP document.

137. Despite all these mechanisms, under the specific circumstances of a post-war and conflict situation and temporarily and spatially limited executive power of government organs it can also not be fully excluded that uneven access to irrigated land may in some cases cause inequality and tension, and possibly powerful stakeholders may execute their interest in previously marginal lands with due to the project intervention improved productive potential.

Gender

138. Preliminary climate change assessments predict GDP losses of as much as 6% per year based on current climate projections (NAPA). Reductions of this order of magnitude would substantially undermine the Government's ability to invest in the nation's development, increasing the responsibility

for adaptation on society as a whole. As explained above, the rural population will be affected most, but urban populations will be affected indirectly. In such a situation, it will be the poorest parts of the communities who will be the least able to adapt. Amongst these groups, it is recognized that women are the most vulnerable. Afghanistan's Policy on Women acknowledges that women have lacked the opportunities provided to men and as a result they fall behind men in all fields of self-advancement. Climate change will affect the socially constructed gender roles between men and women and may undercut efforts to build more equitable access to development. These role dynamics will likely need to evolve to enable men and women to improve their responsive and adaptive capacity. If under climate change-induced stress, institutional structures place unequal emphasis on responding to the needs of men and women, they risk weakening the adaptive capacity of one group over another.

139. The proposed project seeks to fully align with the Adaptation Fund's Gender Policy, thus the project aims to build community self-reliance; so that dependence on the state for adaptation resources is reduced as communities themselves – both men and women – tailor adaptation technologies and techniques to their own needs. The project will aim to directly improve adaptation capacity of approximately 97,000 people from approximately 13,620 households. Generally, 50 percent of the target beneficiary population will be women and 50 percent youth (including young women). Different categories of vulnerable and or marginalized beneficiaries (people with disabilities, female headed households and IDP households) will be targeted. So far nearly 4,000 widows and orphans have been identified in the target areas. Other vulnerable groups are less numerous and these people need to be identified and specifically targeted during the participatory assessment and planning under Component 1. The socio-economic profile of the beneficiary groups has been further analysed and disaggregated by gender during the development of the full proposal through the Gender Assessment and Action Plan (GAAP) presented in Annex 9.

140. Sustained and increased availability of water is key to social development. Improved access to irrigation water specifically supports the livelihoods of women and children through improved food security and quality, e.g. by the opportunity to grow fruits and vegetables on household plots. It is also linked to access to clean and safe household and drinking water from springs, wells and *karez*, which will alleviate adverse health effects and allow for the reallocation of time dedicated to fetching water towards engaging in other activities including education. The reduction in time spent collecting water can improve the participation of youths (especially girls) in school, thus improving the level of education in the target communities.

Environmental Benefits

141. The project areas are affected by ecosystem degradation in catchment areas and on irrigated lands. Vegetation in upper catchments has degraded because of climate change impact increase in annual temperatures, changing precipitation patterns and amounts, reduced snow pack, accelerated snow melt and the shrinking of glaciers, which in many catchments act as natural buffer of water flow against inter-annual variation of precipitation. These processes are further exacerbated by other factors such as overgrazing caused by increase of stocking densities of livestock, reduced or lacking pasture rotation and out of season grazing. Harvesting of trees and shrubs beyond regrowth rates while rejuvenation is hampered by livestock. Under the conditions of increasing frequency and intensity of droughts and other factors this has led to large scale degradation and destruction of tree and shrub vegetation. An additional factor adversely impacting upper watersheds is the expansion of rain-fed arable farming on the expense of rangelands. This leads to the loss of vegetation cover. The degradation of vegetation cover and changes in soil structure from grazing and ploughing cause an increase in surface runoff, reduced infiltration of water into the soil and into aquifers, erosion, mudslides and flash floods.

142. In the irrigated areas environmental degradation is driven by local factors and by the downstream effects of the above described environmental degradation in the upper catchments. Local elements are abandonment of arable lands due to insufficient water supply or salinization, but also the expansion of

irrigated agricultural lands on the expense of remnants of natural riparian ecosystems. Downstream areas are also affected by flash floods, destructive mudslides and the siltation of streams and canals from material eroded in the upper catchments.

143. Overall, the project will provide environmental benefits by addressing ecosystem degradation in upper catchment areas and on downstream irrigated lands. It will lead to improved water retention, preservation and restoration of vegetation cover and seasonal waterbodies in form of percolation ponds. Positive impacts will include reduced soil erosion, flash flood and mudslide risks in upper catchment areas and thus also reduced downstream adverse impact of these factors and events. Groundwater recharge and retention of surface water through vegetation and constructive measures in the upper catchments will contribute to more stable discharge in rivers, streams, wells, springs and *karez* systems. Further small reservoirs at the exits of *karez* and in on-farm irrigation systems will provide additional small waterbodies. The more stable water supply and reduced drought impact will in downstream irrigated areas support the growth of moisture dependent vegetation, like trees, shrubs, forbs and meadows. This will also positively influence local microclimate by evapotranspiration from crops and natural vegetation. In addition, irrigated agricultural lands with a mosaic of annual and perennial crops, shrubs, trees and accompanying natural vegetation will continue to support local biodiversity and connectivity among diverse habitats and ecosystem.

144. The project very unlikely has adverse environmental impacts. Identified issues are of low impact, probability and significance and/or can easily be avoided, mitigated or compensated. The lining of canals and resulting reduction of seepage losses may cause reduced growth of tree, shrub and forb vegetation accompanying unlined canals. More effective water diversion from rivers, streams and springs will also reduce the potential for natural moisture dependent vegetation in valleys. Agricultural intensification and possibly expansion may reduce (mostly already degraded) rangeland vegetation and secondary vegetation on abandoned arable lands, but can potentially also take place on the expense of riparian vegetation. The potential conversion of rangelands and abandoned lands is expected to provide net environmental benefits, while the conversion of valuable riparian ecosystems, if any are found in the project areas, will be avoided by the inclusion of their conservation in the local development plans.

145. Environmental and social risk management are explained in detail in the Environmental and Social Management Plan, provided in Annex 8.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.

Overall cost effectiveness

146. The long-term benefits of the project by securing livelihoods of rural communities in climate change affected irrigated agriculture areas and the benefits for indirect beneficiaries have been assessed to outweigh by far the costs of the project. Full costing for interventions in targeted area is done and the projects were deemed cost effective. The alternative of no action with resulting distortion of livelihoods, migration and related economic, social and environmental costs is considered more costly. Large-scale technical interventions would also be less cost-efficient. A more detailed analysis of costs and benefits of the proposed program and of potential alternatives has been carried out during the planning stage of the program. The table 2 below provides an overview and comparison with potential alternatives.

147. Several factors contribute to the cost-effectiveness of the proposed program. They are explained in the following paras.

148. The preparatory and design phase focused on the identification of implementation principles and approaches that will meet the objectives of the program in the most cost-effective way. The program

will be implemented through government agencies responsible for rural development and climate change adaptation deploying multi-sectoral task teams drawing expertise from the departments responsible for planning and implementing climate resilience enhancing practices with involvement of the CDCs as this was considered the most cost-effective approach.

149. The implementation of the projects on site will be through contracting of the respective CDCs and providing them with advisory support by specialist teams in each province, consisting of experts on all required topics. The CDCs will be supported in hiring technical expertise, sub-contracting services of required machinery and purchasing of needed materials through simplified procurement procedures guided and supervised by the PMU under the MRRD. Further the CDCs in the frame of their implementation contracts will contribute at least 10% of the project cost in-kind, but some CDCs have initially indicated their readiness to contribute 10% additionally in cash. This contribution not only ensures ownership but also provides an incentive for the implementing CDCs for seeking cost-effective solutions, which however are sustainable in the long-term. This approach has proven in the ADB-financed and MRRD-implemented Community-Based Irrigation Rehabilitation and Development (CBIRD) project of being up to ten times more cost-effective than tendering entire projects for implementation by private commercial firms.

150. The applied approaches build on traditional systems of knowledge and institutions, which will contribute to their cost effectiveness. Fully donor-funded costs of rehabilitation of irrigation systems are typically approximately USD 600/ha. The beneficiaries in the project areas will be involved through the provision of labour and locally available materials, which will reduce the costs and incentivise long-term maintenance and thus contribute to the cost-effectiveness of the program. The estimated costs of hard activities are in the average USD 557/ha and USD 61 per individual beneficiary.

151. By providing technical training and financial support to community organizations and improving livelihoods the project will engender ownership of the project and enhanced capacity within these communities. This reduces the overhead for monitoring and maintenance of the activities and constructed/rehabilitated infrastructure and will promote sustainability of project benefits beyond the project lifespan.

152. Cost effectiveness is further ensured by building upon the expert-supported participatory assessment and planning processes and capacity building under Component 1. This will lead to the choice of options which are effective, efficient and supported by the communities. Together with the effective use of the baseline of existing structures in the target areas, this ensures cost-effectiveness and the long-term viability of the activities, investments and outputs under conditions of climate change.

153. The project will include cost-efficient ecosystem-based adaptation approaches, in particular in its upper catchment activities and in reducing disaster risk of all elements of the irrigation systems and rural infrastructure.

154. Building upon current national development programmes and enhancing capacity within the management structures mandated by government further strengthens the cost effectiveness of the project.

Specific cost effectiveness of interventions under Component 2

155. The interventions under Component 2 are interlinked. In most project sites interventions related to all outputs will be combined. The specific costs of their elements in relation to the outputs will only be determined in the cause of the participatory planning process under Component 1. Furthermore, the soft activities under Component1 are expected to lead to additional interventions by the local communities, which contribute mainly to the outputs 2.1 and 2.4, but also to outputs 2.2 and 2.3 and thus increase the overall cost effectiveness of the interventions under component 2.

156. The preliminarily estimated costs of the interventions under Component 2 are USD 6,314,400 or USD 557.20/ha addressed command area and USD 60.95 per individual beneficiary. This value is slightly below the 600 USD/ha typically indicated in fully donor funded irrigation infrastructure rehabilitation projects in Afghanistan. Furthermore, when assessing the cost effectiveness of the interventions, it has to be taken into consideration that the costs do not just include the rehabilitation of karez or canal sections, but address the entire irrigation systems from upper catchment interventions, including five larger water harvesting structures, to on-farm water use efficiency. This value is additionally influenced by a number of projects (17 out of 57) with costs above 1,000 USD/ha, caused by the specific difficult technical conditions of the project sites.

157. The output 2.1 Rainwater harvesting and surface run-off capturing structures for water collection and groundwater recharge are cost-effective. Larger water harvesting structures are planned in five project sites (H8, L1, L10, L11, P2) with total costs of USD 340,000 (USD 124/ha costs additionally to karez and canal costs for the respective command areas). While these structures are comparably expensive, the assessments during the proposal development have shown that they are needed for ensuring the functioning of the related irrigation systems by providing for the necessary groundwater recharge under the conditions of climate change. These structures are multipurpose and serve at the same time aquifer recharge supporting karez, wells and springs, mitigate flood risk to downstream villages and agricultural land and contribute to prevention of soil erosion and siltation. There will be other upper catchment intervention in almost all *karez* projects packages as well, so that the above listed five sites are not the only sites with upper catchment interventions. The approach can be compared with other options of providing irrigation water, like, e.g., pumping from lower located surface sources, long-distance canals and pipelines, which, however, do not provide the other mentioned purposes and do not substantially reduce the impact of climate change. The planned approach is sustainable in the long-term as it uses renewable source in contrast to alternative systems relying on fossil groundwater.

158. The output 2.2 Water intake structures of canal and *karez* systems rehabilitated and climate proofed will in the detailed design make choices of the most cost-effective options and ensure sustainability by considering all climate change related and other potential impacts on these structures. The specific costs of these structural interventions have not yet been determined separately as they are included in the respective intervention packages per project site.

159. The Output 2.3 Rehabilitation of water delivery canals and karez, lining for reduction of seepage losses is cost effective as it makes use of existing systems, makes these functional or increases their efficiency. The costs are USD 810/ha for karez and USD 610/ha for canals, respectively. Alternatives, like construction of new systems have been considered, but preliminary assessments have shown that reconstruction of existing systems is more cost-effective. During the participatory planning under Component 1 the construction of new systems as alternative will be considered, where this would lead to higher cost effectiveness. The use and rehabilitation of existing systems is combined with capacity development for their maintenance, ensuring the sustainability of the interventions, thus making the output cost effective.

160. The Output 2.4 Rehabilitation and/or installation of efficient inter- and on-farm water distribution systems may have higher investment costs compared to the continued use of inefficient systems and compensation of losses by delivering higher amounts of water. However, with irrigation water being in shortage within the communities and between the communities, this investment is justified. On-farm measures are so far calculated as part of the entire packages per project site, but not yet specifically determined as they will largely depend on the results of the participatory assessment and planning process under Component 1. Predicted further increase in water demand and reduced availability will stimulate the maintenance and replication of effective systems and accompanying training activities will

develop awareness and the required institutional and technical capacities to ensure the sustainability of the output.

Table 2: Proposed interventions and Alternative options / cost-effectiveness.

Outcomes/Outputs	Alternatives	Cost-effectiveness
Outcome 1: Strengthened individual and institutional capacity of rural communities to assess, plan, maintain and use climate change resilient irrigation infrastructure.	Option 1: Irrigation schemes are not rehabilitated.	Option 1 would lead to the further decline in agricultural yields and area size of small-scale irrigated arable lands, causing a decline in overall agricultural production, social distortion, emigration and various secondary economic losses.
	Option 2: Business as usual, in the sense that rehabilitation is without consideration of climate change impact.	Option 2 would be unsustainable investments with declining economic benefits and high vulnerability of prematurely becoming dysfunctional or failing.
	Option 3: Implementation of interventions planned by external expert without creation of capacity in the communities	Option 3 would not make use of local knowledge, thus leading to interventions, which are a) less adapted to local conditions; b) more costly as local support is not used and c) less sustainable due to lack of capacity and ownership.
1.1 Participatory assessment for conditions of irrigation systems and climate related risks towards them	Option 1: Conventional planning without specific assessment Option 2: Assessments by external technical experts only	Option 1: Not considering climate change impact and its specific site related aspects can cause investments, which underperform or fail in short to medium term and are this not cost-effective. Option 2: Reliance on external technical expertise only would not make use of the year-long observations and practical expertise of local land-users, thus wasting important local knowledge as basis for planning.
1.2 Plans for rehabilitation and enhanced climate change resilience of irrigation systems are prepared.	Option 1: Planning by external technical experts only	In contrast to the approach of the project of expert-supported participatory planning Option 1 would refrain from involving local communities in the planning process. This would cause problems during implementation and future use of the interventions due to insufficient consideration of local potentials, interests, needs and limitations and make the intervention less effective and less sustainable, thus causing substantially reduced cost-effectiveness.
1.3 Institutional and technical capacity at community level to maintain rehabilitated and climate change resilient irrigation systems	Option 1: Relying exclusively on institutional and technical capacity in the sector agencies at district, provincial and national levels	Capacity development in local communities causes extra costs. However, this capacity will reduce the costs of maintenance of irrigation systems, allow for the financing of maintenance by land users and prevent costly failure of the systems, thus making the overall investment cost-effective.

		Option 1, would in contrast lead to higher maintenance costs, have higher risk that sufficient contributions from land-users are not available and may lead to premature failure of the systems with resulting high costs and missed benefits.
1.4 Institutional and technical capacity at community level to efficiently manage and use irrigation water.	Option 1: Relying exclusively on external institutional and technical capacity	Option 1 would save the costs of capacity development at community level but fail to make use of the existing and new community institutions which ensure that land-users accept water allocation and contribute to maintenance. So Option 1 would be less cost effective due to lower readiness of land users to contribute financially and with labour, thus requiring more costly involvement of commercial companies in the maintenance and due to potentially costly conflict about water allocation.
Outcome 2: Irrigation systems at community level are rehabilitated and climate change resilient	Option 1: Business as usual Option 2: Transformation of irrigated lands into rain-fed lands using drought resistant crops	Option 1 would lead to arable lands in the project areas being inefficient used and finally abandoned as irrigated farming becomes unfeasible due to lack of adequate irrigation water supply. Option 2 would be economically unviable in most project sites already currently as the climate conditions either do not allow for rain-fed farming or rain-fed farming would provide about three to four times lower yields of much less reliability and frequent crop failure. Climate change will further reduce the feasibility of rain-fed farming even with use of drought resistant crops.
2.1 Rainwater harvesting and surface run-off capturing structures for water collection and groundwater recharge	Option 1: No action Option 2: pumping from lower located surface sources Option 3: pumping from deep wells Option 4: long-distance canals and pipelines from surface water sources.	Option 1 will be cost-effective and will be applied where groundwater aquifers also under climate change conditions will sufficiently recharge. Where this is not the case Option 1 would lead to ineffective and unsustainable investment under other outputs. Option 2 is not everywhere technically possible and would in any case require high recurrent costs for energy and maintenance of pumps. Option 3 is in many cases not sustainable and causes the depletion of groundwater resources, further it requires high recurrent costs for energy and maintenance of pumps. Site specific assessments will take place under Component 1. Option 4 is rarely available in the project sites with use of groundwater. Long canals and pipelines are more costly in construction and maintenance and thus not cost effective in such areas.

2.2 Rehabilitated and climate change resilient water intake structures of canal and karez systems	Option 1: Rehabilitation of intake structures without climate change proofing	Option 1 would lead to not cost-effective investments of declining effectiveness and possible failure due to unaccounted for climate change impact.
2.3 Rehabilitated water delivery canals and *karez*, with reduced seepage losses	Option 1: Construction of new systems Option 2: No lining	Option 1 will be considered, where no existing systems are available or their reconstruction is less cost-effective. Otherwise the use of existing structures is generally more cost effective than new ones, in particular under consideration of community contributions available for rehabilitation and maintenance of existing structures. Option 2 will be considered where seepage losses are not affecting the overall effectiveness of the irrigation system or cannot be prevented with reasonable effort. The selection of the most cost-effective technical solution will be made site-specific in the frame of Component 1.
2.4 Rehabilitated and/or newly installed efficient inter- and on-farm water distribution systems	Option 1: Continued use of inefficient systems and compensation of losses by delivering higher amounts of water.	Option 1 is not a feasible option as all project sites are selected by the criterion of existing and predicted climate change related limitations of irrigation water supply. The specific applied technologies will be assessed in terms of site-specific cost effectiveness, which is dependent on investment costs, recurring costs, local farming conditions, crops and wholesale prices. Advice on crop choice and most suitable and cost-effective irrigation technology will be provided by agriculture and irrigation experts.

D. Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

161. Afghanistan became a signatory to the United Nations Framework Convention on Climate Change on 12 June 1992, but ratified it on 19 September 2002. The country ratified the Kyoto Protocol on 13 April 2013 and it entered into force on 23 June 2013. Afghanistan is a least developed country (LDC) and highly vulnerable to climate change. Afghanistan's National Adaptation Programme of Action (NAPA) was adopted in 2009. This project will build the capacity for climate change adaptation planning and implementation by addressing four NAPA priorities that are inter-connected:

Table 3: Relation of planned activities with the ranking in the NAPA.

NAPA Priority Rank	Activity
1	Improved water management and use efficiency
5	Improved food security
6	Rangeland management
7	Creation of off-farm Employment

162. The link between this project strategy and the NAPA is centred on a common goal of informing climate resilient development planning and sector management through improved national and local systems that generate better agriculture, livelihoods and food security. The NAPA identifies a number of existing national policy initiatives, sectoral policies, programs and strategies that may directly or indirectly address climate change adaptation. Accordingly, the most important policy and program documents that have relevance to climate change adaptation include the Afghanistan National Development Strategy, Strategic Policy Framework for the Water Sector, Policy and Strategy for the Forestry and Range Management Subsectors, Strategic National Action Plan (SNAP) for Disaster Risk Reduction, and the National Capacity Needs Self-Assessment (NCSA) for Global Environmental Management and the National Adaptation Programme of Action (NAPA).

163. The NAPA indicates that from the policy perspective, the ultimate goal is to reduce climate change impacts through development programmes and projects that contribute towards the alleviation of the worsening natural resource depletion and environmental deterioration. Therefore, programmes that address climate change impacts (drought, flood, famine, etc.), vulnerability and adaptation measures are treated as an integral component of the overall development programmes that involve all the relevant sectors through short and long-term programmes particularly in the areas of management, utilization, development and conservation of natural resource. This project directly contributes to the above policy approach. In particular, the Government plans that canals and intakes can bring new land under irrigation in line aiming at bringing 5 million ha of land under irrigation by 2030 thus ultimately increasing crop production and contribute to improved food security. The construction and rehabilitation of community-based irrigation systems will contribute to this plan.

164. The proposed program is in line with and instrumental for implementing the Afghan National Irrigation Policy, National Comprehensive Agricultural Development Priority Programme (2016-2021) together with the MRRD Water Supply, Sanitation and Irrigation Program, which all contain the climate resilient rehabilitation of small-scale irrigation systems as priority. The Government of Afghanistan has established a program for the full rehabilitation of all suitable karez systems, including aquifer recharge, karez rehabilitation and water distribution. The proposed program is an integral part of this program.

165. There are currently no sub-national (i.e. at provinces level) development plans or strategies relevant to the proposed project.

166. Additionally, Afghanistan is one of the UN member countries who have adopted the SDGs. The project is directly contributing to the following Sustainable Development Goals:

Goal 1:	End poverty in all its forms everywhere
Goal 2:	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 8:	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Goal 10:	Reduce inequality within and among countries
Goal 13:	Take urgent action to combat climate change and its impacts
Goal 15:	Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss

E. Describe how the project/programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

167. The project meets the following national standards, complies with the Environmental and Social Policy of the Adaptation Fund and with UNDP Social and Environmental Standards.

168. Afghanistan Environmental Law Standards: The **Environment Law** (2007) has been developed under consideration of international best practices. It sets forth national administrative roles and coordination with provincial authorities; establishes management frameworks for natural resource conservation, biodiversity, drinking water, pollution control, and environmental education; and defines enforcement tools. The law is executed through a set of regulations, which specify the provisions of the law, among these the **Environmental Impact Assessment Regulations** (2008; amended 2017). The National Environmental Protection Agency (NEPA) is in charge of controlling and enforcing these regulations, provides and cross-checks environmental data; the NEPA impact assessment expert team analyses the data and they will provide the license if the project meets the standards. **Administrative Guidelines for the Preparation of Environmental Impact Assessments** (2008) – accompany these Regulations to guide proponents on interacting with the National Environmental Protection Agency, on public consultation, and roles and responsibilities of stakeholders. The activities under the proposed project fall into Category 2, i.e. activities with potentially adverse impacts: means those activities that have potentially significant adverse on human environment or on environmentally sensitive areas that are less adverse than those in Category 1 and are site specific and in most instances not irreversible.

169. Of further relevance is the **Water Law** (2009), according to which water is owned by the public and Government is responsible for water protection and management; assigns responsibilities to government institutions for management and protection of water resources, water ownership, and regulates water ownership fees, rights, permits, and usage. The determination of irrigation norms in different river basins, irrigation drainage systems and other related research for water use for agriculture and irrigation are the main responsibility of the Ministry of Agriculture, Irrigation and Livestock with the cooperation from Ministry of Energy and Water, Ministry of Transport and Aviation, Ministry of Public Health and National Environmental Protection. A usage license or activity permit, including for government projects, is necessary for the following activities relevant under the proposed project and will be obtained site specific where required:

1. Surface and groundwater use for newly established development projects.
6. Digging and installation of shallow and deep wells for the commercial, agricultural, industrial and urban water supply purposes.
7. Construction of dams and any other structures for water impoundment, when the storage capacity exceeds 10,000 cubic meters.
8. Construction of structures that encroach the banks, beds, courses or protected rights-of-way of streams, wetlands, *karez*, and springs.

170. The proposed program will comply with these standards by conducting the required Environmental Impact Assessment in accordance to the established procedures. The CDC or local Irrigation Associations will be assisted by the program in obtaining or renewal of permits or licenses under the water law.

171. **National technical standards for the rehabilitation and construction** of small-scale irrigation systems and their elements have been elaborated by the MRRD. The program will fully comply with these standards and MRRD as Executing Entity will be responsible.

172. Adaptation Fund and UNDP Standards: With regard to environmental and social risk assessment and mitigation, the project is committed to comply with the AF's Environmental and Social Principles (ESP), with UNDP's Social and Environmental Standards (SES), as well as with applicable national policies, laws and regulations. The potential risks of the program in relation with the AF ESP are briefly assessed in section II.K of this full proposal. The program fully complies with the AF ESP and addresses any potential risks related to these principles.

173. Overall, Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (http://www.undp.org/ses) and related Accountability Mechanism

(http://www.undp.org/secu-srm). The Social and Environmental Screening Template of UNDP has been updated in the frame of the preparation of this full proposal and is provided in Annex 7.

174. Consistent with the above national regulations, the Adaptation Fund's ESP and UNDP Social and Environmental Standard, an environmental and social impact assessment has been conducted to assess the potential risks that may be associated with the proposed adaptation project's interventions. This is accompanied by an environmental and social management plan (ESMP), which elaborated the mitigation measures that will be taken to ensure consistency with the ESP Principles and Afghanistan's laws and regulations. ESIA and ESMP are provided in Annex 8. NEPA shall approve the ESIA/ESMP for the full program and issue the required license and permit prior to the implementation of the associated activities in accordance with Afghanistan's environmental legislation.

F. Describe if there is duplication of project / programme with other funding sources, if any.

175. There is no duplication of the project with other funding sources. The proposed project is designed to complement the rehabilitation and expansion of Afghanistan's large and medium irrigation systems, which have in the last decade been addressed by international financial and technical assistance projects, e.g. by The World Bank, Asian Development Bank (ADB), USAID, FAO, and others. The ADB implemented project on community-based irrigation rehabilitation and development is restricted to four target provinces in Northern Afghanistan.

176. The proposed project addresses the large portion of small-scale village and inter-village irrigation schemes, which are in urgent need of being adapted to the expected climate change and will not been addressed by any other ongoing or planned project. The line ministry MRRD is coordinating all activities in this sphere and avoids duplication. The proposed project complements other projects in the sector by its focus on climate change adaptation in the context of small-scale irrigation infrastructure, addressing issues from the upper catchment and groundwater recharge to the inter-farm and on-farm distribution.

177. The World Bank funds the "Irrigation Restoration and Development Project for Afghanistan"[66] with total Project Costs of US$ 219.70 million and a Commitment Amount of US$ 97.80 million. FAO has implemented a component of IRDP, providing technical assistance, including expertise and training[67]. The project aims at providing an area of 215,000 ha with irrigation and drainage infrastructure. The project works in large scale irrigation schemes. There is no duplication with the proposed program and very limited potential synergy. The proposed program focuses on small-scale irrigation schemes and is therefore complementary with this project. The experience of the project in strengthening more than 200 *mirabs* in the addressed irrigation schemes will be considered in the frame of Component 1, activities 1.3 and 1.4.

178. The Afghanistan Reconstruction Trust Fund (ARTF) funded by The World Bank financed the project On-Farm Water Management Project (OFWMP)[68] with a size of USD 25 million (downscaled from originally USD 41 million). In this project villagers learnt sustainable irrigation practices. The project targeted the provinces Kabul, Herat, Mazar-e-Sharif, Baghlan and Jalalabad. Duplication in the provinces Kabul and Herat targeted also by the proposed project will be avoided by addressing different districts and villages. The revised target original target of 52,500 ha for command area serviced by on-farm infrastructure modernization has been substantially reduced to 10,000 ha only. The training experience of this project will be used in the frame of Component 1 of the proposed program as best practice examples how on-farm water distribution and effective use can be technically implemented and

[66] http://projects.worldbank.org/P122235/irrigation-restoration-development-project?lang=en
[67] http://www.fao.org/news/story/en/item/122556/icode/
[68] http://projects.worldbank.org/P120398/on-farm-water-management-ofwm?lang=en

be institutionalized within the local communities. Also the lessons learnt concerning the implementation challenges and the necessary reduction in scale by 80% will be considered in the proposed program to avoid similar adjustment needs.

179. The Asian Development Bank has implemented the project "Community-Based Irrigation Rehabilitation and Development"[69]. This project aimed at improved agricultural productivity in four target provinces in Northern Afghanistan, and as outcome farming communities in the target provinces are better served with irrigation infrastructure (planned rehabilitation of at least 100 traditional small-scale irrigation systems at an estimated civil works cost of $40,000 per system). The project was implemented through a community contracting system, which: (i) allowed rural populations to manage the implementation of projects in their areas and increase local economic opportunities; and (ii) created a sense of ownership and timely completion as procurement will be done locally with the maximum involvement of local communities. The proposed program will use the same implementation mechanism as a proven best practice to achieve cost-effectiveness, high quality interventions and sustainability through community ownership.

180. ADB has further rehabilitated and upgraded about 160,000 hectares of irrigated land have been, with work continuing on an additional 260,000 hectares[70]. The ADB managed Afghanistan Infrastructure Trust Fund, to which various other donors contribute is used for funding of irrigation infrastructure. These are works on large-scale irrigation systems and thus they technologically and institutionally differ substantially from proposed program. Neither duplications nor synergies have been identified.

181. USAID had a large scale irrigation project in the provinces Baghlan and Kunduz, which was completed in 2004[71]. The project rehabilitated three major rural irrigation systems and returned more than 300,000 hectares of cultivated land to full irrigated production.

182. USAID from 2008 till 2011 implemented the Afghanistan Water, Agriculture and Technology Transfer (AWATT) project, which worked with Afghan universities and ministries to extend information and knowledge on appropriate technology, enhance the management of water resources, and develop a policy framework for land tenure in rural areas. The project also assisted in developing participatory planning methods with advanced technical opportunities in natural resource planning and management at the local level, which will be used in the frame of the proposed program.

183. Currently USAID implements the project Strengthening Watershed and Irrigation Management (SWIM)[72] with a volume of USD 47.9 million. The project is aiming to achieve 30,000 hectares of land under new or rehabilitated irrigation services, 25 percent increase in water conveyance efficiency, 20 percent increase in crop productivity in improved irrigated lands and 300 Water User Associations or Irrigation Associations being formed to coordinate operations and maintenance of irrigation systems. Furthermore 16,650 hectares of upper watersheds will be restored. SWIM implements its activities in northern Afghanistan. Because of the different spatial scope there will be not duplication with the proposed project. The project provides opportunities for synergies through the exchange of experience related to technical and institutional approaches and implementation mechanisms.

184. The MRRD under various projects implemented from 2002-2016 has addressed already rehabilitation of 2,204 karez. However, these rehabilitation activities targeted the *karez* only, but not the entire irrigation schemes, including their upper catchment areas. Therefore the climate change adaptation potential of these works has been limited. Furthermore the projects covered only a part of all *karez* in Afghanistan. The proposed program will target different *karez* than those already

[69] https://www.adb.org/projects/36222-013/main
[70] https://www.adb.org/countries/afghanistan/overview
[71] https://2012-2017.usaid.gov/results-data/success-stories/rehabilitation-irrigation-systems-afghanistan-0
[72] https://www.usaid.gov/news-information/fact-sheets/strengthening-watershed-and-irrigation-management-swim

rehabilitated and thus avoid duplication. It will use the technical expertise gathered during these previous rehabilitation works and build on it. Furthermore, the MRRD will use the lessons learnt concerning the institutional and individual capacity for the maintenance of the rehabilitated *karez* and the management and allocation of water delivered by these.

185. The Citizens Charter Afghanistan Project[73], financed with a grant amount of USD 500 million by ARTF, IDA and the GoIRA is implemented improve the delivery of core infrastructure and social services to participating communities through strengthened community development councils (CDSs). These services are part of a minimum service standards package that the government is committed to delivering to the citizens of Afghanistan. The CDCs strengthened under this project are a key target group of the Component 1 and the main local implementers of the interventions under Component 2 of the proposed program.

186. None of the afore-mentioned projects addresses climate change impact on small-scale community-based irrigation systems. Furthermore, most projects do not address entire systems from upper watersheds to on-farm irrigation. The proposed program will address these gaps by a clear focus on creation of awareness about climate change related risks and vulnerabilities, district and community level planning and capacity development and physical interventions aiming at enhancing climate change resilience of entire irrigation systems from upper watersheds and groundwater recharge to water distribution and use efficiency.

[73] http://www.artf.af/portfolio/active-portfolio-investment-projects/rural-development/citizens-charter-afghanistan-project

Table 4: Overview of related projects

Donor/ Project Title	Main Objective	Geographic Area	Status	Adaptation Approach	Potential Synergies and Coordination Mechanisms
World Bank / Irrigation Restoration and Development Project for Afghanistan	Improve access to irrigation in targeted areas and strengthen capacity for water resources management	58 locations across the country	Ongoing until Dec. 2020	Not specifically adaptation related; flood/drought forecasting and early warning systems	Limited cooperation potential due to very different types of targeted irrigation schemes (large-scale vs. small-scale in the proposed program) and related different technical and institutional settings. The project has strengthened 200+ *mirab* and this experience will be used in the proposed program.
ARTF (funded by WB) / On-Farm Water Management	Capacity development of farmers to improve on-farm irrigation management	Kabul, Herat, Mazar-e-Sharif, Baghlan, Jalalabad	Ongoing until Dec. 2019	Not specifically adaptation related, but indirectly through efficient water use	The project's best practice examples will be used how on-farm water distribution and effective use can be technically implemented and be institutionalized. Implementation challenges requiring adjustment of scale will be taken into consideration.
ADB / Community-Based Irrigation Rehabilitation and Development	Improved agricultural productivity by rehabilitating at least 100 traditional small-scale irrigation systems	4 provinces in the north	Completed 2018	Not specifically adaptation related	The project aimed at similar, i.e. small-scale, schemes as the proposed program. Therefore the experience of this program, in particular regarding cost-effective implementation will be used.
USAID	Rehabilitation of three major rural irrigation systems and returning more than 300,000 ha of cultivated land to full irrigated production	Baghlan, Kunduz	Completed 2004	Not specifically adaptation related	Due to long time since implementation and targeting of different provinces no synergies.
USAID / Afghanistan Water, Agriculture and Technology Transfer (AWATT)	Improve the community and farm-level management of the supply and demand of irrigation water resources for increased agricultural productivity and food security	National level (universities and ministries)	Completed 2011	Consideration of climate change impact in technology transfer	The proposed program will identify capacity developed under this project and will make use of it in its capacity development related activities under Component 1. The project has developed participatory planning methods with advanced technical opportunities in natural resource planning and management at the local level, which will be used in the participatory assessment and planning under the proposed program (Component 1, Activities 1.1 and 1.2).
USAID / Strengthening Watershed and Irrigation Management (SWIM)	Increasing the sustainable and productive use of water and strengthening water resource management with 30,000 hectares of land under new or rehabilitated irrigation service	northern Afghanistan	Ongoing until end 2021	SWIM integrates climate change together with other cross-cutting issues	The project provides opportunities for synergies through the exchange of experience related to technical and institutional approaches and implementation mechanisms.

MRRD / karez rehabilitations	Rehabilitation of 2,000 + *karez*	Entire country	2002 - 2016	Not specifically adaptation related, only targeting the *karez* structures	The program will make use of the technical expertise gathered during these projects. It will also build on lessons learnt concerning the institutional aspects and capacity needs for sustainable maintenance of *karez* and the management of the water delivered by them.
ARTF and others / Citizens Charter Afghanistan Project	Improve the delivery of core infrastructure and social services to participating communities through strengthened community development councils (CDSs)	Entire country	Ongoing until October 2020	Not specifically adaptation related	The proposed program will address in its Component 1 the CDCs developed under this project. For interventions under Component 2 the CDCs will be the major implementers. Furthermore, the CDC will be the umbrella for the community-level institutions of irrigation infrastructure maintenance and water management and will collaborate with Irrigation Associations and Water User Associations.

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

187. In order to enhance learning and knowledge management, the project will implement its strategy for the documentation, dissemination and communication of information about the program and lessons learned from the implementation of projects and their impacts. This strategy ensures that lessons learned reach the target audience in the appropriate format. The target audience will include policy makers at national and provincial levels, line ministries, technical agencies and their local representations, CDC and District councils, local community people within and beyond the project sites as well as key development partners across the country, which are actively involved in agricultural development, water management, disaster risk reduction and/or adaptation to climate change.

188. The KM and media outreach strategy goals of the project are:

- To inspire, inform and engage with local communities participating in this project;
- To motivate other communities/district/provinces facing similar challenges by transforming this project into a role model for effective climate change adaptation of entire small-scale irrigation systems and water management, ensuring relevant knowledge generated is easily accessible and can be replicated and scaled up;
- To support the information and internal communication needs of all our stakeholders while assisting the implementation of the government's strategy in promoting climate change adapted irrigation and agriculture with the communities and local governments;
- Provide access to capacity development materials, which can be easily adapted for further use in other similar contexts;
- Document the approaches and results achieved under Component 1 in form of guidance manuals for the replication of expert-supported participatory assessment and planning processes and for individual and institutional capacity development;
- Store systematically and provide access to technical planning and design materials, to documentations of the construction and other intervention activities and to the finally achieved results under Component 2. These documentations shall enable the use of lessons learnt, best practices as well as less successful experiences to facilitate effective and efficient replication of successful elements and the prevention of repeating less positive experiences.

189. Project information will be strategically disseminated through media at main milestones including project inception, community participation activities, contract awards and completion of projects. This will involve the use of multiple media platforms, including video, TV, social media and publications. The intention will be to educate and inform all people living in the districts of project intervention sites and to also reach as many people as possible in the provinces and nationally. Complaint redressal mechanism will be established at the Project Management Unit (PMU) by phone and email, and through public consultation events.

190. Data and information collected in the frame of Component 1, Activity 1.1 will be systematically collected and – where suitable – be collated within a GIS platform at the PMU. Additional knowledge and information will be integrated to address specific education, capacity building and communication needs. This will include, for example, relevant background summary information on the science of climate change, likely impacts in the regions of Afghanistan, and implications for the project sites. This will be combined with results generated from the participatory assessments under Output 1.1. Additional information of relevance to Components 1 and 2 will also be provided for use in education and capacity building as well as in the irrigation system rehabilitation activities. This will include materials relating to climate change resilient irrigation infrastructure, water resource management, natural resources management and aquifer recharge in upper catchments, climate smart agriculture and irrigation practices, results of market research for alternative crops, alternative livelihood practices and marketing of value added products.

191. Materials prepared for the capacity development under Component 1 will be systematically stored and made available for further use within the frame of the proposed program and beyond it, in particular in the frame of other projects implemented by the MRRD.

192. Lessons learned will be systematically documented and be shared and discussed at board meetings, technical advisory group meetings, knowledge exchange visits and other stakeholder meetings, incorporated in the annual work plans. The lessons learned will be synthesized to include knowledge based on implementation processes, impacts of the project activities and best practices. Success stories/beneficiary stories as well as documentation of difficulties experienced will be developed and disseminated to stakeholders.

193. The PMU with support from CDCs and local government staff will gather and report delivery and impacts of investment on a quarterly basis in a pre-defined format. These data and information will then be made available through the planned information website.

194. The PMU is responsible for:
- Designation of a focal point for regular contact with people project and other stakeholders;
- Identification of mechanisms for feedback during design and implementation;
- Documentation of all aspects of implementation (including identification, planning, construction, training, institutional development etc.) and impact (including awareness, capacity, changes in water availability, social and environmental impacts) of both components; and
- Decision making of the details of types of information to be disclosed, mechanisms for public notice including language and timing, and responsibility for implementing and monitoring disclosure and dissemination.

195. In summary the KM and media outreach strategy will make use of the following elements:

a) Visibility material and SOPs:
All visibility material and Standard Operation Procedure for public communications must adhere to the AF, UNDP and respective government guidelines. For that effect, specific branding guidelines and public communication focal points will be included in the communication guidance document, including examples for printed materials (banners, billboards, etc…)

b) AF Project website:
The website will be developed as a central management platform for sharing and disseminating the body of knowledge and lessons learned generated and build a Community of Practice that contributes to the scalability and replication across other communities, districts and provinces. All communication activities undertaken should be reflected on the website. Key areas to cover may include, e.g.:
- Awareness about climate change and its impact on small-scale irrigation systems;
- Approaches for enhanced groundwater recharge through upper catchment interventions with practical examples from project sites;
- Coping with increasing risk of natural disasters damaging or destroying irrigation infrastructure;
- Effective on-farm use of irrigation water and crop choices under changing climate conditions;
- Knowledge management: documentation of activities and interventions, stories of success and failure, publications, etc.);
- Cross-cutting topics: gender and youth, marginalized groups, health, environmental impact;
- Media outreach: media packages, social media news feed, photos and video catalogue, press releases, interviews with experts.

c) Photovoice exercise:
This is a process by which people can identify, represent, and enhance their community through photographic means by entrusting cameras to people that act as recorders, and potential catalysts for social action and change in the riverside communities. It can also be used for

documenting positive adaptation changes along basin communities. For example, this could be integrated in the Component 1, participatory assessment activities and be expanded throughout the project as a way of participatory monitoring. There can be photography stories in partnership with the schools or women's groups to empower them to portrait their views and issues related to climate change and how it is addressed by the project.

d) Reports and publications:
Reports and publications should be systematically prepared with target audiences in mind as an integral part of the knowledge management strategy to replicate, scale and generate lessons learned.

e) Social Media
These distribution channels can be very effective to inform communities, cross link to the website and keep a log of the works to tell the project's story annually, after completion of the project and to support project evaluation.

f) Traditional Media:
Local newspapers, TV and radio broadcast in the respective provinces and nationally will be used to reach the affected communities as well as broader audiences. The program will make use of established media connections and develop new ones to receive the maximum media attention for press releases, news stories, special events, press kits, interviews with experts etc.

196. Learning, knowledge management and public outreach will be aligned with and integrated in the overall communication strategies and knowledge management of UNDP in Afghanistan and MRRD to create synergies, use the respective knowledge, skills, technologies and platforms already available and ensure sustainability post project.

197. The program will collaborate with the University of Kabul and with provincial universities with suitable faculties for the integration of the program into students' and post graduate education. This will foster the adoption of approaches used in the program, e.g. participatory assessment and planning, Climate Risk and Vulnerability Assessments, Ecosystem-based adaptation and others into the university curricula. This will ensure the sustainability and replication of generated knowledge and allow for the multiplication of lessons learned and knowledge about best practices in the university education and at the future workplaces of the graduates.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.

198. The project identified key stakeholders at national, provincial and local level as well as international organizations. There are stakeholders, which are involved in the program implementation, participants and target groups of the activities under the program's components and stakeholders which might have a supportive role towards the program. The program development experts involved stakeholders throughout the drafting of the project concept and after acceptance carried out extensive stakeholder consultations in the frame of the process of full proposal elaboration. The consultation process was organized in a coordinated and joint format by UNDP and MRRD.

199. Among the ministries and government agencies the key stakeholders are:

- Ministry for Rehabilitation and Rural Development (MRRD), which originally approached UNDP with the general request for the proposed program and is the agency in charge of community development and provision of assistance in small-scale irrigation rehabilitation and which will be the Executing Entity of this program;

- Ministry of Agriculture, Irrigation and Livestock (MAIL), which is in charge of overall agricultural development and large-scale irrigation systems;
- Ministry of Energy and Water (MEW), which is in charge of rivers and main canals and abstraction from these;
- National Environmental Protection Agency (NEPA), which is in charge of environmental safeguards, environmental monitoring and responsible for the coordination of climate change mitigation and adaptation activities.

200. International organizations and foreign NGOs as stakeholders include:
- UNDP as the AF Implementing Entity collaborated with MRRD in the elaboration of this full proposal;
- ADB, The World Bank, FAO and USAID implemented and are currently involved in the implementation of projects, which provide opportunities for synergies;
- UNEP, CANSA, Aga Khan Foundation, Mercy Corps, Wildlife Conservation Society, The Liaison Office and others can provide lessons learnt from projects related to natural resources management, upper catchment interventions and community development.

201. At provincial and district level stakeholders include the respective branches of the above listed ministries, with particular importance of the provincial branches of MRRD, the PRRD, which will play an important role in the implementation of the project.

202. At the level of local communities key stakeholders are the community members themselves, taking into consideration both men and women as well as people of different age and members of vulnerable groups for their respective roles and responsibilities. Community institutions include:
- CDCs of targeted communities are in charge of the development and resource use in the frame of single villages, or groups of smaller villages;
- There are as well in some areas umbrella organizations of several CDCs, which provide support to these CDC and facilitate issues concerning several villages;
- Within the communities appointed people manage irrigation infrastructure and water resources, like *mirabbashi*, *mirab*, *karezkan* and others;
- Irrigation Associations have been established in some irrigated areas with assistance and continued support by MAIL;
- Water User Associations cover river basins or sub-basins depending on size and boundaries of water use relationships between different irrigation systems, established with assistance and continued support by MEW.

203. The program as stakeholders also considers research and education institutions, like e.g.
- Kabul University and provincial universities;
- Afghanistan Research and Evaluation Unit (AREU), an independent research institution focusing much on rural natural resources governance and management; and
- other stakeholders, which could provide data, information and share experience or contribute to the capacity development under Component 1.

204. During concept drafting the elaborators from UNDP and MRRD consulted in bilateral meetings with NEPA and MAIL. Furthermore, initial consultations took place within the line ministry MRRD, and its subnational branches, the PRRD and RRD. CDCs, their water management institutions, community elders and land-users had already been approached by MRRD and UNDP during past years to discuss the project idea. Field visits and village meetings were conducted in a broad range of irrigated areas across the country to engage with local governments, CDCs and land-users. Their suggestions formed the basis for the project concept. During the concept elaboration MRRD staff in the frame of site visits held further consultations with local community representatives, such as Community Development Council (CDCs) and community elders.

205. The consultation process at national level has been broadened and deepened during the full proposal development between March and June 2019:
- Within MRRD different departments and project teams have been consulted;
- A large inter-agency, multi-stakeholder consultation meeting was held at May 12, 2019, in the premises of MRRD. In the meeting participated representatives of UNDP, MRRD (from Deputy Minister to technical staff from different departments), MAIL, MEW, The World Bank, FAO, UNEP, Aga Khan Foundation, Mercy Corps and Kabul University;
- NEPA was involved in a bilateral extensive consultation meeting with UNDP and MRRD experts at the level of the Deputy General Director;
- The project elaborators further consulted bilaterally with other stakeholders, such as Wildlife Conservation Society, Afghanistan Research and Evaluation Unit, CANSA and others.

206. During development of the present full proposal the experts from MRRD field staff held broad and intensified consultations with stakeholders at provincial and local level. These took place in the provincial centres, in the respective PRRD premises and during site visits in the villages considered for inclusion in the set of project sites.

207. The consultation process included meetings, and working sessions that encompassed various stakeholders including technical staff and beneficiaries:
- Technical Working Sessions: Technical experts of MRRD at the national, province and district levels were involved in the identification of target areas and the determination of potential interventions guided by the needs and potentials in these areas.
- Province level consultation meetings: In these meetings, which were held by MRRD field staff, participated representatives of PRRD, RRD, district councils and of CDCs of preliminary identified potential project villages. During these consultation meetings in a participatory exercise the situation with regard to climate change in the respective areas was discussed and potential solutions proposed by participants, the project concept was presented and suggestions for amendment recorded for further consideration.
- Field visits and village meetings: These were conducted during April till June 2019 in all irrigated areas considered as locations of project interventions. CDCs and beneficiaries were interviewed to establish their level of concern about the current situation, their awareness of environmental and climate change issues affecting irrigated agriculture and water sources. During the meetings CDCs and farmers, but also local district governments, expressed demand for the proposed interventions and indicated an overwhelming interest in the proposed project, which was deemed critical to address irrigation water scarcity and other water and agriculture related concerns particularly amongst women who spend time collecting water and caring for their families. Specific suggestions for project interventions were made and recorded by the MRRD field staff as a basis for the principal elements of Component 2 and for the assessment of benefits and safeguards for possible interventions. All CDCs and community members involved in the consultation expressed their high interest in participating in both components of the program and to make contributions of 10% or even substantially more in form of labour, locally available materials and where available also in cash.

208. The consultation processes in all specific target areas put special emphasis on the identification of marginalized and vulnerable groups. The results of focus group discussions and individual interviews with women, and members of marginalized and vulnerable groups, including minority groups have been taken into consideration in the development of this full project proposal. The consultations led to the identification of returnees into destroyed and abandoned villages, widow families and families of war victims and other people with limited abilities of physical works as particularly marginalized and vulnerable groups. The proposed program was considered being directly and indirectly beneficial for them as it would contribute to secured livelihoods, ease their special situation and reduce their particular vulnerability to the impact of climate change. These aspects will further be in the centre of the implementation of both Components of the program.

209. In some project sites nomadic livestock breeders (*kuchi*) are temporarily present during their seasonal herd migrations. In the provinces Logar, Maidan Wardak and Paktia kuchi make up around 3-5% of the total human population in some project sites, locally up to 9%. This specific social group is neither marginalized nor vulnerable, but has particular needs and interests, in particular related to access to pasture land and water for their livestock during migration. These needs and interests can conflict with those of sedentary community members and will be specifically considered and addressed during the participatory assessment and planning under Component 1, where necessary involving specialized experts and facilitators experienced in resolving issues between nomadic pastoralists and other land-users.

210. Consultation processes in all specific target areas with particular emphasis on focus group discussions and interviews with marginalized and vulnerable groups, including minority groups, will continue during implementation in the frame of Component 1. The results of the expert-supported participatory assessment (Output 1.1) and planning (Output 1.2) shall remain at the core of the development of the site-specific interventions under Component 2. Furthermore, in the frame of the activities 1.1 and 1.2 the project will continue the consultation process at inter-community level to ensure that concerns and interests of communities adjacent and in particular upstream and downstream of the target areas are duly taken into consideration and addressed.

211. Table 5 presents a summary of stakeholders consulted and contributions they made to the project design. A documentation of the stakeholder involvement process is provided in Annex 6.

Table 5: Summary of stakeholders consulted and contributions they made to the project design.

Organisation consulted	Role/Responsibility	Issues addressed	Project components
UNDP	Implementing Entity; proposal development and submission to AF	Drafting of proposal and compilation of annexes, technical oversight and guidance of project development	All
MRRD including its departments and projects	Executing Entity; program development, identification of potential project sites and interventions, consultations at all levels	Project fitting into the mandate of MRRD; technical aspects and implementation arrangements	All
MAIL with different departments, incl. NRM department	In charge of overall agricultural policy, larger irrigation schemes and support of IA, upper catchment management	Close collaboration, in particular with regard to involvement of IA, where existing, on-farm irrigation and adapted crops and upper catchment interventions incl. EbA.	Component 2
MEW	In charge of water management and regulation of abstraction for larger irrigation schemes; support of WUA	Suggested focus on community-level “hard” interventions Collaboration with regard to involvement of WUA, in case of abstraction from	Component 2

		rivers – upstream-downstream relations.	
NEPA	In charge of environmental monitoring and analysis, incl. related to climate change and of EIA process	Involvement in assessments and planning with technical expertise. Monitoring of environmental impact	Component 1 – direct involvement Component 2 – env. impact monitoring
PRRD; RRD in target provinces and districts	Immediate assistance of implementation at local level	Advice on priority project sites and potential interventions Assistance in implementation at local level	All
District administrations of all target districts	General responsibility for rural development	Advice on priority project sites and local development issues	All, but more interested in Component 2
CDC of all potential project sites	Represent target groups and beneficiaries Provision of community contribution Local implementers	Full integration in all project activities Identification of specific interventions Implementation of interventions under Component 2 with procurement of technical advice, machinery services and materials	All Component 2 – Implementation of interventions
Traditional community water management institutions	Target group for capacity development, in the future in charge of infrastructure and water management	Interested in high quality and sustainable interventions	Component 1 Component 2 – site-specific implementation
WUA and IA in potential project sites, where they exist	Distribution of water between irrigation schemes (WUA) and within larger irrigation schemes (IA)	Where WUA and IA are active, they need to be involved in the aspects of irrigation water allocation	Component 1 (assessment, planning, capacity development) Component 2 (specific aspects of implementation of interventions, e.g. water intakes, water allocation and measuring)
Kabul University, various faculties	Provision of expertise, education of students	Expertise for assessment, planning and capacity development Expertise for impact monitoring	Component 1 Impact monitoring of Component 2

		Education of students for capturing of lessons learned for their future professional practice	
Provincial Universities	Provision of expertise, education of students	Still to be consulted	Component 1 Impact monitoring of Component 2
Other international organizations, NGOs	Implementing projects with potential for synergies, exchange of knowledge and lessons learned	Various suggestions concerning technical aspects and implementation	All

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

212. Afghanistan is among the countries in the world with the lowest GHG emissions per capita (rank 167 of 192 with 0.3 t in 2014)[74] although its total emissions have increased rapidly from 9.8 Mt (2014) to 13 Mt (2017)[75]. It is, however, among the most vulnerable countries to the effects of climate change, particularly in relation to vulnerability to droughts, floods, and landslides/avalanches. This vulnerability to some extent is caused by the level of exposure to climate change impact. But it is also the consequence of a very high sensitivity of its population to the impact of climate change. The sensitivity is multidimensional and is based on socio-economic, cultural and political factors. Women are among the most severely affected as climate change often affects a number of daily tasks that are culturally associated with women's responsibility such as household water supply or collecting resources for heating and cooking, gardening and others.

213. The small and medium scale irrigation schemes serving single communities or several villages are of key importance for local livelihoods, and for the country's agricultural production and food security. At the same time these irrigation schemes are already affected by ongoing climate change and will be more affected by predicted future climate change under all GHG scenarios. Reduced snow and rainfall, increased rainfall variability, higher water demand caused by higher temperatures, changing seasonal availability of irrigation water, reduced groundwater recharge and extreme weather events put stress on the irrigation systems, which need to be enhanced and made resilient to continue to provide the required services under climate change conditions. These traditional irrigation systems are insufficiently maintained under climate change conditions described above. Insufficient understanding of the climate change impacts and limited capacity prevents local communities from implementing these required upgrades to the irrigation systems and ensure their operation and maintenance. The Government of Afghanistan's line ministry MRRD is not able to address these issues without donor assistance.

214. The funding requested covers in some of these irrigation systems the additional costs that climate change is bringing. The total funding required for this project is $9,432,556 including project management and project execution fees. The funding requested is based on the available estimates of the cost of proposed technologies for climate change proof irrigation systems, related watershed management measures, technology transfer and awareness and capacity building activities in 56 communities with a total population of 97,023 people in 13,620 households.

[74] https://www.indexmundi.com/facts/indicators/EN.ATM.CO2E.PC/rankings
[75] http://www.globalcarbonatlas.org/en/CO2-emissions

Component 1

215. The currently inadequate conditions of irrigation systems and the insufficient consideration of climate change related impacts on their effectiveness and sustainability have significant reasons in the lack of adequate awareness and weak institutional frameworks at local (community, inter-community and district) levels. This requires investment in these enabling aspects to change behavior, and build awareness of best practice, both among local authorities and communities.

216. Without external assistance neither would awareness on climate change impact on the functioning and sustainability of the irrigation systems be built nor would capacity be developed to address these impacts. In the result neither assessments of climate change risks and vulnerabilities nor adequate planning would take place for enhancing the climate change resilience of all elements of the irrigation systems in an integrated way. The necessary knowledge for capacity development of local level institutions and individuals and for technical implementation in compliance with the state of the art and impact of predicted climate change would not be possible. Thus no capacity would be available for climate change adapted operation and maintenance of small-scale irrigation systems and the management of irrigation water distribution and use.

217. To address these gaps the project will fund capacity building and institutional activities associated with the promotion of climate resilience for the communities. This will include activities related to risk and vulnerability assessments, climate change smart adaptation planning for rehabilitation and enhancement of community level irrigation systems and the development of institutional and individual capacity to operate and maintain the climate change resilient irrigation systems and manage irrigation water resources. About 23% of the budget will be allocated to these activities. The awareness and capacity development related activities, for which funding is requested, are expected to result in a significantly higher adaptation benefit for small-scale irrigated agriculture in the target areas and sustainability than standalone physical rehabilitation works would achieve. Through the involvement of district level authorities, the establishment of showcases and the sharing of lessons learnt the benefits will also spread beyond the immediate project areas.

Component 2

218. Physical maintenance, rehabilitation and construction of small-scale irrigation schemes currently take place only in a limited scale and without consciously addressing the impact of ongoing and projected climate change. Without the requested funding such activities would mainly address single elements of irrigation systems, but would not cover entire systems from the water collection and groundwater replenishment, over water delivery systems to inter-farm and on-farm distribution systems. The impacts of climate change would not adequately be addressed, and no climate change proofing of the irrigation systems would take place.

219. The funding requested covers the additional costs that climate change is bringing on the irrigation systems. The proposed activities under the component on rehabilitation of irrigation infrastructure are based on a holistic approach, which addresses the entire system, including the adequate management of the upper catchment to increase water availability, the rehabilitation of delivery and distribution systems to reduce water losses and the efficient use of irrigation water by the farmers. The proposed approach includes climate change proofing of all elements of the irrigation systems. This is in contrast to limited and isolated rehabilitation works, which might potentially be implemented without the requested funding, but would not take into account and address climate change impact. About 70% of the budget will be allocated to Component 2, i.e. to physical improvements targeting the irrigation systems in a holistic landscape approach from upper catchments to on-farm use.

220. During the development of the full proposal further details on the funding available in each of the project areas have been determined. These findings indicate the very limited availability of

resources at this level, further justifying the full provision of funding. Locally available resources will be mobilized for the implementation of climate change proof rehabilitation and development of the irrigation schemes and by this sustainability and local ownership will be strengthened (section J). Several communities have already expressed their readiness to provide more than the required 10% in-kind contribution in form of work and locally available materials, but are ready to increase this contribution and in exceptional cases even to provide cash contributions from migrant remittances. The programme costs are additional to other costs associated with community level irrigation scheme rehabilitation and development, but the success of the intervention from an adaptation perspective is not dependent on co-financing activities by other parties.

Conclusion

221. The project will strengthen climate resilience among rural communities through climate change resilient infrastructures, diversified livelihoods, and strengthen capacity of institutions and communities to support the irrigation sector in targeted areas in Afghanistan. These results would not be achievable without the requested funding and climate change impact would further hit unprepared communities relying on highly vulnerable irrigated agricultural systems. The funding of the proposed project is well justified by its direct outcomes and the economic, social and environmental benefits explained in section B and its cost-effectiveness (section C). Beyond the described immediate outcomes and benefits, the proposed project will allow adaptation to be mainstreamed into local communities and implemented actions to address specific threats and barriers will be replicated.

J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project / programme.

Institutional sustainability and strengthening of capacities:

222. The project outcomes are closely aligned and coordinated with efforts already underway within Afghanistan to promote development and SDG targets. The project focuses on strengthening the capacity of national and sub-national entities to adapt with climate change impacts. To ensure the sustainability of the project interventions beyond the project lifetime, ownership of the project by government structures (primarily MRRD, NEPA and MAIL) is of paramount importance.

223. The project builds on traditional institutions (see para 32) for irrigation infrastructure construction and maintenance and regulation of water supply, which functioned for centuries, still exist in some extent in rural areas with irrigated lands, or have been functioning until recently. Such institutions include, e.g., people elected by the communities, which are in charge of *karez* and canal systems and regulate water distribution in the communities – e.g., the *mirabbashi*, *mirab* and *karezkan*. There are also elders' councils of village and local councils *shura*, which deal with the maintenance and allocation of resources, including irrigation water. The project will assist in reviving or newly establishing suitable institutions and their integration in the CDCs, inter-village and district institutions, including existing Water User Associations and Irrigation Associations, which is an explicit policy of the government. These institutions will be sustainable due to their function for involved stakeholders and their integration in official local governance structures or support by them. They will be in charge of operation and maintenance as well as regulation of water supply to individual farms. As integral parts of formally recognized organizations they will be able to collect fees, have bank accounts and can obtain loans. The households will pay regular fees for maintenance of the irrigation systems and for the management of water delivery. They will further contribute volunteer community work (*hashar*) for maintenance and repair works in the irrigation systems. The sustainable management and regulation of land use in upper watersheds will be maintained through community-based regulation mechanisms. All these contributions and mechanisms are based on traditional institutions, which are either still functioning or will be revived

and adapted to the specific needs in the frame of the capacity development activities under Component 1.

224. The detailed ways how such traditional and newly developed institutions are managed will be developed in participatory processes in the frame of the Component 1, taking into consideration policy and legal requirements as well as economic viability to provide long term sustainability of the investment. Structures and processes will be documented and lessons learnt will be shared to provide that institutions for climate proofing and maintenance of irrigation infrastructure can be adopted in future irrigation schemes.

225. Additionally, an extensive programme of capacity building will accompany the climate change adaptation techniques and practices in a learning-by-doing approach. This will build a cadre of skills and experience at sub-national level that will be able to support ongoing adaptation beyond the project period.

Ownership:

226. This initiative will work, because the preparation phase focused on community participation, engagement at the design and planning, and this project will take a holistic approach. The absence of community participation has been a major reason for previous agricultural and infrastructure projects to fail. This project aims at building community-based institutions and organization which will ensure longer term sustainability, and take an ecosystem approach to ensure that issues of water availability are addressed in a whole and not in a fragmented way. The planned implementation arrangements through the local CDCs, which will be advised by MRRD and the PRRD and supported in purchasing external technical expertise, machinery services and materials, combined with own contributions by the communities will additionally contribute to a much higher sense of ownership than it is typically the case for projects contracted to private companies.

227. Afghanistan's rural communities have a long tradition of self-governance through community institutions like elders' councils and water management institutions. The government aims at the integration of such traditional structures in the Community Development Councils (CDCs). The CDCs[76] were first established under the National Solidarity Programme (NSP). They are tasked with planning, negotiating, and managing development investments. The Councils are trained in financial management and bookkeeping, and in basic principles of transparency, participation, and accountability. Under the Citizens Charter National Priority Programme the existing thematic committees *shuras*, such as health, education, and agriculture committees are to be integrated as subcommittees to the CDCs. They carry out technical functions and coordinate with line ministries, while providing CDCs with their full financial and planning information, allowing rural and urban communities to manage and implement a single and transparent budget and development plan. A more recent development is the establishment of umbrella organizations of several CDCs located in one area and sharing common infrastructure and natural resources. These umbrella organizations coordinate and facilitate the activities and balancing of interests and allow for mobilizing financial support for larger projects serving several villages.

228. Traditionally water users contribute labour and materials to the construction and maintenance of irrigation infrastructure in form of labour. However, resources of communities and households are insufficient to cover the investment needs for rehabilitation, expansion and climate proofing of irrigation infrastructure. Under the proposed project a community contribution of at least 10% to the costs of the improvement of irrigation infrastructure will contribute to the ownership among the beneficiaries.

[76] Government of Islamic Republic of Afghanistan Citizens' Charter National Priority Programme December 2016

Financial sustainability:

229. There is high political will and demand for stable irrigation water supply in small and medium-scale irrigation schemes in Afghanistan, due to the high importance of the irrigated agriculture depending on such schemes for local livelihoods and food security. However, the budget allocation by Government towards activities aimed at increasing resilience of rural communities to climate change effects in relation to sustained availability of irrigation water, in particular during droughts exacerbated by ongoing climate change is insufficient. This funding request under preparation is expected to help foster interventions geared at protecting rehabilitating and expanding selected irrigation schemes, including their catchments and strengthening community adaptation measures.

230. Continuous catchment protection interventions and the operation and maintenance of the established or rehabilitated climate-proof irrigation infrastructures will be ensured by labour, in-kind and financial contributions by the water users in the frame of the institutions revived and adapted or newly established at community and inter-village levels. The institutions in charge of irrigation infrastructure operation and maintenance and water management and distribution will be assisted in the establishment of proper mechanisms ensuring accountability and transparency of their revenues and spending. These mechanisms will build on established systems, where people already contribute labour, materials, but also cash for the maintenance of common services, like irrigation water but also for other joint interests. Irrigation Associations already collect financial contributions by farmers, depending on the size of land area provided with irrigation water, which will then be used for maintenance works. The IA have own bank accounts and are able to obtain loans from banks for financing of larger repair works, e.g. after disaster, and thus can react fast and effective for ensuring continuous water supply during critical seasons.

Sustainability of groundwater use:

231. There are no local groundwater management plans in the target areas. The project in its activities 1.1. and 1.2 related to participatory assessment and planning will establish groundwater replenishment potential and sustainable rates of ground water use. This will allow for the sustainable use of predictable available groundwater in irrigation and for household needs.

232. The project will not lead to the installation of equipment, like tube wells and pumps, which are risky in terms of overdraft of limited groundwater resources. Such devices have already caused the exhaustion of aquifers previously supporting *karez* systems. The reliance on *karez* systems capturing only the natural flow reduces the risk of overuse of groundwater resources. Karez do not lift groundwater, but drain aquifers at specific locations, allowing for effective and efficient delivery of the water to the irrigated command areas. Depending on the site-specific hydrological and hydrogeological conditions the *karez* capture more or less only a part of the available ground water. Without functioning *karez* the groundwater flows through the sediments, either appearing in a different location or entering deeper aquifers in more distant areas. So the impact of *karez* on local groundwater levels is typically very limited, but will be assessed site specific under Component 1 to ensure the sustainability of groundwater use and avoid conflict with other users of the same or related aquifers.

233. Where technically feasible, special installations will be considered, which prevent or limit water flow in *karez* during seasons when no irrigation takes place. However, this is possible only in situations where local substrate conditions prevent the water from flowing a different way, getting lost and/or potentially causing damage by subrosion. Furthermore, most karez at their exit have ponds (*hauz*) used for water storage over a certain period of time and effective distribution. Where terrain and substrate allows and financial viability is shown, larger reservoirs might be built for storing a larger amount of the otherwise unused water. These options will be explored in the frame of Component 1 under the outputs related to expert-supported assessment and planning.

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.

234. The proposed project fully aligns with the Adaptation Fund's Environmental and Social Policy (AF ESP) and National Environmental Protection Agency (NEPA) established environmental screening standards. The project elements have been screened against the 15 principles that form the basis of the AF ESP. The details of the screening, potential risk and proposed high level mitigations are contained in the Environmental and Social Impact Assessment and Management Plan (ESIA/ESMP, provided in Annex 8). UNDP will not support activities that do not comply with national law and obligations under international law, whichever is the higher standard.

235. The high-level pre-screening against the 15 principles of the Adaptation Fund's ESP as well as UNDP's Social and Environmental Screening determined that the project is a moderate risk (Category B) project. According to the UNDP's Social and Environmental Standards Procedure Category B includes impacts of low magnitude, limited in scale (site-specific) and duration (temporary) that can be avoided, managed and/or mitigated with relatively uncomplicated accepted measures. Also based on NEPA's environmental Impact Assessment regulation similar projects deemed to be under Category 2.

236. This is based upon formulated project activities, and for project activities which are not fully formulated at this time, the generic impacts of projects of this type. It is important to note that full details of all components cannot be known until the full participatory local planning with communities and other stakeholders have been finalized. Where this is the case, then the activities that have yet to be described in full detail are considered to be unidentified sub-projects (USPs). During implementation of the project, USPs will be defined and then screened to ensure that they comply with the AF ESP. The process for screening is described in the ESIA/ESMP.

237. Overall, the project will have significant positive environmental and social impacts through improving the ecosystems and promoting sustainable water and land management practices within the catchments of the selected rivers. Proposed activities under Component 2 (including construction of rainwater harvesting and erosion control structures, construction of small-scale flood management structures, reconstruction of existing and construction of new intake structures, reduction of seepage from canals and reclamation of non-irrigated lands for irrigated farming) may portend some negative risks; however, these will be largely small-scale and localized risks, which can be readily managed with the application of mitigation measures and will be outweighed by the positive environmental and social impact. An environment and social impact assessment and management plan will be completed in line with the safeguard policies of the Government of Afghanistan and the ESP.

238. During preparation of this full project proposal, a detailed assessment was undertaken to elaborate the scale, scope and location of these activities, identify targeted communities while considering the Adaptation Fund principles. Following this, the environmental and social impacts / risks identification section has been updated as per i) the outcomes of the Environmental and Social Impact Assessment (Annex 8) and ii) the additional information that was obtained during developing of the full proposal. Table 6 provides an overview of the identified assessment and management requirements for each of the Environmental and Social Principles.

239. The ESIA/ESMP serves as management tool to assist in minimising potential adverse environmental and social impact and to achieve a set of environmental and social objectives. The ESIA/ESMP is aligned with the AF ESP. It identifies relevant legislation, multi-lateral agreements, steps for screening activities, potential environmental and social impacts, required mitigation measures and proposed monitoring schedules.

240. The ESIA/ESMP will be used by the project implementers to structure and control the environmental management safeguards that are required to avoid or mitigate adverse effects on the environment. The ESIA/ESMP will be updated from time to time by the implementing Project Management Unit (PMU)/contractor in consultation with the UNDP staff and MRRD to incorporate changes in the detailed design phase of the projects.

241. In addition, the ESIA/ESMP grievance mechanism, could be used by target beneficiaries. The mechanism is designed to receive and facilitate grievances in a transparent manner to allow for adequate monitoring, evaluation and response to address complaints in a timely fashion. The Grievance Redress Mechanism is not a substitute for the legal process. In addition to the project-level and national grievance redress mechanisms, complainants have the option to access UNDP's Accountability Mechanism, with both compliance and grievance functions. The Social and Environmental Compliance Unit investigates allegations that UNDP's Standards, screening procedure or other UNDP social and environmental commitments are not being implemented adequately, and that harm may result to people or the environment. The Social and Environmental Compliance Unit is housed in the Office of Audit and Investigations and managed by a Lead Compliance Officer. A compliance review is available to any community or individual with concerns about the impacts of a UNDP programme or project. Complaints regarding projects/programmes supported by the Fund can also be filed with the secretariat at the following address: Adaptation Fund Board secretariat Mail stop: MSN P-4-400, 1818 H Street NW, Washington DC, 20433 USA, Tel: 001-202-478-7347 afbsec@adaptation-fund.org.

Table 6. Overview of assessment and management requirements for compliance with AF ESP

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
1. Compliance with the Law	X	
2. Access and Equity		X
3. Marginalized and Vulnerable Groups	X	
4. Human Rights	X	
5. Gender Equity and Women's Empowerment	X	
6. Core Labour Rights		X
7. Indigenous Peoples	X	
8. Involuntary Resettlement	X	
9. Protection of Natural Habitats		X
10. Conservation of Biological Diversity		X
11. Climate Change		X
12. Pollution Prevention and Resource Efficiency		X
13. Public Health	X	
14. Physical and Cultural Heritage		X
15. Lands and Soil Conservation	X	

1. Compliance with the Law:

242. The project complies with all regulation as mandated by the Afghanistan national laws and the ESP. This includes compliance and/or guided implementation in alignment with the Environment Law (2007), Environmental Impact Assessment Regulations (2008, amended 2017), Water Law (currently in process of review and amendment) and other applicable laws and regulations. An overview of the relevant legislation is provided in Annex 4.

243. During the preparation of the full proposal and EIA/ESMP for UNDP SESP Category B and Afghanistan EIA regulations Category 2 projects, all stakeholders (including NEPA, MAIL, MEW, district councils, CDCs, and community members) have been consulted to ensure all legal requirements will be met during implementation. All sub-projects have been assessed for their general compliance with the law. As the sub-projects only during implementation will be planned site-specific and in further detail, further assessment will take place during the project against the AF ESP's 15 principles. The necessary decision about the EIA will be obtained by MRRD from NEPA in accordance with the Environmental Impact Assessment Regulations. If any permission is required by the Water Law, it will be obtained by the respective entities (CDC, IA or WUA depending on the site-specific circumstances) with support by MRRD and PRRD.

244. Risk: None; Component 1 includes assessment and capacity building activities, which do not have direct physical impacts and comply with national laws and regulations; Component 2 includes physical interventions, which will be implemented in accordance to national legislation.

2. Access and Equity

245. The project hinges on a participatory stakeholder engagement process. The proposed program's activities are designed to provide equal and fair access to benefits by communities in highly vulnerable areas, in particular to irrigation water for arable land suitable for irrigation and to household and drinking water. In addition, the project will be designed and implemented in a way that it will not impede access of any group to essential resources. The CDCs will facilitate the selection of specific project sites and activities as per adaptation needs of the intervention area. For ensuring future equitable access, the development of community institutions for water management and distribution will ensure involvement of all stakeholders at community and inter-village level comprising women, men, youth, and all vulnerable groups. So the entire program design ensures that the program meets the requirements of this principle and the participatory assessment and planning process and the capacity development under Component 1 will provide for this.

246. Risk: Yes; individual access to certain natural resources may become restricted for the achievement of benefits for the entire community; where despite interventions shortage of irrigation water and irrigated lands persist, benefits might become inequitably accessible.

247. Mitigation: The issue will be addressed considered and addressed in the frame of participatory assessment and planning process and in the frame of institutional capacity development on water use.

3. Marginalized and Vulnerable Groups

248. The program during its consultation processes in all specific target areas put special emphasis on the identification of marginalized and vulnerable groups. The socio-profile and needs of all beneficiary groups have been assessed during the development of the full proposal. The results of focus group discussions and individual interviews with members of marginalized and vulnerable groups, including minority groups have been taken into consideration in the development of this full project proposal. The consultations led to the identification of returnees into destroyed and abandoned villages, widow families and families of war victims and other people with limited abilities

of physical works as particularly marginalized and vulnerable groups. The proposed program will be directly and indirectly beneficial for them as it would contribute to secured livelihoods, ease their special situation and reduce their particular vulnerability to the impact of climate change.

249. The program will further target the participation of women and youth to enhance their opportunities for improved livelihoods. These aspects were fully integrated based on the results of focus group discussions and interviews with women and young people.

250. In some project sites in Logar, Paktia and Maidan Wardak nomadic livestock breeders (*kuchi*) are temporarily present during their seasonal herd migrations. This specific social group, making up in these areas typically 4-5% of the local population, is neither marginalized nor vulnerable, but has particular needs and interests, in particular related to access to pasture land and water for their livestock during migration. These needs and interests will be specifically considered and addressed during the participatory assessment and planning under Component 1.

251. Consultation processes in all specific target areas with particular emphasis on focus group discussions and interviews with marginalized and vulnerable groups, including minority groups, will continue during implementation in the frame of Component 1. This will ensure that all groups are well represented participatory assessment and planning process as well as in the community-based and inter-community institutions for water management for each target catchment area.

252. Risk: None; the issue has been considered in the frame of the full project preparation and is fully addressed by the participatory planning process and the established grievance mechanism.

4. Human Rights

253. Afghanistan is a country with substantial problems in meeting human rights standards. Violations are in particular committed by Anti Government Elements, but also government officials at different levels are regularly involved in violations of human rights. This situation limits the opportunities of a program not specifically designed for addressing human rights to achieve substantial improvements.

254. The program will respect and where applicable promote human rights. UNDP's application of the Human Rights Based Approach and its emphasis on gender equality in development programming will ground the implementation of the proposed program on these important development principles. The program is developed with particularly attention that no human rights violations can occur in the context or as result of the program implementation. In particular the broad community participation and capacity developments under Component 1 allow for effective addressing of any so far not foreseeable risks in this regard. By selecting project sites under the control of the legitimate government the program allows for addressing any human rights related issues through established and official complaint and grievance redress mechanism and communication channels.

255. The program will create awareness with all involved in the programme operations, including site-specific design, execution, monitoring, and evaluation, about the Universal Declaration of Human Rights as an overarching principle in the implementation of the project/programme. Further, it will carry out regular site visits and monitoring and evaluation activities. The proposal in the ESMP describes its established complaints and grievance redress mechanism to ensure there are adequate opportunities for community members to present any concerns about the project. The project will also stay in regular contact with PRRD and RRD as well as CDCs so that any complaints about the project can be channelled back to the project timely.

256. Risk: None; the issue has been considered in the frame of the full project preparation and is fully addressed by the participatory planning process, the established grievance mechanism and other adequate measures.

5. Gender Equity and Women's Empowerment

257. In Afghanistan many women issues are compromised by cultural hindrances and limited low economic status. The program therefore specifically addresses gender issues and ensures that the program design is inclusive and in compliance with Afghanistan's and Adaptation Fund's Gender Polices. The program will particularly facilitate gender equity and women's involvement all project activities. At least 50% of target beneficiaries are women.

258. Component 1 will in particular assess vulnerabilities of women and address these in the planning process and capacity development. By this women will be engaged in activities that determine the results of the program, address their specific circumstances, reduce their climate change related vulnerability and allow them for a more active role in the management and use of water and related resources post program. The Component 2 activities will include livelihood improvement and lead to income creation for women and youth, with particular attention to women-headed households. A Gender Assessment and Action Plan (GAAP) has been developed during proposal development and is provided in Annex 9.

259. Risk: None; the issue has been considered in the frame of the full project preparation and is fully addressed by Gender Assessment and Action plan, the participatory planning process, the established grievance mechanism and other adequate measures.

6. Core Labour Rights

260. The project will be managed in accordance with ILO core labour standards as stated in the 1998 ILO Declaration of Fundamental Principles and Rights at Work and with Afghanistan's Labour Law, which both prohibit forced labour, child labour and discrimination, and allow freedom of association. Component 2 (catchment and irrigation system rehabilitation) may require recruitment of specialized labour force to complement community effort and undertake the restoration works requiring special skills. Payments to labour under the project will be made as per Government approved norms duly following minimum wage rate and hence ensuring core labour rights.

261. Civil works related to restoration of irrigation systems, in particular *karez* tunnels and riverbanks might expose individuals involved to occupational safety risk. This occupational safety risk will be mitigated through the selection and effective use of appropriate mechanical equipment and personal protective gear. Work procedures, training, and awareness creation/sensitization will also be done for everyone involved in the project. These issues are reflected in the ESIA/ESMP.

262. Risk: Low; there are some risks related to physical works.

263. Mitigation: Selection and effective use of appropriate mechanical equipment and personal protective gear, work procedures, training, and awareness creation/sensitization.

7. Indigenous Peoples

264. Afghanistan does not have a history of colonization and that's why the concept of "Indigenous Peoples" is neither appropriately applicable to any ethnic group nor politically accepted. UNDP's Standard 6 on Indigenous Peoples was consulted in the context of this project and it was verified that the nomadic *kuchi* communities do not fall under the broad terms in that standard. Therefore, no indigenous peoples live in Afghanistan and any project areas and the program accordingly will not create any negative impact on the indigenous people.

265. Risk: None; no indigenous people exist in any of the project areas.

8. Involuntary Resettlement

266. The program does not include voluntary or involuntary resettlement and result in neither physical nor economic displacement. Project sites for the adaptation activities under Component 2 will be take place on community lands of the communities benefiting from these activities and there will be no land acquisition, resettlement or disruption of stakeholder's access to land.

267. Risk: None; the project does not include any resettlement or physical or economic displacement.

9. Protection of Natural Habitats

268. The program and its local projects will take place in areas without critical habitats and protected areas. They will facilitate the rehabilitation and protection of natural habitats in upper catchment areas and the maintenance and development of habitats in cultural landscapes of small and medium-scale irrigated areas. The project activities will enhance recharge and restoration of water systems including groundwater. The activities for the expansion and rehabilitation of irrigation systems under Component 2 may in a limited amount cause the conversion of degraded rangelands and abandoned arable lands as well possibly small sections of riparian ecosystems modified by current land-use. These are neither critical nor protected natural habitats. The expert-supported participatory assessment and planning processes under Component 1 will ensure that no valuable and sensitive habitats are affected by the implementation of Component 2 and any possible negative impact is offset by development of new habitats. The ESIA/ESMP in Annex 8 provides guidance.

269. Risk: Moderate; the physical interventions under Component 2 and their results will impact the ecosystems directly and indirectly. Although this impact is expected to have positive net effect it has to be considered.

270. Mitigation: The assessment and planning processes under Component 1, guided by the ESIA/ESMP will ensure that no valuable and sensitive habitats are affected and any possible negative impact is offset by development of new habitats.

10. Conservation of Biological Diversity

271. Overall, the planned interventions (catchment and irrigation system rehabilitation and resilience) will have only small localized and/or temporary impact on biodiversity conservation. Reduced water losses from seepage and leakage of canals due to lining and capturing of springs may locally affect the growth of trees, shrubs and forbs along these structures. Consultations and environmental assessment as part of the development of the full proposal further considered the ecosystem services of biodiversity available for beneficiary populations in the project area. In the frame of participatory planning mitigation and compensation measures will be determined to offset any expected losses. The ESIA/ESMP in Annex 8 provides guidance.

272. Risk: Moderate; the physical interventions under Component 2 and their results will locally impact biodiversity directly and indirectly. Although this impact is expected to have positive net effect it has to be considered.

273. Mitigation: Consideration of potential biodiversity loss in the frame of assessment and planning processes under Component 1 and integration of preservation and rehabilitation measures, guided by the ESIA/ESMP.

11. Climate Change

274. The proposed project is specifically designed to integrate climate resilience into the project activities to develop climate proof irrigation systems and ensure long-term sustainability of infrastructures. The project is aligned with the climate change adaptation plans at the national and community levels. None of the interventions are likely to result in an increase in greenhouse gas emissions. On the contrary, the upper catchment activities of the proposed project will have positive climate change mitigation impact through improved GHG sequestration thanks to reduced and reverted degradation of vegetation.

275. Risk: Moderate. While the project interventions have no adverse impact with regard to Climate Change they can nevertheless be affected, despite climate resilient approaches and techniques in accordance to best available practices.

276. Mitigation: Integration of Climate Change Vulnerability and Risk assessments and use of best adaptation potential for different scenarios and predicted climate change trends.

12. Pollution Prevention and Resource Efficiency

277. The proposed program will not require (during or after implementation) significant amounts of water, energy, materials or other natural resources. None of the activities under the proposed project will result in the production of significant quantities of wastes, especially of hazardous or toxic wastes. The program during construction and operation will not produce significant volumes of effluents or air pollutants, including greenhouse gases. All applicable international standards will be met for maximizing material resource use and minimising the production of wastes and the release of pollutants. The program ESMP contains measures to mitigate potential localized impact, such as noise and dust pollution, which may be associated with construction activities. No such risks exist for future operation.

278. Risk: Low; any construction activity can cause localized pollution and requires resources. Irrigation systems use naturally available water resources.

279. Mitigation: For the physical interventions under Component 2 pollution prevention and effective resource use will be addressed in the detailed planning under Component 1 and will be required in the ESMP. With regard to irrigation water use efficiency, planning and capacity development under Component 1 and the implementation of measures under Component 2 will increase resource use efficiency.

13. Public Health

280. The program's core objective of improving irrigated agriculture will improve food security; irrigation water availability will improve the diversity of crops and reduce malnutrition. In some areas also access to safe drinking water will reduce waterborne diseases and improve hygiene. Water quality will be improved as a result of environmental / catchment protection.

281. Risk: None; the project has only predictable positive impact.

14. Physical and Cultural Heritage

282. The program activities will not be implemented in any area known for having cultural sites and sites with unique natural values. Site selection process will ensure there is no interference on areas of physical and cultural heritage.

283. Despite there is no national physical and culture heritage related legal and regulatory framework that would apply to all or specific *karez*, the *karez* are generally considered as historical and cultural

heritage and their preservation and revitalization under this project will be in accordance to this status. If cultural heritage is discovered, the relevant technical ministry will be notified. The project during detailed design planning will assess the historic relevance of *karez* considered for rehabilitation and where relevant the ESMP contains measures for the preservation of their authenticity during the restoration of *karez* and other elements of irrigation systems of particular historic relevance. For making use of existing knowledge, experience and best international practice, the program will seek support and collaboration in research, training and technology transfer with UNESCO's International Centre on Qanats and Historic Hydraulic Structures, where several of MRRD's program staff already has received training.

284. Some springs are considered cultural and religious sites and such springs will be integrated into irrigation systems fully securing their cultural and spiritual values.

285. Risk: Low; the project will work in *karez* systems, which are generally considered as cultural heritage. It will contribute to their conservation as living history and preserve its functionality for the support of people's livelihoods today and in the future.

286. Mitigation: Negative impact in karez of particular historic relevance will be avoided through assessment of particular karez systems and implementation of rehabilitation works with conservation measures where required.

15. Lands and Soil Conservation

287. The project interventions will support sustainable soil and land management practices in upper catchments and in the irrigated areas. Project activities will promote practices that will reverse land degradation in the selected catchments, improve vegetation cover, enhance soil stability and reduce runoff, thereby promoting soil fertility. The project will also facilitate the adoption of good land-use and irrigation practices to support soil conservation and prevent waterlogging and salinization.

288. Risk: None; the impact of assessment, training and capacity development under Component 1 as well as the implementation of the physical measures under Component 2, in accordance to the requirements formulated in the ESMP, will have positive impact on lands and soil conservation.

Conclusion

289. Following the preliminary environmental and social risks identified and screened in the Environmental and Social Risks Matrix table here above, in the previous paras a more detailed justification and explanation was provided. Further details on the environmental and social screening are provided in the UNDP Social and Environmental Screening Template in Annex 7, which covers the same topic as the AF ESP, but in a different structure. The ESIA describes the existing environmental and social conditions, possible impact on these by the project and the related ESMP provides comprehensive information on the mitigation, compensation and management of any potential adverse impact and monitoring of these impacts and the measures taken in their regard (Annex 8).

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project / programme implementation.

290. The Ministry of Rural Rehabilitation and Development (MRRD) will be the Executing Entity for this project. The project will be executed in compliance with the Government of Islamic Republic of Afghanistan and UNDP Rules and Regulations, policies and procedures following the NIM guidelines.

291. As Multilateral Implementing Entity, UNDP will be responsible for independent project oversight and implementation support through specialized technical support services and quality assurance throughout the project funding cycle. Details of services covered by the MIE fee are listed in Annex N. UNDP provides three tiers of oversight and quality assurance, namely: i) day-to-day oversight of project quality, timeliness and safeguard standards; ii) oversight of project completion; and iii) oversight of project accounting and reporting. This will ensure that appropriate project management milestones are managed and completed. Such oversight will be carried out by the UNDP Afghanistan Country Office and UNDP-GEF at the regional and global level.

292. The Ministry of Rural Rehabilitation and Development (MRRD) will be the Executing Entity and will appoint a project task team (paid for by project resources) to coordinate operations and manage the program in collaboration with the PRRDs and RRDS in the project areas. The relevant stakeholders will be the Ministry of Agriculture, Irrigation and Livestock (MAIL), National Environmental Protection Agency (NEPA) and their provincial and district level offices in targeted provinces of Afghanistan.

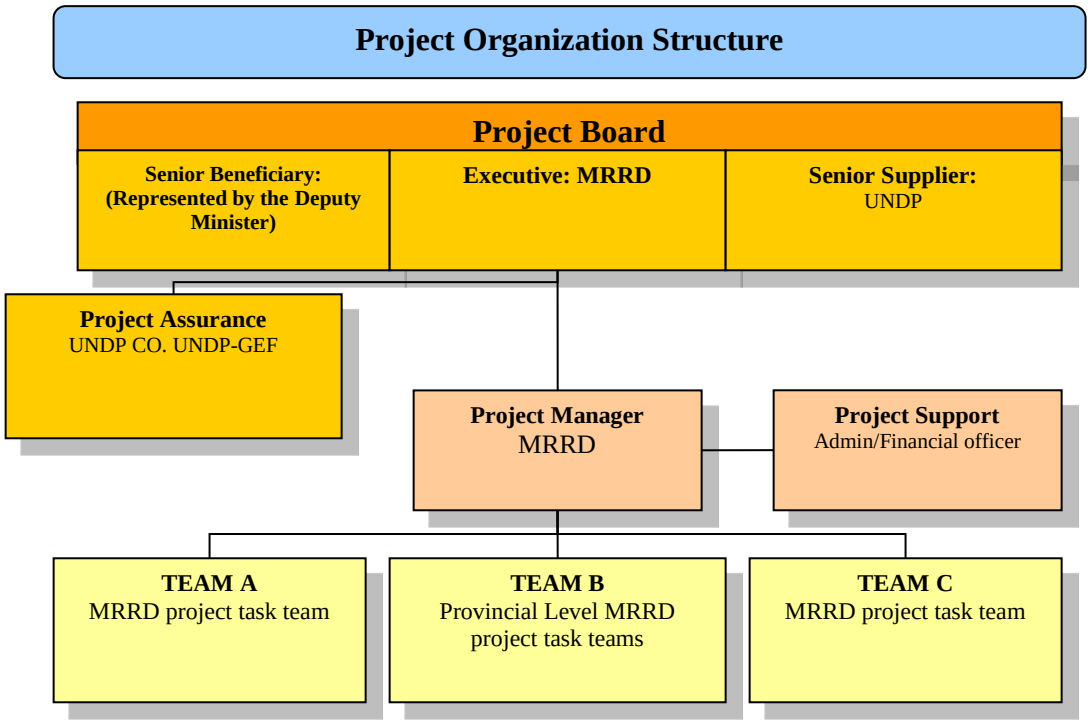


Figure 8: Proposed Project Operational Structure

293. A Project Board (PB) will be established to provide direction to the IP comprising of national and sub-national representatives. The PB will be chaired by the MAIL. The PB will convene quarterly to discuss project progress and approve annual work plans. The PB will comprise MAIL, NEPA,

MRRD, UNDP, Provincial representatives of MAIL and MRRD, Kabul University. Additionally, other representatives from relevant Ministries may be represented on the Project Board: this will be determined at the inaugural meeting of the PB during the project inception period. It is proposed that UNDP will co-chair the PB. The Project Manager will be an ex officio member of PB responsible for taking minutes. Potential members of the Project Board are reviewed and recommended for approval during the Project Appraisal Committee (PAC) meeting. Representatives of other stakeholders can be included in the PB as appropriate.

294. The implementation of projects under Component 2 will be contracted to the respective CDCs in the project areas. They will receive support and advice and be supervised by the MRRD project task teams. The CDCs will be assisted by the MRRD project task teams in subcontracting of external technical expertise, machinery services and purchasing of construction materials. Every project will be monitored and evaluated by the MRRD project task teams and after successful completion handed over to the CDC for further operation and maintenance. MRRD Task Teams are comprised of

- Project task Team A: District representation. A Project Officer will be based in the target Districts and will be responsible for overseeing and monitoring activities in the District concerned. The District Officer will report to the respective Provincial Manager.
- Provincial level MRRD, task team: The regional level coordination groups lead by provincial managers will ensure effective and succesful implementation of the projects and ensuring active participation of all relevant government agencies and communities at provincial level and will report to project manager. The provincial level group will meet every month till the projects are implemented and thereafter once every three months during the service delivery stage. Regions with a large number of projects and having a critical mass in a province may hold such meetings at the provincial level as well. The MRRD will utilise existing offices of the MRRD at Provincial level in respect of the Districts which are the target of the assistance. These offices will be responsible for design and implementation of the support in the Districts concerned.
- Project task Team C: This team comprises of all operational staff in Kabul and provincial level, will coordinate and manage all operational support for programmatic activities functions as the PMU and lead by the project manager. This team will be responsible for the day-to-day management, administration, coordination and supervision of implementation of the assistance. Based in the MRRD offices in Kabul and provincial level, they will monitor work progress and ensure timely delivery of outputs as per the Annual Work Plans and Results Framework and will also ensure compliance with all applicable regulations, progress reporting and monitoring.

295. The MRRD will involve NEPA through an inter-ministerial agreement directly in those activities under Component 1, where NEPA can provide suitable expertise. These will be activities related to the assessment of climate change impact in the project sites, identification of planning options and capacity development on environmental topics. Furthermore, NEPA will be involved in the monitoring of environmental impact and of the implementation of and compliance with the ESMP:

296. The MRRD will involve MAIL under Component 1 in the assessment and planning process and in Component 2 in the provision of technical assistance in implementation of projects, in particular with regard to the upper catchment activities (MAIL Department for Natural Resources Management) and to on-farm irrigation and crop cultivation practices.

B. Measures for financial and project / programme risk management

297. During the development of this full proposal all major risks have been identified, their significance considered and a plan of monitoring and mitigating them included. Table 7 provides detailed information on the different categories of risks, their level and how they will be managed.

Table 7. Risk identification and management

No.	Type	Risk Description	Level	Mitigation strategy
1	Institutional	Decision-making processes at the national and local levels are slow.	Low	- Project Task Teams will operate directly in the project areas to promote local decision-makers' involvement in the project and keep authorities and decision-makers informed about the development and achievements of the project. - Permanent political and technical support will be provided to the project and its stakeholders by MRRD and other agencies of the Government involved in the project (MAIL, NEPA, MEW where relevant), as well as coordination of actions with the project task teams and provincial and local stakeholders.
2	Institutional	Coordinated efforts with MRRD, MAIL and NEPA at national level and in five provinces might create delays during project implementations.	Medium	- Project Board (Steering Committee) will be structured to have representatives from national ministries and their counterparts from the five provinces to foster coordination. - Foster participation of national and provincial policy and decision-makers in workshops during the project preparation phase and consultation through various meetings and communications about the project's strategy, components, and expected outcomes. - Active participation of national and provincial policy and decision-makers in key moments during the life of the project (approval, inception, implementation, and mid-term and final evaluations).
3	Operational	There might be resistance from some stakeholders in adopting the proposed measures in project areas.	Medium	Component 1 includes a comprehensive expert supported participatory assessment and planning process where community members, CDCs from the target community and from potentially affected communities, district authorities, WUA, IAs and other stakeholders will consider locally important issues related to climate change and adaptation and interventions to be implemented in the respective project sites securing the ownership and acceptance of interventions.
4	Operational	There might be delays in implementation caused by low experience of some CDCs in	Medium	- The target CDCs will under Component 1 undergo an assessment, planning and capacity development process, in the frame of which their ability to implement the planned project activities will be jointly considered with program staff;

		implementing larger projects		- The selection of specific projects will take into consideration the operational capabilities of the respective CDCs - The CDCs will receive technical guidance, advice and supervision by the project task teams and will contract external expertise.
5	Financial	Delays in executing funding at the CDC level.	Low	- The project activities under Component 1 will be designed and paced to ensure their completion within the timeframe of the project. -UNDP and MRRD will provide permanent support for the mobilization of funds, contracting, monitoring, and financial reporting.
6	Financial	MRRD and CDCs are not able to leverage sufficient financial resources for the sustainability of project interventions.	Medium	- In Component 1 the program will strengthen the institutional capacity in the CDCs (and/or IAs) for establishing financial mechanisms for collection of equitable contributions by water users and for accessing additional sources of funding (e.g. conditional loans) for continuous operation and maintenance and future repair or expansion. -UNDP will provide support to the GoIRA in securing and mobilizing future climate change-related financing.
7	Environmental	Climate change may follow scenarios, under which the implemented adaptation approaches are insufficient or ineffective.	Medium	The expert guided participatory assessment and planning process will identify solutions, which address observed impact of ongoing climate change and will be effective and sustainable in the medium term (2050) under projections for the most likely scenarios. This will secure effective adaptation in a reasonable time perspective and in a cost-effective manner. Adaptation to extreme changes, e.g. prolonged drought causing the permanent insufficiency of irrigation water sources will require approaches, which are beyond the technical and financial scope of the proposed program.
8	Environmental	Continued anthropogenic degradation in upper watersheds, as a result of unsustainable land-use practices and/or ineffective irrigation and crop cultivation practices.	Medium	- The program follows a holistic and landscape approach targeting entire irrigation schemes from upper catchments, groundwater aquifers and sources of irrigation water to on-farm practices. - The Component 1 will include a participatory assessment and planning process and capacity development, by which the communities will be made aware of the interrelations within the landscape and develop and institutionalize their own mechanism for preventing unsustainable practices. - Specific activities have been preliminarily designed and will be site-specifically planned to directly and indirectly address anthropogenic

				degradation while generating food security and generation of income in target communities. - The project task teams will involve specialized experts from MAIL and NEPA to take advantage of environmental and land use instruments in place to assure that the objectives sought in the AF proposal are not undermined.
9	Social	Pressures and tensions between upstream and downstream water users	Medium	- Program activities will increase awareness about the impact of climate change on irrigation schemes and landscapes as an interconnected systems and the need to reduce inefficient use of water and to cooperate between upstream and downstream users; - The program will make use of WUA and IA and strengthen their capacity to facilitate the balancing of competing interests, discuss and jointly implement efficient water management.
10	Political	Security situation may deteriorate and Anti-Government Elements may gain partly or full control in project areas	Low	- The project areas have been selected under consideration of current and potential security concerns and risk of AGE gaining power – all project areas in this regard are of low risk, are firmly controlled by the government forces and there is little inclination among the local population towards AGE. - The character of project interventions and the ownership and capacity development of local and community institutions would ensure sustainability of the project results also in the case of temporary or permanent increase of AGE influence .

298. The identified risks are addressed within the frame of the activities under the program components as well as in its implementation mechanisms.

299. A comprehensive risk management strategy will be a core component of project management activities. This is in line with UNDP's stringent risk management approach, which is part of the corporate policy. The UNDP CO provides support to the program team and executing entity for constant and consistent risk monitoring, and the results are tracked and reported in UNDP's internal risk monitoring system. Risks will be entered into the UNDP's Atlas (project management system) and will be systematically monitored as part of the M&E process by UNDP staff carrying out their oversight related tasks. The results are also reported in the yearly evaluation undertaken for each project.

C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund.

300. During the preparation of the full proposal, the project has been assessed and screened against the UNDP's SESP and AF's 15 ESP principles and has been categorized as Category B and Afghanistan EIA regulations Category 2 projects. All stakeholders (including NEPA, MAIL, MEW, district councils, CDCs, and community members) have been consulted to ensure all legal requirements are met. The NEPA will do the screening of each specific intervention based on the

information provided by the project in accordance to the national regulations on environmental impact assessments. In the case that any activities will require an EIA, which is not the case by current knowledge, this would be prepared by the project and reviewed by NEPA.

301. The ESIA/ESMP was developed to ensure due diligence, to avoid causing harm or exacerbating risks or impacts. It describes the procedures to determine: (i) the categorization of the project activity based on potential adverse environmental and social impacts of project activities, and (ii) how potential impacts will be addressed through the selection of appropriate mitigation and management plans.

302. To ensure the environmental and social objectives of the projects are met, the ESMP will be used by the project implementers to structure and control the environmental and social management safeguards that are required to avoid or mitigate adverse effects on the environment and communities. UNDP and the MRRD ensure that the ESMF and its associated plans are complied with through the life of the project as well as post the project and this is part of the O and M Plan. The ESMF also becomes part of any contract that is issued under the project and the IE and UNDP will ensure it is followed.

303. The environmental and social objectives of the ESMP are to:
    a. encourage good management practices through planning, commitment and continuous improvement of environmental practices;
    b. comply with applicable laws, regulations and standards for the protection of the environment;
    c. adopt the best practicable means available to prevent or minimise environmental impact, in particular:
        i. prevent or minimise the pollution of land, air and water;
        ii. prevent or minimise potential adverse impact on river dynamics, environmental flow and water use;
        iii. prevent or minimize the destruction or degradation of vegetation and soil;
        iv. protect native flora, fauna and important ecosystems from additional adverse impact;
    d. identify key environmental and social indicators;
    e. describe monitoring procedures required to identify impacts on the environment;
    f. provide an overview of the obligations of MRRD, UNDP, local partners and contractors in regard to environmental obligations; and
    g. provide a grievance system to manage potential complaints and/or grievances.

304. The ESMP will be updated from time to time by the implementing Project Management Unit (PMU)/contractor in consultation with the UNDP staff and MRRD to incorporate changes in the detailed design phase of the projects.

305. The ESMP will be consulted for each sub-project by the MRRD and UNDP prior to any works being undertaken. The National Environmental Protection Agency (NEPA) will be responsible for the supervision of the ESMP. The UNDP will gain the endorsement of NEPA and will ensure the ESMP is adequate and followed. The PMU will ensure timely remedial actions are taken by the implementer and contractors where necessary. The MRRD will be responsible for the revision or updates of this document during the course of work. It is the responsibility of the person to whom the document is issued to ensure it is updated. The revision or update has to be endorsed by NEPA.

306. The broad physical investments, including the general technical designs and project locations, are known. However, there are implementation details and final detailed designs that will be will be identified during project implementation in the frame of the expert-supported participatory assessment and planning process in Component 1. To ensure that detailed design and

implementation plans do not change risk ratings and to better define the nature and scale of potential impacts and the mitigation measures required in the subsequent ESMPs, secondary screening should be undertaken (this can be done at the appropriate level e.g. task by task or by atoll or by sub-activity).

307. The following process will be used for screening sub-activities and associated elements under Component 2 during project implementation. Any sub-activity and associated elements developed in detail during the the processes under Component 2 should be evaluated according to the screening process described below to determine the potential risk of associated environmental and social impacts, and associated mitigation options. The process consists of the following steps:

i. At the time of preparing Terms of Reference for each sub-activity or associated element, each sub-activity or associated element shall be screened against the 15 AF ESPs and categorized, with a decision made to proceed or modify the proposal and identify relevant safeguards instruments;
ii. Preparation of required safeguards instruments including stakeholder consultations as necessary;
iii. Review of prepared safeguards instruments as per national and AF safeguards policies, additional stakeholder consultations as deemed necessary;
iv. Submit prepared safeguards instruments to UNDP, disclosure of approved instruments locally and on UNDP's website;
v. Implementation – monitoring, reporting and remedial measures as per approved ESMP etc., ongoing consultations and community engagement.

308. As the Executing Entity, MRRD will be responsible for the implementation and compliance with the ESMP via the collaborating partners and contractors. The ESMP will be part of contractual agreements with the CDCs and of any tender documentation.

309. The UNDP and MRRD are accountable for the provision of specialist advice on environmental and social issues to the delivery organisations (e.g. contractors, CDCs and/or NGOs) and for environmental and social monitoring and reporting. The MRRD or its delegate will assess the environmental and social performance of the delivery organisations in charge of implementing activities throughout the project and ensure compliance with the ESMP. More specific elements of the ESMP administration will be identified and determined during the elaboration of the full proposal.

310. The project will comply with the Environmental and Social Policy of the Adaptation Fund as described in Part II: Section J. As the Adaptation Fund-accredited Implementing Agency, UNDP – together with the relevant national partners – will ensure that the project follows the procedures outlined in the Environment and Social Policy of the Fund. This includes, for example, the requirement that all project activities reflect local circumstances and needs and draw upon national actors and capabilities. The proposal has been screened according to the UNDP's Social and Environmental Safeguards Procedure (SESP) to ensure that necessary safeguards are incorporated into the project design. This includes quality assessment and social and environmental safeguards.

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

311. Project level monitoring and evaluation will be undertaken in compliance with standard MIE requirements as agreed with the Adaptation Fund. It is expected to prepare annual Adaptation Fund project performance reports that include the Adaptation Fund results trackers. There will be an independent midterm review and a terminal evaluation to assess progress and lessons learned.

312. The project will be monitored through the following M&E activities. The M&E budget is provided in the table below.

Project start:

313. A Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and programme advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan.

314. The Inception Workshop should address a number of key issues including:

1. Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and UNDP RCU staff vis-à-vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.
2. Based on the project results framework, finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
3. Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
4. Discuss financial reporting procedures and obligations, and arrangements for annual audit.
5. Plan and schedule Project Board meetings. Roles and responsibilities of all project organisation structures should be clarified and meetings planned. The first Project Board meeting should be held within the first 12 months following the inception workshop.

315. An Inception Workshop report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

Quarterly:

316. The following will be undertaken on a quarterly basis:

- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.
- Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS. Risks become critical when the impact and probability are high. Note that for UNDP/AF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).
- Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.
- Other ATLAS logs can be used to monitor issues, lessons learned etc. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

Annually:

317. The project is required to submit a Project Performance Report (PPR) to the donor on an annual basis, one year after the start of project implementation (date of inception workshop) and the last such report should be submitted six months after project completion

318. The PPR completed template should be submitted to the secretariat in English and that all financial figures provided in the template should be in US dollars (USD). There are 8 sections in the template, as follows:

1. Overview
2. Financial information
3. Procurement data
4. Risk assessment
5. Ratings
6. Project indicators
7. Lessons learned
8. Adaptation Fund results tracker

Periodic Monitoring through site visits:

319. UNDP CO and the UNDP RCU will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no later than one month after the visit to the project team and Project Board members.

Mid-term of project cycle

320. The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation. The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; it will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-EEG. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Office Evaluation Resource Center (ERC).

End of Project:

321. An independent Final Terminal Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and AF guidelines. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-EEG.

322. The final Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC).

323. During the last three months, the project team will prepare the Project Final Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

Audit

324. The audit would be performed under the UNDP financial regulations and rules applicable to audit policies on UNDP projects.

Learning and knowledge sharing:

325. Results from the project will be disseminated within and beyond the project intervention zones through existing information sharing networks and forums.

326. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyse and share lessons learned that might be beneficial in the design and implementation of similar future projects.

327. Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

Communications and visibility requirements:

328. The AF logo should appear on all relevant publications of the Project, included within other logos, project equipment and other acquisitions with AF funds. Any citation in publications regarding projects funded by the AF should give recognition to the AF. The logos of the implementing agencies and enforcement agencies will also appear on all publications. Full compliance is required with UNDP's Branding Guidelines. These can be accessed at http://intra.undp.org/coa/branding.shtml, and specific guidelines on UNDP logo use can be accessed at: http://intra.undp.org/branding/useOfLogo.html.

329. Where other agencies and project partners have provided support through co-financing, their branding policies and requirements should be similarly applied.

Table 8. M&E workplan and budget

Type of M&E activity	Responsible Parties	Budget US$ *Excluding project team staff time*	Time frame
Inception Workshop and Report	▪ Project Manager ▪ UNDP CO, UNDP RTA	Indicative cost: 10,000	Within first two months of project start up
Measurement of Means of Verification of project results.	▪ UNDP RTA/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members.	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for	▪ Oversight by Project Manager ▪ Project team	To be determined as part of the Annual	Annually prior to the annual report and in

Type of M&E activity	Responsible Parties	Budget US$ *Excluding project team staff time*	Time frame
Project Progress on *output and implementation*		Work Plan's preparation.	accordance with the definition of annual work plans
Annual reports (PPR)	▪ Project manager and team ▪ UNDP CO ▪ UNDP RTA ▪ UNDP EEG	None	Annually, after inception workshop
Periodic status/ progress reports	▪ Project manager and team	None	Quarterly
Mid-term External Evaluation	▪ Project manager and team ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost: 35,000	At the mid-point of project implementation.
Final External Evaluation	▪ Project manager and team, ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost: 40,000	At least three months before the end of project implementation
Project Final Report	▪ Project manager and team ▪ UNDP CO ▪ local consultant	0	At least three months before the end of the project
Audit	▪ UNDP CO ▪ Project manager and team	Indicative cost per year: 5,000	Yearly
Visits to field sites	▪ UNDP CO ▪ UNDP RCU (as appropriate) ▪ Government representatives	For AF supported projects, paid from IA fees and operational budget	Yearly
TOTAL indicative COST Excluding project team staff time and UNDP staff and travel expenses		US$ 105,000 (+/- 5% of total budget)	

E. Provide a results framework for the project proposal, including milestones, targets and indicators.

	Indicators	Baseline	End of project targets	Means of verification	Risks and assumptions
Objectives of the Program Increased resilience to climate change impact of the livelihoods of rural communities depending on irrigated arable farming by ensuring the supply of irrigation water under changing climate conditions.	Number of households, which have secured or improved livelihoods in number of community and inter-village irrigation schemes, where by 2022 yields from irrigated agriculture are in accordance to optimal irrigation water supply.	All households in all target villages with insecure and declining agricultural livelihoods due to climate change impact and resulting unreliable and declining yields.	13,620 households in at least 50 community and inter-village irrigation schemes.	Baseline survey Assessment reports Social survey	A: Climate change dynamics do not exceed current projections and adaptation potentials R:Security issues may locally affect the effective implementation and further operation and maintenance of rehabilitated systems
Outcome 1 Strengthened individual and institutional capacity of rural communities to assess, plan, maintain and use climate change resilient irrigation infrastructure	1.1 Number of villages, for which by end of 2019 assessments covering climate change related risks, current conditions of and water availability for irrigation systems are available.	No assessments of climate change related risks, current conditions of and water availability for irrigation systems are available	Assessments for least 50 villages or inter-village irrigation schemes available.	Assessment (CRVA) reports prepared by the project team	A: In all target villages CDCs and traditional community decision making systems and social cohesion are functional A: Target villages under firm control by the government
	1.2 Number of community or inter-village irrigation schemes, for which by March 2020 in plans for climate change resilient rehabilitation of irrigation systems are available.	No plans for climate change resilient rehabilitation of irrigation systems are available; current plans do not address climate change.	Plans for climate change resilient rehabilitation available for least 50 villages or inter-village irrigation schemes available.	Catchment and irrigation system climate change resilient rehabilitation plans	
	1.3 Number of villages or inter-village irrigation schemes, for which by end 2021 mechanisms for climate change resilient irrigation system	Institutions for irrigation system maintenance and irrigation water management exist in estimated 50% of the villages, but are not capable of addressing climate change	50 villages or inter-village irrigation schemes with institutionalized mechanisms that allow for climate change resilient operation and maintenance of the systems and	Baseline surveys Technical survey checklists and reports	

	maintenance and irrigation water management have been institutionalized.	related issues and securing operation and maintenance of the systems and distribution of water.	effective and equitable distribution of water.	Satisfaction survey	
Outcome 2 Irrigation schemes at community level rehabilitated and made climate change resilient	2.1 Number of upper catchments, in which by 2021 effective measures are implemented and physical structures installed, which increase groundwater recharge and reduce water losses, erosion and floods caused by excessive surface run-off.	No targeted upper catchment management in any of the villages in place for addressing climate change related problems of water management.	30 upper catchments, out of these 5 upper catchments with larger physical measures.	Baseline surveys Technical survey checklists and reports	R: Conflicting use interests and short-term gains from unsustainable upper catchment use may impede effective measures. A: Communities and households ready to deliver own contributions (mainly in-kind in form of volunteer work and locally available materials)
	2.2 Number of village and inter-village irrigation schemes, in which by 2022 irrigation systems, including intake structures, canals, karez and related structures are rehabilitated in a climate change resilient way.	Existing irrigation systems not or not fully functional and affected by climate change impact.	50 villages and inter-village irrigation schemes rehabilitated in a climate change resilient way, including all elements of the respective systems.	Baseline surveys Technical survey checklists and reports	
	2.3 Number of village and inter-village irrigation schemes, where efficient inter- and on-farm water distribution systems are functioning by 2022.	Inter- and on-farm water distribution with substantial losses, inequalities and inefficient water use.	40 villages and inter-village irrigation schemes	Baseline surveys Technical survey checklists and reports Satisfaction survey	A: People with technical skills and authority in local institutions remain in their villages and do not emigrate for better paid jobs.

F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

Project Objective(s)[77]	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Increased resilience to climate change impact of the livelihoods of rural communities depending on irrigated arable farming by ensuring the supply of irrigation water under changing climate conditions.	Number of households, which have secured or improved livelihoods in number of community and inter-village irrigation schemes, where by 2022 yields from irrigated agriculture are in accordance to optimal irrigation water supply. Target: 10,500 households in at least 50 community and inter-village irrigation schemes.	**Outcome 3:** Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level **Outcome 4:** Increased adaptive capacity within relevant development and natural resource sectors **Outcome 6:** Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	**3.1.** Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses **4.1.** Physical infrastructure improved to withstand climate change and variability-induced stress **4.2.** Physical infrastructure improved to withstand climate change and variability-induced stress **6.1.** Percentage of households and communities having more secure (increased) access to livelihood assets.	8,693,600
Project Outcome(s)	**Project Outcome Indicator(s)**	**Fund Output**	**Fund Output Indicator**	**Grant Amount (USD)**
Strengthened individual and institutional capacity of rural communities	**Indicator target 1.1:** Number of villages, for which by end of 2019 assessments covering climate change related	Output 3: Targeted population groups participating in adaptation and risk reduction awareness activities	3.1.2 No. of news outlets in the local press and media that have covered the topic	1,906,023

[77] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

to assess, plan, maintain and use climate change resilient irrigation infrastructure	risks, current conditions of and water availability for irrigation systems are available. Target value: 50 villages or inter-village irrigation schemes. **Indicator target 1.2:** Number of community or inter-village irrigation schemes, for which by March 2020 plans for rehabilitation and climate proofing of irrigation systems are available. Target value: 50 villages or inter-village irrigation schemes. **Indicator target 1.3:** Number of villages or inter-village irrigation schemes, for which by end 2021 mechanisms for climate change resilient irrigation system maintenance and irrigation water management have been institutionalized. Target value: 50 villages or inter-village irrigation schemes.			
Irrigation schemes at community level rehabilitated and made climate change resilient	**Indicator target 2.1:** Number of upper catchments in which by 2022 effective measures (e.g. grazing management, reforestation) are implemented and physical structures installed, which increase groundwater recharge and reduce water losses, erosion	Output 4: Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability Output 6: Targeted individual and community livelihood	4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types) 6.1.1.No. and type of adaptation assets (physical as well as	6,004,200

	and floods caused by excessive surface run-off. Target value: 30 upper catchments, out of these 5 upper catchments with larger physical measures. **Indicator target 2.2:** Number of village and inter-village irrigation schemes, in which by 2022 irrigation systems, including intake structures, canals, karez and related structures are rehabilitated in a climate change resilient way. Target value: 50 villages and inter-village irrigation schemes. **Indicator target 2.3:** Number of village and inter-village irrigation schemes, where efficient inter- and on-farm water distribution systems are functioning by 2022. Target value: 40 villages and inter-village irrigation schemes.	strategies strengthened in relation to climate change impacts, including variability	knowledge) created in support of individual- or community-livelihood strategies	

G. Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

Award ID:	TBA				**Project ID:**	TBA					
Award Title:	Climate change resilient livelihoods advanced in rural Afghanistan (UNDP PIMS 6340)										
Business Unit:	AFG 10										
Project Title:	Climate change resilient livelihoods advanced in rural Afghanistan										
PIMS no.	6340										
Implementing Partner (Executing Entity)	Ministry of Rural Rehabilitation and Development (MRRD)										
Components	**Responsible Party / Imple-menting Agency**	**Fund ID**	**Donor Name**	**Atlas Budgetary Account Code**	**ATLAS Budget Description**	**Amount Year 1 (USD)**	**Amount Year 2 (USD)**	**Amount Year 3 (USD)**	**Amount Year 4 (USD)**	**Total (USD)**	**Budget Note**
Component 1: Strengthened individual and institutional capacity of rural communities to assess, plan, maintain and use climate change adapted irrigation infrastructure.	MRRD	62040	AF	71200	International consultants	11,000	11,850	11,000	11,000	44,850	A4
				71300	Local consultants	255,000	320,000	320,000	196,600	1,091,600	A1, A5, A8, A13
				71500	UN Volunteers	30,000	30,000	30,000	30,000	120,000	A9, A14
				71600	Travel	6,000	5,000	5,000	3,000	19,000	A10, A15
				72100	Contractual services - Companies	80,000	100,000	100,000	80,000	360,000	A16
				72300	Material & goods	6,100	7,273	6,100	6,100	25,573	A17
				74500	Miscellaneous Expenses	6,000	6,000	6,000	6,000	24,000	A6, A11
				75700	Training, Workshops and Conferences	50,000	58,000	59,000	50,000	217,000	A3, A7, A12
				72500	Supplies	1,000	1,000	1,000	1,000	4,000	A2
				Sub-total Component 1		**445,100**	**539,123**	**538,100**	**383,700**	**1,906,023**	

Component 2: Irrigation schemes systems at community level rehabilitated and climate change resilient.	MRRD	62040	AF	71300	Local consultants	39,100	49,000	49,000	38,100	175,200	B1, B3, B5, B8
				71600	Travel	5,000	5,000	5,000	4,000	19,000	B7
				72100	Contractual services - Companies	1,200,000	2,400,000	1,500,000	700,000	5,800,000	B2, B4, B6, B9
				72300	Material & goods	2,500	2,500	2,500	2,500	10,000	B10
				Sub-total Component 2		**1,246,600**	**2,456,500**	**1,556,500**	**744,600**	**6,004,200**	
PROJECT EXECUTION COST	DoE	62040	AF	71200	International consultants		30,000		35,000	65,000	PM1
				71300	Local consultants		4,500		5,500	10,000	PM2
				71400	Contractual Services - Individuals	19,200	19,200	19,200	19,200	76,800	PM3
				71600	Travel	3,000	3,000	3,000	3,000	12,000	PM4
				71800	Contractual Services-Imp Partn	62,850	62,850	62,850	62,850	251,400	PM5
				72100	Contractual services - Companies	-	10,000	-	15,000	25,000	PM6
				72200	Equipment and furniture	50,000	20,000	20,000	20,000	110,000	PM7
				72400	Communications	1,250	1,250	1,250	1,250	5,000	PM8
				72500	Supplies	1,000	1,000	1,000	1,000	4,000	PM9
				72800	IT Equipment	11,000	6,000	4,000	4,000	25,000	PM10
				74100	Professional services (Audit)	5,000	5,000	5,000	5,000	20,000	PM11
				74200	Audiovisual & Print Production Costs	4,800	4,800	4,800	4,800	19,200	PM12

				74500	Miscellaneous Expenses	5,000	5,000	4,977	4,600	19,577	PM13
				74596	Service to Project - GOE	29,386	35,325	32,844	32,845	130,400	PM14
				75700	Training, Workshops and Conferences	2,500	2,500	2,500	2,500	10,000	PM15
				Sub-total Project Execution cost		**194,986**	**210,425**	**161,421**	**216,545**	**783,377**	
TOTAL PROGRAMME COST						**1,886,686**	**3,206,048**	**2,256,021**	**1,344,845**	**8,693,600**	

Budget Notes

Note	Outcomes/Outputs	ATLAS Number	ATLAS Budget Description	Original budget for 4 year Total (USD)	Description of Expenditures
Component 1: Strengthened individual and institutional capacity of rural communities to assess, plan, maintain and use climate change resilient irrigation infrastructure					
A1	Output 1.1 Participatory assessment of irrigation systems and the climate related risks conducted	71300	Local consultants	332,800	4 National consultants to develop and undertake analyses of the conditions of climate related risks towards irrigation systems @ $160 per day/person for 130 days per year for 4 years.
A2		72500	Supplies	4,000	Materials related to the participatory assessment and planning process with the local communities.
A3		75700	Training, Workshops and Conferences	100,000	Training and workshop cost about the conditions of climate related risks towards irrigation systems for the communities and institutes, 5 workshops per year@$5,000/workshop. Total cost $100,000.
		Total Output 1.1		**436,800**	
A4	Output 1.2 Plans for rehabilitation and climate proofing of existing irrigation systems are prepared	71200	International consultants	44,850	International Climate Change expert to lead the development and undertaking analyses of the conditions of climate related risks towards irrigation systems and to formulate climate-proofing irrigation systems @ $345/day for total of 130 days for 2 years.
A5		71300	Local consultants	226,000	4 National consultants to formulate climate-proofing irrigation systems @ $125 per day/person for 113 days per year for 4 years.

A6		74500	Miscellaneous Expenses	12,000	Miscellaneous costs associated with the development, maintenance and communication of all climate proofed agriculture activities.
A7		75700	Training, Workshops and Conferences	86,800	Training and workshop cost on how to formulate climate-proofing irrigation systems, 7 workshops per year@$3,100/workshop. Total cost $86,800.
			Total Output 1.2	**369,650**	
A8	Output 1.3 Institutional and technical capacity at community level to maintain and operate rehabilitated climate resilient irrigation systems	71300	Local consultants	332,800	4 National consultants to develop and undertake analyses of the conditions of climate related risks towards irrigation systems @ $160 per day/person for 130 days per year for 4 years.
A9		71500	UN Volunteers	60,000	UN Volunteer to support developing a monitoring plan and communication reports of institutional and technical capacity events/workshops at community level to maintain rehabilitated and climate proofed irrigation systems.
A10		71600	Travel	9,500	Travel cost for local consultants to pay quarterly visits to project target villages to ground truth the local community monitoring platform.
A11		74500	Miscellaneous Expenses	12,000	Miscellaneous costs associated with the development, maintenance and communication of all climate-proofed agriculture activities.
A12		75700	Training, Workshops and Conferences	30,200	Trainings/workshops to build capacity of the government officials on having a systematic approach in terms of maintaining the irrigation infrastructures.
			Total Output 1.3	**444,500**	
A13	Output 1.4: Institutional and technical capacity at community level for efficient management of irrigation water	71300	Local consultants	200,000	4 National consultants to formulate climate-proofing irrigation systems @ $125 per day/person for 100 days per year for 4 years.
A14		71500	UN Volunteers	60,000	UN Volunteer to support developing a monitoring plan and reports on Institutional and technical capacity events at community level for efficient management of use of the water.
A15		71600	Travel	9,500	Travel cost for local consultants for quarterly visits to project target villages to ground truth the local community monitoring platform.
A16		72100	Contractual services - Companies	360,000	Contract with consulting firms to develop the material for awareness raising in the entire community about the limitations and expected trends of irrigation water availability, how irrigation water distribution can account for priorities and the need for efficient water use, including deliver trainings to the communities in the remote areas. In schemes where irrigation water is also used for household needs, particularly for drinking water, local people will be made aware about water quality, its maintenance, health risks and how to address.

A17		72300	Material & goods	25,573	Purchase of materials and goods to support the awareness raising of the institutions and communities on the impacts of climate change on irrigated farming and maintenance of improved irrigation infrastructure.
			Total Output 1.4	**655,073**	
			Total Component 1	**1,906,023**	
Component 2: Irrigation schemes at community level rehabilitated and made climate change resilient					
B1	Output 2.1 Rainwater harvesting and surface run-off capturing structures for water collection and groundwater recharge.	71300	Local consultants	84,480.00	2 National experts for technical engineering design of the rainwater harvesting and surface run-off capturing structures for water collection and groundwater recharge @ $120 per day/person for 88 days per year for 4 years.
B2		72100	Contractual services - Companies	340,000	Contract companies and community development councils to undertake all the construction and rehabilitation work of water harvesting system in 5 villages with different scale and cost (village1, $110,000, Village 2, $90,000, Village 3, $40,000, Village 4, $70,000, Village 5, $30,000)
			Total Output 2.1	**424,480**	
B3	Output 2.2 Water intake structures of canal and *karez* systems rehabilitated and climate proofed.	71300	Local consultants	30,240	1 National expert to do technical engineering design of the rainwater harvesting and surface run-off capturing structures for water collection and groundwater recharge @ $120 per day/person for 63 days per year for 4 years
B4		72100	Contractual services - Companies	1,442,900	Contract companies and community development councils to undertake all the construction and rehabilitation work of Water intake structures of canal and karez systems rehabilitated and climate proofed in 16 villages
			Total Output 2.2	**1,473,140**	
B5	Output 2.3 Rehabilitation of water delivery canals and *karez*, lining for reduction of seepage losses	71300	Local consultants	30,240	1 National expert for rehabilitation engineering plan of canals and Karez systems @ $120 per day/person for 63 days per year for 4 years
B6		72100	Contractual services - Companies	1,352,700	Contract companies and community development councils to undertake work of rehabilitation of water delivery canals and karez, lining for reduction of seepage losses in 15 villages

B7		71600	Travel	19,000	Travel cost for local consultants to pay quarterly visits to project target sites to monitor the construction and rehabilitation work
			Total Output 2.3	**1,401,940**	
B8	Output 2.4 Rehabilitated and/or newly installed efficient farm water distribution systems	71300	Local consultants	30,240	1 National consultant to develop engineering design of efficient inter and on farm water distribution systems @ $120 per day/person for 63 days per year for 4 years
B9		72100	Contractual services - Companies	2,664,400	Contract companies and community development councils to undertake work of Rehabilitation and/or installation of efficient inter- and on-farm water distribution systems in 23 villages
B10		72300	Material & goods	10,000	Engineering and other related materials and goods to support activities (Total station, GPS, Generator, Cameras)
			Total Output 2.4	**2,704,640**	
			Total Component 2	**6,004,200**	
Project Execution Cost					
PM1	Project Execution Cost	71200	International consultants	65,000	International experts to conduct Midterm and Final Evalution
PM2		71300	Local consultants	10,000	National consultant to conduct MTR and TE
PM3		71400	Contractual Services - Individuals	76,800	Recruitment of Project Management staffs under UNDP contracts (Finance Associate, $12,000/year for 4 years; Driver, $7,200/year for 4 years)
PM4		71600	Travel	12,000	Travel cost for Project Management Unit
PM5		71800	Contractual Services-Imp Partn	251,400	Recruitment of Project Management staffs under IP contracts (National Project Manager; $25,650/year for 4 years; HR assistant, $6,000//year for 4 years; Procurement assistant, $8,400/year for 4 years; M&E Associate, $6,000/year for 4 years, IT assistant, $8,400/year for 4 years; Admin assistant, $8,400/year for 4 years;)
PM6		72100	Contractual services - Companies	25,000	Contractual Service to support communication (Website development and Maintenance $15,000, development of MIS system $10,000)
PM7		72200	Equipment and furniture	110,000	Office Equipment & Furniture (Chairs, tables, water dispenser, office cleaning material, fire distinguisher, antiblast film for windows, etc.)

PM8		72400	Communications	5,000	Communications materials
PM9		72500	Supplies	4,000	Office Supplies
PM10		72800	IT Equipment	25,000	Computers, printer and other IT equipments for the Project Management Unit
PM11		74100	Professional services	20,000	Annual audit fee
PM12		74200	Audiovisual & Print Production Costs	19,200	Print and Publications (Brochures, Banners and other promotion materials)
PM13		74500	Miscellaneous Expenses	19,577	Miscellaneous cost
PM14		74596	Service to Project - GOE	130,400	Costs of providing support services to the project, including financial management/payment process, HR services, Procurement services, and travel & general services.
PM15		75700	Training, Workshops and Conferences	10,000	Project Inception workshop; Steering committee meeting and TAC meeting
Total Project Execution Cost				**783,377**	
Total Project/Programme cost				**8,693,600**	

H. Include a disbursement schedule with time-bound milestones.

	Upon signature of Agreement	One Year after Project Start	Year 2	Year 3	Total
Scheduled date	April-20	April-21	April-22	April-23	
Project Funds	1,886,686	3,206,048	2,256,021	1,344,845	8,693,600
Implementing Entity Fees	391,803	163,509	115,057	68,587	738,956
Total	**2,278,489**	**3,369,557**	**2,371,078**	**1,413,432**	**9,432,556**

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government[78]

Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:

Mr. Ezatullah Sediqi *Deputy Director – General (Technical Affairs)* *National Environmental Protection Agency (NEPA)*	Date:. *19 December 2018*

B. Implementing Entity certification

Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address

6. Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.

Pradeep Kurukulasuriya
Director and Executive Coordinator- Environmental Finance &
Global Head- Environment, Climate Change and Energy
United Nations Development Programme
Implementing Entity Coordinator

Date: 19 Jan 2020

Tel. and email: Tel: +1-917-498-7221
pradeep.kurukulasuriya@undp.org

Project Contact Person: Benjamin Larroquette

Tel. and Email: benjamin.larroquette@undp.org

Annex 7: Social and Environmental Screening Template[1]

The completed template, which constitutes the Social and Environmental Screening Report, must be included as an annex to the Project Document. Please refer to the Social and Environmental Screening Procedure and Toolkit for guidance on how to answer the 6 questions.

Project Information

Project Information	
1. Project Title	Strengthening the resilience and increasing livelihood opportunities of rural Afghan communities
2. Project Number	UNDP PIMS ID 6340
3. Location (Global/Region/Country)	South Asia/Afghanistan/Multiple Provinces

Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?
Briefly describe in the space below how the Project mainstreams the human-rights based approach
UNDP's application of the Human Rights Based Approach and its emphasis on gender equality in development programming will ground the implementation of the proposed program on these important development principles. Accordingly, the project will implement measures that increase the accessibility of services for marginalized groups. For instance, it builds into its beneficiary selection criteria preferences for women-headed households, IDPs, returning refugees and other vulnerable population. The design of these measures during detailed participatory planning at project sites will also consider the special needs of these marginalized groups. In order to achieve this, the program will conduct surveys and interviews to understand the challenges marginalized groups face and discover the best ways to overcome them together with the beneficiaries. Moreover, the program will work closely with the Ministry of Women Affairs, MRRD's department for *Kuchi*, and civil society organizations that target marginalized individuals to benefit from their expertise and maximize the impacts of its results. In addition, the program will carry out regular site visits and monitoring and evaluation activities to ensure there are adequate opportunities for community members to provide their feedback, including any concerns about the project. The program will also stay in regular contact with the CDCs and local governments so that any complaints can be channelled back to the program timely and be addressed immediately.
Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment
Preliminary climate change assessments predict GDP losses of as much as 6% per year based on current climate projections (NAPA). Reductions of this order of magnitude would substantially undermine the Government's ability to invest in the nation's development, increasing the responsibility for adaptation on society as a whole. As explained above, the rural population will be affected most, but urban populations will be affected indirectly. In such a situation, it will be the poorest communities who will be the least able to adapt. Amongst these groups, it is recognized that women are the most vulnerable. Afghanistan's Policy on Women acknowledges that women have lacked the opportunities provided to men and as a result they fall behind men in all fields of self-advancement. Climate change will affect the socially constructed gender roles between men and women and may undercut efforts to build more equitable access to development. These role dynamics will likely need to evolve to enable men and women to improve their responsive and adaptive capacity. If under climate change-induced stress, institutional structures place unequal emphasis on responding to the needs of men and women, they risk weakening the adaptive capacity of one group over another. The project aims to build community self-reliance; so that dependence on the state for adaptation resources is reduced as communities themselves – both men and women – tailor adaptation technologies and techniques to their own needs. The project will aim to directly improve adaptation capacity of approximately 100,000 people from approximately 11,300 households in 58 communities spread over five provinces. Generally, 50 percent of the target beneficiary population (51,542) will be women and estimated 50 percent youth (including young women). Different categories of vulnerable and or marginalized beneficiaries (people with disabilities, female headed households and IDP households) will be targeted, making up about 4% of the target population.

[1] This SEST has been modified from the SEST provided with the Program Concept in the frame of Full Proposal development based on available information on project sites and proposed interventions.

Sustained and increased availability of water is key to social development. Improved access to irrigation water specifically supports the livelihoods of women and children through improved food security and quality, e.g. by the opportunity to grow fruits and vegetables on household plots. It is also linked to access to clean household and drinking water from springs, wells and *karez*, which will alleviate adverse health effects and allow for the reallocation of time dedicated to fetching water towards engaging in other activities including education. The reduction in time spent collecting water can improve the participation of youths (especially girls) in school, thus improving the level of education in the target communities.
Briefly describe in the space below how the Project mainstreams environmental sustainability
The project is integrated with the country's agricultural development and climate change adaptation policies and is supported by the key ministries responsible for rural development, agriculture and irrigation management, and environmental protection. Adaptation to climate change impact on irrigated agriculture and rural livelihoods have featured prominently in national development plans and the strong support from all the ministries (agriculture and irrigation, rural development, environmental protection) involved ensures that the project enjoys strong political support – a critical enabler for development efforts. The project will assist rural communities of five provinces in capacity building for adaptation to climate change and in rehabilitating and making climate proof their irrigation systems from upper catchment areas to on-farm water use efficiency. Improved management of upper catchment areas with application of rainwater harvesting techniques will foster the recharging of groundwater aquifers, reduce surface runoff and resulting erosion and flood events, thus contributing to the ecosystem resilience, reduced disaster risk and adaptation to climate change impacts like drought, unreliable and shifting precipitation patterns, reduced snow cover and shrinking glaciers.

Part B. Identifying and Managing Social and Environmental Risks

QUESTION 2: What are the Potential Social and Environmental Risks? *Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any "Yes" responses). If no risks have been identified in Attachment 1 then note "No Risks Identified" and skip to Question 4 and Select "Low Risk". Questions 5 and 6 not required for Low Risk Projects.*	**QUESTION 3: What is the level of significance of the potential social and environmental risks?** *Note: Respond to Questions 4 and 5 below before proceeding to Question 6*			**QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?**
Risk Description	***Impact and Probability (1-5)***	***Significance*** ***(Low, Moderate, High)***	***Comments***	***Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.***
Where, despite project implementation, shortage of irrigation water and/or irrigated lands persist, conflict is possible about access to irrigation water and/or to newly irrigated or rehabilitated land. There might also be conflict where in the case of upper catchment interventions the local community may restrict open access to grazing lands. (Checklist question 8 on Principle 1)	I = 1 P = 1	Low	Power structures within communities only in a limited extend can be influenced in the frame of such a program. Open access situations and unclear resource governance are commonly reasons for the degradation of ecosystems, resources and result in land and resources degradation. Upper catchment interventions may require the	To be considered and addressed in the frame of participatory assessment and planning process and in the frame of institutional capacity development on water use.

			regulation of use in such areas by the local CDCs.	
Physical works under the project construction may pose potential risks and vulnerabilities related to occupational health and safety due to physical hazards. (Checklist question 3.7 on Principle 3)	I = 1 P = 1	Low	Any physical works using machinery, construction materials and working in difficult accessible locations, like inside of karez bear certain risks.	The issue is addressed and the risks are minimized by selection and effective use of appropriate mechanical equipment and personal protective gear, work procedures, training, and awareness creation/sensitization.
Modification or conversion of habitats due to upper catchment management and irrigation, reduction of trees, shrubs, forbs along irrigation canals and at captured springs (Checklist questions 1.1, on Principle 3)	I = 1 P = 3	Low	These activities will target heavily degraded areas only and lead to a general improvement of the biodiversity, ecosystem functions and services as well as productivity. However, their impact on the currently existing ecosystems has to be considered, as these will be transformed and their biodiversity and ecosystem functions and services will unavoidably change.	The issue has been considered and addressed during the full project development in ESMP. It will further be addressed area-specific during implementation in the frame of participatory assessment and planning process. All related activities will be planned in a way that the benefits from overall ecosystem improvements will exceed any possible local habitat losses.
Rehabilitated and climate change resilient irrigation systems or reforested sites as well as livelihood related physical structures can be damaged or destroyed by natural disasters. Such destruction would likely be local and reversible. Despite precautionary planning extreme drought can affect the functioning of irrigation infrastructure under the project. Although the project aims at reducing risk for likelihoods and increasing the resilience of infrastructure climate change may in the long term exacerbate these risks. (Checklist questions 2.2, 3.5 on Principle 3)	I = 3 P = 5	Moderate	The project's objective is to increase the resilience of the irrigation systems, including their upper catchment areas towards the impact of climate changes. The severity of these impacts and thus the adaptation potential will depend on not fully predictable trends in GHG emissions and climate change.	In the frame of participatory assessment and planning process Climate Risk and Vulnerability Assessments will be integrated and for each site and proposed intervention the adaptation potential will be assessed for different scenarios and predicted climate change trends.
Traditional irrigation systems, in particular *karez* will be revitalized. Potentially water use from springs of traditional cultural, spiritual and religious importance. (Checklist questions 4.1, 4.2 on Principle 3)	I = 2 P = 3	Moderate	The impact of revitalizing irrigation systems in the sense of "living heritage" is considered positive. However, the program has to avoid that authentically preserved irrigation systems, in particular karez of historical value, lose their authenticity because of "modernizing" in terms of losing original substance and erected new structures and used materials.	To be considered and addressed in the frame of participatory assessment and planning process. In case of possible impact on sites of recognize or not recognized national or international importance assessment and planning with involvement of the responsible department in the Ministry of Information and Culture of Afghanistan.
The project during construction can result in the release of pollutants from construction machinery to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts. The project may	I = 1 P = 3	Low	The proposed project will only in a very limited extent during construction works cause minor pollution and require	Pollution will be minimized by applying the legal environmental standards of Afghanistan and using the cleanest available technologies and machineries. Resources for construction will be used as efficient as possible and remnants

during construction and operation potentially result in the generation of waste (non-hazardous and hazardous (mainly lubricants and batteries from machinery). No use of chemicals or materials subject to international bans or phase-outs is proposed or expected. (Checklist questions 7.1, 7.2 and 7.3 on Principle 7)			resources in form of construction materials.	will be removed and recycled. All potentially hazardous waste from machinery will be properly collected and safely disposed.

	QUESTION 4: What is the overall Project risk categorization?		
	Select one (see SESP for guidance)		**Comments**
	Low Risk	☐	
	Moderate Risk	☑	**If the appropriate mitigation measures are put in place during the project, the project will have an extremely low environmental and social risk over the life of the project.**
	High Risk	☐	
	QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?		
	Check all that apply		**Comments**
	Principle 1: Human Rights	☑	The proposed project does not impact human rights. There might be a low risk of conflict about access to irrigation water and/or to newly irrigated or rehabilitated land, which will be addressed through the facilitation of community level participatory planning and setting of clear requirements for the prevention of discrimination of poor, disadvantaged and minority groups.
	Principle 2: Gender Equality and Women's Empowerment	☐	
	1. Biodiversity Conservation and Natural Resource Management	☑	There might be localized transformation of existing biodiversity and ecosystems, which will be outweighed by the positive impact of the project on biodiversity and ecosystems.
	2. Climate Change Mitigation and Adaptation	☑	The project contributes to climate change adaptation and does not cause any additional emission of greenhouse gases.
	3. Community Health, Safety and Working Conditions	☑	The project positively impacts on community health by improving water supply and local microclimate. Safety and working conditions are addressed during

			construction, rehabilitation and operation of irrigation systems, in particular regarding the *karez* systems.
	4. Cultural Heritage	☑	No cultural heritage will be adversely affected by the project. The revitalization of *karez* systems contributes to their preservation as cultural heritage.
	5. Displacement and Resettlement	☐	The proposed project does neither directly nor indirectly cause displacement and resettlement.
	6. Indigenous Peoples	☐	There are no indigenous people in any of the project areas.
	7. Pollution Prevention and Resource Efficiency	☑	The proposed project will only in a very limited extent during construction works cause minor pollution and require resources in form of construction materials. Pollution will be minimized by applying the legal environmental standards of Afghanistan and using the cleanest available technologies and machineries. Resources for construction will be used as efficient as possible. The project will result in an increased efficiency of use of land and water resources.

Final Sign Off

Signature	***Date***	***Description***
QA Assessor		UNDP staff member responsible for the Project, typically a UNDP Programme Officer. Final signature confirms they have "checked" to ensure that the SESP is adequately conducted.
QA Approver		UNDP senior manager, typically the UNDP Deputy Country Director (DCD), Country Director (CD), Deputy Resident Representative (DRR), or Resident Representative (RR). The QA Approver cannot also be the QA Assessor. Final signature confirms they have "cleared" the SESP prior to submittal to the PAC.
PAC Chair		UNDP chair of the PAC. In some cases PAC Chair may also be the QA Approver. Final signature confirms that the SESP was considered as part of the project appraisal and considered in recommendations of the PAC.

SESP Attachment 1. Social and Environmental Risk Screening Checklist

Checklist Potential Social and Environmental Risks		
Principles 1: Human Rights		**Answer (Yes/No)**
1.	Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	No
2.	Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups? [2]	No
3.	Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	Yes
4.	Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	No
5.	Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	No
6.	Is there a risk that rights-holders do not have the capacity to claim their rights?	No
7.	Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	No
8.	Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	Yes
Principle 2: Gender Equality and Women's Empowerment		
1.	Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	No
2.	Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	No
3.	Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	No
4.	Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? *For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being*	No
Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below		
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management		
1.1	Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? *For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes*	Yes
1.2	Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	No
1.3	Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	No
1.4	Would Project activities pose risks to endangered species?	No
1.5	Would the Project pose a risk of introducing invasive alien species?	No
1.6	Does the Project involve harvesting of natural forests, plantation development, or reforestation?	No

[2] Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

1.7	Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	No
1.8	Does the Project involve significant extraction, diversion or containment of surface or ground water? *For example, construction of dams, reservoirs, river basin developments, groundwater extraction*	No
1.9	Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	No
1.10	Would the Project generate potential adverse transboundary or global environmental concerns?	No
1.11	Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area? *For example, a new road through forested lands will generate direct environmental and social impacts (e.g. felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.*	No
Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant[3] greenhouse gas emissions or may exacerbate climate change?	No
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	Yes
2.3	Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)? *For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding*	No
Standard 3: Community Health, Safety and Working Conditions		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	No
3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	No
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No
3.4	Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	No
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	Yes
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	No
3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	Yes
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No
Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? *(Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)*	Yes
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	Yes
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No

[3] In regards to CO_2, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	No
5.3	Is there a risk that the Project would lead to forced evictions?[4]	No
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	No
Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	No
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	No
6.3	Would the proposed Project potentially affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples (regardless of whether indigenous peoples possess the legal titles to such areas, whether the Project is located within or outside of the lands and territories inhabited by the affected peoples, or whether the indigenous peoples are recognized as indigenous peoples by the country in question)? *If the answer to the screening question 6.3 is "yes" the potential risk impacts are considered potentially severe and/or critical and the Project would be categorized as either Moderate or High Risk.*	No
6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	No
6.5	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	No
6.6	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No
6.7	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No
6.8	Would the Project potentially affect the physical and cultural survival of indigenous peoples?	No
6.9	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
Standard 7: Pollution Prevention and Resource Efficiency		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	Yes
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	Yes
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? *For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol*	Yes
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	No
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No

[4] Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

ADAPTATION FUND

ANNEXES DOSSIER:

PROJECT TITLE: **CLIMATE CHANGE RESILIENT LIVELIHOODS ADVANCED IN RURAL AFGHANISTAN**

IMPLEMENTING ENTITY: **UNITED NATIONS DEVELOPMENT PROGRAMME**

AF PROJECT ID: to be inserted **(UNDP PIMS 6340)**

Annexes

Annex 1: Climate and Climate Change Trends, Projections

1. The climate of Afghanistan is mainly arid and continental. Major climatic differences in the country are determined by altitude, mountain ranges acting as barrier to aerial circulation and by the influence of different patterns of atmospheric circulation. These factors all together determine the patterns of precipitation and temperature in the country.

2. Detailed data on the climate patterns in Afghanistan are difficult to obtain. During the years of conflict, recording of meteorological data was interrupted at most stations. Data therefore often have a gap between 1980 and the mid or late 2000s. Furthermore, data recorded at stations in the mountain valley do not properly represent the temperature and precipitation higher up in the mountains. These differences can be highly significant and influence heavily on ecosystems and land-use in mountainous areas.

3. The temporal climate patterns are best presented by climate diagrams. These graphs combine average monthly values of temperature (left y-axis) with precipitation (right y-axis). Temperature is plotted against precipitation with a scale unit of 1°C against a scale unit of 2 mm precipitation. Months during which the rainfall bars are below the temperature scale are considered as relative arid (drought) period.

4. The climate diagrams and characteristics of some project sites are presented in section 1.4.

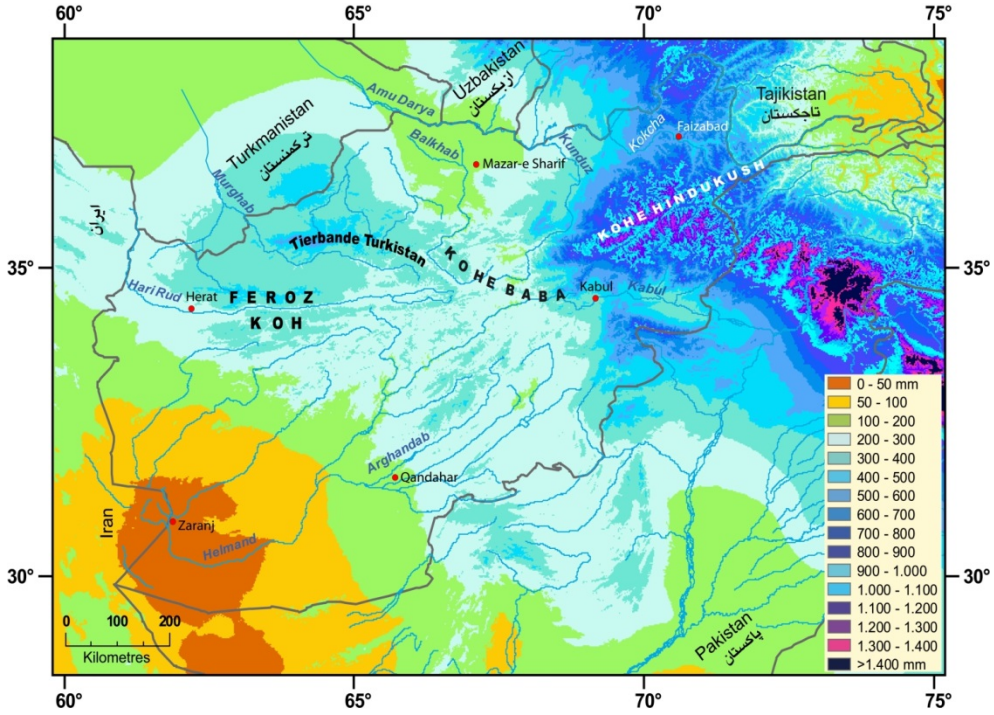


Figure 1 Mean annual rainfall in Afghanistan and adjacent areas (map by Rafiqpoor[1]).

1. Precipitation[2]

5. Most of Afghanistan receives little precipitation. Total annual rainfall varies over the country as can be seen on the map of mean annual rainfall (figure 1). Highest rainfall amounts of up to 1000+ mm per annum are received in the highest mountain regions of Hindukush and Safed Koh in the Northeast and East of the country. The Central plateau and mountains of Koh-e Baba, Tierband-e Turkestan and Feroz Koh receive low to moderate precipitation of 300-500 mm p.a. The lowlands in the North and in the South-east have rainfall of only 100-200 mm or in the country's southwestern Nimroz, Helmand and Farah provinces even less than 50 mm per annum.

6. Precipitation is of very high variability and may be concentrated to just a few days in the rainy season, which may last several months. Rainstorms can yield the whole rainfall of a month within few hours, often causing flash floods, erosion and landslides. So called *sel-ab*, floods with large amounts of mud, gravel and larger stones can be highly destructive and devastate entire valleys. On the other hand, only daily rainfall of more than 5 mm is considered ecologically relevant, because smaller amounts of rain tend to evaporate immediately. Figure 2 shows the percentage of days with >5 mm rain among all rainy days in one year during the period 1972-1974.

[1] Breckle, S.-W. and Rafiqpoor, M.D. (2010). Field Guide Afghanistan – Flora and Vegetation, Bonn, Scientia Bonnensis.

[2] Summarized based on Breckle, S.-W. and Rafiqpoor, M.D. (2010). Field Guide Afghanistan – Flora and Vegetation, Bonn, Scientia Bonnensis.

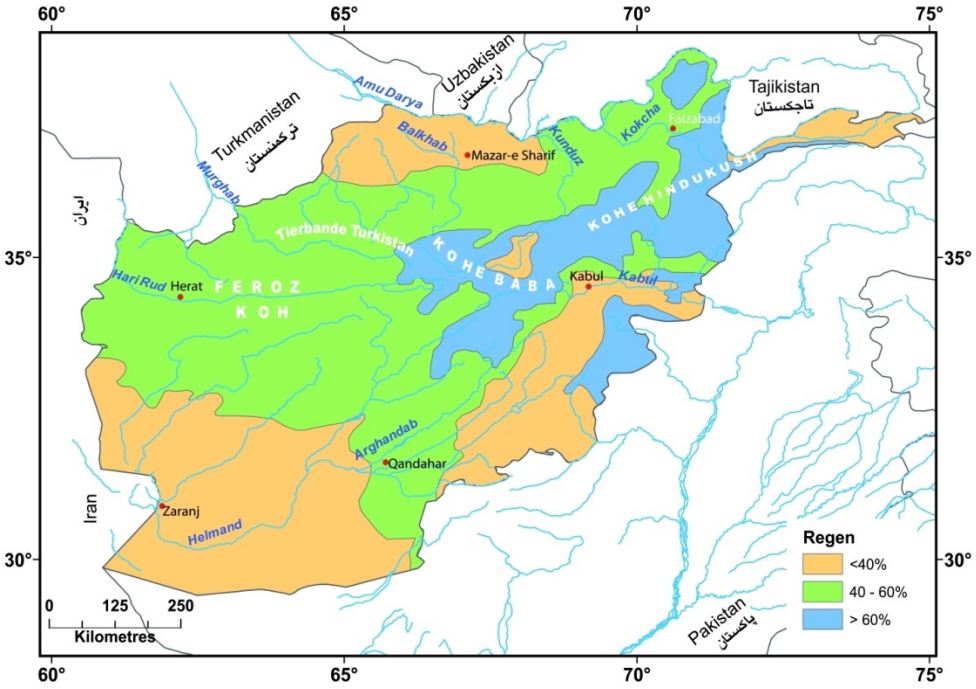


Figure 2 Percentage of rainy days with >5 mm precipitation (map by Rafiqpoor[3]).

7. In most parts of the country precipitation is concentrated during the winter and spring months. Depending on the mainly by altitude determined temperature, snow is stored until the summer season and provides melt water to the lowlands on which irrigated agriculture as well as run-of-the river hydropower heavily depend. In the north of the country a substantial portion of the annual rainfall occurs during the spring months; and rain-fed agriculture is highly dependent on this rainfall pattern and yields are heavily affected by droughts during this season. Small areas in the east of the country are under the influence of the Indian summer monsoon and therefore have a second rainfall peak during the summer months. Figure 3 shows these areas according to the percentage of summer rains in in annual rainfall.

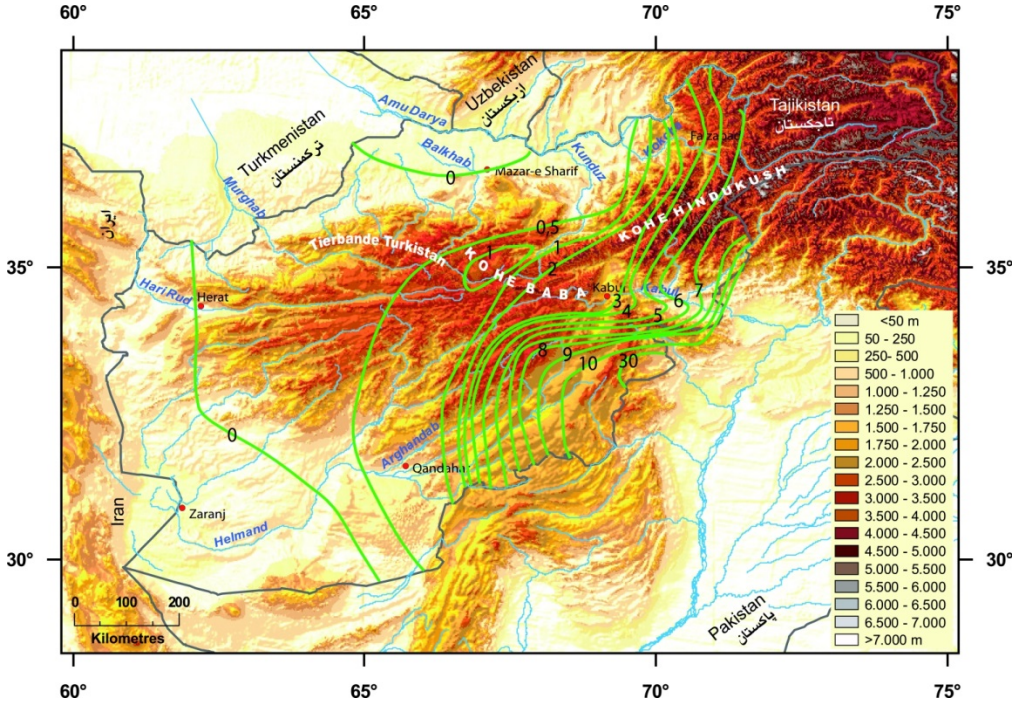


Figure 3 Percentage of summer rains in the annual precipitation (map by Rafiqpoor[4]).

8. Precipitation in form of snow is stored until the temperatures raise. For this reason rivers with their catchment receiving much precipitation as snow have the lowest flow in winter. As larger snow packs at high altitudes last until mid-summer flow peak in such rivers is in summer at the height of snow melt. Discharge in rivers where precipitation in the catchment is mainly as rain is closer related to the seasonal patterns of precipitation, but flow is more or less buffered by a part of the rainfall being infiltrated into the groundwater and after some time released by springs.

[3] Ibd.

[4] Breckle, S.-W. and Rafiqpoor, M.D. (2010). Field Guide Afghanistan – Flora and Vegetation, Bonn, Scientia Bonnensis.

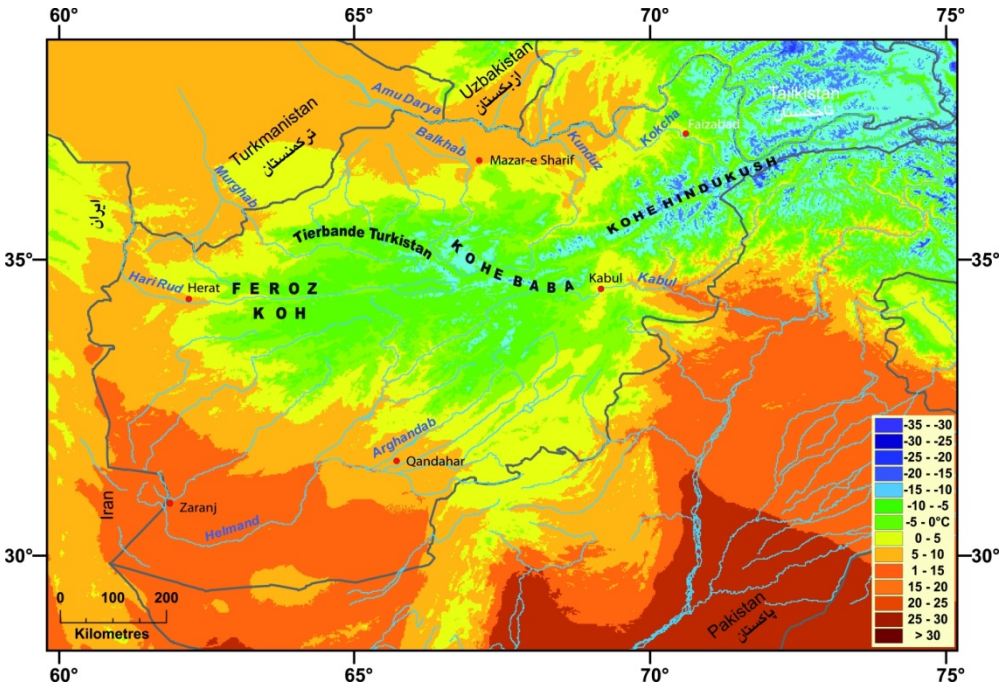


Figure 4 Mean annual temperatures (map by Rafiqpoor[5]).

2. Temperature[6]

9. Temperature patterns in Afghanistan are subject to altitudinal gradients. While there are generally lower temperatures higher in the mountains, the lowest temperatures have been recorded in the continental inter-montane basins. The spatial patterns of temperatures of Afghanistan are best presented by maps of the mean annual temperature (figure 4). The seasonal variations of temperature show the highly continental character of the climate of Afghanistan.

10. The combination of precipitation and thermal patterns describe the ecological climate conditions for vegetation growth and thus for land-use. In most mountainous areas with sufficient humidity for the growth of plants is the thermal growing season extremely short, sometimes one month or less. In areas with a longer thermal growing season aridity limits plant growth. The map in figure 5 shows this eco-climate classification. The regions with most favourable conditions for natural vegetation and agriculture are those with warm (9-10 thermal vegetation months) and humid (7-9 hygric vegetation months). Such regions are concentrated on the slopes around Safed Koh in the East and at the northern slopes of Hindukush in Takhar and Baghlan. The areas north of the Feroz Koh, Tirband-e Turkistan and Koh-e Baba have warm subhumid to semiarid climate and are important agricultural areas. In these areas yield of non-irrigated agriculture heavily depends on the seasonal rainfall in spring and if precipitation in May and June is insufficient there the result will be crop failure, which makes the region especially prone to climate change impact, with predicted more irregular rainfall patterns and higher degree of aridity. The southwest, mainly the provinces of Farah, Nimroz, Helmand and Kandahar is warm and semiarid to hot and periarid. Here agriculture is possible only with irrigation from rivers, originating in the central mountains.

11. Most project sites are located in hot, warm and warm-temperate subhumid eco-climates, meaning that arable farming is largely dependent on irrigation. Few sites are located in more humid climates, but under the site specific conditions only with irrigation sustainable and reliable yields can be achieved.

[5] Breckle, S.-W. and Rafiqpoor, M.D. (2010). Field Guide Afghanistan – Flora and Vegetation, Bonn, Scientia Bonnensis.

[6] Summarized based on Breckle, S.-W. and Rafiqpoor, M.D. (2010). Field Guide Afghanistan – Flora and Vegetation, Bonn, Scientia Bonnensis.

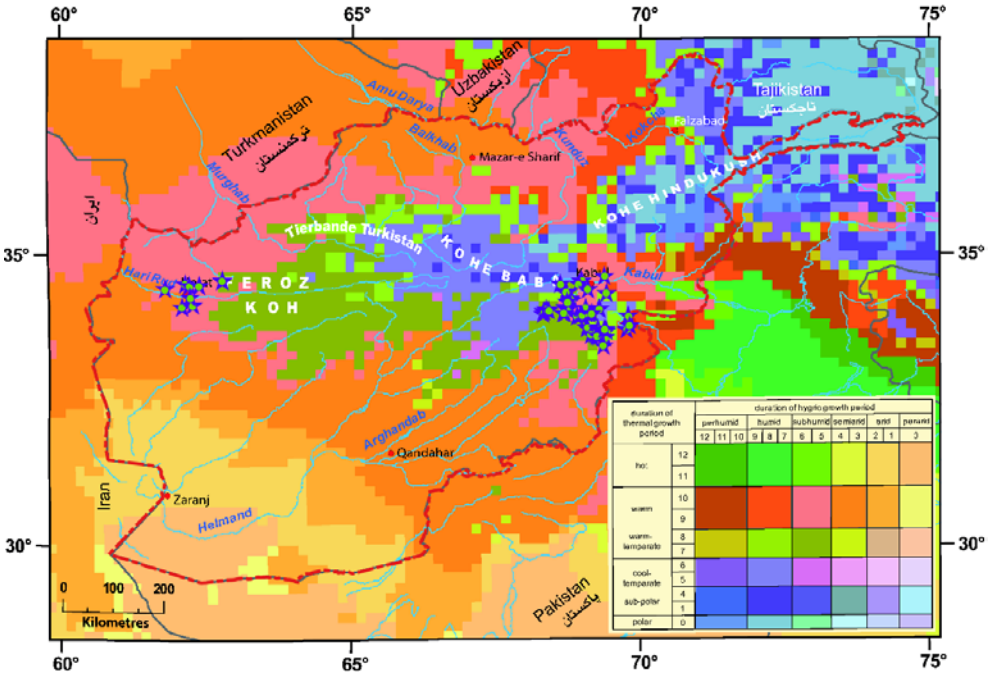


Figure 5 Eco-climate classification with project sites (map by Rafiqpoor[7]).

3. Climate change predictions[8]

12. Ongoing trends in climate change are difficult to determine with accuracy due to the lack of long-term precise meteorological records in the country. Available data and trends from neighbouring countries indicate that mean annual temperature has increased by 0.6°C since 1960, at an average rate of around 0.13°C per decade. Increases have been most pronounced during the autumn (September, October, November), with increases at an average rate of 0.29°C per decade and a significant increase in the number of exceptionally hot days and nights. Changes in precipitation regimes tend to vary more between regions than temperature. Mean rainfall over Afghanistan has decreased slightly (at an average rate of 0.5 mm per month (or 2% per decade) since 1960. This is mainly due to decreases of around 2.7 mm per month (6.6% per decade) in spring (March, April, May) rainfall.

13. Current models indicate significant warming across all regions of Afghanistan with average predicted increases in temperature of 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 marked in the north and the central plains of Afghanistan. All projections indicate substantial increases in the frequency of days and nights that are considered 'hot' in current climate, especially during summer months.

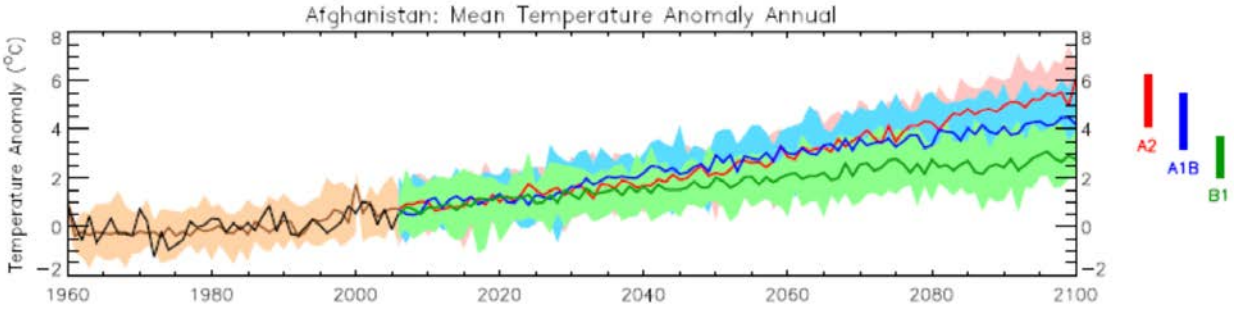


Figure 6 Change in temperature until 2100 under 3 emissions scenarios (0 = 1970-1999 average).

14. Across all emission scenarios the mean annual temperature is projected to increase by 1.4 to 4.0°C by the 2060s, compared to 1970-1999 averages. Dependent on the emission scenario, the range of projections by the 2090s is around 1.5 to 2.5°C.

[7] Breckle, S.-W. and Rafiqpoor, M.D. (2010). Field Guide Afghanistan – Flora and Vegetation, Bonn, Scientia Bonnensis.

[8] Savage, M., Dougherty, B., Hamza, M., Butterfield, R., Bharwani, S. (2009). Socio-Economic Impacts of Climate Change in Afghanistan. A Report to the Department for International Development. Stockholm Environment Institute, Project Report – 2009.

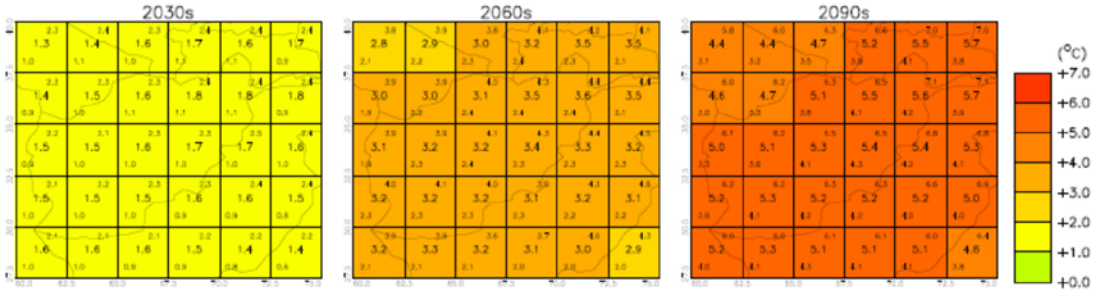


Figure 7 Spatial projections for temperature change under SRES A2 scenario.

15. In the short term, average annual rainfall is projected to show a small increase by about 10-20 mm. Mean annual rainfall changes in the 2090s show conditions generally drier (by 10-40 mm) over much of Afghanistan. Much of the drying is due to decreases in spring rainfall (March, April, May). Winters are expected to be significantly drier in the South further increasing the aridity there. Drought is likely to be regarded as the norm by 2030, rather than as a temporary or cyclical event. Floods due to untimely rainfall and a general increase in temperature are of secondary importance. Their impacts may by amplified due to more rapid spring snow melt as a result of higher temperatures, combined with the downstream effects of land degradation, loss of vegetative cover and land mismanagement.

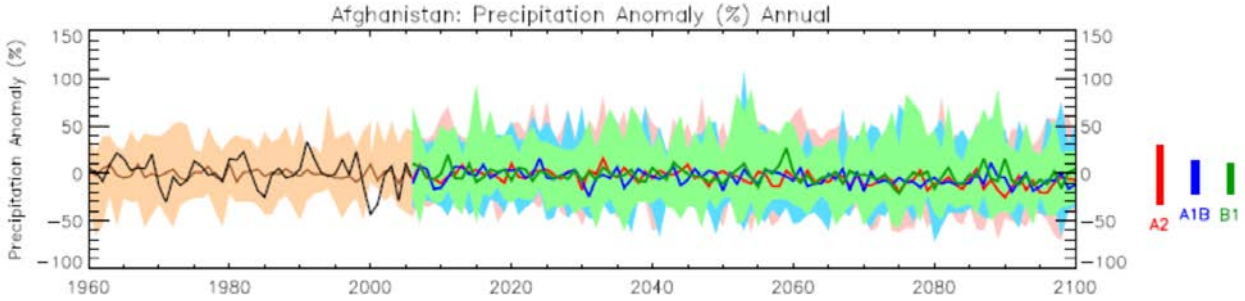


Figure 8 Change in precipitation until 2100 under 3 emissions scenarios (0 = 1970-1999 average).

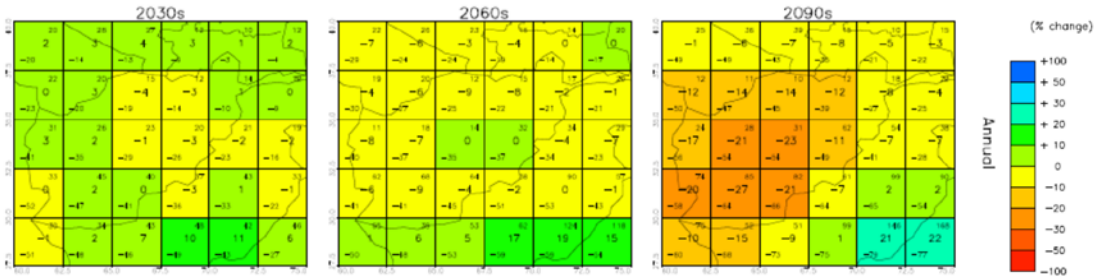


Figure 9 Spatial projections of percent precipitation change under SRES A2 scenario[9].

4. Climate information on project sites[10]

16. Local climate varies between the planned project sites. As these sites are not necessarily located in the vicinity of weather stations, here climate diagrams from stations are presented, which are located sufficiently close to the selected sites to be representative for these. For some sites no nearby weather station data could be identified.

[9] Ibd. Savage et al. (2009).
[10] Climate diagrams retrieved from https://en.climate-data.org

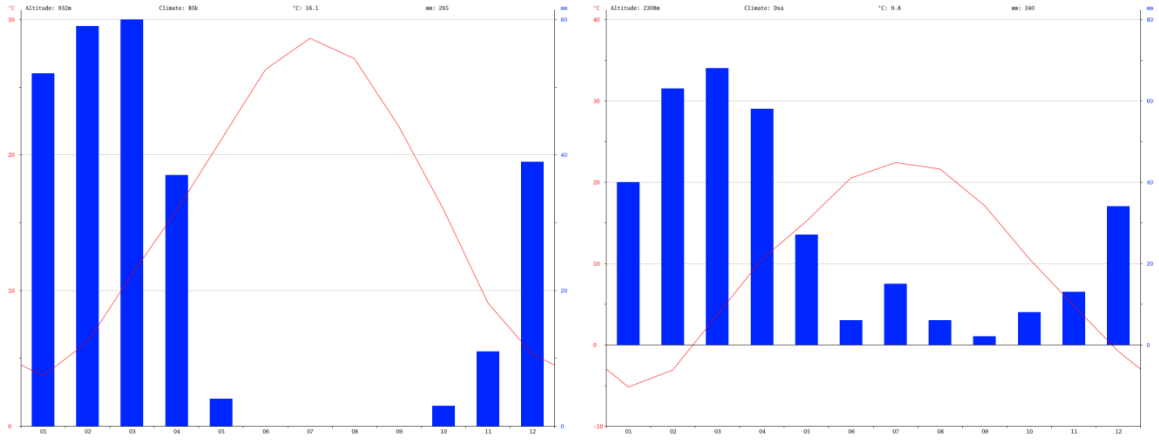


Figure 10 Climate diagrams of Herat (left) and Gardiz of Paktia (right).

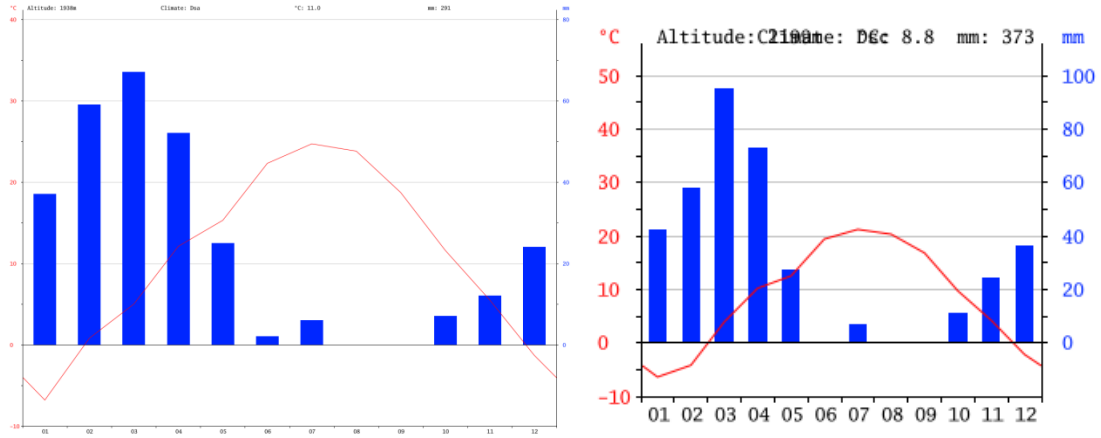


Figure 11 Climate diagrams of Pule Alam of Logar (left) and Maidan Shahr of Wardak (right).

17. All project sites are characterized by hot and dry summers and cooler or cold and wet winters. Rainfall during the critical months of the vegetation period from May till September is either low or lacking, thus making effective arable farming dependent on irrigation. On the other hand precipitation during the cold and wet season does allow for the recharge of aquifers.

Annex 2: Socio-Economic Conditions in the Project Zones

1. Population

1. The population of sub-districts targeted by the project, the number of general beneficiaries of project activities and of those of the beneficiaries, which are planned to be provided with access to electricity, have been determined in the project site surveys:
   a. Number of households: 13,620;
   b. Population targeted by project activities: 95,341, among them female 50%, widows and orphans 4%;
   c. Average area of irrigated land per household addressed by the project: 0.64 ha.

2. The population density in Afghanistan is 57 per km². 26.7 % of the population is urban. The median age in Afghanistan is 17.6 years. The population of 37.2 million people in Afghanistan in general is growing by annually 2.3% (2019 est.)[11]. Growth in rural areas is higher than in urban areas, but is partly compensated by migration to towns. Population growth in rural areas increasingly leads to overuse of natural resources, e.g. overgrazing of rangeland, overharvesting of fuelwood and expansion of rain-fed cultivation onto marginal lands. Resulting conflicts over access to these resources are among the underlying reasons of tension at different levels.

3. In rural areas of Afghanistan resident population uses the land in an agro-pastoralist form, often in a transhumant manner with seasonal mobility between summer and winter pastures at different altitudes. Some groups of specialized livestock breeders, so-called *kochi* maintain a nomadic lifestyle with long-distance migrations between summer and winter grazing areas. These nomadic pastoralists belong to different ethnic groups, mainly Pashtuns and few Kyrgyz. They have assigned customary and/or formal rights over the seasonal grazing areas used by them. With the general population increase and overuse of rangelands conflicts about access to grazing areas became more common during the last decade. The nomadic pastoralists are often considered as disadvantaged, but with an own specialized Independent Directorate, representation in the parliament, key government officials originating in such communities and considerable wealth in form of livestock this perception is challenged by other social groups.

2. Gender

4. Gender issues are more broadly described in Annex 9.

5. The Gender Development Index (GDI), defined as the ratio of the female to the male HDI and which measures gender inequalities in terms of three basic dimensions of human development (health, education and command over economic resources), has a value of 0.625 for Afghanistan; this is low even in comparison to 0.925 for Nepal and 0.75 for Pakistan, with only Yemen (0.425 being lower. Likewise, the Gender Inequality Index (GII) ranks Afghanistan among the countries with the highest gender inequality despite substantial improvements over the last 15 years.[12] In addition, Afghanistan's National Gender Strategy[13] acknowledges that women have lacked the opportunities provided to men and as a result they fall behind men in all fields of self-advancement. As a result of lack of ownership of resources, women in rural areas are engaged more in activities such as carpet weaving, embroidery and tailoring.

6. The formal analysis of the gender dimensions of the impacts of climate change in Afghanistan has been relatively thin, even though it is important, given the precarious situation of women in the country. While equal rights for women are enshrined in the Constitution and some steps have been taken over the past decade to increase the opportunities available to them, in general women in Afghanistan have limited access to financial resources and other assets, education and employment opportunities, freedom of movement, and a voice in shaping decisions.

7. More encouragingly, Afghanistan has strong experience of agricultural cooperatives, women self-help groups and other community development organisations that are now increasingly playing important roles in the social and economic development of farmers and rural communities.

8. Among the beneficiaries of the project 50% are women, as estimated based on the population data determined during the field surveys. About 4% of the population are widows and orphans, which are particularly vulnerable. Climate resilient agriculture based on reliable access to irrigation water is especially important for women. They together with small children, particularly girls, typically suffer first and most from malnutrition, caused by unreliable yields of subsistence and cash crops and low diversity of cultivated crops.

3. Employment, Economic Aspects and Livelihoods

9. The most common employment sectors are agriculture, where 45% of Afghans are employed, followed by skilled workers and artisans at 10% and sales and business at 9%. About 68% of households own livestock and over 36% of households are engaged in farming. However, the productivity in the agriculture sector is low, with agriculture contributing just over 25% of GDP. Fresh and dried fruits make the biggest contribution to the country's export base and there is significant potential for expansion. However, a major obstacle for an increase in quantity and quality of agricultural products is the impact of climate change, which mainly through droughts causes insufficient and unreliable access to irrigation water, resulting in declining areas and yields in irrigated agriculture.

10. Opium poppy cultivation in Afghanistan (estimated to contribute close to 90% of the world's illicit supply[14]) remains a significant concern. The lack of reliable, stable alternate sources of legal income has been identified as one of the major drivers for opium poppy cultivation[15]. Analyses of climate change impacts on Afghanistan also suggest that water-intensive staple crops will become less remunerative to farmers, with a likely increase in the attractiveness of those that are more drought-hardy, including the opium poppy. In the projects no opium poppy cultivation or opium processing has been documented during the field surveys.

11. In the project sites based on the results of the field surveys, almost all households are in varying extent dependent on agriculture, particularly on small scale irrigated arable farming. Livestock ist the second most important agricultural asset and grazing of communal and open-access rangelands can cause conflict between and within communities, where it affects arable farming or competition for pasture resources is high. Non-agricultural activity in the target communities is limited to small businesses in form of various shops and small family-run workshops for carpentry, welding, whitesmith, blacksmith and tailor works.

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[11] http://www.worldometers.info/world-population/afghanistan-population/
[12] http://hdr.undp.org/en/data
[13] National Gender Strategy 2012-2016, Islamic Republic of Afghanistan, Ministry of Public Health - Gender Department http://moph.gov.af/Content/Media/Documents/MoPH_National_Gender_Strategy_Final_English_20121642012129342465533325325.pdf
[14] United Nations Office on Drugs and Crime (UNODC), "Drug Trafficking" https://www.unodc.org/unodc/en/drug-trafficking/
[15] UNODC, "Afghanistan Opium Survey 2015: Socio-economic Analysis" https://www.unodc.org/documents/crop-monitoring/Afghanistan/Afghanistan_opium_survey_2015_socioeconomic.pdf

4. Health

12. The health care system of Afghanistan has suffered from decades of war and civil unrest and the restrictive policies under the Taliban regime. Especially in rural areas health care is still insufficient despite international aid for the development of a new functional health care system.

13. The population of Afghanistan is affected by a high prevalence of infectious diseases, among them tuberculosis, poliomyelitis, leprosy, typhoid, hepatitis, leishmaniosis and others. Malnutrition, exacerbated by the 2018 drought related food shortage is one of the most serious factors adversely affecting health. In the project provinces the situation was assessed as critical, serious or poor in 2018.[16]

14. Women suffer from the effects of malnutrition, hard physical work and high frequency of child birth and nursing. Improved maternal and child care have reduced maternal and infant mortality.[17] Decreases in these mortality rates are consistent with changes in key determinants of mortality, including an increasing age at marriage, higher contraceptive use, lower fertility, better immunisation coverage, improvements in the percentage of women delivering in health facilities and receiving antenatal and postnatal care, involvement of community health workers and increasing access to the Basic Package of Health Services.[18]

5. Labour and Working Conditions

15. No specific assessment has been undertaken to assess labour and working conditions in the project areas. Generally, in Afghanistan's labour and working conditions are characterized by hard physical labour combined with a low level of mechanization. This situation also concerns civil works, like construction and maintenance of water management systems, roads or bridges.

[16] https://www.unicef.org/afghanistan/media/3911/file/afg-publication-Nutrition%20cluster%20report.pdf%20.pdf

[17] E.g. Bartlett et al. (2017). Progress and inequities in maternal mortality in Afghanistan (RAMOS-II): a retrospective observational study. (http://www.sciencedirect.com/science/article/pii/S2214109X17301390)

[18] Rasooly M.H. et al (2014). Success in reducing maternal and child mortality in Afghanistan. https://www.ncbi.nlm.nih.gov/pubmed/24003828

Annex 3: Targeted Beneficiaries

1. The targeted beneficiaries have been identified during field surveys by MRRD staff. At all project sites a data sheet was completed, indicating:
   a. Physical and land use information;
   b. Local population and social aspects, including number of households, male and female population, presence of widows, orphans, IDPs, nomadic pastoralists (kochi), ethnic affiliation;
   c. Existence of community institutions;
   d. Agricultural activities;
   e. Command area benefiting from the proposed project.

1. Herat

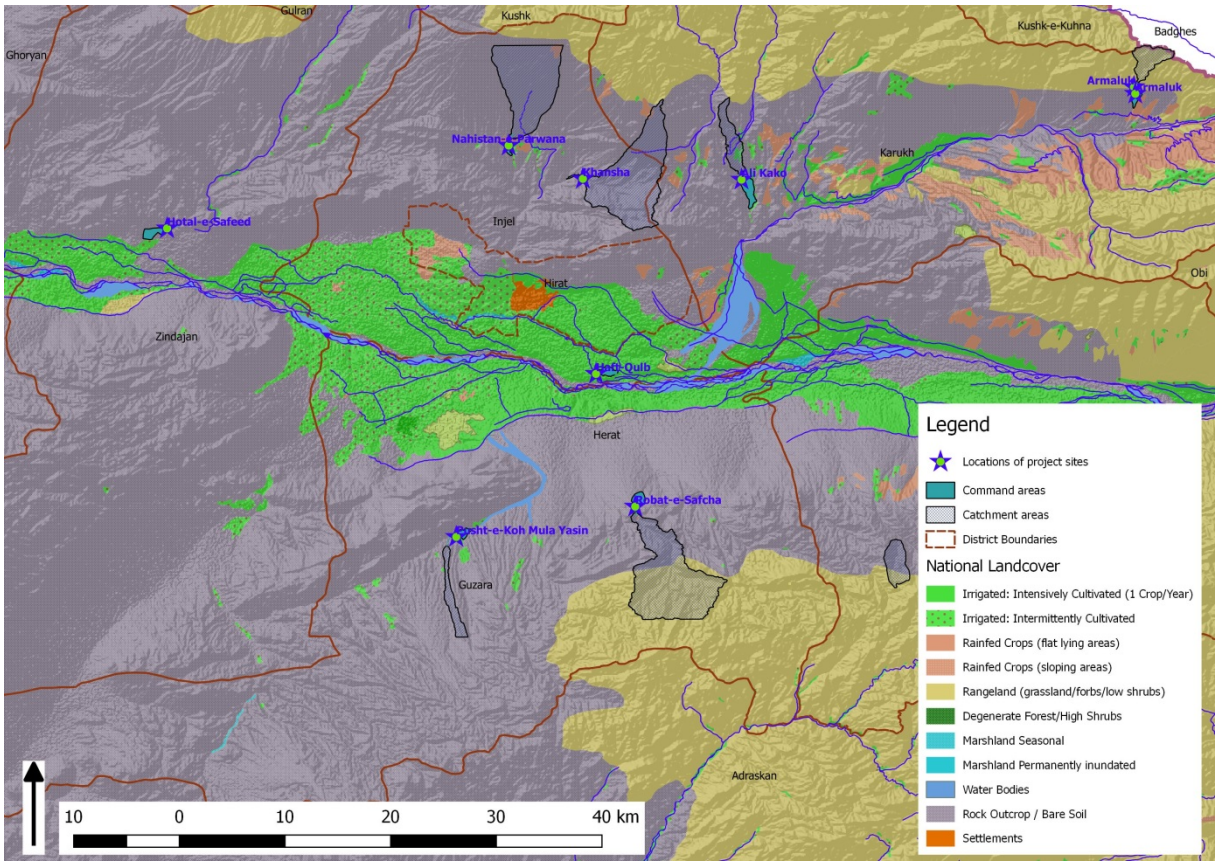

Figure 12 Project sites and land use in Herat.

ID	District	Village	HH	M	F	Orphans/ Widows	Kochi	Project type	Command area (ha)
H1	Zindajan	Hotal-e-Safeed	37	135	122	5%	-	Karez	194,1
H2	Guzra	Pusht-e-Koh Mula Yasin	96	345	324	4%	-	Karez	104,3
H3	Guzra	Robat-e-Safcha	188	645	669	3%	-	Karez	160,0
H4	Injil	Nahistan-e-Parwana	86	288	312	3%	-	Karez	48,4
H5	Injil	Khansha	43	165	135	4%	-	Karez	24,8
H6	Injil	Haft-Qulb	280	1020	940	3%	-	Canal	140,4
H7	Karukh	Ali Kako	126	435	445	2%	-	Karez	280,0
H8	Karukh	Armaluk	326	1107	1173	3%	-	Karez	80,8
Total			1,180	4,140	4,120	254			1033

2. At site H8 additionally a larger water harvesting structure is planned, which will serve for the recharge of three karez and downstream deep wells. Additionally it will contribute to the protection from floods of downstream located valuable agricultural land.

3. The population in the different project sites belongs to the ethnic groups of Tajik and Pashtuns. There are no *kochi* present in the project sites. All villages have CDCs.

4. Agriculture relies on irrigated cultivation of wheat, barley, rice, corn, peas, beans and vegetables, but also saffron, cumin and cotton. Irrigation water supply relies largely on snow pack and is thus at risk of being reduced due to climate change impact. People raise various livestock on pastures: goats, sheep and cattle.

2. Kabul

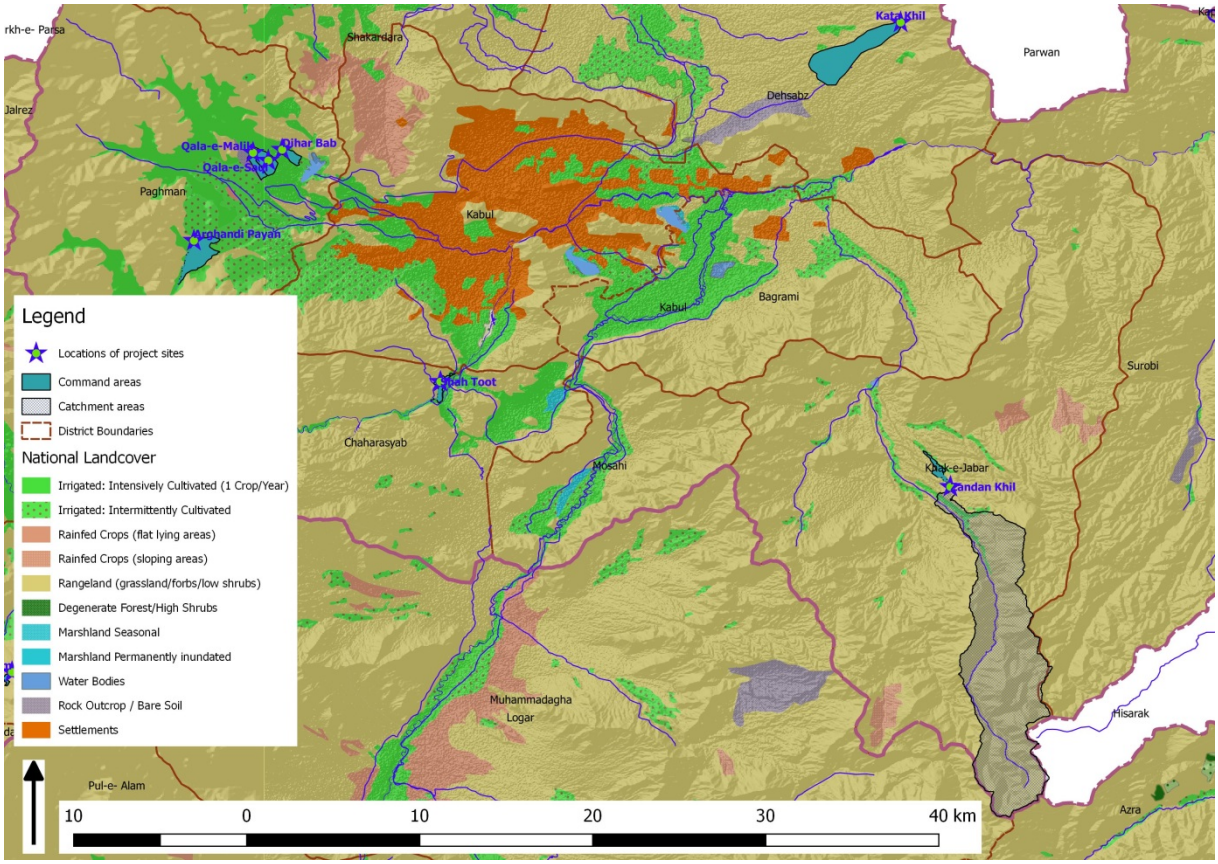

Figure 13 Project sites and land use in Kabul.

ID	District	Village	HH	M	F	Orphans/ Widows	Kochi	Project type	Command area (ha)
K1	Khaki Jabar	Zandan Khil	24	89	79	2%	-	Karez	74,3
K2	Dehsabz	Kata Khil	334	1110	1230	3%	-	Canal	823,6
K3	Paghman	Qala-e-Saqi	338	1150	1215	2%	-	Canal	143,3
K4	Paghman	Qala-e-Malik	278	980	967	3%	-	Canal	91,9
K5	Paghman	Dihar Bab	279	963	990	4%	-	Canal	76,0
K6	Paghman	Arghandi Payan	600	2000	2200	4%	-	Canal	315,8
K7	Char Aasaib	Shah Toot	286	1100	900	4%	-	Canal	71,8
Total			2,139	7,392	7,581	505			1597

5. The population in the different project sites belongs to the ethnic groups of Pashtuns and Tajik. There are no *kochi* present in the project sites. All villages have CDCs.

6. Agriculture relies on irrigated cultivation of wheat, barley, corn, beans and vegetables, but also fruit orchards. Irrigation water supply relies largely on snow pack and is thus at risk of being reduced due to climate change impact. The risk exacerbates the currently low efficiency of canals for irrigation water delivery. People raise various livestock on pastures: goats, sheep and cattle.

3. Logar

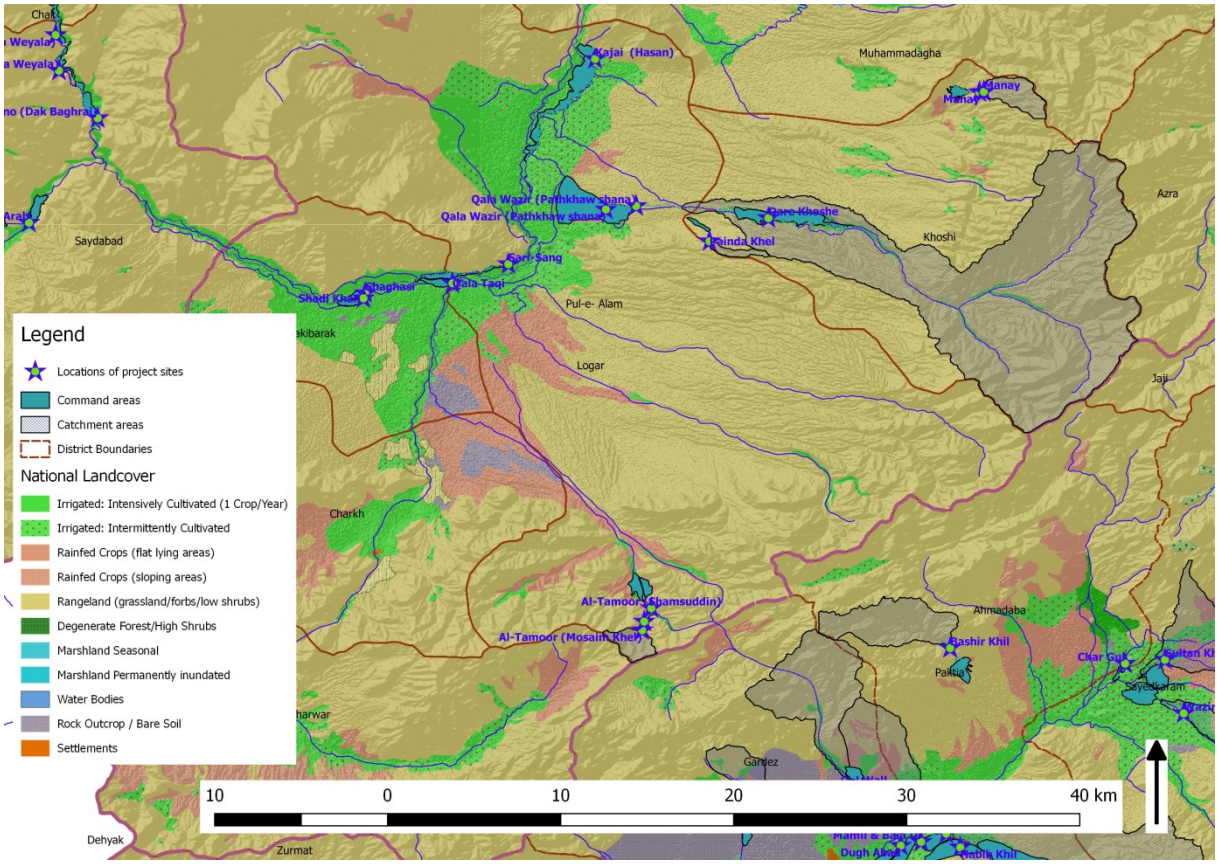

Figure 14 Project sites and land use in Logar.

ID	District	Village	HH	M	F	Orphans/ Widows	Kochi	Project type	Command area (ha)
L1	Pule Alam	Al-Tamoor (Mosaim Khel)	85	320	275	1%	5%	Karez	101
L2	Pule Alam	Al-Tamoor (Shamsuddin)	78	320	225	2%	8%	Karez	52,5
L3	Pule Alam	Qala Wazir (Pathkhaw shana)	351	1100	1360	2%	4%	Karez	767,8
L4	Pule Alam	Kajai (Hasan)	401	1420	1389	5%	9%	Karez/ Canal	485,15
L5	Barky Barak	Shaghasi	45	152	162	2%	4%	Canal	54
L6	Barky Barak	Shadi Khan	51	180	175	2%	-	Canal	38
L7	Barky Barak	Qala Taqi	65	235	223	3%	3%	Canal	78,6
L8	Barky Barak	Sari-Sang	81	280	290	2%	-	Canal	94,45
L9	Khoshy	Painda Khel	34	126	109	2%	3%	Check dam	33,2
L10	Khoshy	Manay	52	183	178	1%	2%	Karez	60,6
L11	Khoshy	Dare Khoshe	328	1140	1158	2%	-	Canal	385,5
Total			1,243	5,456	5,544	299	456		1,571

7. At site L9 as standalone and at sites L1 and L10 as additional structures larger water harvesting structures are planned, which will serve for the recharge of five *karez* and several downstream deep wells. The water harvesting structure at site L1 will additionally serve more than 1,500 ha of lands with irrigation water. Additionally all these structures will contribute to the protection from floods of downstream located valuable agricultural land and *karez* structures and by this benefit a larger number of beneficiaries than directly supplied by the reconstructed canals and *karez*.

8. The population in the different project sites belongs to the ethnic groups of Pashtuns and in lesser extent Tajik. Most communities are composed of one ethnic group, but several are mixed. In some villages IDP are present as well as disabled people and war victims. Nomadic pastoralists (*kochi*) use the project sites and represent up to 9% of the local population, in total about 460 people. All villages have CDCs; in some communities *mirab* regulate water use as village level. Some villages belong to irrigation associations.

9. Agriculture relies on irrigated cultivation of wheat, barley, corn, potatoes, beans, peas and vegetables (e.g. tomatoes), but also fruit orchards, vineyards and almonds as well as cotton. Clover is locally cultivated as forage. Irrigation water supply relies largely on snow pack and is thus at risk of being reduced due to climate change impact. The risk exacerbates the currently low efficiency of canals for irrigation water delivery. People raise various livestock on pastures: goats, sheep and cattle as well as poultry.

4. Paktia

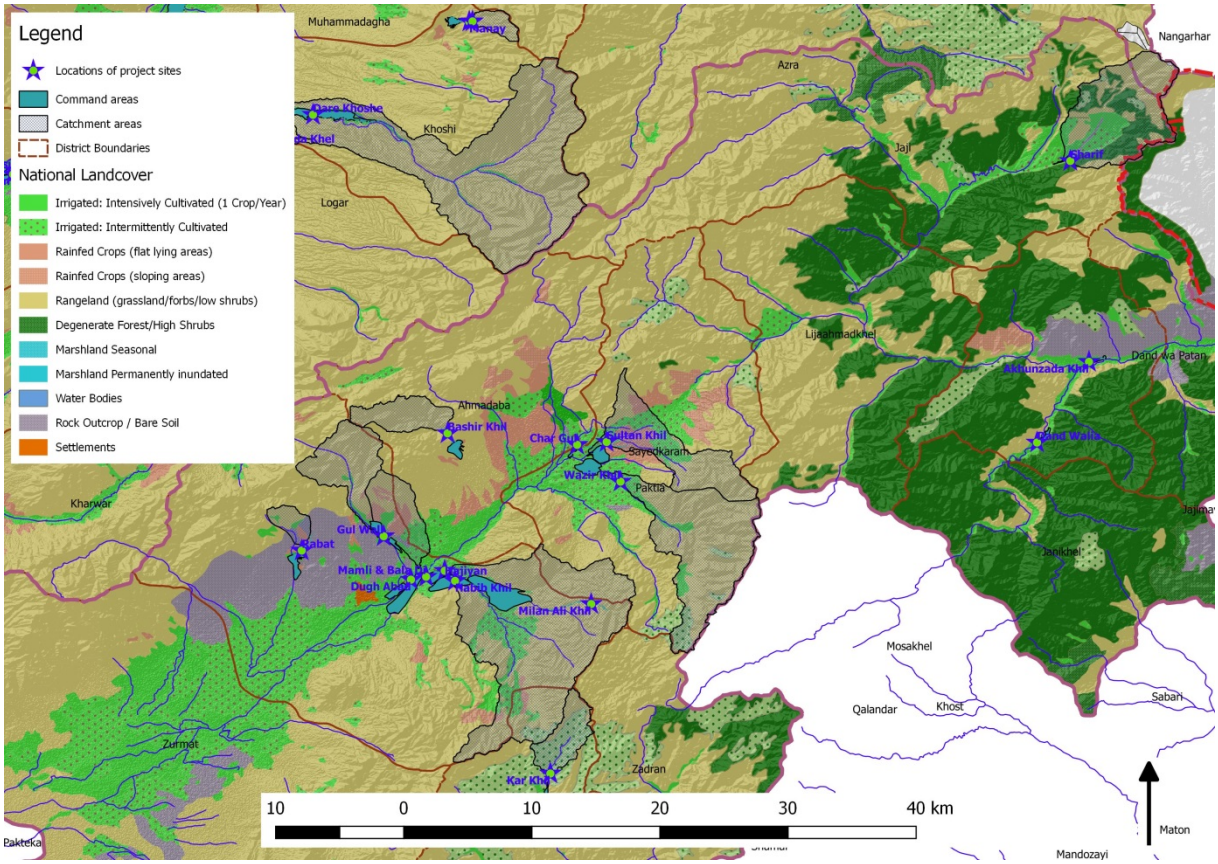

Figure 15 Project sites and land use in Paktia.

ID	District	Village	HH	M	F	Orphans/ Widows	Kochi	Project type	Command area (ha)
P1	Aryoub Zazi	Sharif	71	200	300	2%	-	Check dam	21,0
P2	Chamkani	Dand Walia	264	950	895	3%	-	Canal	42,0
P3	Chamkani	Akhunzada Khil	191	650	685	4%	4%	Canal	26,6
P4	Sayid Karam	Sultan Khil	83	298	282	3%	4%	Karez	154,5
P5	Sayid Karam	Wazir Khil	3033	10800	10430	7%	3%	Karez	212,5
P6	Gardiz	Hajiyan	176	600	635	3%	4%	Karez	117,6
P7	Gardiz	Bashir Khil	1907	6850	6500	2%	3%	Karez	124,9
P8	Gardiz	Gul Wall	310	1020	1150	5%	2%	Canal	68,0
P9	Gardiz	Milan Ali Khil	99	350	345	4%	-	Canal	721,9
P10	Gardiz	Dugh Abad	205	700	734	4%	-	Karez	98,3
P11	Gardiz	Rabat	350	1250	1200	4%	3%	Karez	150,5
P12	Gardiz	Habib Khil	368	1300	1276	3%	2%	Canal	258,3
P13	Gardiz	Mamli & Bala Di	194	700	658	5%	-	Canal	342,7
P14	Ahmad Aba	Char Gul	104	350	380	4%	3%	Karez	31,8
P15	Shwak	Kar Khil	83	300	280	3%	-	Karez	100,0
Total			7,438	26,318	25,750	2410	1,354		2,471

10. At site P1 a larger water harvesting structure is planned, which will primarily protect walnut gardens from flood during monsoon, and further serve the collection and redirection of spring water for downstream irrigation and the recharge of downstream deep wells.

11. The population in the different project sites belongs to the ethnic groups of Pashtuns (*mazhab*) and in lesser extent Tajik. Most communities are composed of one ethnic group, but several are mixed. In some villages IDP are present as well as disabled people and war victims. Nomadic pastoralists (*kochi*) use the project sites and represent up to 4% of the local population, in total about 1,350 people. All villages have CDCs.

12. Agriculture relies on irrigated cultivation of wheat, barley, corn and vegetables. Irrigation water supply relies largely on snow pack and is thus at risk of being reduced due to climate change impact. The risk exacerbates the currently low efficiency of canals for irrigation water delivery. People raise various livestock on pastures: goats, sheep and cattle.

5. Maidan Wardak

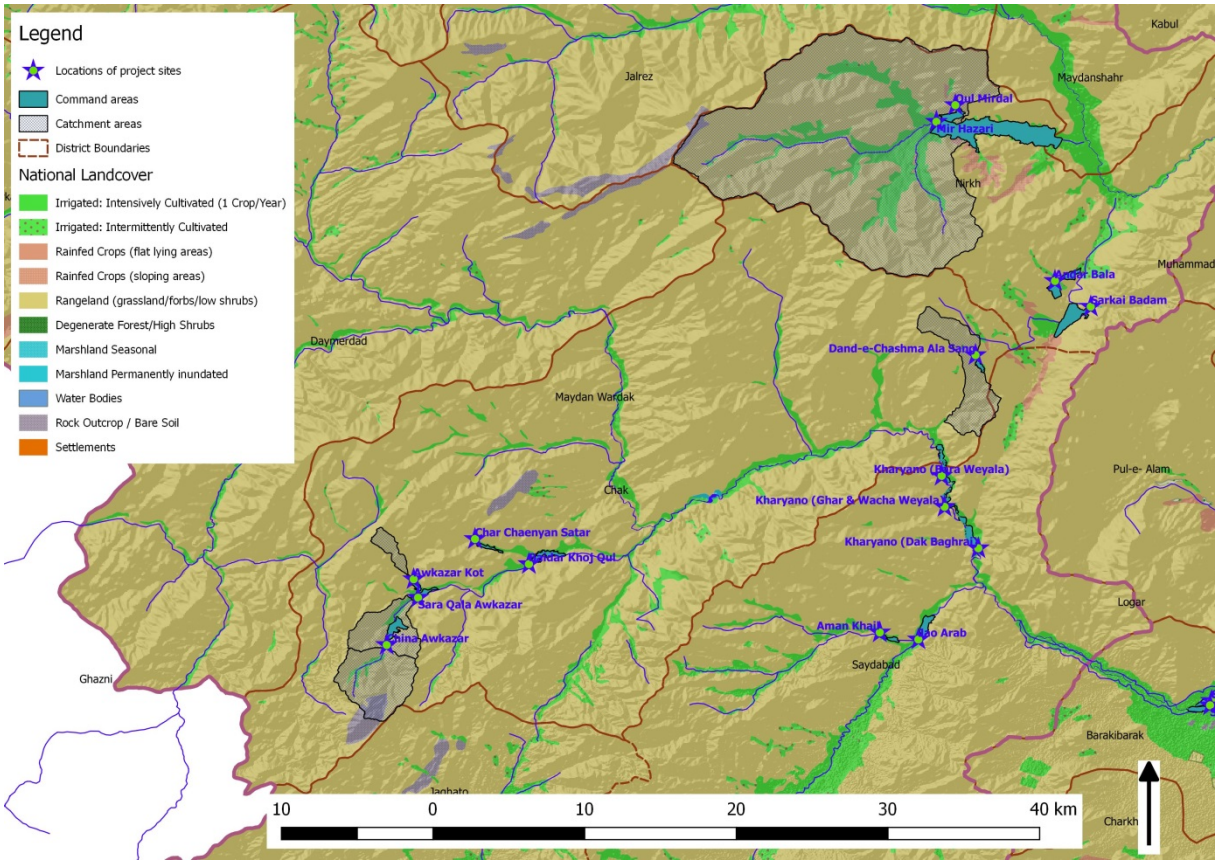

Figure 16 Project sites and land use in Maidan Wardak.

ID	District	Village	HH	M	F	Orphans/ Widows	Kochi	Project type	Command area (ha)
W1	Sayed Abad	Kharyano (Bara Weyala)	72	260	245	2%	3%	Canal	56,0
W2	Sayed Abad	Kharyano (Ghar & Wacha Weyala)	90	325	305	3%	3%	Canal	85,0
W3	Sayed Abad	Kharyano (Dak Baghrai)	102	350	365	3%	2%	Canal	112,0
W4	Sayed Abad	Jao Arab	68	245	228	3%	3%	Canal	93,0
W5	Sayed Abad	Aman Khail	49	167	177	3%	2%	Karez	38,0
W6	Jalriz	Dani Sang Lakh Angrion	165	590	564	5%	4%	Canal	168,0
W7	Narkh	Sarkai Badam	100	342	355	4%	3%	Karez	226,0
W8	Narkh	Andar Bala	88	320	295	3%	2%	Karez	135,0
W9	Narkh	Qul Mirdal	39	142	132	1%	2%	Karez	87,0
W10	Narkh	Mir Hazari	146	520	499	3%	2%	Karez	111,0
W11	Chak	Awkazar Kot	43	155	147	2%	2%	Karez	32,0
W12	Chak	China Awkazar	88	300	315	4%	3%	Karez	110,0
W13	Chak	Dand-e-Chashma Ala Sang	121	452	395	3%	2%	Karez	28,0
W14	Chak	Sara Qala Awkazar	32	120	105	2%	2%	Karez	45,0
W15	Chak	Char Chaenyan Satar	41	150	135	2%	0%	Karez	36,0
W16	Chak	Baidar Khoj Qul	49	175	165	3%	4%	Karez	90,0
Total			1,291	4,613	4,427	289	234		1,452

13. Water harvesting structures are planned within the context of the canal and karez rehabilitations, which will serve for the recharge of ground water and protection from floods of downstream located valuable agricultural land.

14. The population in the different project sites belongs to the ethnic groups of Pashtuns, in two villages Sooraei and Populzai. No IDP have been recorded as being present as well as disabled people and war victims. Almost 300 people (3%) are widows and orphans. Nomadic pastoralists (*kochi*) use the project sites and represent up to 4% of the local population, in total about 230 people. All villages have CDCs.

15. Agriculture relies on irrigated cultivation of wheat, barley, potatoes, beans, peas and vegetables, but also fruit orchards, as well as locally cotton. Irrigation water supply relies largely on snow pack and is thus at risk of being reduced due to climate change impact. The risk exacerbates the currently low efficiency of canals for irrigation water delivery. People raise various livestock on pastures: goats, sheep and cattle.

Annex 4: National Legal Framework Related to Environmental Impact and Water Use for Irrigation

1. LEGISLATION, POLICIES AND REGULATIONS

1. The following legislation is relevant to the project:

1.1 Constitution of the Islamic Republic of Afghanistan (2004)

2. **The Constitution of the Islamic Republic of Afghanistan** (2004) – including foundations of legislation on social and environmental issues, such as, for instance:
   - "Mines and other subterranean resources as well as historical relics shall be the property of the state. Protection, management and proper utilization of public properties as well as natural resources shall be regulated by law" (Article Nine);
   - "The state, within its financial means, shall design and implement effective programs to develop agriculture and animal husbandry, improve economic, social and living conditions of farmers, herders and settlers as well as the nomads' livelihood." (Article Fourteen);
   - "The state shall be obligated to adopt necessary measures to protect and improve forests as well as the living environment." (Article Fifteen).

1.2 Environment Law (2007)

3. This law has been developed under consideration of international best practices. It sets forth national administrative roles and coordination with provincial authorities; establishes management frameworks for natural resource conservation, biodiversity, drinking water, pollution control, and environmental education; and defines enforcement tools[19].

4. The law defines the National Environmental Protection Agency "as an independent institutional entity, responsible for coordinating and monitoring conservation and rehabilitation of the environment, and for implementing this Act."

5. Key elements of the law are:
   - Fundamental principles (Article 5);
   - Functions and power of NEPA (in Article 9); Committee for Environmental Coordination (Article 10); National (Article 11) and Subnational (Article 12) Environmental Advisory Councils;
   - Management of Activities Affecting the Environment, regulating among others: Prohibited activities (Article 12); Preliminary assessment (Article 13); Comprehensive mitigation plans (Article 14); Approval (Article 15) and Appeal (Article 16) procedures; Detailed provisions on public participation (Article 19) and on the EIA board of experts (Article 20); Economic incentives and disincentives (Article 24) and Valuation of natural resources (Article 25);
   - Pollution control (Articles 27-33);
   - "Environmental considerations relevant to water resources conservation and management" (Articles 34-35), which contain general requirements, like "protecting aquatic and associated ecosystems and their biological diversity" and fundamental requirements regarding prevention and remedy of water pollution;
   - Biodiversity and natural resources conservation and management (Articles 36-63);
   - Environmental information, education and training, and research (Articles 64-66);
   - Compliance and enforcement (Article 67), which among others specifies the appointment and powers of inspectors (Article 67), Abatement order (Article 68), Compliance order (Article 69), punishment, liability and appeal.

6. The law is executed through a set of regulations, which specify the provisions of the law.

1.3 Environmental Impact Assessment Regulations (2008; amended 2017)

7. Schedule I lists project types likely to have significant impacts (Category 1) or potentially adverse impacts (Category 2); and the industries likely to cause pollution. Schedule II provides the application form; Schedule III provides the Technical Guideline for the Screening Process; and Schedule IV the record of decision.

8. **Administrative Guidelines for the Preparation of Environmental Impact Assessments** (2008) – accompany these Regulations to guide proponents on interacting with the National Environmental Protection Agency, on public consultation, and roles and responsibilities of stakeholders.

1.4 Water Law (2009)

9. Water is owned by the public and the Government is responsible for water protection and management; assigns responsibilities to government institutions for management and protection of water resources, water ownership, and regulates water ownership fees, rights, permits, and usage.[20] Key elements of the law are[21]:

10. Article 1 of the Preamble of the Law stipulates its purpose: "This law is to enforce the principles of Article Nine of The Constitution of Afghanistan for the purpose of conservation, equitable distribution, and the efficient and sustainable use of water resources, strengthen the national economy and secure the rights of the water users, in accordance with the principles of Islamic jurisprudence and the praiseworthy customs and traditions of the people."

11. According Article 8(1) "All the water of the country belongs to the people of Afghanistan and the government is responsible for its protection, control, management and effective use in accordance with law."

12. Article 11(1) defines that "Construction, rehabilitation, development and protection of Irrigation Networks as well as Construction of diversion dams in the Irrigation Networks are the responsibility of ministry of agriculture, irrigation and livestock and ministry of rural rehabilitation and development."

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[19] Taylor, D. A. (2006). Policy: new environment law for Afghanistan. Environmental Health Perspectives, 114(3). Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1392251/

[20] Ahmad, T. (2013). Legislation on use of water in agriculture: Afghanistan. Retrieved fromhttp://www.loc.gov/law/help/water-law/afghanistan.php

[21] Legislation on Use of Water in Agriculture: Afghanistan. Retrieved from: https://www.loc.gov/law/help/water-law/afghanistan.php#legal

13. The Law outlines the responsibilities of a number of government institutions with respect to the management and protection of water resources. According to article 8(5), "determination of irrigation norms in different river basins, irrigation drainage systems and other related research for water use for agriculture and irrigation are the main responsibility of the Ministry of Agriculture, Irrigation and Livestock with the cooperation from Ministry of Energy and Water, Ministry of Transport and Aviation, Ministry of Public Health and National Environmental Protection." Article 8(8) determines that "Rights-of-way for water resources and water infrastructure, storage facilities, diversions, rivers, traditional and engineered canals, *karez*, springs, wells, and other related natural water courses such as washes are protected from encroachment. Rights-of-way for water resources will be determined in light of the principles of Islamic jurisprudence by the Ministry of Energy and Water in cooperation with Ministry of Agriculture, Irrigation and Livestock, Ministry of Mines, Ministry of Rural Rehabilitation and Development and related departments. "

14. Article 19 prohibits the use of water resources without a permit, except for the certain purposes, including "Drinking water, livelihood and other needs, if the total daily consumption does not exceed 5 cubic meters per household";

15. Moreover according to article 21(2) a usage license or activity permit, including for government projects, is necessary under certain circumstances, including "6. Digging and installation of shallow and deep wells for the commercial, agricultural, industrial and urban water supply purposes", "7. Construction of dams and any other structures for water impoundment, when the storage capacity exceeds 10,000 cubic meters" and "8. Construction of structures that encroach the banks, beds, courses or protected rights-of-way of streams, wetlands, *karez* [underground irrigation water management system(s)], and springs.";

1.5 Law on Managing Land Affairs (2008)

16. This law lays out principles of land classification and documentation, and the principles governing allocations of state land, land leasing, land expropriation, settlement of land rights, and restoration of lands. The law encourages commercial investment in state-owned agricultural land with opportunities for long leases. Among the objectives of the law are[22] the "Creation of a unitary and reliable land management order across the country"; "Management of property books and land registration based on the credible documents of relevant offices"; "Segregation of government, individual, virgin and arid and pasture (grazing) and endowed lands" and "Providing the opportunity for the people to access land."

1.6 Land Expropriation Law (2001)

17. The law recognizes private property and provides that acquisition of private land for public purposes should be done with great care and by the competent authorities and compensation for all other assets, e.g., structures, crops, trees etc., on the land should be paid based on market rate. But the law does not specifically provide for resettlement and rehabilitation i.e., provision of additional assistances to the eligible vulnerable affected families, restoration of business/income loss to be compensated and other assistance/rehabilitation measures.[23]

18. Issues that are not covered by the Law on Managing Land Affairs and the Land Expropriation Law are governed by the country's Civil Code, which in large measure reflects the Hanafi School of Islamic law (*Shari'a*). Islamic law governs when the Civil Code is silent on an issue. Customary law dominates in Afghanistan, and the Civil Code recognizes the application of customary law with regard to land rights. The Constitution is silent on the authority of customary law but prohibits the adoption of laws that are inconsistent with the tenets of Islam. Customary law is in large measure consistent with *Shari'a*, and *Shari'a* permits the practice of customary law so long as it does not interfere with tenets of Islam. Customary law systems vary but share the following characteristics: (i) use of customary village councils (known in Dari as *shura*, or *jirga* in Pashtu) that use mediation and arbitration techniques of dispute resolution; (ii) the application of principles of apology and forgiveness; and (iii) the concept of restorative justice.[24]

1.7 Law on the Protection of Historical and Cultural Properties (2004)

19. The law defines the objects falling within its scope, sets forth the State's interest and rights in such objects, specifies prohibited and regulated activities involving such objects, and establishes enforcement measures.

1.8 Access to Information Act (2014)

20. This law ensures the right of access to information for all citizens from the government and non-government institutions; the transparency and accountability in the conduct of governmental and nongovernment institutions; and establishes the processing of information requests and provision of information.

2. Environmental Impact Assessment in Afghanistan

21. Environmental Impact Assessment is implemented under the authority of the National Environmental Agency (NEPA) in accordance with Article 22 of the Environmental Law and follows the Environmental Impact Assessment Regulations (2008). NEPA is the authorized agency to issue a Certificate of Compliance.

22. The Environmental Impact Assessment Regulations distinguish Category 1 and Category 2 activities, but apply as well to any other activity that is likely to have a significant adverse effect on the environment and which is determined by NEPA to be a prohibited activity.

23. NEPA's Division of Environmental Impact Assessment and Sustainable Developments screens all projects and decides about approval or further requirements for finalizing the screening, makes the decision about the requirement of an Environmental and Social Impact Assessment. A board of main stakeholders makes final decision of approval or rejection. By 2017 this board rejected about 800 applications and approved more than 2,500[25].

24. Depending on character and expected impact of a project NEPA requires Environmental Management Plans, Emergency Response Plans and/or Reclamation Plans (mining projects).

25. Inspection and monitoring of implementation are carried out by NEPA's provincial or main departments, depending on size and impact of the project.

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[22] ADB (2014). Country Assessment on Land Acquisition and Resettlement. Regional Technical Assistance (RETA) – 7433: Mainstreaming Land Acquisition and Resettlement Safeguards in Central and West Asia RegionRetrieved from https://www.adb.org/sites/default/files/project-document/149538/43288-012-tacr-08.pdf

[23] Ibd.

[24] Ibd.

[25] Personal information by Deputy Head of NEPA, Mr. Gh.M.Malikyar, 2017.

26. **Category 1** activities are activities likely to have adverse impacts: means those activities likely to have significant adverse effects that are sensitive, diverse or unprecedented, and affect an area broader than the sites of facilities subject to the physical works of the activity. These activities among others include:

E. Water management, dams, irrigation and flood protection

The construction or upgrading of:

i. Dams and reservoirs with a storage volume of 50 million cubic meters or more, or a surface area of 8 square kilometres or more; or
ii. Irrigation and drainage projects serving 15,000 hectares or more.

I. Environmentally Sensitive Areas

All activities situated in environmentally sensitive areas as determined by regulation.

27. **Category 2** activities are activities with potentially adverse impacts: means those activities that have potentially significant adverse on human environment or on environmentally sensitive areas that less adverse than those in Category 1 and are site specific and in most instances not irreversible. These activities among others include:

F. Water management, dams, irrigation and flood protection

The construction or upgrading of:

i. Dams and reservoirs with a storage volume of less than 50 million cubic meters or a surface area less than 8 square kilometres;
ii. Irrigation and drainage projects serving less than 15,000 hectares;
iii. Small-scale irrigation systems with a total cost of less than US$ 800,000.

2.1 Environmental Impact Assessment Process

28. The planned small-scale irrigation system rehabilitation under the proposed project, including all related works, fall into Category II, if any. The Regulations, however, do not prescribe procedural differences for activities of one or the other category. All other activities do not fall into any category under these regulations. Thus in the frame of the implementation planning of each project site the project will have undergo the process as described in the Regulations.

29. NEPA accepts for initial review documents in English but all formal applications for approval have to be submitted in official language (either Dari or Pashtu). The following process will take place in the frame or Consideration of applications after screening:

- The project applicant has to submit to NEPA an application form in the format provided in Schedule II of the Regulations. The applicant shall conduct a screening process and submit a screening report to determine, whether or not there is a likelihood of significant adverse effects.
- The NEPA than within 14 days of receiving an application shall distribute a notice of public disclosure to land owners, land-users, and the elders of local communities likely to be affected by the activity.
- NEPA within 21 days of distributing the notice of public disclosure shall
  - Decide whether the information contained in the screening report is sufficient to issue a Certificate of Compliance, with or without conditions;
  - Request required additional information from the applicant; or
  - Instruct the applicant to require an Environmental impact assessment.
- The content of the Environmental Impact Statement is described in Regulation 7 of the Environmental Impact Assessment Regulations;
- Within 45 days of the Environmental Impact Statement being lodged with NEPA the Agency shall
  - issue a Certificate of Compliance, with or without conditions; or
  - advise the applicant in writing to revise the submitted reports and add required information.
- Within 30 days of submission of the revised documents NEP shall issue the Certificate of Compliance, with or without conditions or refuse to issue the Certificate and provide written reasons for the refusal to the applicant.

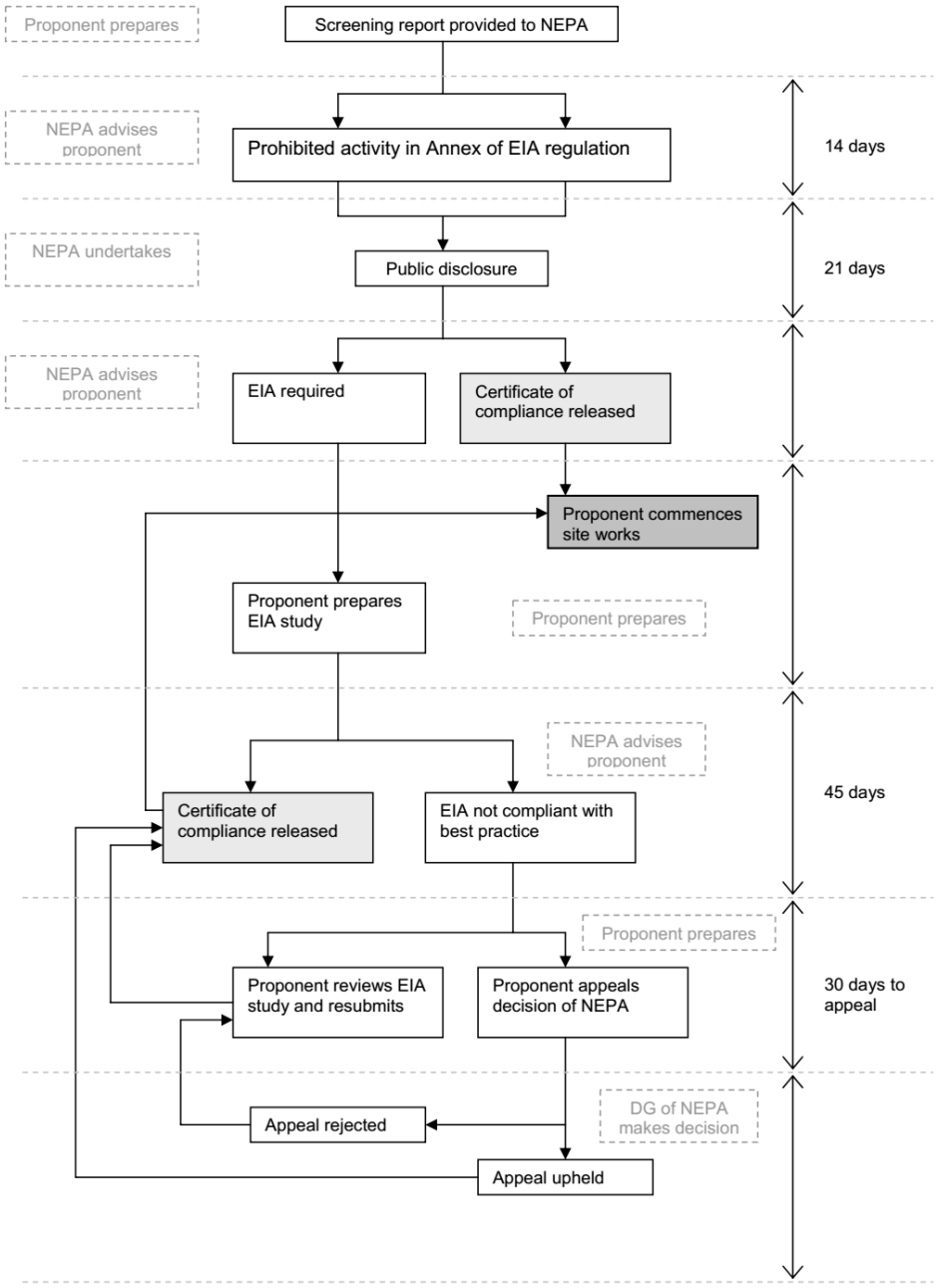


Figure 17 EIA Procedure[26].

30. The Environment Law, Article 19 "Public participation", provides a legal framework for public consultation during environmental assessment:

- Affected persons may express their opinion on a proposed project, plan, policy or activity, preliminary assessment, environmental impact statement, final record of opinion and comprehensive mitigation plan, before the approval of the project, plan, policy or activity, and the proponent must demonstrate to the National Environmental Protection Agency that affected persons have had meaningful opportunities, through independent consultation and participation in public hearings, to express their opinions on these matters on a timely basis.

- The National Environmental Protection Agency shall not reach a decision on any application for a permit until such time that the proponent has demonstrated to the satisfaction of the National Environmental Protection Agency that the proponent has distributed copies of the document to affected persons, informed the public that the document is being made available for public review by advertising the document and displaying a copy of it for inspection, and convened and recorded the proceedings of a public hearing.

- After the National Environmental Protection Agency has reviewed the conditions set forth in item 3 above, the National Environmental Protection Agency shall reach a decision and inform the public of that decision and make available any relevant documentation or information for public review.

[26] National Environmental Impact Policy, November 2007

3. MULTILATERAL AGREEMENTS

31. The Islamic Republic of Afghanistan is a signatory to a number of international and regional agreements and conventions, which are related to the environment. They include:
    - UN Framework Convention on Climate Change (UNFCCC or "Framework Convention"), ratified in September 2002, and the Kyoto Protocol to the Framework Convention signed in June 2013.
    - UN Convention on Biological Diversity (1993), since December 2002;
    - UN Convention to Combat Desertification (1996), since November 1995;
    - Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1975), since October 1985;
    - Convention on the Conservation of Migratory Species of Wild Animals (CMS, 1983), since August 2015;
    - Convention Concerning the Protection of the World Cultural and Natural Heritage, since March 1979;
    - Vienna Convention for the Protection of the Ozone Layer Vienna (1985), since September 1988.

32. In addition, Afghanistan has signed but not ratified[27]:
    - UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property (1970);
    - Ramsar Convention on Wetlands (1975);
    - Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1992);
    - Memorandum of Understanding Concerning Conservation Measures for the Siberian Crane (1993) under the CMS;
    - UNIDROIT Convention on Stolen or Illegally Exported Cultural Objects (1995);
    - UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (2006).

33. Afghanistan is not a signatory to the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention; 1998).

34. Afghanistan became the 60th member of the International Labour Organization (ILO) in 1934 and is considered an "original" member State. Since the establishment of the Liaison Office in Kabul in 2003, the ILO has worked in a wide range of areas including: Employment strategies, Labour law reform, International labour standards, Migration, Skills development, Child labour and Social dialogue. Afghanistan has ratified 19 conventions, but 63 conventions not ratified. Among the not ratified conventions are Fundamental like C029 - Forced Labour Convention, 1930 (No. 29); C087 - Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87) and C098 - Right to Organise and Collective Bargaining Convention, 1949 (No. 98) as well as Governance (Priority) and Technical.[28]

[27] Panj-Amu River Basin Sector Project (RRP AFG 48042), Initial Environmental Examination; July 2016, DRAFT

[28] https://www.ilo.org/asia/countries/afghanistan/lang--en/index.htm

Annex 5: Background on CRVA Approaches and Technical Design

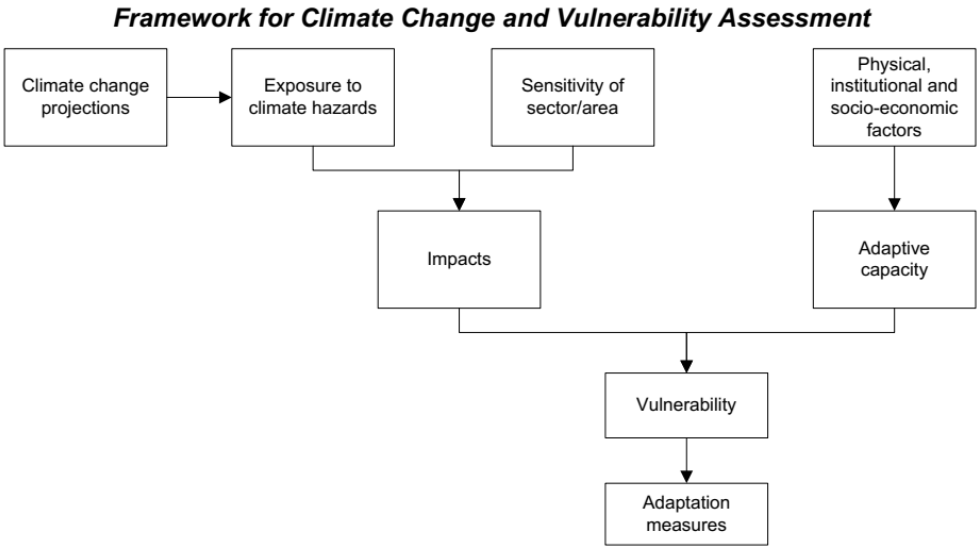
1. Climate Risk and Vulnerability Assessment (CRVA) [29]

A. Framework

1. Vulnerability is defined as the degree to which a system is susceptible to the adverse effects of change. In the climate context, change is manifested by increasing weather variability and a projected long-term shift in climate patterns, particularly for extreme weather events.

2. Vulnerability is a function of the nature, magnitude, and speed of climate change to which an area or sector is exposed, as well as its sensitivity and its adaptive capacity. Specifically, exposure is defined as "the nature and degree to which a system is exposed to significant climatic variations"; sensitivity is defined as "the degree to which a system is affected, either adversely or beneficially, by climate-related stimuli"; and adaptive capacity is defined as "the ability of a system to adjust to climate change (including climate variability and extremes), to moderate the potential damage from it, to take advantage of its opportunities, or to cope with its consequences".

3. Exposure to climate hazards is influenced mainly by geographical location. Sensitivity and adaptive capacity, on the other hand, are context-dependent. Adaptive capacity includes non-climate factors that either aggravate or mitigate the effects of climate change. The latter depends on access to resources and support systems, management capacity, and design standards.



4. Following this framework, information is collected on climate change exposure derived from regional climate modeling data, sensitivity of affected areas, and adaptive capacity.

   - *Exposure* captures the level of potential exposure to extreme climate-related events (drought, storm surge, landslides, flooding) and predicted change to baseline climate parameters (temperature and precipitation), by combining future climate model data with information on past (extreme) events.
   - *Sensitivity* measures the sensitivity of the system of interest—in this case, infrastructure--to climate change hazards because of location, nature of the infrastructure (e.g., bridges that are sensitive to flood levels) and so on.
   - *Adaptive Capacity* reflects natural, physical or institutional factors that influence capacity to adapt to climate change impacts. This includes various non-climate factors like development pressures, watershed condition, engineering design parameters, resources, etc.

B. Method

- Determine sensitivity of infrastructure types to specific climate parameters (i.e., Which climate parameters are critical to performance nd durability? Are existing assets already being affected by increasing variability and extremes in these parameters undercurrent climate?).
- Using modeling-based projections, assess how the critical climate parameters are expected to change, including levels of confidence based on degree of agreement among models.
- Examine non-climate factors that aggravate or mitigate the impact of climate change, including geographic factors (e.g., proximity to waterways, nature of terrain), geologic factors (e.g., strength and erodibility of soils), watershed features (e.g., land use, state of degradation) and relevant socio-economic drivers.
- Assessvulnerability of subprojects considering the combined effects of future climate change and related non-climate factors.
- Identify keyrisk reduction measures and follow-up assessments to specify the measures.

C. Steps during feasibility studies

5. *Scoping*: Identify the climate parameters to which subprojects are vulnerable (e.g., precipitation, temperature, extreme weather events). Focus the information collection on the relevant parameters. Different types of subprojects may involve different sets of climate change parameters (e.g., if the water source is river, groundwater, reservoir) and site (coastal, upland).

[29] From ADB, slightly adapted: https://www.adb.org/sites/default/files/linked-documents/49026-002-sd-03.pdf

6. *Impact assessment*: Understand how the climate parameters may affect the subprojects (e.g., precipitation's effect on dependable water, supply, extreme rain events on structural integrity, etc.). Combine with understanding the role of other factors, e.g., watershed conditions, topography, population density.

7. *Vulnerability assessment and strategic resilience measures*: Understand how the climate parameters are expected to change under climate change scenarios. Then examine the impact of those changes current agriculture and livelihoods and on proposed projects regarding their structural viability, operational performance (especially on their maintenance and periodic rehabilitation requirements), and longevity/sustainability. Identify strategies/measures for adaptation.

D. Steps during detailed engineering design

8. *Adaptation planning*: What specific measures, provisions and planning considerations are warranted to address the assessed vulnerable aspects of the projects (e.g., design parameters, materials and construction methods, maintenance scheme). Assess how/when these measures can be applied: immediately at the time of implementation? not immediately, but build the project so that retrofits can be made as and when necessitated? not at all? what other strategies are acceptable to decision makers and stakeholders?

9. *Implementation arrangements*: How will the adaptation measures be implemented, who are responsible, and how will the measures be financed? Arrangements will vary depending on the nature of the measures (engineering vs non-engineering) as well as on the degree of coordination and funding required.

10. *Monitoring and feedback*: Very important because adaptation is a site-specific and iterative process of adjustment/learning, given also the inherent uncertainty in the severity and timing of climate change impacts. As lessons are gained, these can be feedback to policymakers and mainstreamed into sector policy and planning.

E. Some issues and challenges

11. A central issue is understanding, communicating and handling uncertainty—using the term “uncertainty” as understood in science, rather than in the commonly mistaken sense of not being sure or lacking information with which to act.

12. There is scientific consensus that climate change will alter the hydrologic cycle in important ways (water is the entry point). But despite continuing advances in climate change science, uncertainty about impacts and outcomes remain. The difficulty is that the science community and its terminology uses terms like “risk”, “likelihood” and “uncertainty” that policy makers and the public, including even engineers, mistake for lack of information needed to act, encouraging either skepticism or a wait-and-see attitude.

13. But planners and decision makers cannot wait for climate change uncertainty to somehow be cleared up by science or more evidence before acting, for such uncertainty is unavoidable and will not disappear. Rather, there is a need to fundamentally change the planning and decision-making strategies by taking on an adaptive approach to development, one that confronts uncertainty directly and proactively manages its implications. The old planning paradigm which shuns uncertainty is no longer appropriate. Climate change resilience is fundamentally about managing uncertainty. Water resource management decisions must pay attention to present-day risks of increasing climate variability and extreme weather, and be robust to the uncertainties of future climate change.

14. The sequencing of weather events as simulated in models will not correspond to observations, since the models are not constrained to reproduce the timing of the natural climate variations. Users of climate change data should thus bear in mind that projections derived from models, no matter how sophisticated, are not to be regarded as predictions of actual future climate. Rather, such projections provide simulations of future climate under a variety of hypothetical development and GHG emissions scenarios, and (recently through the RCPs) also alternative global policy choices.

15. Climate projections are driven by assumptions in any case, and should be interpreted properly and with caution considering the unavoidable uncertainty. The occurrence of any discrete climate change event cannot be pinpointed exactly, except through use of probabilities or likelihood estimates. And it is not possible to precisely predict the size and form of climate change impacts, particularly at the local level where water adaptation measures must be implemented.

16. Since uncertainty in climate change management is unavoidable, the aim is to minimize it. This is done, for example, by choosing climate models that capture well the dominant climate feature of a region and, preferably, by not relying on just one model. The other aim is to quantify uncertainty so that the range of probable outcomes can be expressed probabilistically, to be useful for planning and decision making (by producing a range of projections, an ensemble of models enables statistical analysis to be applied).

F. Two-step adaptation planning

17. A two-step procedure for risk-based infrastructure planning is usually followed, and which also serves as basis for justifying supplemental adaptation funding, e.g., from climate funds. To quantify and assess the risk/uncertainty implications of climate change on water resources planning, a two-step planning procedure may be followed:

    - In the first step, a baseline planning scenario is established; this is defined as 'business-as-usual' water resources development with no consideration of the likely implications of long-term climate change. It uses data derived from historical records.

    - In the second step, an alternative scenario is defined as the basis for planning. The alternative scenario(s) is based on climate change projections and it includes outcomes that are to be achieved by a set of adaptation measures that explicitly address climate change risk. In short, this is an altered plan that includes measures for climate resilience.

18. This two-step procedure enables decision-makers to better assess the risk posed by climate change on water development plans, and to quantify the cost implications of providing measures for climate adaptation/resilience. However, it is not yet routinely done in water planning unless the projects in question are being co-financed by climate funds that mandate such two-step procedure (so that the basis for justifying the cost of adaptation is easier to assess).

19. Developing an alternative project planning scenario incorporating climate change projections requires using climate modeling data, for instance, to examine climate change hazard exposure. This two-step logic applies more readily in the case of climate-proofing types infrastructure. For instance, one can assess the design difference and estimate the cost implications between that of upgrading infrastructure to meet current service standards (which serves as the baseline scenario), versus that of upgrading it to higher standards to anticipate climate change effects.

20. The benefit measurement of an adaptation measure that addresses a climate change scenario in development planning derives from the damages avoided with reference to a baseline. In practice, such avoided damages are difficult to estimate given the uncertainty inherent in the modeling tools for climate change prediction. Occurrences of any discrete climate change event cannot be pinpointed, except through use of probabilities. And as

only the frequency and severity of events over time can be projected, damages can only be estimated in a probabilistic sense. Nonetheless, this framework enables decision-makers to systematically account for risk and to assess the robustness of the plan.

G. General strategies for adaptation

21. Ensure that infrastructure development is not planned “as-usual”. Investment decisions must be made robust to the uncertainties of future climate change (and its interaction with other change pressures, such as land use change, watershed degradation, population pressure and so on).

22. Adaptive learning approach
    - consider a variety of plausible futures/scenarios for planning, including climate change (and other change drivers)
    - consider a variety of possible adaptation strategies that bear in mind constraints (e.g., limited knowledge base and tools, financial capacity)
    - favor actions that are flexible, robust to uncertainties, and are scalable and reversible as needed
    - use a learning approach based on hedging, probing and incremental actions, which can lead to better understanding of key uncertainties, interrelationships and consequences
    - enforce routine of monitoring and updating assessments
    - adjust plan considering knowledge gained

23. The mainstreaming of CCA into community level irrigation and agricultural planning should be viewed in the context of their inter-dependence: activities to achieve agricultura development objectives incidentally achieve also adaptation objectives, whereas adaptation measures that are incorporated into agricultural development plans ensure the latter’s sustainability.

2. Technical Designs and Approaches

24. The Technical Design and Approaches follow the guidelines, outlined by the Ministry if Rural Rehabilitation and Development (MRRD).[30] The Technical Manual determines the design of all necessary hydraulic structures, including intake structures (to be rehabilitated or rebuilt under Output 2.2 of the proposed project), delivery or distribution networks like canals and karez (Output 2.3), control network regulating the allocation of water and other auxiliary structures (Output 2.4) as well as on-farm irrigation (Output 2.4). It also addresses upper catchment interventions, in particular rainwater harvesting structures, check dams and similar installations, planned under Output 2.1. The detailed site-specific design of the intervention packages for each project site will be prepared in the frame of the participatory assessment and planning processes under Component 1 and based on their results.

25. So far only preliminary exemplary designs have been developed for potential interventions in specific areas. Here we present as examples such design solutions, which will be taken into consideration during the site specific participatory processes. The cost estimates for each site have been based on typical costs for potentially suitable and necessary intervention packages.

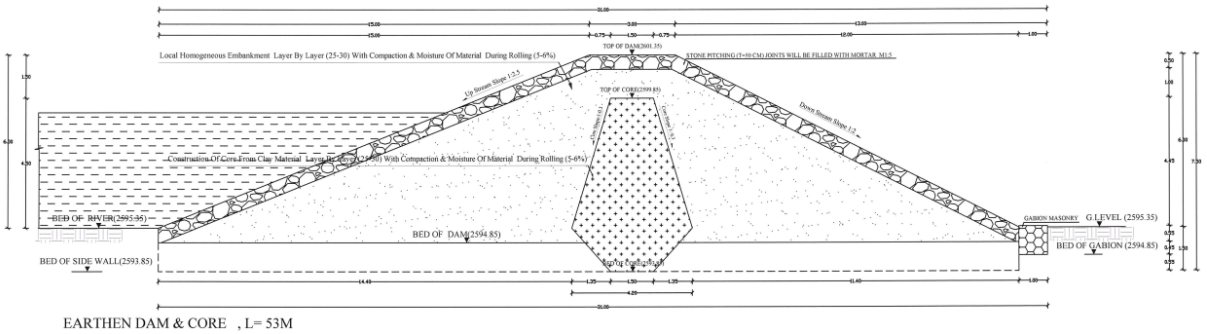
2.1 Upper catchment interventions

26. Natural replenishment of ground water reservoir is a slow process and is often unable to keep pace with the excessive and continued exploitation of ground water resources in various parts of the country. On the other hand climate change has changed the precipitation pattern from a slow and always to a fast and at once. This has not only decreased the natural infiltration process but also increased the floods and soil erosion which has resulted in declining ground water levels and thus has reduced the flow of water in karez or has completely dried karez. Artificial recharge efforts are basically aimed at augmentation of the natural movement of surface water into ground water reservoir through suitable civil construction techniques.

27. Artificial recharge techniques aim at extending the recharge period in the post-rainfall season for about three or more months, resulting in enhanced sustainability of karez and other ground water sources during the dry season. Techniques have to be adopted for diverting most of the surface storage to the ground water reservoirs within the shortest possible time.

28. Upper catchment interventions include, e.g., the construction of (i) check-dams, (ii) percolation ponds, (iii) underground/ subsurface dams, (iv) terracing, (v) contour trenches and/or (vi) recharge wells.

    - Check dams (fig. 18) are normally 10 to 15 m long, but the length may exceed to about 200 m depending on the site. Normally check dams are 2 to 5 m high.



[30] Islamic Republic of Afghanistan, Ministry of Rural Rehabilitation and Development 2019. Irrigation Technical Manual. Version 1; English Version, 207 pp.

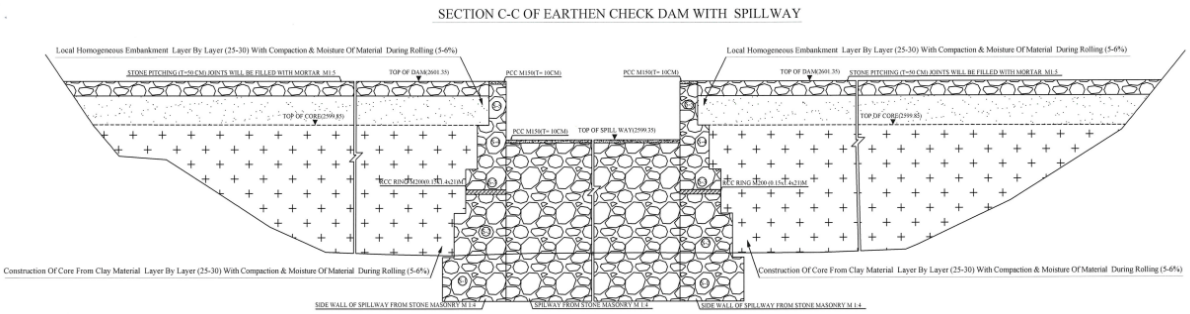


Figure 18 Earthen check dam planned at site L1 Mosaim Khel (Logar, Pule Alam).

- Percolation tanks are based on principles similar to those of check dams, differing from these in having larger reservoir areas. They are not provided with sluices or outlets for discharging water from the tank for irrigation or other purposes. They may, however, be provided with arrangements for spilling away the surplus water that may enter the tank so as to avoid over-topping of the tank bund.
- An underground dam is a sub-surface barrier constructed across stream channel for arresting/retarding the ground water flow and increase the ground water storage. They are so far not planned in the project sites, but might be considered if the assessment and planning process under Component 1 demonstrates their suitability and economic viability.
- Contour trenching (fig. 19) is a watershed management and artificial recharge practice, aimed at building up soil moisture storage involving the construction of small embankments or bunds across the slope of the land.
- Terraces are the small embankments constructed across the slopes of the hills for recharge and plantation and to prevent surface runoff.
- Injection wells or recharge wells are structures similar to bore/tube wells but constructed for augmenting the ground water storage in deeper aquifers through supply of water under gravity. They are so far not planned in the project sites, but might be considered if the assessment and planning process under Component 1 demonstrates their suitability and economic viability.

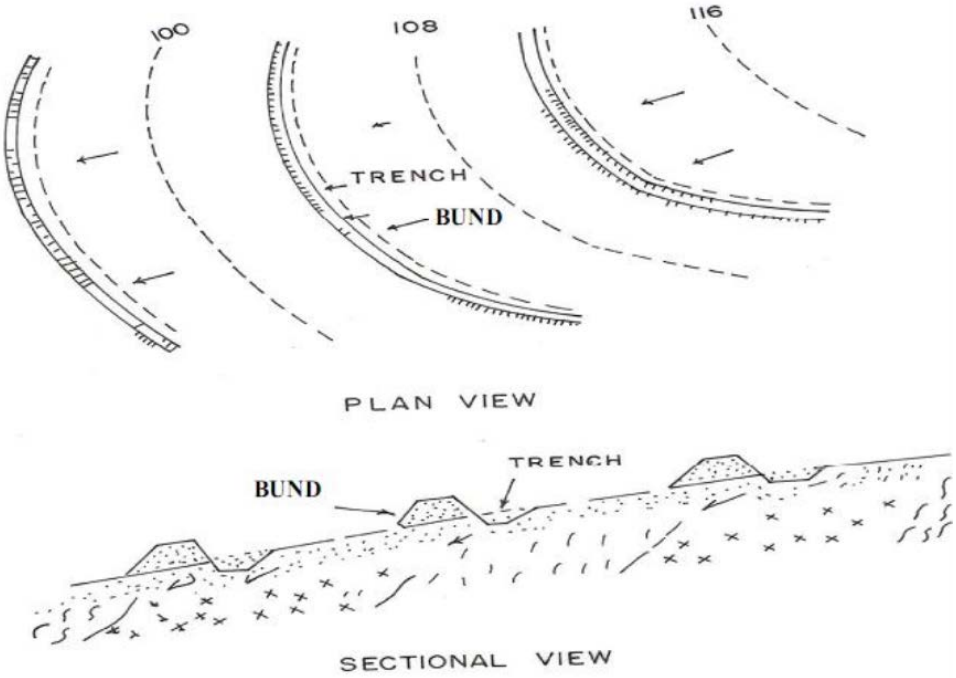


Figure 19 Contour trenching.

2.2 Intake structures

29. There might be canal intake structures with and without modifications of the riverbed. In most cases intake without damming is suitable only for the diversion of small amounts of water. (See Fig. 20).

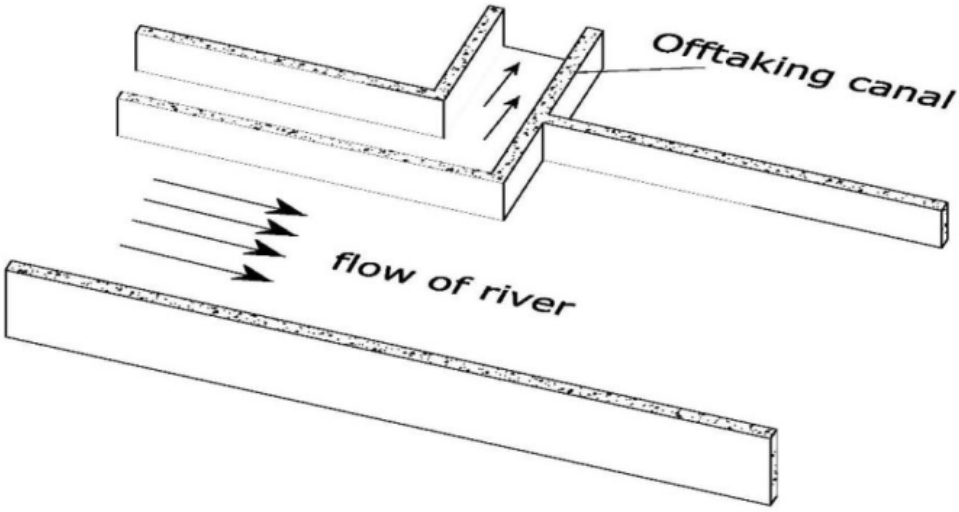


Figure 20 Intake structure without modification of the river course.

30. Intake with water damming normally consists of the weir or barrage, the canal head regulator, divide wall and sluice gate. The individual elements of a structure with weir can be seen in Fig. 21.

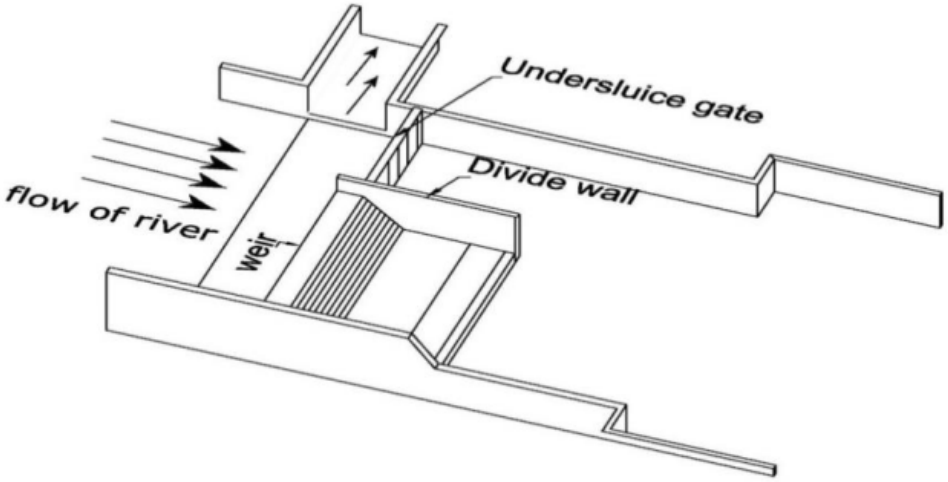


Figure 21 Intake structure with weir.

31. Also simpler structures like bottom ramps can be effective in increasing the reliability and amount of water withdrawal by intake structures.

32. The intake structures of the karez are the mother wells, shown below under 2.3. They will be addressed under Output 2.2, if any specific structural changes are feasible to regulate water flow.

2.3 Canals and karez

33. At several project sites canals will be rehabilitated and seepage losses be reduced by lining with concrete (fig. 22), stone masonry or brick masonry.

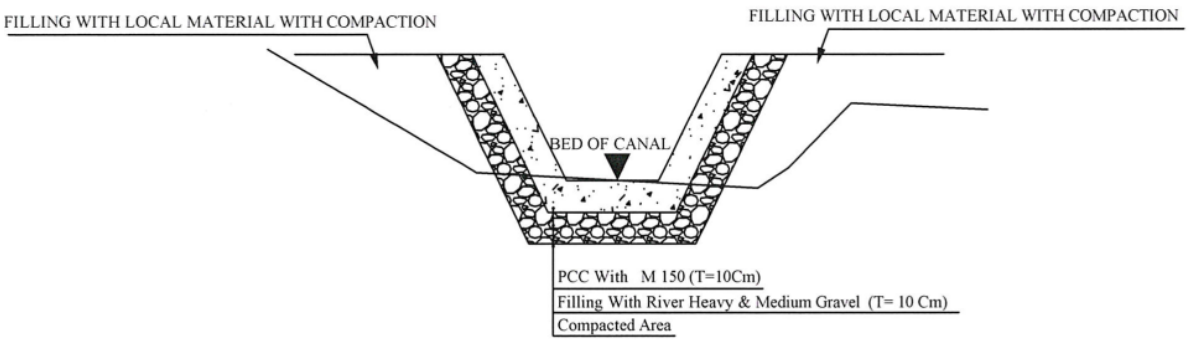


Figure 22 Canal lining with concrete.

34. A *karez* consists of several structures (see figure 23):

- The main and deepest well of a *karez* is called mother well. It is the first well of a karez at its upstream end. The depth of mother well ranges from 20 m - 40 m in long *karez*, 10 m - 25 m, in short *karez* and 5 m -12 m in tile *karez*.

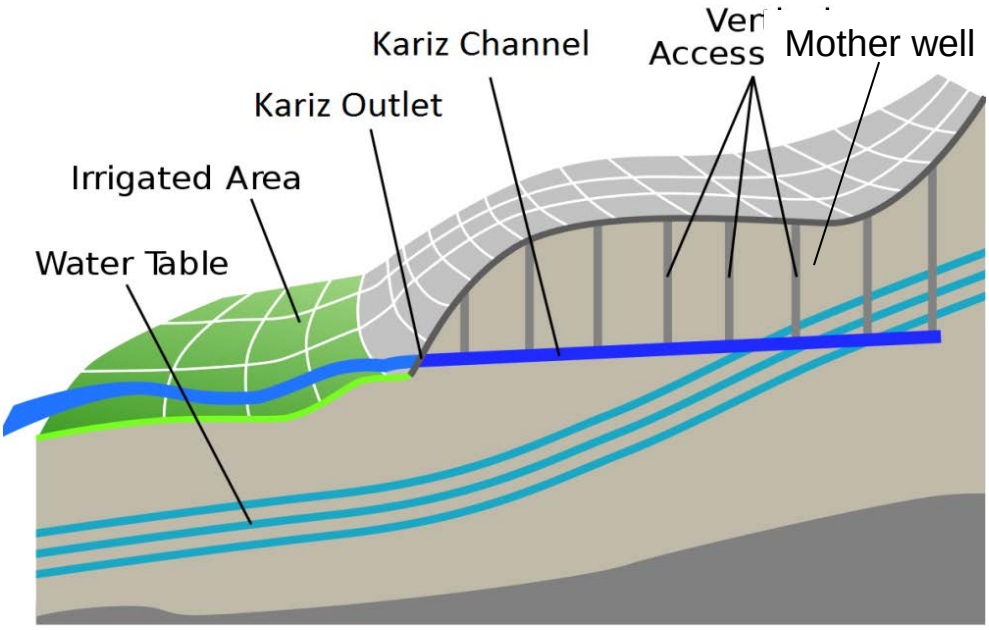


Figure 23 Karez profile.

- The wells of *karez* are connected through a tunnel called *karez* tunnel. The slope of the tunnel ranges from 0.03% - 0.05%. The part of the tunnel below the ground water table is called wet zone or feeding section. The remaining part is called dry zone or transport section. The feeding section of the tunnel drains water from the aquifer. The length of wet zone and dry zone differs from case to case. The longer the wet zone of *karez*, the more stable the *karez* will be and vice versa.
- The exit point of water from the tunnel to the surface is called *karez* mouth/ outlet. Water from the outlet to the agricultural land or farm is transported through a canal. Typically, karez have discharge of 5-10 l/s. As discharge of *karez* is less as compared to the surface water, the water from a *karez* is collected in a water reservoir (*hauz*) and is released once the reservoir is filled.

35. The Irrigation Technical Manual provides guidance on the rehabilitation of karez under consideration of their types, elements and specific local situations. This guidance also includes selection criteria for selecting *karez* suitable for sustainable rehabilitation with regard to competing water uses, ground water resources, available command area, community interest, economic viability and others. It also addresses the safety issues to be taken into account during *karez* rehabilitation.

36. In cases when the tunnel material gets loose and cannot sustain its shape or the tunnel has completely demolished, the tunnel lining is needed. Materials for lining can be precast concrete, which is costly, dry stone masonry and brick masonry. Brick masonry is used as lining material in *karez* registered as cultural and monumental sites. These are normally provided in parabolic arches or triangular roofs.

37. Well repair uses stone masonry lining, brick masonry lining and RCC ring. Stone masonry lining is economical as well as durable. Brick masonry is specially focused in cultural and historical karez sites to save their archeological value. RCC rings are precast concrete that can be pre-fabricated. They are the most economical and practical method of wells repair.

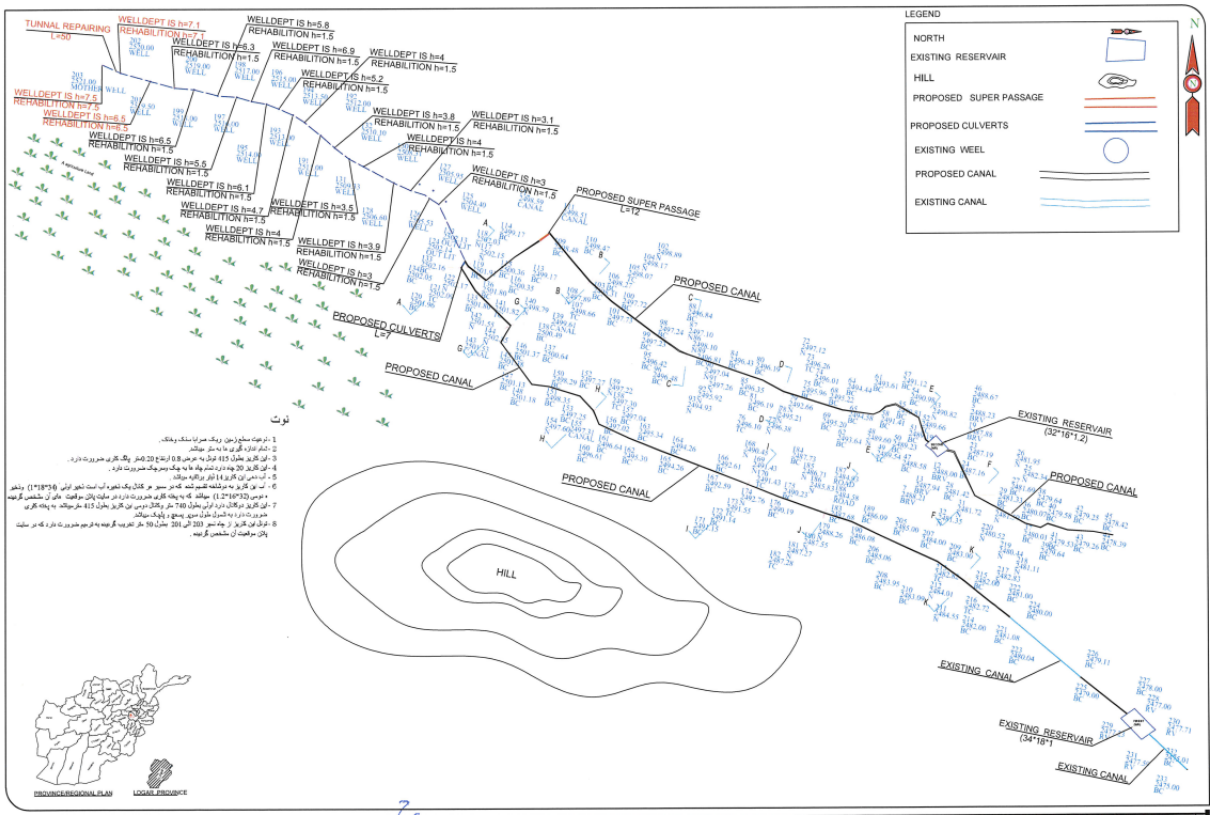


Figure 24 Planned rehabilitation of karez and canal system in Shamsuddin (Logar, Pule Alam).

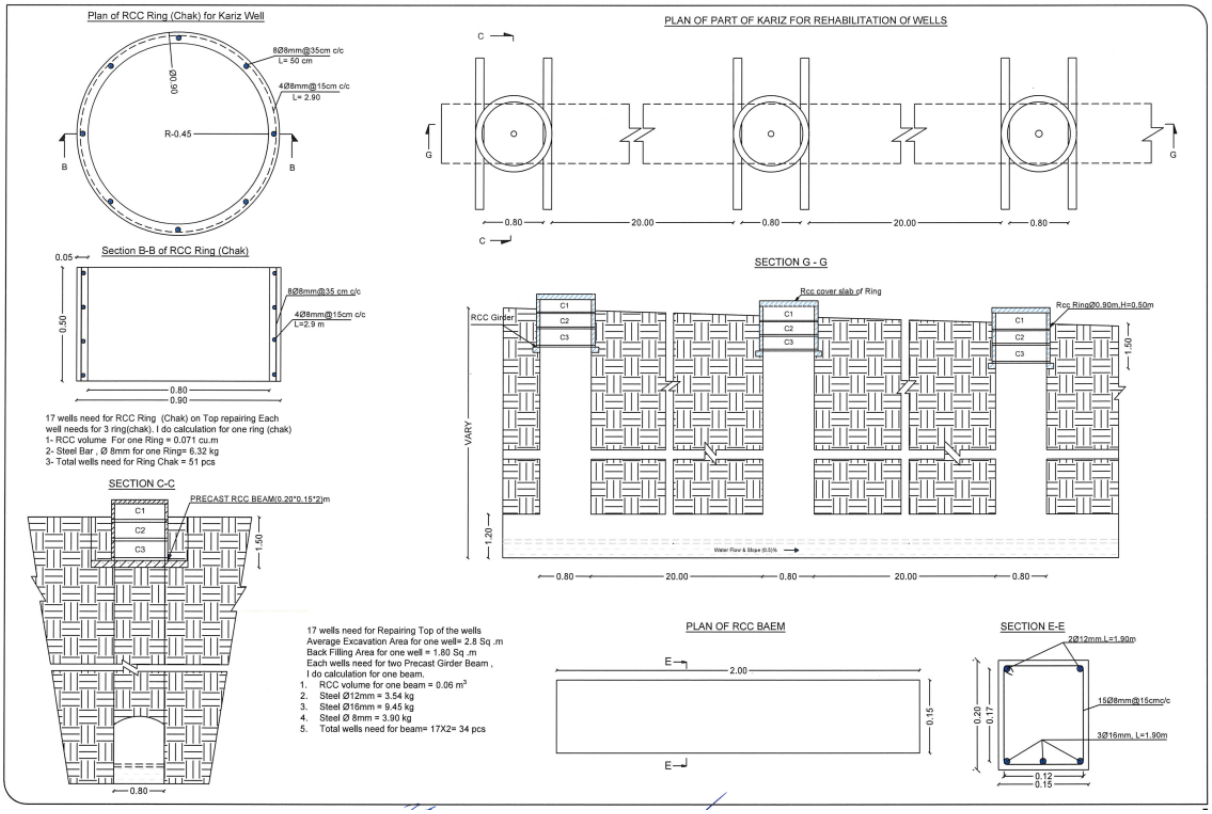


Figure 25 Planned repair of karez wells in Shamsuddin (Logar, Pule Alam).

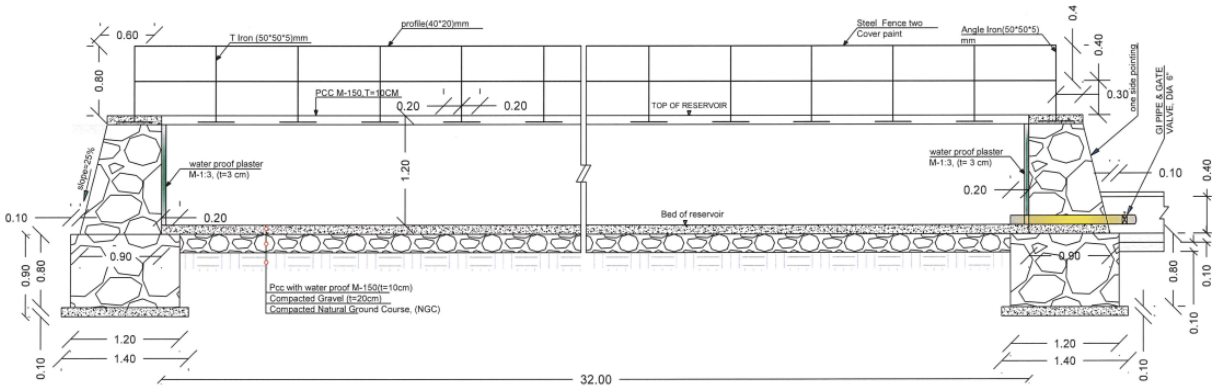


Figure 26 Planned water reservoir at karez outlet in Shamsuddin (Logar, Pule Alam).

2.4 Distribution regulation and on-farm interventions

38. The construction of effective control gates will allow for water distribution.

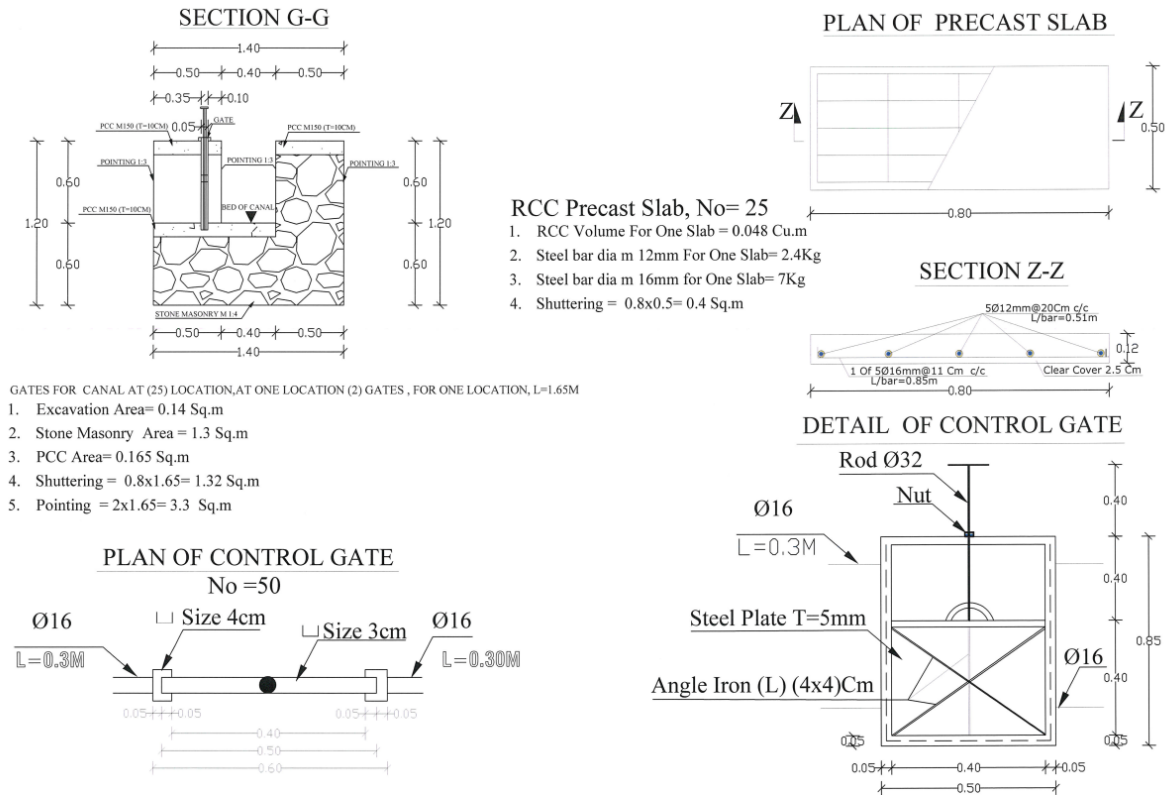


Figure 27 Example of design of control gates.

39. The climate change adaptation of small-scale irrigation systems also addresses the regulation of water distribution and on-farm water use efficiency. One structural element to be introduced will in many cases be flow measuring.

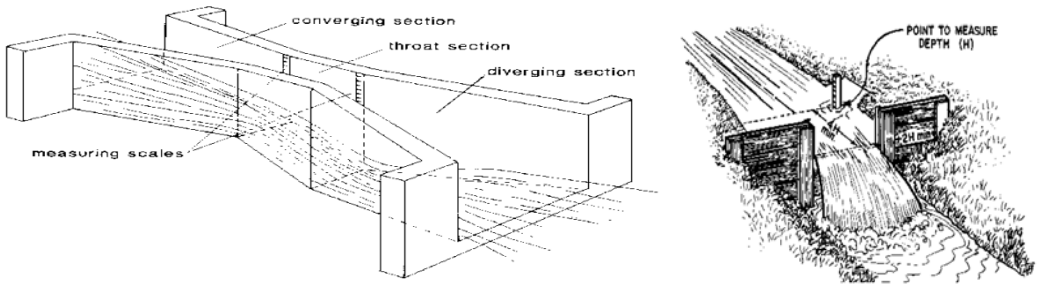


Figure 28 Structures for flow measuring.

40. The program will also address irrigation efficiency by assisting in choice and adaptive development of locally suitable water efficient irrigation techniques, e.g. drip irrigation.

Annex 6: Report on Consultations in the Project Zones and with National Level Stakeholders

Stakeholder Consultations

A series of consultation sessions and meetings with the technical working groups with the relevant stakeholders took place during the project design. The attendees at the meeting were given a brief description as to the purpose of the consultations. The Climate Change Adaptation Fund was also introduced with the highlight of climate change impacts in Afghanistan.

The following ministries/government authorities were represented at the sessions – Ministry of Rural Rehabilitation and Development (MRRD), Ministry of Energy and Water (MOEW), Ministry of Agriculture, Irrigation and livestock (MAIL), National Environmental Protection Agency (NEPA) relevant international agencies, NGOs, Private sector and Community Development Councils (CD) at the national level and sub- regional level of the country. The following areas were highlighted as major areas of Afghanistan.

Agriculture

- The vulnerability of the agriculture sector in Afghanistan is due to increased temperatures and changes in rainfall/snowfall patterns and snow melt which is high. Increased soil evaporation, reduced river flow and less frequent rain during peak cultivation seasons are already affecting agricultural productivity and crop choice options
- The existing irrigation systems in Afghanistan are operating at a low efficiency level
- Community level awareness raising at all levels

Adaptation Fund Proposal

- Validation of data collected from sites
- The outputs and activities were proposed
- Technical Feasibility Report and draft Project Proposal reviewed
- Theory of Change of the proposed proposal reviewed and finalized

Summary at end of Discussions:

The proposed project is to be designed to empower the rural poor in fighting climate change impacts such as changing seasons, erratic precipitation and increased incidence of extreme events affecting lives, ecosystems and livelihoods in rural Afghanistan. The emphasis during the consultations were that apart from building resilience against climate change impacts by enhanced livelihood and environmental security, the proposed project should also deliver direct benefits such as climate proof irrigation system.
List of the consultation workshops in different regions were as below:

No	Workshop Location	Team Leader	Date
1	Consultation Workshop in Herat	Rafi Stanikzai	March 9, 2019
2	Consultation Workshop in Kabul	Baryalai Helali	May 13, 2019
3	Consultation Workshop in Logar	Habibullah khan	April 10, 2019
4	Consultation Workshop in Maidan Wardak	Rahmanullah Hamid	March 29, 2019

Technical Working Group (TWG) Consultations

1st TWG

- The Ministry of Rural Rehabilitation and Development (MRRD) in collaboration with the Ministry of Agriculture, Irrigation and Livestock (MAIL), National Environmental and Protection Agency (NEPA), Ministry of Energy and Water (MoEW) with support from UNDP, is formulating a project on "Climate change resilient livelihoods advanced in rural Afghanistan" for submission to the Climate Change Adaptation Fund.

- Accordingly, the 1st Technical Working Group (TWG) meeting was held, the main focus of this meeting was to narrow the scope and geographical focus.

- Mr. Stefan Michel and Mr. Rafiullah Stanekzai who will be supporting with data gathering and research for project formulation, were introduced.
- Issues with the existing climate change impacts on the agriculture and irrigation systems were discussed and highlighted.
- The level of productivity of agriculture products from the past few years which are impacted due to climate change were discussed.
- Most vulnerable to climate change and based on preset technical criteria the geographical areas were proposed.

2nd TWG

The Ministry of Rural Rehabilitation and Development (MRRD) in collaboration with the Ministry of Agriculture, Irrigation and Livestock (MAIL), National Environmental and Protection Agency (NEPA), Ministry of Energy and Water (MoEW) with support from UNDP, is formulating a project on "Climate change resilient livelihoods advanced in rural Afghanistan" for submission to the Climate Change Adaptation Fund. GREEN CLIMATE FUND FUNDING PROPOSAL.

Mr. Stefan, the Technical Expert, who is responsible for drafting the Technical Feasibility Report, made a clearly structured presentation to explain the report he was currently working on.

The presentation focused on the following areas;

1. Presented the main part of the concept note, covering areas such as Afghanistan Scenario, Impacts of Climate Change, Vulnerability of Afghanistan towards Climate Change, Design of the project, implementation mechanism & next steps towards climate proofing of rural area agriculture.

2. Feasibility develops a strategy and recommendations for facilitating the above 'change'. Accordingly, the strategy is built on three pillars:

    a. Enhance livelihood opportunities and agricultural productivity of rural communities

3rd TWG

The Ministry of Rural Rehabilitation and Development (MRRD) in collaboration with the Ministry of Agriculture, Irrigation and Livestock (MAIL), National Environmental and Protection Agency (NEPA), Ministry of Energy and Water (MoEW) with support from UNDP, is formulating a project on "Climate change resilient livelihoods advanced in rural Afghanistan" for submission to the Climate Change Adaptation Fund. GREEN CLIMATE FUND FUNDING PROPOSAL.

Accordingly, the 3rd Technical Working Group meeting the Technical Expert, who is responsible for drafting the Technical Feasibility Report, listed out the draft outputs, activities and sub-activities for review of the participants;

Project objective:

This project's overall objective is the increased resilience to climate change impact of the livelihoods of rural communities depending on irrigated arable farming by ensuring the supply of irrigation water under changing climate conditions. The project will achieve this in selected rural communities by implementing two interrelated components resulting in two outcomes:

1. Building individual and institutional capacity of rural communities to assess, plan, maintain and use climate change adapted irrigation infrastructure; and
2. Rehabilitation of irrigation schemes at community level by improving groundwater recharge, reconstruction of water abstraction, delivery, inter-farm and on-farm distribution systems.

In the long term, it is expected that lessons learnt will be applied to other parts of Afghanistan and result in improved adaptive capacity there as well.

Project/Programme Components	Expected Concrete Outputs
1. Capacity of local community institutions to develop climate resilient irrigation infrastructure..	1.1 Participatory assessment of conditions of and climate related risks towards irrigation systems 1.2 Plans for climate-proofing of irrigation systems formulated. 1.3 Institutional and technical capacity at community level to maintain rehabilitated and climate proofed irrigation systems 1.4 Institutional and technical capacity at community level for efficient management of use of the water .
2. Rehabilitation and climate proofing of irrigation schemes at community level.	2.1 Rainwater harvesting and surface run-off capturing structures for water collection and groundwater recharge. 2.2 Water intake structures of canal and *karez* systems rehabilitated and climate proofed.2.3 Rehabilitation of water delivery canals and *karez*, lining for reduction of seepage losses 2.4 Rehabilitation and/or installation of efficient inter- and on-farm water distribution systems

- The budget for major project interventions were up for discussion and certain amendments were made.
- A comment was made at the involvement and engagement of the local community organizations will be the key in this aspect.
- A concern was raised whether women led civil societies or agriculture cooperatives will be engaged in this process, it was reiterated that the registration of organizations will help in this regard and a fair balance of representatives will be used for service delivery
- Sustainability of the project was highlighted as a key area of focus.

List of Participants

Kabul Province

Islamic Republic of Afghanistan
Ministry of Rural Rehabilitation & Development
Regional Programs

May 12, 2019

Consultation Meeting on Climate Change Resilient Livelihoods Advanced in Rural Afghanistan

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26	Naseer Ahmad Faiz	MAIL/ID	Adviser	abr.fna.2008@gmail.com	0700476311	
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30	Stefan Michel	UNDP	INTL. CONSULTANT	st-michel@gmx.de		
31						
32						

Herat

No	Name	Province	Position and organization
1	Haji M Omarjan	Herat	Community Development Council Member
2	Haji Abdul Majid	Herat	Community Development Council Member
3	Haji Juma Khan	Herat	Community Development Council Head
4	Haji Amanullah	Herat	Community Development Council Head
5	M Rasool	Herat	Deputy Director, MAIL
6	Haji Gulbidin	Herat	Provincial Director, MRRD
7	Madat Khan	Herat	Head of National Citizen Charter Programme in Herat provice
8	Ali Mohammad	Herat	Community Development Council Member
9	Dawood Shah	Herat	Member of Agriculture cooperative
10	Zarif Khan	Herat	Member of Agriculture cooperative
11	Rahmatullah	Herat	Member of Agriculture cooperative
12	Mirza Khan	Herat	MRRD regional technical team
13	Haji Fazel Ahmad	Herat	MRRD regional technical team
14	Mowlawi Khaleq Dad	Herat	MRRD regional technical team
15	Rahmatullah Agha	Herat	MRRD regional technical team
16	Haji M Nawab	Herat	MoEW regional technical team
17	Sharafuddin	Herat	MoEW regional technical team
18	Haji Ahmad Khan	Herat	MoEW regional technical team
19	Haji Nik Mohammad	Herat	MAIL regional technical team
20	Gul Dasta	Herat	MAIL regional technical team
21	Abdul Ghafar	Herat	MAIL regional technical team
22	Abdul Ghafor	Herat	NEPA regional technical team
23	Nazar Mohammad	Herat	NEPA regional technical team

Logar Province

No	Name	Province	Position and organization
6	Darya khan	Logar	MoEW regional technical team
7	Zikrya khan	Logar	MoEW regional technical team
8	Ashna	Logar	MAIL regional technical team
9	Noor Lal	Logar	MAIL regional technical team
10	Gul .wali	Logar	NEPA regional technical team
11	Ab.Qader	Logar	NEPA regional technical team
12	Hj.Redwanull ah	Logar	MoEW regional technical team
13	Fazal mola	Logar	MAIL regional technical team
14	Hj.Ab Jalal	Logar	MRRD regional technical team
15	Momtaz	Logar	MRRD regional technical team
16	Temor sha	Logar	Community Development Council Member
17	Ala Nazar	Logar	Community Development Council Member
18	Mer zaman	Logar	Community Development Council Member
19	Bibi Gowhar	Logar	Community Development Council Member
20	Yeshed khan	Logar	AREA international NGO
21	M.Hashm	Logar	AREA international NGO
22	M.Ghani	Logar	Merab Bashi
23	Sonobar	Logar	Merab Bashi

Maidan Wardak Province:

No	Name	Province	Position and Organization
1	Hizbullah	Wardak	Deputy chairperson, Community Development Council
2	Hj.Noorulalh	Wardak	Community Development Council Member
3	Adam khan	Wardak	Community Development Council Member
4	Khan zada	Wardak	MoEW regional technical team
5	Ismail	Wardak	MoEW regional technical team
6	Hj.Sharefullah	Wardak	MAIL regional technical team
7	Hj.khan zareen	Wardak	MAIL regional technical team
8	Hj.M. Alam	Wardak	NEPA regional technical team
9	Naiamatullah	Wardak	NEPA regional technical team
10	Rasool mohmmad	Wardak	MoEW regional technical team
11	Hj.Ab Rahman	Wardak	MAIL regional technical team
12	Sharefa	Wardak	MRRD regional technical team
13	Emal khan	Wardak	MRRD regional technical team
14	Bas golon	Wardak	University lecturer
15	Najmodeen	Wardak	University lecturer
22	Mo .Ahmad	Wardak	Chairperson CDC
23	Akram khan	Wardak	Chairperson of CDC
24	Hj. Aslam	Wardak	Member of CDC
25	Hj.Sayed Jalal	Wardak	Member of CDC

Summary of the TWG meetings

Meeting	Venue	Objective	Participants
1st Technical Working Group	Ministry of Rural Rehabilitation and Development (MRRD)	The main focus of this meeting was to narrow the scope and geographical focus	The Ministry of Rural Rehabilitation and Development (MRRD) in collaboration with the Ministry of Agriculture, Irrigation and Livestock (MAIL), National Environmental and Protection Agency (NEPA), Ministry of Energy and Water (MoEW),UNDP, civil society, private sector
2nd Technical Working Group	Ministry of Rural Rehabilitation and Development (MRRD)	The objective of this meeting was to view the progress of the Project Team in drafting the Technical Feasibility Report	
3rd Technical Working Group	Ministry of Rural Rehabilitation and Development	Proposed outputs and activities were revised	

Annex 7: Social and Environmental Screening Template[31]

The completed template, which constitutes the Social and Environmental Screening Report, must be included as an annex to the Project Document. Please refer to the Social and Environmental Screening Procedure and Toolkit for guidance on how to answer the 6 questions.

Project Information

Project Information	
1. Project Title	Strengthening the resilience and increasing livelihood opportunities of rural Afghan communities
2. Project Number	UNDP PIMS ID 6340
3. Location (Global/Region/Country)	South Asia/Afghanistan/Multiple Provinces

Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?

Briefly describe in the space below how the Project mainstreams the human-rights based approach

UNDP's application of the Human Rights Based Approach and its emphasis on gender equality in development programming will ground the implementation of the proposed program on these important development principles. Accordingly, the project will implement measures that increase the accessibility of services for marginalized groups. For instance, it builds into its beneficiary selection criteria preferences for women-headed households, IDPs, returning refugees and other vulnerable population. The design of these measures during detailed participatory planning at project sites will also consider the special needs of these marginalized groups. In order to achieve this, the program will conduct surveys and interviews to understand the challenges marginalized groups face and discover the best ways to overcome them together with the beneficiaries.

Moreover, the program will work closely with the Ministry of Women Affairs, MRRD's department for *Kuchi*, and civil society organizations that target marginalized individuals to benefit from their expertise and maximize the impacts of its results.

In addition, the program will carry out regular site visits and monitoring and evaluation activities to ensure there are adequate opportunities for community members to provide their feedback, including any concerns about the project. The program will also stay in regular contact with the CDCs and local governments so that any complaints can be channelled back to the program timely and be addressed immediately.

Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment

Preliminary climate change assessments predict GDP losses of as much as 6% per year based on current climate projections (NAPA). Reductions of this order of magnitude would substantially undermine the Government's ability to invest in the nation's development, increasing the responsibility for adaptation on society as a whole. As explained above, the rural population will be affected most, but urban populations will be affected indirectly. In such a situation, it will be the poorest communities who will be the least able to adapt. Amongst these groups, it is recognized that women are the most vulnerable. Afghanistan's Policy on Women acknowledges that women have lacked the opportunities provided to men and as a result they fall behind men in all fields of self-advancement. Climate change will affect the socially constructed gender roles between men and women and may undercut efforts to build more equitable access to development. These role dynamics will likely need to evolve to enable men and women to improve their responsive and adaptive capacity. If under climate change-induced stress, institutional structures place unequal emphasis on responding to the needs of men and women, they risk weakening the adaptive capacity of one group over another.

The project aims to build community self-reliance; so that dependence on the state for adaptation resources is reduced as communities themselves – both men and women – tailor adaptation technologies and techniques to their own needs. The project will aim to directly improve adaptation capacity of approximately 100,000 people from approximately 11,300 households in 58 communities spread over five provinces. Generally, 50 percent of the target beneficiary population (51,542) will be women and estimated 50 percent youth (including young women). Different categories of vulnerable and or marginalized beneficiaries (people with disabilities, female headed households and IDP households) will be targeted, making up about 4% of the target population.

Sustained and increased availability of water is key to social development. Improved access to irrigation water specifically supports the livelihoods of women and children through improved food security and quality, e.g. by the opportunity to grow fruits and vegetables on household plots. It is also linked to access to clean household and drinking water from springs, wells and *karez*, which will alleviate adverse health effects and allow for the reallocation of time dedicated to fetching water towards engaging in other activities including education. The reduction in time spent collecting water can improve the participation of youths (especially girls) in school, thus improving the level of education in the target communities.

Briefly describe in the space below how the Project mainstreams environmental sustainability

[31] This SEST has been modified from the SEST provided with the Program Concept in the frame of Full Proposal development based on available information on project sites and proposed interventions.

The project is integrated with the country's agricultural development and climate change adaptation policies and is supported by the key ministries responsible for rural development, agriculture and irrigation management, and environmental protection. Adaptation to climate change impact on irrigated agriculture and rural livelihoods have featured prominently in national development plans and the strong support from all the ministries (agriculture and irrigation, rural development, environmental protection) involved ensures that the project enjoys strong political support – a critical enabler for development efforts.

The project will assist rural communities of five provinces in capacity building for adaptation to climate change and in rehabilitating and making climate proof their irrigation systems from upper catchment areas to on-farm water use efficiency. Improved management of upper catchment areas with application of rainwater harvesting techniques will foster the recharging of groundwater aquifers, reduce surface runoff and resulting erosion and flood events, thus contributing to the ecosystem resilience, reduced disaster risk and adaptation to climate change impacts like drought, unreliable and shifting precipitation patterns, reduced snow cover and shrinking glaciers.

Part B. Identifying and Managing Social and Environmental Risks

QUESTION 2: What are the Potential Social and Environmental Risks? *Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any "Yes" responses). If no risks have been identified in Attachment 1 then note "No Risks Identified" and skip to Question 4 and Select "Low Risk". Questions 5 and 6 not required for Low Risk Projects.*	**QUESTION 3: What is the level of significance of the potential social and environmental risks?** *Note: Respond to Questions 4 and 5 below before proceeding to Question 6*			**QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?**
Risk Description	***Impact and Probability (1-5)***	***Significance (Low, Moderate, High)***	***Comments***	***Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.***
Where, despite project implementation, shortage of irrigation water and/or irrigated lands persist, conflict is possible about access to irrigation water and/or to newly irrigated or rehabilitated land. There might also be conflict where in the case of upper catchment interventions the local community may restrict open access to grazing lands. (Checklist question 8 on Principle 1)	I = 1 P = 1	Low	Power structures within communities only in a limited extend can be influenced in the frame of such a program. Open access situations and unclear resource governance are commonly reasons for the degradation of ecosystems, resources and result in land and resources degradation. Upper catchment interventions may require the regulation of use in such areas by the local CDCs.	To be considered and addressed in the frame of participatory assessment and planning process and in the frame of institutional capacity development on water use.
Physical works under the project construction may pose potential risks and vulnerabilities related to occupational health and safety due to physical hazards. (Checklist question 3.7 on Principle 3)	I = 1 P = 1	Low	Any physical works using machinery, construction materials and working in difficult accessible locations, like inside of karez bear certain risks.	The issue is addressed and the risks are minimized by selection and effective use of appropriate mechanical equipment and personal protective gear, work procedures, training, and awareness creation/sensitization.
Modification or conversion of habitats due to upper catchment management and irrigation, reduction of trees, shrubs, forbs along irrigation canals and at captured springs (Checklist questions 1.1, on Principle 3)	I = 1 P = 3	Low	These activities will target heavily degraded areas only and lead to a general improvement of the biodiversity, ecosystem functions and services as well as productivity. However, their impact on the currently existing ecosystems has to be considered, as these will be transformed and their biodiversity and ecosystem functions and services will unavoidably change.	The issue has been considered and addressed during the full project development in ESMP. It will further be addressed area-specific during implementation in the frame of participatory assessment and planning process. All related activities will be planned in a way that the benefits from overall ecosystem improvements will exceed any possible local habitat losses.
Rehabilitated and climate change resilient irrigation systems or reforested sites as well as livelihood related physical structures can be damaged or destroyed by natural disasters. Such destruction would likely be local	I = 3 P = 5	Moderate	The project's objective is to increase the resilience of the irrigation systems, including their upper catchment areas towards the impact of climate changes.	In the frame of participatory assessment and planning process Climate Risk and Vulnerability Assessments will be integrated and for each site and proposed intervention the adaptation potential will be assessed for different scenarios and predicted climate change trends.

and reversible. Despite precautionary planning extreme drought can affect the functioning of irrigation infrastructure under the project. Although the project aims at reducing risk for likelihoods and increasing the resilience of infrastructure climate change may in the long term exacerbate these risks. (Checklist questions 2.2, 3.5 on Principle 3)			The severity of these impacts and thus the adaptation potential will depend on not fully predictable trends in GHG emissions and climate change.	
Traditional irrigation systems, in particular *karez* will be revitalized. Potentially water use from springs of traditional cultural, spiritual and religious importance. (Checklist questions 4.1, 4.2 on Principle 3)	I = 2 P = 3	Moderate	The impact of revitalizing irrigation systems in the sense of "living heritage" is considered positive. However, the program has to avoid that authentically preserved irrigation systems, in particular karez of historical value, lose their authenticity because of "modernizing" in terms of losing original substance and erected new structures and used materials.	To be considered and addressed in the frame of participatory assessment and planning process. In case of possible impact on sites of recognize or not recognized national or international importance assessment and planning with involvement of the responsible department in the Ministry of Information and Culture of Afghanistan.
The project during construction can result in the release of pollutants from construction machinery to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts. The project may during construction and operation potentially result in the generation of waste (non-hazardous and hazardous (mainly lubricants and batteries from machinery). No use of chemicals or materials subject to international bans or phase-outs is proposed or expected. (Checklist questions 7.1, 7.2 and 7.3 on Principle 7)	I = 1 P = 3	Low	The proposed project will only in a very limited extent during construction works cause minor pollution and require resources in form of construction materials.	Pollution will be minimized by applying the legal environmental standards of Afghanistan and using the cleanest available technologies and machineries. Resources for construction will be used as efficient as possible and remnants will be removed and recycled. All potentially hazardous waste from machinery will be properly collected and safely disposed.

	QUESTION 4: What is the overall Project risk categorization?		
	Select one (see SESP for guidance)		**Comments**
	Low Risk	☐	
	Moderate Risk	☑	**If the appropriate mitigation measures are put in place during the project, the project will have an extremely low environmental and social risk over the life of the project.**
	High Risk	☐	
	QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?		
	Check all that apply		**Comments**
	Principle 1: Human Rights	☑	The proposed project does not impact human rights. There might be a low risk of conflict about access to irrigation water and/or to newly irrigated or rehabilitated land, which will be addressed through the facilitation of community level participatory planning and setting of clear requirements for the prevention of discrimination of poor, disadvantaged and minority groups.
	Principle 2: Gender Equality and Women's Empowerment	☐	
	1. Biodiversity Conservation and Natural Resource Management	☑	There might be localized transformation of existing biodiversity and ecosystems, which will be outweighed by the positive impact of the project on biodiversity and ecosystems.

	2. Climate Change Mitigation and Adaptation	☑	The project contributes to climate change adaptation and does not cause any additional emission of greenhouse gases.
	3. Community Health, Safety and Working Conditions	☑	The project positively impacts on community health by improving water supply and local microclimate. Safety and working conditions are addressed during construction, rehabilitation and operation of irrigation systems, in particular regarding the *karez* systems.
	4. Cultural Heritage	☑	No cultural heritage will be adversely affected by the project. The revitalization of *karez* systems contributes to their preservation as cultural heritage.
	5. Displacement and Resettlement	☐	The proposed project does neither directly nor indirectly cause displacement and resettlement.
	6. Indigenous Peoples	☐	There are no indigenous people in any of the project areas.
	7. Pollution Prevention and Resource Efficiency	☑	The proposed project will only in a very limited extent during construction works cause minor pollution and require resources in form of construction materials. Pollution will be minimized by applying the legal environmental standards of Afghanistan and using the cleanest available technologies and machineries. Resources for construction will be used as efficient as possible. The project will result in an increased efficiency of use of land and water resources.

Final Sign Off

Signature	***Date***	***Description***
QA Assessor		UNDP staff member responsible for the Project, typically a UNDP Programme Officer. Final signature confirms they have "checked" to ensure that the SESP is adequately conducted.
QA Approver		UNDP senior manager, typically the UNDP Deputy Country Director (DCD), Country Director (CD), Deputy Resident Representative (DRR), or Resident Representative (RR). The QA Approver cannot also be the QA Assessor. Final signature confirms they have "cleared" the SESP prior to submittal to the PAC.
PAC Chair		UNDP chair of the PAC. In some cases PAC Chair may also be the QA Approver. Final signature confirms that the SESP was considered as part of the project appraisal and considered in recommendations of the PAC.

SESP Attachment 1. Social and Environmental Risk Screening Checklist

Checklist Potential Social and Environmental Risks		
Principles 1: Human Rights		**Answer (Yes/No)**
1.	Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	No
2.	Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups? [32]	No
3.	Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	Yes
4.	Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	No
5.	Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	No
6.	Is there a risk that rights-holders do not have the capacity to claim their rights?	No
7.	Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	No
8.	Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	Yes
Principle 2: Gender Equality and Women's Empowerment		
1.	Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	No
2.	Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	No
3.	Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	No
4.	Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? *For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being*	No
Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below		
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management		
1.1	Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? *For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes*	Yes
1.2	Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	No
1.3	Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	No
1.4	Would Project activities pose risks to endangered species?	No
1.5	Would the Project pose a risk of introducing invasive alien species?	No
1.6	Does the Project involve harvesting of natural forests, plantation development, or reforestation?	No
1.7	Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	No
1.8	Does the Project involve significant extraction, diversion or containment of surface or ground water? *For example, construction of dams, reservoirs, river basin developments, groundwater extraction*	No
1.9	Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	No

[32] Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

1.10	Would the Project generate potential adverse transboundary or global environmental concerns?	No
1.11	Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area? *For example, a new road through forested lands will generate direct environmental and social impacts (e.g. felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.*	No
Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant[33] greenhouse gas emissions or may exacerbate climate change?	No
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	Yes
2.3	Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)? *For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding*	No
Standard 3: Community Health, Safety and Working Conditions		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	No
3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	No
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No
3.4	Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	No
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	Yes
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	No
3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	Yes
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No
Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? *(Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)*	Yes
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	Yes
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No
5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	No
5.3	Is there a risk that the Project would lead to forced evictions?[34]	No
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	No

[33] In regards to CO_2, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

[34] Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	No
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	No
6.3	Would the proposed Project potentially affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples (regardless of whether indigenous peoples possess the legal titles to such areas, whether the Project is located within or outside of the lands and territories inhabited by the affected peoples, or whether the indigenous peoples are recognized as indigenous peoples by the country in question)? *If the answer to the screening question 6.3 is "yes" the potential risk impacts are considered potentially severe and/or critical and the Project would be categorized as either Moderate or High Risk.*	No
6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	No
6.5	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	No
6.6	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No
6.7	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No
6.8	Would the Project potentially affect the physical and cultural survival of indigenous peoples?	No
6.9	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
Standard 7: Pollution Prevention and Resource Efficiency		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	Yes
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	Yes
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? *For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol*	Yes
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	No
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No

Annex 8: Environmental and Social Impact Assessment and Management Plan

1. INTRODUCTION

1.1 BACKGROUND

1. This Environmental and Social Impact Assessment and Environmental and Social Management Plan (ESIA/ESMP) has been prepared in support of the project proposal for *"Climate change resilient livelihoods advanced in rural Afghanistan*" by the Government of the Islamic Republic of Afghanistan (GoIRA) to the Adaptation Fund (AF). As this project is supported by UNDP in its role as IE, the project has been screened against the 15 environmental and social principles that are the basis of the Adaptation Fund's Environmental and Social Policy and UNDP's Social and Environmental Standards Procedure. In the result of the screening the project was deemed a Moderate Risk (World Bank/International Finance Corporation Category B) project. An Environmental Social Impact Assessment (ESIA) has been prepared for the project. Chapter 9 of this Annex provides the Environmental and Social Management Plan (ESMP), addressing the environmental and social impacts identified in the frame of the ESIA for this project.

2. The Ministry of Rural Rehabilitation and Development (MRRD) of the Government of the Islamic Republic of Afghanistan (GoIRA) with support from UNDP, is formulating a project on adaptation to climate change impacts, the *"Climate change resilient livelihoods advanced in rural Afghanistan"* for submission to the AF.

1.2 DESCRIPTION OF THE PROGRAM

3. The program is described in detail in the Full Proposal, Part II, section A. It consists of two components: Component 1 Capacity of local community institutions to develop climate resilient irrigation infrastructure and Component 2 Rehabilitation and climate proofing of irrigation schemes at community level.

4. Component 1 consist of "soft activities", in particular trainings, participatory assessments, planning of adaptation responses to climate change risks and vulnerabilities, institutional and technical capacity development at community level to maintain rehabilitated and climate change resilient irrigation infrastructure and to ensure efficient water use. The assessment and planning exercises will be guided by professional facilitators and technical experts. The Component 1 therefore does not have any direct environmental impact. However, in its result activities might become implemented which may require specific environmental and social impact assessments in accordance to the legislation of Afghanistan and/or the safeguards requirements of potential funding agencies. In terms of social impact, Component 1 is expected to have positive impact in terms of empowerment of local communities to mobilize own resources for their climate change adaptation, in terms of community ownership of rehabilitated climate change resilient irrigation systems and in terms of institutional and individual capacity development.

5. Component 2 consists of sets of activities to be implemented in 58 communities. Each project site will have its own specific interventions, which will be planned in detail in the frame of Component 1 to ensure maximum use of community knowledge, adaptation to community needs and build community ownership. The Component 2 has been structured along the irrigation systems from upper catchments, via water intake structures, delivery canals and karez to the inter-farm and on-farm distribution systems. It is expected that at most project sites interventions will be implemented in all four sets of activities. In addition to smaller upper catchment interventions there will be five larger check dams. Intake structures will be rehabilitated for all canals and in case of karez mother wells will be rehabilitated and the opportunities to modify them in a way allowing for regulation of inflow will be explored. At the current stage, 25 canals are expected to be rehabilitated – lined for reducing seepage losses and increasing water use efficiency and modified for reducing the risk of damage by climate change exacerbated disasters. The cleaning and adaptation of 31 karez is planned, including the construction of improved outlet structures allowing for collection of water for effective irrigation. In all targeted project sites water distribution between farms and water use on farms will be addressed, based on the results of the assessments and planning under Component 1.

6. The approaches of Climate Change Risk and Vulnerability Assessments (CRVA) and some technical details of the planned "hard interventions" are presented in Annex 5.

1.3 PROJECT ALTERNATIVES

7. As part of the project development, a range of alternatives were considered: The alternative of no action would result in an increasing distortion of livelihoods, migration and related economic, social and environmental costs. It was therefore rejected. The alternative of massive large-scale technical interventions, including e.g. the construction of entirely new irrigation systems, was considered not cost effective. Also in some locations an expansion of pumping irrigation from deep wells was considered as being not cost effective and risky in terms of sustainability due to the possibility of over-drafting of limited groundwater resources. A detailed assessment of the considered alternatives is provided in the full proposal in Part II, Section C on cost-effectiveness of the proposed program.

2. LEGAL AND INSTITUTIONAL FRAMEWORK FOR ENVIRONMENTAL AND SOCIAL MATTERS

8. The legal framework conditions are described in Annex 4.

3. DESCRIPTION OF EXISTING ENVIRONMENT

9. This section identifies the existing environmental and social baseline conditions of the country and its regions in general and of project intervention sites in particular. The potential impact of the project interventions on the existing environmental

and social conditions will be assessed in section 4 and avoidance and mitigation measures are presented in in the ESMP (section 5).

3.1 TOPOGRAPHY, GEOLOGY, SEISMIC ACTIVITY AND SOILS[35]

10. Afghanistan is very mountainous and its topography characterized by the Hindukush with about 7,000 m high snowy peaks, other high mountains, the high central plateau, deeply eroded gorges and valleys, inter-montane basins and wide pediments. About half of the country is located at altitudes above 2,000 m while altitudes below 500 m account for less than 10%.

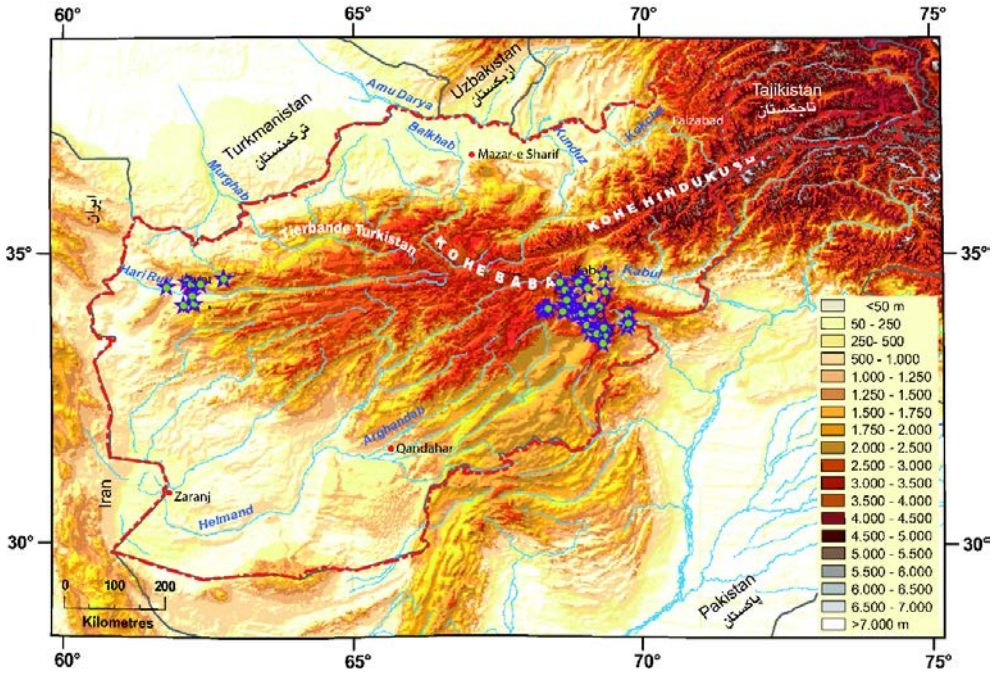


Figure 29 Relief with major rivers (map by Rafiqpoor[36]) and project sites.

11. The project sites are located at the western edges of the mountainous region of central Afghanistan (Herat), in the central mountains (Maidan Wardak) and in the eastern mountains and valley (Kabul, Logar and Paktia).

12. Afghanistan's geology (figure 30) is very complex. The specific interventions at the project sites will mainly take place in the Canozoic sediments of the Late Quarternary, composed of clays, gravel and loess. For the *karez* the existence of upper permeable layers is important, allowing for groundwater recharge and functioning as aquifer above impermeable layers. The need for lining of canals depends on local geology and the permeability of the local substrates.

[35] Breckle, S.-W. and Rafiqpoor, M.D. (2010). Field Guide Afghanistan – Flora and Vegetation, Bonn, Scientia Bonnensis.
[36] Ibd.

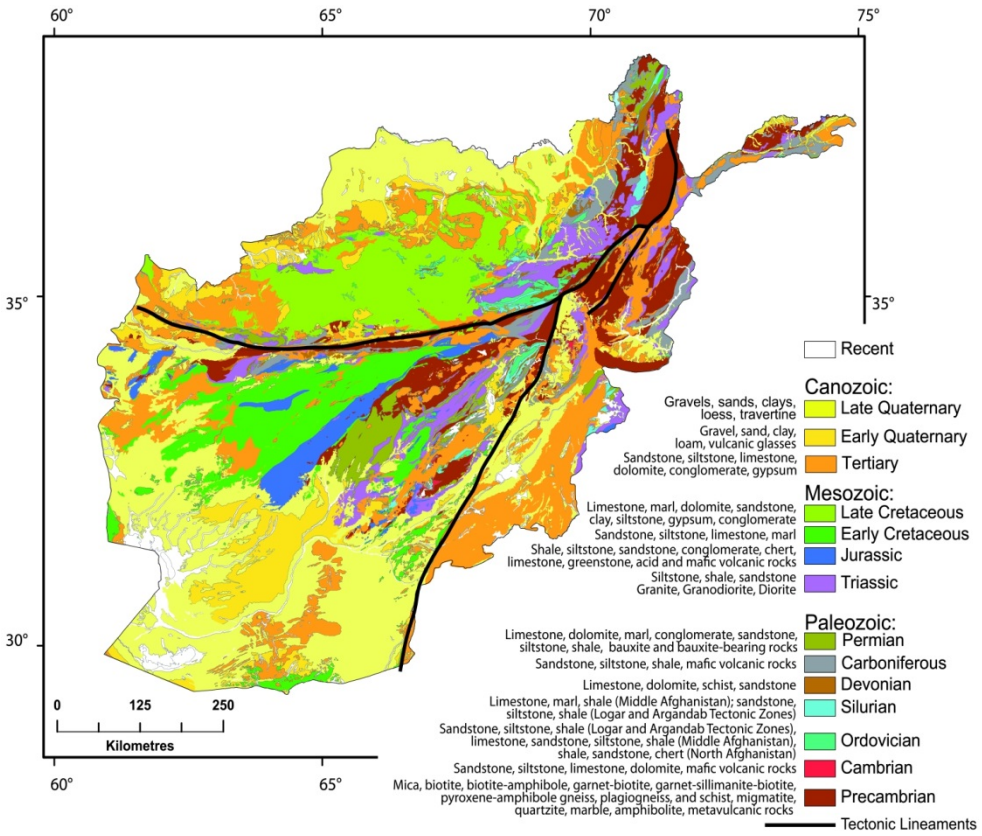


Figure 30 Geology with tectonic lineaments (map by Rafiqpoor[37]).

13. Afghanistan is located in a seismic active zone, where the Eurasian and Indian tectonic plates collide. Parts of Afghanistan lie within a relatively stable, southward-projecting promontory of the Eurasian tectonic plate, but the country is surrounded on the east, south, and west by active plate boundaries that are associated with deformation, faults, and earthquakes. The greatest hazard is in the east, where the Indian plate moves northward with respect to Eurasia at a rate of about 4 cm/yr. A broad zone of deformation along the plate boundary lies partly within eastern Afghanistan, trending south-westward from the Hindu Kush in northeast Afghanistan, through Kabul, and along the Afghanistan-Pakistan border. This zone is characterized by abundant earthquakes and major faults.

14. Seismic hazard is low in the project sites in Herat and medium to high in the project sites in Kabul, Logar, Paktia and Maidan Wardak (figure 32).

[37] Ibd.

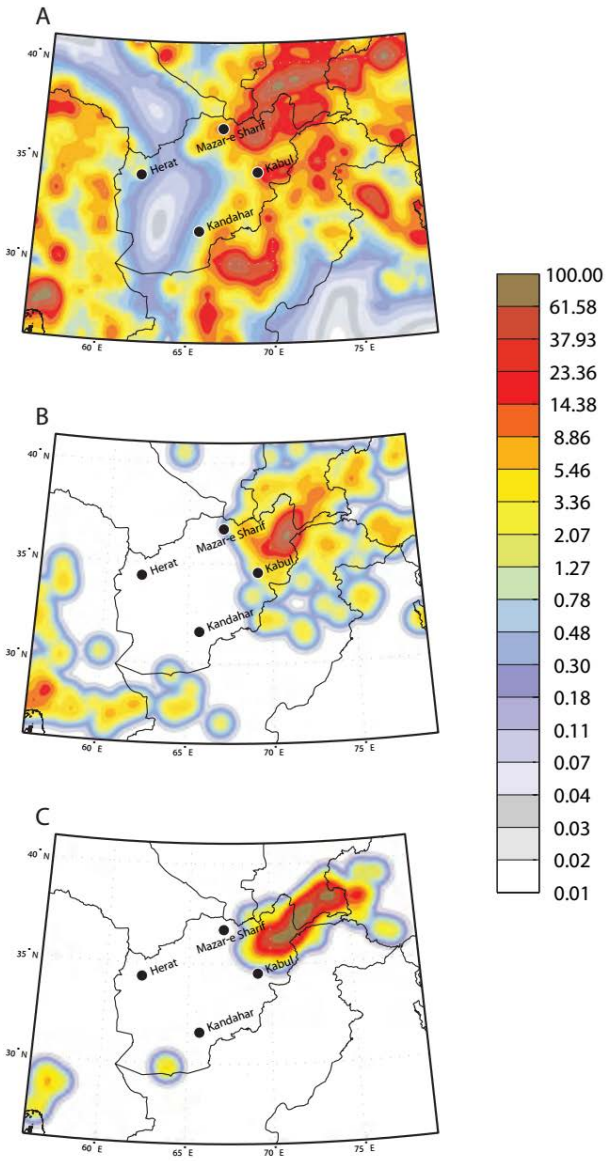


Figure 31 Maps of modelled earthquake rates derived from smoothed seismicity showing the number of M6.0 earthquakes occurring per 10,000 km^2 per 10,000 years for depths – (A) 0–50 km, (B) 50–100 km, (C) 100–250 km.

15. Figure 32 provides a map of soil regions across Afghanistan. The soils are a result of the varied topography, the petrological basis (bedrock), the climatic differentiation and the vegetation cover.

16. Many soils in Afghanistan due to their young age, arid climate, historical and current erosion and low vegetation productivity are poorly developed and have low humus content. Soil erosion depends on several parameters, such as type of soil, slope, vegetation, topography and rainfall and wind intensity. The loss of soil stability and soil erosion can take place due to the removal of vegetation cover, and numerous construction activities. The major reasons for soil erosion all over Afghanistan are overgrazing, removal of trees, shrubs and subshrubs for fuel and cultivation of sloping lands. It can cause the loss of soil fertility and induce slope instability. Wind erosion removes fertile topsoil and causes dust storms, which negatively affect air quality and human health.

17. As rainfall is often concentrated in single large events it can have a significant impact on unprotected soils, where sudden high surface run-off causes sheet and gully erosion, sedimentation and sometimes massive flash flood events and debris flows.

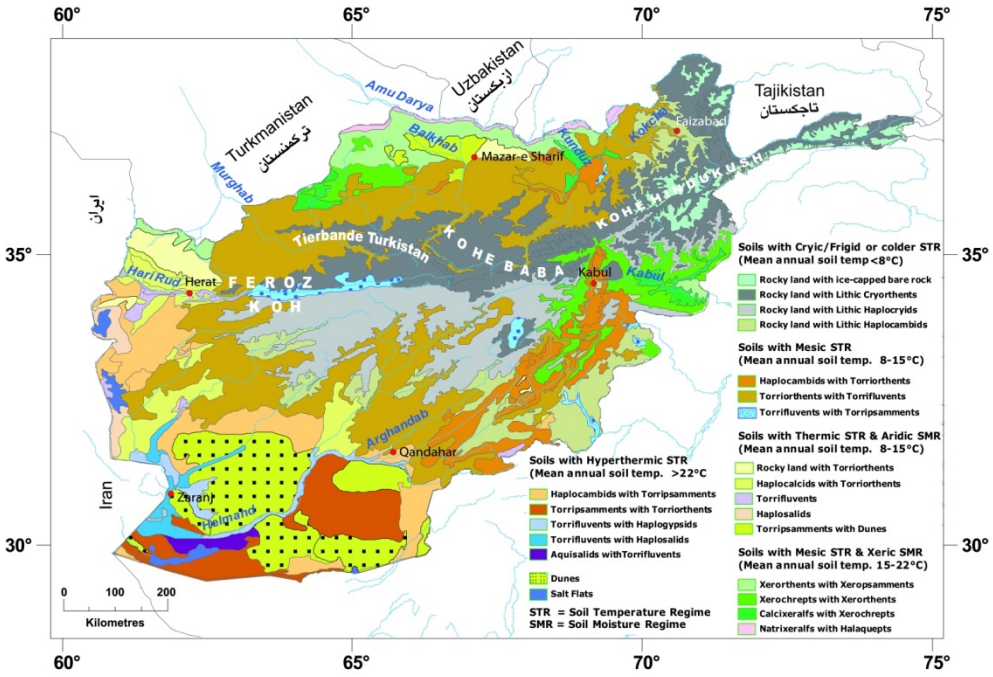


Figure 32 Soil regions after the classification of USDA (map by Rafiqpoor[38])

3.2 UNEXPLODED ORDNANCES

18. After decades of war, civil war and civil unrest, unexploded ordnances are a risk factor in most areas of Afghanistan. Land mines have been widely used during the Soviet-Afghan war 1979-1989 and during the civil war between the Mujahedeen factions and with the Taliban (1989-2001)[39].

19. The project preparation did not include a detailed analysis of presence of unexploded ordnances in the planned project sites. However, all are located in areas, which are stable since many years, and these areas have either been cleaned up and/or are known and intensively used by the local communities.

3.3 CLIMATE

20. Climate conditions and trends in Climate Change are described in Annex 1.

3.4 AIR QUALITY

21. The project areas are predominantly village or rural in character. There is very little air pollution from any industrial pollution sources. Dust pollution is common all over Afghanistan during the dry season and originates from dry arable lands and degraded rangelands, both not covered by protective vegetation. Use of biomass and dung for cooking causes year-round localized air pollution in villages. During the cold season of up to eight months heating with biomass, dung and coal, all burned in primitive heating devices, causes substantial air pollution.

3.5 SURFACE WATER AND HYDROLOGY

22. Afghanistan can be divided into three major drainage basins and some non-drainage areas: 1. the endorheic Amu Darya basin, draining previously into the Aral Sea with some of the historic tributaries now isolated and considered as forming two separate basins: 1.a Harirod-Murghab and 1.b Northern, 2. the endorheic Helmand River basin draining to the Sistan terminal lakes on the Iranian border, 3. Kabul-Indus River basin draining now or in the past into the Indus and finally into the Arabian sea. The planned projects are located in the major drainage basins Kabul and Harirod-Murghab.

[38] Ibd.

[39] International Campaign to Ban Landmines. Landmine monitor report 2003. New York:Human Rights Watch,2002.

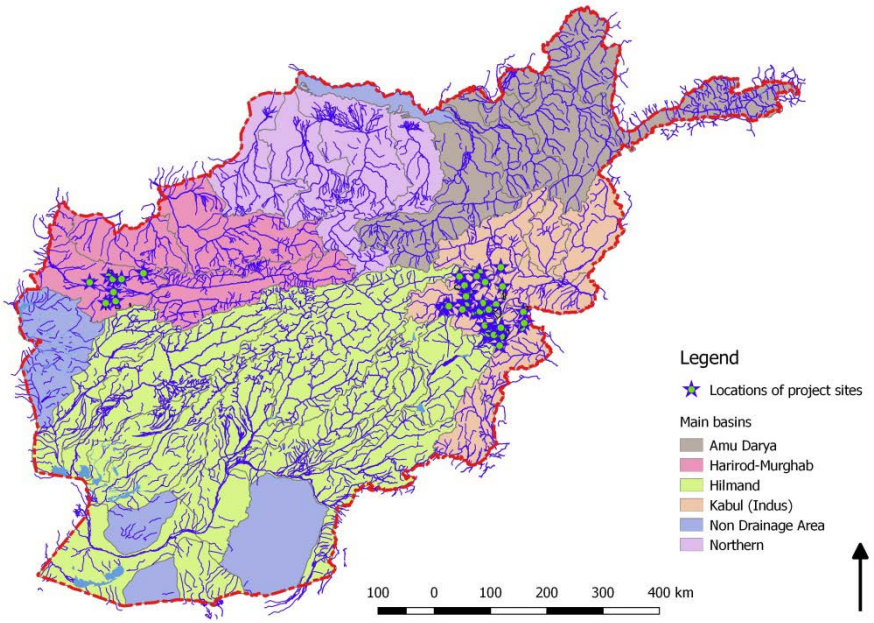


Figure 33 Main drainage basins of Afghanistan with planned project sites

23. The discharge in all rivers varies much between seasons, but also between years. Seasonal fluctuations of discharge are caused by a combination of precipitation patterns, snow accumulation and snowmelt. Precipitation is highest at higher altitudes, where low temperature cause that a large portion of precipitation is stored as snow. For this reason the peaks of river discharge are not synchronous with precipitation patterns. The seasonal variations in discharge are advantageous for irrigated agriculture, because precipitation outside the vegetation season is naturally stored and during the growth season provided as river discharge. The predicted climate change will affect this seasonal water availability as precipitation patterns become more irregular and temperature increase reduces snow packs. Inter-annual variation of mean discharge is also high and variations of discharge by factor 5-10 and more can be observed between driest and wettest years. These variations cause challenges for irrigated agriculture and due to climate change they observably increase and this trend is projected to continue.

24. Pollution of rivers in the project areas is highly unlikely due to the absence of industrial polluters and the lack of large scale intensively used irrigated lands. As livestock dung is usually collected as fuel or fertilizer no substantial pollution from livestock can be expected. In rural and urban settlements pollution of rivers by domestic waste can locally be substantial. Lack of sewage treatment causes localized pollution of surface water by human excrements. Many rivers have seasonally or episodically high sediment load, which can affect irrigation infrastructure and require substantial maintenance efforts for repair and removal of silt, sand and gravel.

3.6 GROUNDWATER

25. Water is infiltrated into the ground and replenishes the groundwater, where during a sufficient time of the year precipitation exceeds evapotranspiration and where porous substrate allows for the water to sink in deep enough and to reach an aquifer, i.e. a geological layer, which is permeable for water, subordinated by an impermeable stratum. Under the climate conditions of Afghanistan infiltration takes place during the wet season in areas with enough rainfall. Most precipitation is in the mountains and snowmelt contributes to the groundwater replenishment of the aquifers. In contrast, in the arid lowlands little precipitation reaches the groundwater as most water is either immediately evaporated or stored in the upper soil horizons and then transpired by plants or evaporated from the soil surface. The groundwater supply in the arid lowlands thus depends on the replenishment in the mountain areas.[40]

26. Only close to the mountains is the aquiferous layer not too deep below ground to be reached by a well or a shaft. For this reason since centuries in Afghanistan underground irrigation canal(s) *karez* are used. In such a *karez* the groundwater is first captured at the bottom of the mountains by digging a vertical shaft, from where it will be led to the irrigation areas through long tunnels. Along this tunnel during the construction of the underground channel a series of vertical shafts is excavated to remove the material from the tunnel and to allow for its future maintenance. This creates a chain of ring-shaped small hills in the landscape (fig. 34).[41]

27. The total ground water recharge in Afghanistan is 16.4 km³ or 10% of the total precipitation, partly due to the concentration of rainfall in form of snow, which recharges groundwater when it melts. Climate change will directly negatively impact on groundwater recharge. Groundwater extraction is estimated at about 2.8 km³, of which 99% is used for agriculture. Of this 1.2 km³ comes from *karez* systems, 1.0 km³ from springs and the remaining from shallow and deep wells.[42] In densely populated areas of Afghanistan, like the Kabul basin with a population of 4.6 million people (2015), ground water is pumped with diesel pumps, leading to a depletion of groundwater tables. Groundwater pollution is caused by inadequate sanitation

[40] Breckle, S.-W. and Rafiqpoor, M.D. (2010). Field Guide Afghanistan – Flora and Vegetation, Bonn, Scientia Bonnensis.
[41] Breckle, S.-W. and Rafiqpoor, M.D. (2010). Field Guide Afghanistan – Flora and Vegetation, Bonn, Scientia Bonnensis.
[42] ADB (2015). Preparation of the Afghanistan Water Resource Sector Development Strategy. Volume 2 Annexes. TA-7994 AFG.

facilities. Groundwater is the preferred source for village water supply, since it can be of high quality and less seasonal than surface water, but salinity is a problem in some areas.[43]

28. At the sites of planned projects groundwater studies will be undertaken under Component 1 in the frame of the participatory assessment and planning process. The field surveys during proposal preparation explored the site-specific situation and assessed the potential of sustainable *karez* functioning based on current ground water situation and under consideration of upper catchment measures for increasing aquifer recharge.

Figure 34 *Karez* landscape in a perspective GoogleEarth view; the lines of the irrigation tunnels leading from the foothills to the villages are well visible.

3.7 VEGETATION, FLORA AND FAUNA

29. The vegetation of Afghanistan, except of the small forest areas in the East and the irrigated lands, appears over large areas rather monotonous and for most of the time plants appear to be almost absent. This impression is caused by the strongly seasonal and predominantly semiarid climate in combination with the past and ongoing excessive impact of grazing, cutting of vegetation for forage and fuel and expanding *la'lmi* cultivation of drylands. The vegetation of Afghanistan (figure 35) can be characterized by the main zonal vegetation categories on normal ecological sites (No.1-8). Vegetation formed under predominant influence of one ecological factor like additional water or high salinity is called azonal vegetation (No. 9).

30. The project sites are located in the following vegetation zones (numbers refer to the map figure 35):

    1.e Shrubby *Amygdalus* semi-deserts in foothill areas of N-, S- and W-Afghanistan and in interior basins.

    3.b *Pistacia atlantica* woodlands in W-, S- and E-Afghanistan at altitudes between 1,000 and 2,000 m, often degraded with dominance of unpalatable spiny *Astragalus* and small annuals..

    3.c *Amygdalus* woodlands of *A. kuramica* and *A. browiczii* at elevations of 2,000 to 2,800 m, often transformated into thorny cushion subshrub and *Leucopoa karatavica* grassland.

    3.d *Juniperus excelsa/semiglobosa* woodlands in N-Afghanistan above 1,400 m up to the tree line at 2,900 to 3,200 m, largely transformed into thorn-cushion and *Artemisia glanduligera*.

    4. Evergreen broad-leaved woodlands and forests in E-Afghanistan at altitudes of 800 to 1,300 m, often replaced by sub-shrub communities of *Perovskia* and *Artemisia* species.

    5. Temperate coniferous forests and woodlands in E-Afghanistan, in a large scale severely degraded or already destroyed and replaced by *Artemisia* subshrub communities.

    9. Riverine vegetation at lower terraces of the major river valleys, in the majority transformed into agricultural lands with forest remnants heavily affected by cutting and livestock grazing.

[43] Ibd. ADB (2015)

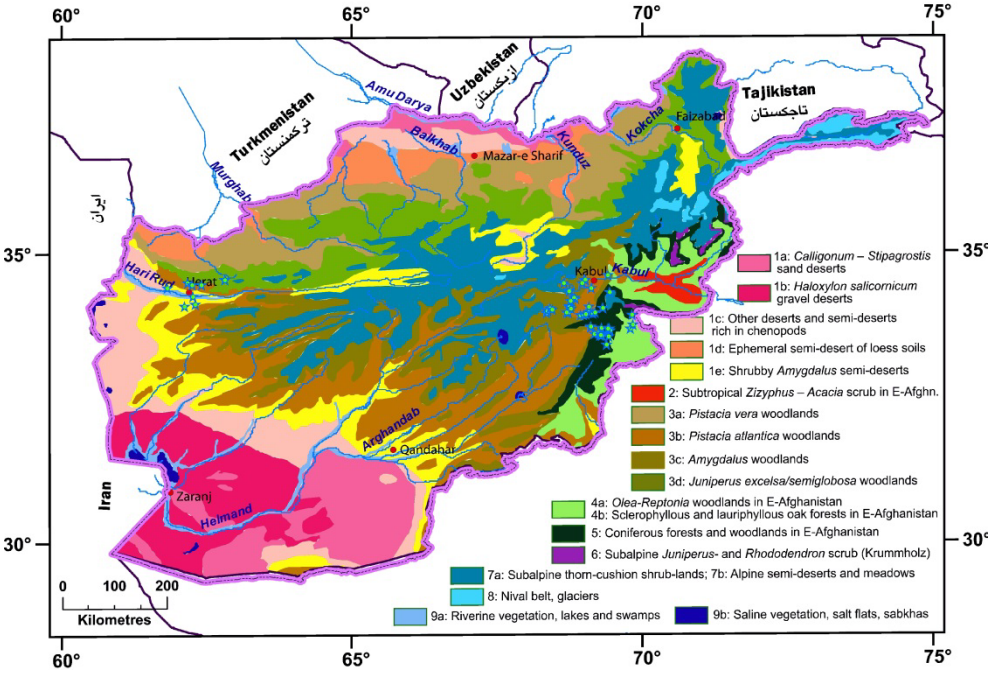


Figure 35 Map of the main vegetation categories of Afghanistan (map by Rafiqpoor[44]) with project sites

31. None of the project sites is within areas with natural vegetation of high conservation importance, but all in areas with vegetation heavily transformed by human influence. However, there might be remnants of native vegetation or secondary vegetation forming important habitats.

32. Despite degradation of the vegetation cover, the number of vascular plant species is high with estimated 4,100 species. 30% of the species are thought to be endemic. There is no known substantial problem with invasive non-native plant species. Deforestation and degradation of woodlands, overgrazing and cultivation of marginal areas cause the loss of plant diversity and the dominance of few species, which are often spiny or otherwise less palatable to livestock.

33. Analyses of recorded animal species in Afghanistan list: 150 mammal species, 515 bird species, 112 reptiles, eight amphibians, 139 fish (according to other sources only 85 species of 10 families[45]) and 245 butterflies. Only seven vertebrate species are endemic to Afghanistan, including the one endemic amphibian – the Paghman salamander *Paradactylodon mustersi*.[46]

34. The only invasive animal species posing any substantial risk to ecosystems, biodiversity, economy and human health are the cosmopolitan rodents *Mus musculus* and *Rattus norvegicus*. The native fish fauna could in the future be possibly affected if rainbow trout *Salmo gairdenerii* and other non-native fish species are bred and released into natural waterbodies.

35. The Protected Areas System of Afghanistan is still in an early stage of development. A National Protected Area System Plan of Afghanistan has been developed with international assistance and approved by NEPA in 2010. So far, the 2015 targets of this plan have been met only partly. None of the project sites is located within or close to an existing or planned protected area.

3.8 Land Use, Land Ownership and Customary Tenure

36. Land-use in Afghanistan is largely determined by the climate conditions and the availability of surface and ground water. The specific land use situation in the locations of project sites has is explained in the full proposal with illustrative maps in the section “Overview of the project areas”.

37. The dominant land-use type in Afghanistan is rangeland used for extensive livestock grazing. Grazing takes place in different forms, distinguished by the level of mobility of the herds. Sedentary grazing is restricted to the surroundings of the villages and often causes overgrazing. Transhumant pastoralism makes use of varying forage availability in different altitudinal or otherwise determined ecological zones. With growing human population and livestock numbers. Nomadic pastoralism takes place over larger distances. Most nomadic pastoralists (*kochi*) use defined seasonal grazing areas, usually with specific camp locations and pastures used by specific family groups. Growing human population and livestock numbers have contributed to increasing conflict between transhumant and nomadic pastoralists about access to pastures, impossibility of pasture rotation and in the result overgrazing and pasture degradation.

38. The second largest land-use category is rain-fed arable land (*la’lmi*) with wheat being the dominant crop. Rain-fed farming is affected by large scale soil erosion and loss of fertility. Climate change makes this type of land-use increasingly risky and contributes to declining yield. Parts of the non-irrigated lands are covered by pistachio woodlands, the extend and density rapidly of which declined during the last decades.

[44] Breckle, S.-W. and Rafiqpoor, M.D. (2010). Field Guide Afghanistan – Flora and Vegetation, Bonn, Scientia Bonnensis.
[45] Coad, B. (2015): Native fish biodiversity in Afghanistan. Iran. J. Ichthyol. 2(4): 227-234.
[46] Kanderian, N., Lawson, D., Zahler, P. (2011): Current status of wildlife and conservation in Afghanistan, International Journal of Environmental Studies, 68:3, 281-298. http://dx.doi.org/10.1080/00207233.2011.573960

39. Irrigated agriculture is restricted to river valleys and alluvial fans at the bottom of mountain ranges. Important crops include rice, other cereals and fruit trees.

40. Forests and woodlands make up only about 867,000 ha or 1.33% of the country's land area. Between 1990 and 2005 about one third of the forest cover was lost[47].

41. The government owns rangelands, forests, barren lands and other lands, not belonging to individual land-owners. These lands are assigned to the local communities, which have customary tenure over these lands. Thus the land ownership and tenure in some extent reflect the traditional use rights, but, decades of conflict, population displacement, changes in national political and economic ideologies, and variable climatic conditions (including drought) have resulted in a complex and unsettled landownership and management situation. Land rights are perceived to be highly insecure and disputes are widespread, undermining prospects for investment needed to increase agricultural productivity and increasing the vulnerability of millions of households to poverty. The Taliban and others use land disputes to foment general social unrest and conflict.[48] This situation is not expected to impact on the project activities. First, firm government control and high level of security figured prominently among the site selection criteria and no side is under any significant threat of takeover by anti-government elements. Second, even in the unlikely case of such a takeover the public lands under actual community use allocated for the irrigation systems would not be a likely object of forceful changing of tenure as any anti-government elements and their supporters would be interested in maintaining irrigation water supply for their own needs and for the functioning of the local economy. Third, the arable farming areas in the project sites are unlikely to become an object of forceful take over due to their rather small scale.

42. All planned canal and *karez* rehabilitation will take place on land owned by the government, used by the local communities and the tenure not being disputed. Traditionally the lands belonging to irrigation infrastructure serving the entire community are not allocated for private use.

3.9 Social Aspects

43. Social aspects are covered in Annex 2.

3.10 Indigenous Peoples and Ethnic Minorities

44. As part of due diligence, an analysis and consultations were undertaken as to the probability of any of the project activities involving indigenous people and/or ethnic minorities. Afghanistan does not have a history of colonization and that's why the concept of "Indigenous Peoples" is neither appropriately applicable to any ethnic group nor politically accepted. Therefore, no indigenous peoples live in Afghanistan and any project areas.

45. According to the Constitution of Afghanistan, Article Four "The nation of Afghanistan shall be comprised of Pashtun, Tajik, Hazara, Uzbek, Turkman, Baluch, Pachaie, Nuristani, Aymaq, Arab, Qirghiz, Qizilbash, Gujur, Brahwui and other tribes. The word Afghan shall apply to every citizen of Afghanistan." Thus no ethnic group is to be singled out as minority. In the project sites Pahstun, Tajik and some subgroups of these ethnicities have been identified.

46. The *Kochi* of Afghanistan are nomadic pastoralists, belonging to several Pashtun and Kyrgyz tribes. The term *Kochi* does not refer to an ethnic group but to a certain complex of social-economic and cultural characteristics. While there is no special legislation on *Kochi*, for addressing of the specific issues related to their lifestyle and related vulnerability an Independent General Directorate of Kochi has been established. In the House of Elders, the upper house of the National Assembly, the parliament, two seats are reserved for representative of the nomadic pastoralists. *Kochi* seasonally use for grazing some of the project sites.

47. The project pays attention that any discrimination is prevented and all people living permanently or seasonally (nomadic people) in the project areas, independent of their ethnical, religious or social affiliation, are equally involved and benefit from the project as far as technically possible.

3.11 Archaeological and Cultural Heritage

48. Afghanistan has a rich archaeological and cultural heritage, which has much suffered from war and civil unrest. With the intensified development of infrastructure and use of mineral resources new threats to this heritage emerge. In addition to the famous and globally and regionally important cultural and archaeological sites, there are many sites of national or local importance, which are important elements of the identity of the nation, regions or local communities. Such sites can be remnants of small castles, mausoleums, locations of historical graveyards and others. These sites are not always officially registered and may sometimes be known to local people only. No matter their lack of official protected status such sites deserve protection under all circumstances. If discovered during civil works, which cannot be replanned, careful archaeological excavation and scientific documentation should be mandatory.

49. None of the project sites is located in locations of officially registered or so far known specific archaeological and/or cultural heritage value. However, the *karez* are considered as cultural heritage and the project will contribute to the revival and maintenance of this living heritage.

3.12 Waste Management

50. No specific data is available for waste management in the project areas. Generally, most urban and all rural areas lack any waste management system, and waste created by households, administration, agriculture and industry is mainly burned

[47] https://rainforests.mongabay.com/deforestation/archive/Afghanistan.htm
[48] https://www.land-links.org/country-profile/afghanistan/

or disposed in an unregulated way. Livestock excrements are used as fertilizer or are dried and burned in heating and cooking stoves. Rural households also use crop residues as fuel for cooking, baking and heating.

51. Burning waste is an important source of air pollution. Waste disposed in landfills or in the open landscape negatively influences on aesthetic amenity and can cause hazards, mainly for ecosystems and agriculture.

4. ENVIRONMENTAL AND SOCIAL RISK ASSESSMENT

4.1 UNDP AND AF SOCIAL AND ENVIRONMENTAL SCREENING POLICY REQUIREMENTS

52. As this project is supported by UNDP in its role as an AF IE, the project in addition to the AF's 15 Environmental and Social Principles has been screened against UNDP's Social and Environmental Standards Procedure. The Social and Environmental Screening Template was prepared and the project deemed to be a moderate risk (Category B) project. These screenings provided the rationale for the project being classified as a moderate risk. This ESIA provides further discussion below. The document Annex 7: Social and Environmental Screening Template includes the triggers from UNDP safeguards.

4.2 IMPACT ASSESSMENT METHODOLOGY

53. An impact risk assessment was undertaken using the UNDP Social and Environmental Screening Procedure to assess the probability (expected, highly likely, moderately likely, not likely) and the impact of the risk (critical, severe, moderate, minor, negligible). From this, a significance value was attributed to the potential impact (negligible, low, medium, high and extreme).

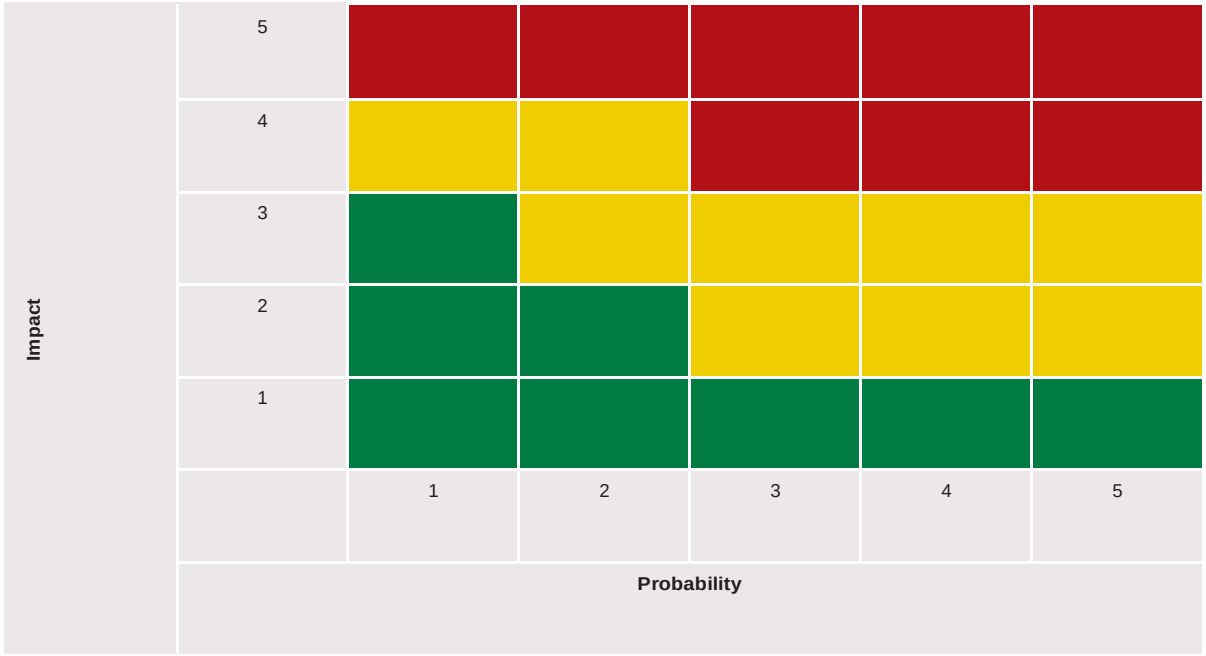
Table 1 Rating of Probability of Risk

Score	Rating
5	Expected
4	Highly Likely
3	Moderately likely
2	Not Likely
1	Slight

Table 2 Rating of Impact of Risk

Score	**Rating**	**Definition**
5	Critical	Significant adverse impacts on human populations and/or environment. Adverse impacts high in magnitude and/or spatial extent (e.g. large geographic area, large number of people, transboundary impacts, cumulative impacts) and duration (e.g. long-term, permanent and/or irreversible); areas impacted include areas of high value and sensitivity (e.g. valuable ecosystems, critical habitats); adverse impacts to rights, lands, resources and territories of indigenous peoples; involve significant displacement or resettlement; generates significant quantities of greenhouse gas emissions; impacts may give rise to significant social conflict
4	Severe	Adverse impacts on people and/or environment of medium to large magnitude, spatial extent and duration more limited than critical (e.g. predictable, mostly temporary, reversible). The potential risk impacts of projects that may affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples are to be considered at a minimum potentially severe.
3	Moderate	Impacts of low magnitude, limited in scale (site-specific) and duration (temporary), can be avoided, managed and/or mitigated with relatively uncomplicated accepted measures
2	Minor	Very limited impacts in terms of magnitude (e.g. small affected area, very low number of people affected) and duration (short), may be easily avoided, managed, mitigated
1	Negligible	Negligible or no adverse impacts on communities, individuals, and/or environment

Table 3 UNDP Risk matrix



Green = Low, Yellow = Moderate, Red = High

54. When undertaking the risk assessment, all activities, including, hard/soft infrastructure and livelihood interventions, were assessed with regard to all environmental and social principles. Specific measures for each principle are discussed along mitigation measures later in this ESMP.

4.3 ASSESSMENT OF IMPACTS BY ACTIVITIES

55. This section assesses the possibility and severity of impact and the resulting risk level, possibly caused by the project activities – unmitigated and with avoidance and mitigation measures.

Activity	Unmitigated Impacts	Probability and Impact	Avoidance and Mitigation Measures	Probability and Impact post mitigation
1.1 and 1.2 Expert supported participatory assessment and planning at community level	The participatory assessment and planning does not involve any physical impact on the environment and does not have direct social impact on the target groups. The indirect impact of the planned interventions, which will be developed, on environmental and social issues can only be in a limited extent assessed at this stage. There is a low risk that environmental and social issues are not adequately taken into consideration.	Probability: 1 Impact: 2 Risk level: Low	Ensure the full participation of all relevant stakeholders, including representatives of different social groups, women and vulnerable people. Ensure the full consideration of all potential future environmental and social impacts, including gender issues and include the respective social and environmental safeguards in the frame of community-level planning.	Probability: 1 Impact: 1 Risk level: Low
1.3 and 1.4 Development of institutional and technical capacities for maintenance and operation of rehabilitated irrigation infrastructure and efficient water management	The building of capacity does not involve any physical impact on the environment and does not have direct social impact on the target groups. The indirect impact will depend on the consideration of environmental and social issues in the capacity development program. There are risks that these issues are not adequately taken into consideration resulting in future adverse environmental and social impact, e.g. unsustainable or unequitable water allocation.	Probability: 2 Impact: 3 Risk level: Moderate	Include the consideration of environmental and social issues in all capacity development programs for different actors involved in operating and maintaining of irrigation infrastructure and management of irrigation water. Ensure the involvement of women and all social groups and of vulnerable people, their capacity development and representation in all institutions.	Probability: 1 Impact: 1 Risk level: Moderate
Component 2 activities on rehabilitation and climate change proofing of irrigation systems (common impacts)	Modification or conversion of habitats and/or reduction of trees, shrubs, forbs due to upper catchment management, at captured springs, along irrigation canals and due to irrigation.	Probability: 3 Impact: 2 Risk level: Moderate	The issue will be addressed area-specific during implementation in the frame of participatory assessment and planning process. All related activities will be planned in a way that the benefits from overall ecosystem improvements will exceed any possible local habitat losses.	Probability: 3 Impact: 1 Risk level: Low
	Rehabilitated and climate change resilient irrigation systems or reforested sites as well as livelihood related physical structures can be damaged or destroyed by natural disasters. Such destruction would likely be local and reversible. Despite precautionary planning extreme drought can affect the functioning of irrigation infrastructure under the project. Although the project aims at reducing risk for likelihoods and increasing the resilience of infrastructure climate change may in the long term exacerbate these risks. The severity of these impacts and thus the adaptation potential will depend on not fully predictable trends in GHG emissions and climate change.	Probability: 5 Impact: 3 Risk level: Moderate	The project's objective is to increase the resilience of the irrigation systems, including their upper catchment areas towards the impact of climate changes. In the frame of participatory assessment and planning process Climate Risk and Vulnerability Assessments will be integrated and for each site and proposed intervention the adaptation potential will be assessed for different scenarios and predicted climate change trends. In the result all interventions will be planned and implemented under consideration of current and predicted disaster risks and climate change impact and as resilient as technically feasible and economically viable.	Probability: 3 Impact: 2 Risk level: Moderate

Activity	Unmitigated Impacts	Probability and Impact	Avoidance and Mitigation Measures	Probability and Impact post mitigation
2.1 Rainwater harvesting and surface run-off capturing structures for water collection and groundwater recharge.	There might be conflict where in the case of upper catchment interventions the local community may restrict open access to grazing lands. Open access situations and unclear resource governance are commonly reasons for the degradation of ecosystems, resources and result in land and resources degradation. Upper catchment interventions may require the regulation of use in such areas by the local CDCs.	Probability: 2 Impact: 3 Risk level: Moderate	The issue will be considered and addressed in the frame of participatory assessment and planning process and in the frame of institutional capacity development on water use. The program will assist in the clarification of land-use rights, where necessary and facilitate solutions, which allow for balancing of conflicting interests.	Probability: 1 Impact: 1 Risk level: Low
	These activities will target heavily degraded areas only and lead to a general improvement of the biodiversity, ecosystem functions and services as well as productivity. However, their impact on the currently existing ecosystems has to be considered, as these will be transformed and their biodiversity and ecosystem functions and services will unavoidably change.	Probability: 2 Impact: 2 Risk level: Low	The design and spatial planning of all upper catchment interventions will take into account potentially valuable ecosystems (in terms of biodiversity conservation, resources and ecosystem services), like e.g. productive wet meadows, woodlands and forests and through planning avoid negative impact on these, or where such impact is considered unavoidable, implement adequate mitigation or compensation measures.	Probability: 2 Impact: 1 Risk level: Low
2.2 Water intake structures of canal and karez systems rehabilitated and climate proofed.	Potentially water use from springs of traditional cultural, spiritual and religious importance.	Probability: 1 Impact: 2 Risk level: Low	To be considered and addressed in the frame of participatory assessment and planning process. In case of possible impact on sites of recognized or not recognized national or international importance assessment and planning with involvement of the responsible department in the Ministry of Information and Culture of Afghanistan.	Probability: 1 Impact: 1 Risk level: Low
	Improved and climate change resilient water intake structures can affect the downstream availability of water for environmental needs and other water users.	Probability: 3 Impact: 3 Risk level: Moderate	Environmental flow requirements will be considered and accordingly secured in all cases where modified or new water intake structures impact on the water flow in the river. The interests of downstream water users will be considered and addressed through their involvement in the participatory assessment and planning process, where existing, through the respective Water Users' and/or Irrigation Associations.	Probability: 2 Impact: 2 Risk level: Low
2.3 Rehabilitation of water delivery canals and karez, lining for reduction of seepage losses	Traditional irrigation systems, in particular karez will be revitalized. Potentially water use from springs of traditional cultural, spiritual and religious importance. The impact of revitalizing irrigation systems in the sense of "living heritage" is considered positive. However, there is a risk that authentically preserved irrigation systems, in particular *karez* of historical value, lose their authenticity because of "modernizing" in	Probability: 3 Impact: 2 Risk level: Low	To be considered and addressed in the frame of participatory assessment and planning process. In case of possible impact on sites of recognized or not recognized national or international importance assessment and planning with involvement of the responsible department in the Ministry of Information and Culture of Afghanistan. The program has to avoid that authentically preserved irrigation systems, in particular *karez* of historical value, lose their authenticity. Historical structures and materials will be	Probability: 1 Impact: 1 Risk level: Low

Activity	Unmitigated Impacts	Probability and Impact	Avoidance and Mitigation Measures	Probability and Impact post mitigation
	terms of destruction of original substance and erection of new structures and used materials.		preserved and replaced where needed in an authentic way.	
	Lining of canals and resulting and desired reduction of seepage may reduce the availability of water for secondary accompanying herbal and shrub and tree vegetation along canals, causing its degradation and loss of productive and habitat functions.	Probability: 3 Impact: 3 Risk level: Moderate	In the frame of the expert guided participatory assessment and planning such potentially valuable vegetation elements will be assessed and as much as technically possible preserved through mechanisms, like controlled water delivery from the lined canals.	Probability: 3 Impact: 2 Risk level: Moderate
2.4 Rehabilitation and/or installation of efficient inter- and on-farm water distribution systems	Where, despite project implementation, shortage of irrigation water and/or irrigated lands persist, conflict is possible about access to irrigation water and/or to newly irrigated or rehabilitated land. Power structures within communities only in a limited extend can be influenced in the frame of such a program.	Probability: 2 Impact: 2 Risk level: Low	To be considered and addressed in the frame of participatory assessment and planning process and in the frame of institutional capacity development on water use.	Probability: 1 Impact: 1 Risk level: Low
	Reservoirs at canal and *karez* outlets for temporary collection of water for effective irrigation can become deadly traps for amphibians, reptiles and small mammals.	Probability: 4 Impact: 3 Risk level: Moderate	The design of the reservoirs will be adapted with lower inclinations of side walls to allow an easy escape of small vertebrates.	Probability: 1 Impact: 1 Risk level: Low

56. The overall risk level of the program without mitigation is Moderate. Mitigation already integrated in the program will reduce the risk level of several risks, but overall risk level remains Moderate.

4.4 SPECIFIC IMPACTS ON ENVIRONMENTAL AND SOCIAL SITUATION

57. The project is expected to have impacts on the environmental and social situation. Here these possible impacts are explained with regard to the 15 AF Environmental and Social Principles and with reference to the description of the current situation provided in section 3 of this ESIA/ESMP.

4.4.1 AF Principle 1 Compliance with the Law

58. The project complies with all regulation as mandated by the Afghanistan national laws and the ESP. This includes compliance and/or guided implementation in alignment with the Environment Law (2007), Environmental Impact Assessment Regulations (2008, amended 2017), Water Law (currently in process of review and amendment) and other applicable laws and regulations. An overview of the relevant legislation is provided in Annex 4.

59. Component 1 includes assessment and capacity building activities, which do not have direct physical impacts and comply with national laws and regulations; Component 2 includes physical interventions, which will be implemented in accordance to national legislation.

60. During the preparation of the full proposal and EIA/ESMP for UNDP SESP Category B and Afghanistan EIA regulations Category 2 projects, all stakeholders (including NEPA, MAIL, MEW, district councils, CDCs, and community members) have been consulted to ensure all legal requirements will be met during implementation. All sub-projects have been assessed for their general compliance with the law. As the sub-projects only during implementation will be planned site-specific and in further detail, further assessment will take place during the project against the AF ESP's 15 principles. The necessary decision about the EIA will be obtained by MRRD from NEPA in accordance with the Environmental Impact Assessment Regulations. If any permission is required by the Water Law, it will be obtained by the respective entities (CDC, IA or WUA depending on the site-specific circumstances) with support by MRRD and PRRD.

61. Risk: None.

4.4.2 AF Principle 2 Access and Equity

62. The project hinges on a participatory stakeholder engagement process. The proposed program's activities are designed to provide equal and fair access to benefits by communities in highly vulnerable areas, in particular to irrigation water for arable land suitable for irrigation and to household and drinking water. In addition, the project will be designed and implemented in a way that it will not impede access of any group to essential resources. The CDCs will facilitate the selection of specific project sites and activities as per adaptation needs of the intervention area. For ensuring future equitable access, the development of community institutions for water management and distribution will ensure involvement of all stakeholders at community and inter-village level comprising women, men, youth, and all vulnerable groups. So the entire program design ensures that the program meets the requirements of this principle and the participatory assessment and planning process and the capacity development under Component 1 will provide for this.

63. Individual access to certain natural resources may become restricted for the achievement of benefits for the entire community. Such situations are possible in upper watersheds, where current unregulated use of rangelands and other resources causes land degradation and hampers groundwater recharge. Such uses are not based on individual rights, but on open access situations, and thus necessary restrictions affect all resource users indiscriminately, individual loss of access is insignificant and outweighed by the benefits for the entire community in terms of climate change adaptation for irrigation water supply and disaster risk reduction.

64. Where despite interventions shortage of irrigation water and irrigated lands persist, benefits might become inequitably accessible. Such access and equity issues might be related to power relations within and between communities and can be exacerbated by spatial patterns providing some households or communities with comparative advantages.

65. Risk: Yes; Probability: Low.

4.4.3 AF Principle 3 Marginalized and Vulnerable Groups

66. The program during its consultation processes in all specific target areas put special emphasis on the identification of marginalized and vulnerable groups. The socio-profile and needs of all beneficiary groups have been assessed and the results have been taken into consideration in the development of this full project proposal. The consultations led to the identification of returnees into destroyed and abandoned villages, widow families and families of war victims and other people with limited abilities of physical works as particularly marginalized and vulnerable groups. The program will further target the participation of women and youth to enhance their opportunities for improved livelihoods. It will be directly and indirectly beneficial for these groups as it would contribute to secured livelihoods, ease their special situation and reduce their particular vulnerability to the impact of climate change.

67. Consultation processes in all specific target areas with particular emphasis on focus group discussions and interviews with marginalized and vulnerable groups, including minority groups, will continue during implementation in the frame of Component 1. This will ensure that all groups are well represented participatory assessment and planning process as well as in the community-based and inter-community institutions for water management for each target catchment area.

68. Risk: None. The issue has been considered in the frame of the full project preparation and is fully addressed by the participatory planning process and the established grievance mechanism.

4.4.4 AF Principle 4 Human Rights

69. Afghanistan is a country with substantial problems in meeting human rights standards. Violations are in particular committed by Anti Government Elements, but also officials at different levels are involved in violations of human rights.

This situation limits the opportunities of a program not specifically designed for addressing human rights to achieve substantial improvements.

70. The program will respect and where applicable promote human rights. UNDP's application of the Human Rights Based Approach and its emphasis on gender equality in development programming will ground the implementation of the proposed program. The program is developed with particularly attention that no human rights violations can occur in the context or as result of the program implementation. The broad community participation and capacity development under Component 1 allow for effective addressing of any so far not foreseeable risks in this regard. By selecting project sites under the control of the legitimate government the program allows for addressing any human rights related issues through established and official complaint and grievance redress mechanism and communication channels.

71. The program will create awareness with all involved in the programme operations, including site-specific design, execution, monitoring, and evaluation, about the Universal Declaration of Human Rights as an overarching principle in the implementation of the project/programme. Further, it will carry out regular site visits and monitoring and evaluation activities. The ESMP describes its established complaints and grievance redress mechanism to ensure there are adequate opportunities to present any concerns. The project will also stay in regular contact with PRRD and RRD as well as CDCs so that any complaints can be channelled back to the project timely.

72. Risk: None. The issue has been considered in the frame of the full project preparation and is fully addressed by the participatory planning process, the established grievance mechanism and other adequate measures.

4.4.5 AF Principle 5 Gender Equity and Women's Empowerment

73. In Afghanistan many women issues are compromised by cultural hindrances and limited low economic status. The program therefore specifically addresses gender issues and ensures that the program design is inclusive and in compliance with Afghanistan's and Adaptation Fund's Gender Polices. The program will particularly facilitate gender equity and women's involvement all project activities. At least 50% of target beneficiaries are women.

74. The project will not have any adverse impact on gender equality, but it is designed to enhance the development of women. Component 1 will in particular assess vulnerabilities of women and address these in the planning process and capacity development. By this women will be engaged in activities that determine the results of the program, address their specific circumstances, reduce their climate change related vulnerability and allow them for a more active role in the management and use of water and related resources post program.

75. The Component 2 activities will include livelihood improvement and lead to income creation for women and youth, with particular attention to women-headed households. Improved irrigation and household water supply is an intervention that has proven to contribute to economic empowerment of women. Easier access to water frees up women's time, thus allowing them to spend more time on education and other skill building activities. Benefits of improved climate resiliency accrue particularly to women as they often disproportionately suffer the impacts of climate change. But women are not just climate change victims or beneficiaries. They are imperative to climate change adaptation efforts by practicing adaptive measures as a part of daily life. For more detail refer to the Gender Assessment and Action Plan in Annex 9.

76. Risk: None. The issue has been considered in the frame of the full project preparation and is fully addressed by Gender Assessment and Action plan, the participatory planning process, the established grievance mechanism and other adequate measures.

4.4.6 AF Principle 6 Core Labour Rights

77. The project will be managed in accordance with ILO core labour standards as stated in the 1998 ILO Declaration of Fundamental Principles and Rights at Work and with Afghanistan's Labour Law, which both prohibit forced labour, child labour and discrimination, and allow freedom of association. Component 2 (catchment and irrigation system rehabilitation) may require recruitment of specialized labour force to complement community effort and undertake the restoration works requiring special skills. Payments to labour will be made as per Government approved norms duly following minimum wage rate and ensuring core labour rights.

78. No adverse impact on labour and working conditions will be caused by the project activities. Civil works related to restoration of irrigation systems, in particular karez tunnels and riverbanks might expose individuals involved to occupational safety risk. This occupational safety risk will be mitigated through the selection and effective use of appropriate mechanical equipment and personal protective gear. The applicable regulations of labour and working conditions will be followed, in particular the guidance on safety of *karez* rehabilitation works provided in the Irrigation Technical Manual of the MRRD (2019). Work procedures, training, and awareness creation/sensitization will also be done for everyone involved in the project.

79. Risk: Low; Probability: Low.

4.4.7 AF Principle 7 Indigenous Peoples

80. Afghanistan does not have a history of colonization and that's why the concept of "Indigenous Peoples" is neither appropriately applicable to any ethnic group nor politically accepted. Therefore, no indigenous peoples live in Afghanistan and any project areas and the program accordingly will not create any negative impact on the indigenous people.

81. Beneficiaries of the project are rural Afghan people independent of their ethnicity. During the consultations the project preparation teams did record the ethnic composition of the population in the targeted communities. Members of two main ethnic groups of the country, Pashtu and Tajik, including some sub-groups are present in the target communities.

82. Risk: None.

4.4.8 AF Principle 8 Involuntary Resettlement

83. The program does not include voluntary or involuntary resettlement and will result in neither physical nor economic displacement. Project sites for the adaptation activities under Component 2 will be on community lands of the communities benefiting from these activities and there will be no land acquisition, resettlement or disruption of stakeholder's access to land.

84. The planned interventions will not have any substantial direct adverse impact on land-use. The overall impact will be positive due to increased and more reliable productivity of arable lands thanks to climate change resilient irrigation water supply. Any impact on other land uses, in particular on grazing and fuel wood collection due to upper catchment interventions and modification of seepage dependent vegetation along unlined canals is much localized. Due to the location of these interventions on communally used land and participatory assessment and planning as well as the involvement of adjacent communities via their CDCs no adverse impact on livelihoods of households and communities will be caused. Some unsustainable and harmful land use either causing degradation of ecosystems and their products and services or relying on losses from inefficient canals might get reduced or halted. These losses will be outweighed by the benefits of climate change resilient irrigation systems, reduced disaster risk and products and services provided by better managed and rehabilitated upper catchment areas.

85. The project activities do not require acquisition of land and have therefore no impact on land ownership and only very limited impact on customary land tenure and land-use. The project will not lead to any requirement for compulsory land acquisition and/or compensation to be paid. The lands needed for irrigation system rehabilitation are owned by the government and permanently allocated to the communities. Therefore, neither Economic Displacement nor Livelihood Restoration will be necessary. All communities at the planned project sites have requested rehabilitation and improved climate change resilience of their irrigation infrastructure.

86. With regards to upper catchments there might locally be unregulated use of target watersheds by different communities. The situation of open access lands causes resource degradation and conflict and in accordance with the land legislation and policy of the GoIRA these lands should become assigned to the respective communities for ensuring their sustainable use and management. The program through its participatory assessment and planning process will involve representatives of all communities using such lands to determine customary and formal land use rights, settle any potential conflicts and to agree upon the implemented measures.

87. Risk: None.

4.4.9 AF Principle 9 Protection of Natural Habitats and AF Principle 10 Conservation of Biological Diversity

88. *Possible impact on vegetation and flora*: The program and its local projects will take place in areas without critical habitats and protected areas. At all sites planned for rehabilitation and increasing the climate change resilience of irrigation systems the vegetation cover is already highly transformed from its natural stage. All sites are in intensively used agricultural landscapes and most sites are located in the immediate vicinity of villages. The adverse impact of construction and operation on natural vegetation will therefore be limited. Physical measures in upper catchments, in particular larger check dams and percolation ponds can modify the vegetation due to construction works requiring local substrates as construction materials. By the operations of such structures temporary water bodies lasting per year for several weeks and longer are created, which result in local alteration of the vegetation. On the other hand, upper catchment management agreed in the process of participatory assessment and planning will aim at rehabilitation and protection of natural habitats, preserving existing vegetation to ensure groundwater replenishment and reduce erosion and disaster risk.

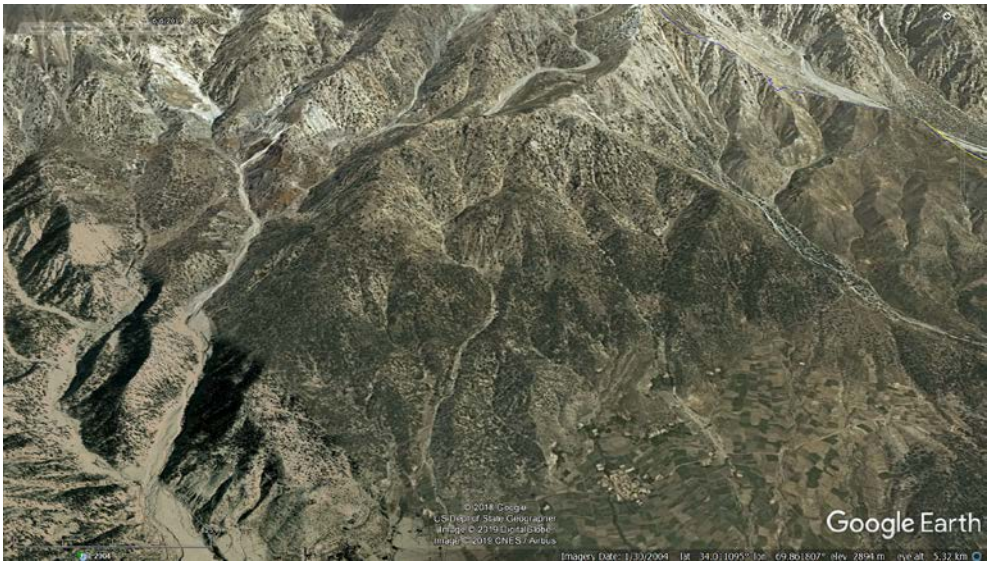
Figure 36 Perspective GoogleEarth view of Bashir Khil watershed in Paktia province with juniper woodlands of high conservation value, which will be preserved by regulation of upper catchment use.

89. The construction and operation of canal intake structures can alter riparian vegetation. These intakes are to be built in locations with very little riparian vegetation and the impact is therefore low and can be mitigated or compensated. Canals with high seepage losses often have accompanying secondary herbal, shrub and tree vegetation, which can provide resources for the local population and form small ecosystems. This vegetation will unavoidably be affected by construction

works for canal rehabilitation, and effective reduction of seepage losses will change its environment in terms of water availability. These changes will be assessed in the frame of assessment, planning and site-specific design and where the economic and environmental value of such secondary vegetation is high, mitigation measures, like small regulated outflows from the lined canals, will prevent the loss of such vegetation.

90. The activities for the expansion and rehabilitation of irrigation systems under Component 2 may in a limited amount cause the conversion of degraded rangelands and abandoned arable lands as well possibly small sections of riparian ecosystems modified by current land-use. These are neither critical nor protected natural habitats. The expert-supported participatory assessment and planning processes under Component 1 will ensure that no valuable and sensitive habitats are affected by the implementation of Component 2 and any possible negative impact is offset by development of new habitats. This will facilitate the maintenance and development of habitats in cultural landscapes of small and medium-scale irrigated areas.

91. *Possible impact on fauna*: No specific information on the occurrence of animal species, including fish and other aquatic organisms, at the specific planned sites is available. The overall impact of the construction phase is expected to be not problematic for fauna in general and for rare or endangered species in particular. Existing knowledge about the distribution of potentially critical species and the planned location and character of the interventions show that no such species will be affected by the program. The program's indirect impact on fauna will be related to the transformation of habitats and specific habitat features animal species rely on. Weir structures will reduce the flow velocity in a short river section above the weir, locally changing the conditions for aquatic fauna. These sections are very small, maximum few ten meters, and conditions resemble natural river sections with slow velocity due to relief and natural barriers in the river. Dams used for diversion, covering only parts of the river section, change flow dynamics only in these parts. For these reasons no adverse impact on aquatic fauna is expected to be caused by this change of riverine habitat conditions. The rehabilitation and climate proofing of intake structures will not alter the natural flow patterns substantially and the minimum residual flow has to be determined during design stage for each canal intake, ensuring that ecological requirements of riverine ecosystems and needs of downstream water users are met. Direct impact on fauna through an increased mortality is likely in the case of erection or reconstruction of water collection reservoirs with steep vertical walls at the outlets of canals or *karez*, which can become deadly traps for amphibian, reptiles and small mammals if the walls are not built with an inclination and roughness of material allowing for escape.



92. Figure 37 Perspective GoogleEarth view of Sharif watershed in Paktia province with forests of high conservation value, which will be preserved by regulation of upper catchment use.

93. *Protected Areas and other critical sites for conservation*: None of the proposed project sites is located in or adjacent to an existing, previous, planned or proposed protected area. Critical sites for biodiversity conservation and for the preservation of ecosystem services are woodlands and forests found in upper catchment areas of several project sites in Paktia province and in lesser extent in Logar province. The upper catchment interventions will be implemented in way preserving these stands and preventing damage to them.

94. Risk: Moderate; Probability: Moderate (Biodiversity) to High (Habitats).

4.4.10 AF Principle 11 Climate Change

95. The project activities will not have any adverse impact on climate. The proposed project is specifically designed to integrate climate resilience into the project activities to develop climate proof irrigation systems and ensure long-term sustainability of infrastructures. The project is aligned with the climate change adaptation plans at the national and community levels. None of the interventions are likely to result in an increase in greenhouse gas emissions. The upper catchment activities of the proposed project and improved agricultural productivity in irrigated areas may have positive climate change mitigation impact through improved GHG sequestration thanks to reduced and reverted degradation of vegetation, but these might be compensated by GHG emissions from agricultural activities.

96. The impact of climate change trends on the results of the project activities in the mid and long term can be adverse despite the overall aim of the project of increasing resilience of irrigation systems towards climate change impact, climate resilient approaches and techniques in accordance to best available practices.

97. Risk: None (for impact on climate change), moderate (for impact of climate change).

4.4.11 AF Principle 12 Pollution Prevention and Resource Efficiency

98. The proposed program will not require (during or after implementation) significant amounts of water, energy, materials or other natural resources. None of the activities under the program will result in the production of significant quantities of wastes, especially of hazardous or toxic wastes. The program during construction and operation will not produce significant volumes of effluents or air pollutants, including greenhouse gases. All applicable international standards will be met for maximizing material resource use and minimising the production of wastes and the release of pollutants.

99. *Construction*: Workers involved in construction and operational activities will be instructed in minimising the impact of waste generated. The key waste streams generated during construction are likely to include residual sediment and construction wastes such as:
    a. The excavation wastes unsuitable for reuse during earthworks in particular during cleaning of canals and karez, but their amounts will be limited and they can be disposed or reused for other construction purposes;
    b. Wastes from construction equipment maintenance. Various heavy vehicles and construction equipment will be utilised for the duration of the construction and drilling phase. Liquid hazardous wastes from cleaning, repairing and maintenance of this equipment may be generated. Likewise leakage or spillage of fuels/oils within the site needs to be managed and disposed of appropriately;
    c. Non-hazardous liquid wastes will be generated through the use of workers' facilities such as toilets; and
    d. General wastes including scrap materials and biodegradable wastes.

100. Any construction activities have the potential to cause air quality nuisance. In the case of the planned activities these are very limited in scale and impact.

101. *Operation*: Key waste streams generated during operations will be limited to excavated sediments from canals and *karez* during regular maintenance (primarily sand and silt, which either be safely disposed, be used for construction or spread on suitable agricultural areas).

102. The construction and operation of climate change resilient irrigation systems and their elements will not substantially change the existing water quality conditions. Pollution of ground water will be prevented by proper control and maintenance of machinery. Leakage of hazardous liquids from machinery and storage is a risk, which concerns, e.g. fuel, oil, hydraulic liquid, brake fluid and coolants. This risk has to be minimized by handling these liquids with care, storage on sealed ground and prevention of leakage into soil during operation and maintenance of construction machinery. There will not be any flushing of salinized soils and resulting discharge of salinized collector water. As the program will not implement any activities resulting in the operation of deep wells the risk will be avoided that withdrawn fresh groundwater is replaced by salty groundwater.

103. Risk: Low; Probability: Moderate.

4.4.12 AF Principle 13 Public Health

104. No adverse impact on human health will be caused by the project activities. The increased reliability and productivity of irrigated crops will improve food security, allow for diversification of crops and thus result in improved health. Also the improved household water supply reduces health risks and reduces the need for of heavy physical work related to carrying water, which is harmful to health, and will improve hygiene. Especially women and children, which bear the main load of carrying water will benefit from these improvements. Water quality will be improved as a result of environmental/catchment protection and will reduce waterborne diseases.

105. Risk: None.

4.4.13 AF Principle 14 Physical and Cultural Heritage

106. There are no known cultural, archaeological and historical heritage sites at the planned project sites. During the surveys local people mentioned mosques, graveyards and other sacred sites. These structures will not be affected by the project activities. Some springs are considered cultural and religious sites and such springs will be integrated into irrigation systems fully securing their cultural and spiritual values.

107. The *karez* as such are considered an element of living historical heritage and related legal and regulatory framework that would apply will be followed. The project will contribute to the preservation and revival of this heritage. *Karez* of particular historical authenticity and value should be rehabilitated without alteration causing the loss of this value. For making use of existing knowledge, experience and best international practice, the program will seek support and collaboration in research, training and technology transfer with UNESCO's International Centre on Qanats and Historic Hydraulic Structures.

108. At some project sites so far unknown cultural, archaeological or historical objects may exist. Careful screening by interviewing local people and site assessments should avoid that these are affected. Only if government agencies in charge of cultural, archaeological or historical heritage and local communities have agreed, such sites should be altered by project activities, under the condition that artefacts are properly recorded, documented and preserved.

109. Risk: Low; Probability: Moderate.

4.4.14 AF Principle 15 Land and Soil Conservation

110. The project interventions will support sustainable soil and land management practices in upper catchments and in the irrigated areas. Promoted practices will reverse land degradation in the selected catchments, improve vegetation cover, enhance soil stability and reduce runoff, thereby promoting soil fertility. The project will also facilitate the adoption of good land-use and irrigation practices to support soil conservation and prevent waterlogging and salinization.

111. *Possible impact during construction*: It is not expected that any land preparation or civil works under the project could result in temporary blockage or alteration of natural flow paths, thus causing changes in the drainage patterns in the respective area. Civil works and transportation of construction materials could cause localized alteration of vegetation and soil increasing the proneness to erosion by wind and water. Construction works will take place outside of the season of rain and high discharge and will be carried out according to engineering standards in a way that erosion risks are avoided. Activities, which involve significant disturbance of soil or operating within drainage lines and waterways, will be planned to be undertaken during the driest months. All required erosion and sediment control mechanisms in such sites will be in place before the onset of the wet season. Activities on drylands will be carried out in a way that minimizes disturbance of vegetation and soil structures, and resulting wind and water erosion.

112. *Possible impact during operation*: Due to the character of the interventions and effective mitigation measures not only will impact be small, but the conditions are expected to improve over the existing conditions. At upper catchments erosion control by physical measures, regulation of grazing and rehabilitation of vegetation will reduce erosion and support the protection of hydraulic structures from damage by eroded materials. The intake structures and the diversion of a proportion of the river discharge can influence on the existing patterns and intensity of vertical and lateral erosion of the river course, and of transportation and sedimentation of material by the river. At intake with weirs and other barriers in the main river course flow velocity in the river will be reduced and the weir may partially or totally block the transportation of larger materials. Below the weir lower discharge may reduce riverbed erosion, while lack of material from upstream may cause a deficiency of sediment and thus could lead to vertical erosion. However, given the high natural fluctuations of river discharge, transportation and sedimentation of material the additional impact of the weirs on erosion, transportation and sedimentation will be low. The weirs are designed in a way that minimizes these impacts and reduces the need for manual removal of accumulated sediment above the weirs.

113. The project activities will not have any impact on seismic activity. The project sites are located in zones of low and medium seismic activity, with the majority being located in low risk zones. The design of all structures will take into account the estimated likelihood and intensity of seismic activities and thus minimize risks of structural failures and secondary damages.

114. Unexploded ordnances have either been removed or risk locations are known to local government agencies and CDCs. The areas, where the project activities take place, were not subject to recent military or insurgency activities. Thus risk caused by unexploded ordnances is low. In case of detection by chance the necessary measures will be taken in accordance to established protocols.

115. Risk: None.

4.4.15 Surface Water and Hydrology

116. No impact on river discharge is expected during the construction of intake structures. The construction will take place during the season of low flow, when discharge can be concentrated in parts of the riverbed, allowing for construction works on the dry parts. If any temporary diversion by a coffer dam, typically a conventional embankment dam of both earth- and rock-fill, is necessary, this will affect only a small area and the temporary diversion channel will be located in the riverbed and be of less than 100 m length. These construction works will not affect the streamflow characteristics in any river section.

117. The operation of canal intakes unavoidably has an impact on the river discharge, especially where weirs or similar structures are installed for effective and flow independent withdrawal of irrigation water from the river. In such areas in case of water shortages competition with irrigation needs of downstream users and environmental needs are possible. The requirements for minimum residual flow amounts in river sections affected by rehabilitated intake structures have to be determined in the participatory assessment and planning under Component 1 and the design of intake structures specifically for each site for meeting the ecological needs of riverine ecosystems and the needs of downstream water users.

118. Risk: Low; Probability: Moderate.

4.4.16 Groundwater

119. The construction works for rehabilitation of the irrigation systems with all their elements do not have any impact on ground water quantities. The construction works will neither cause any impact on infiltration of precipitation nor any abstraction of ground water.

120. The implementation of upper catchment interventions and the operation of physical structures for water harvesting will increase the replenishment of groundwater due to reduced surface runoff and increased infiltration. In areas close to rivers the near-surface groundwater level can be connected to the river discharge. For this reason the diversion of a part of the flow for irrigation may slightly influence the near-surface groundwater level in the immediate vicinity of the river. The operation of *karez* will in some extent drain groundwater from aquifers. This water is tapped from natural gravity flow, but not pumped. Therefore in most cases the operation of karez has little or no additional impact on groundwater in aquifers. Where considered necessary and feasible, options will be explored of integrating gates in mother wells to avoid groundwater losses outside of the irrigation period.

121. Risk: Low; Probability: Low.

4.4.17 Indirect and Cumulative Impacts on Environmental and Social Situation

122. Beyond the direct and indirect environmental and social impacts no other impacts are predicted. No cumulative adverse impacts are possible because the locations of all project sites are located far from each other.

123. Risk: None.

5. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

5.1 OVERVIEW AND OBJECTIVES OF THE ESMP

124. An ESMP is a management tool used to assist in minimising the impact to the environment and socially; and establish a set of environmental and social objectives. To ensure the environmental and social objectives of the projects are met, the ESMP will be used by the project implementers to structure and control the environmental and social management safeguards that are required to avoid or mitigate adverse effects on the environment and communities.

125. UNDP and the Government ensure that the ESMP and its associated plans are complied with through the life of the project as well as post the project and this is part of the O and M Plan. The ESMP also becomes part of any contract that is issued under the project and the IE and UNDP will ensure it is followed.

5.2 OVERVIEW OF INSTITUTIONAL ARRANGEMENTS FOR THE ESMP

5.2.1 Administration of ESMP

126. The National Environmental Protection Agency (NEPA) will be responsible for the supervision of the ESMP. The UNDP will gain the endorsement of NEPA and will ensure the ESMP is adequate and followed.

127. The National Executing Agency for this project is the MRRD. The MRRD is accountable to UNDP for managing the project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources. The PMU will be established under the MRRD. The PMU will be will be responsible for the day-to-day implementation of the ESMP. The ESMP will be part of the project documentation. UNDP will provide specialist advice on environmental and social issues to the delivery organisations (e.g. contractors and/or NGOs).

128. As the implementing agency, MRRD will be responsible for the implementation and compliance with the ESMP via the collaborating partners and contractors. The ESMP will be part of any tender documentation.

129. The UNDP and MRRD are accountable for the provision of specialist advice on environmental and social issues to the delivery organisations (e.g. contractors and/or NGOs) and for environmental and social monitoring and reporting. The MRRD or its delegate will assess the environmental and social performance of the delivery organisations (e.g. contractors) in charge of delivering each component throughout the project and ensure compliance with the ESMP.

130. The Supervising Engineers/Project Manager will supervise the contractors, while the contractors will be responsible for implementation of all activities on environment and social issues. The contractors will be responsible for the day to day compliance of the ESMP. Personnel working on the projects have accountability for preventing or minimising environmental and social impacts. For any incident that causes or has the potential to cause material or serious environmental or social harm, the delivery organization shall notify the Project Manager as soon as possible. The delivery organisation/contractor must cease work until remediation has been completed. The Field Officer will be responsible for daily environmental inspections of the project/construction site. The MRRD or its delegate will cross check these inspections by undertaking monthly audits.

5.2.2 Screening and Environmental and Social Management of Unidentified Sub-projects

131. While the details of project beneficiaries, sites and types of adaptation measures have been identified during the full proposal preparation, in few cases, specific locations, site-specific scope and technical detail of measures will be defined during the project implementation. All these technologies have been piloted before by UNDP and MRRD through past and on-going projects. The scope of activities will be limited in size. However, once the exact location/sites, technical details and beneficiary communities for these measures will be defined, the project will carry out additional risk screening and assessments, over and above the assessment for generic impacts undertaken to date.

132. UNDP will carry out social and environmental risks screening, consultations, assessment and monitoring during the project implementation in accordance with the Adaptation Fund safeguards policy. The project will follow Adaptation Fund Guidance document for Implementing Entities on compliance with the Adaptation Fund Environmental and Social Policy, as well as UNDP safeguards policy and the national laws and standards. Prior to any on-site investment decision, and within three months of initial potential project identification the project will conduct:

    a. Targeted stakeholder consultation and beneficiary consultations;
    b. Detailed screening/identification of risks against applicable principles (updated UNDP SESP and AF 15 ESP Principles);
    c. ESIA (scope depending on the results of risk screening for specific site-based measures);
    d. Determination and implementation of avoidance and mitigation measures;
    e. Monitoring.

133. On identification of a proposed sub-project/activity, during the participatory planning process under Component 1 the proposing CDC will present a brief description of the activity, its specific objectives, a description of how it meets local needs, and how it fits into the wider project Components. This initial description will contain the results of the screening exercise, based on the AF 15 ESP Principles, which will highlight any areas of particular concern. The Project Management Unit (PMU) will assist in this process if required.

134. The PMU will then undertake a site visit to the proposed location, to conduct a high-level scoping of the sub-project/activity, to verify the pre-screening highlighting any areas of environmental and social concern, to check on legal and technical feasibility, to make a provisional list of key stakeholders, and to assess the management capacity of the EE.

135. The PMU will produce an activity description/technical specification outlining the project's aims and objectives against local needs, any evident legal and regulatory issues, an estimate of likely technical and financial requirements, and a high-level verification that the project targets the intended beneficiaries. The level of impact assessment required to ensure adherence to the AF Principles will be established, including a list of stakeholders and a methodology for consulting them created, appropriate to the size of the project proposed.

136. A formal assessment of potential Environmental and Social Impacts, including gender issues, will be conducted appropriate to the size of the project. Responsibility for this will rest with the PMU. If required under national legislation, or if impacts are envisaged as high or moderate, a third party contractor may be employed. However, Sub-Projects are envisaged as small, with low Environmental and Social impacts, and any use of specialist ESIA contractors will be exceptional. The assessment format will follow the 15 Principles of the AF ESP. The scope of the study will vary according to requirements, but in all cases it will be comprehensive, including all identified risks and impacts, required avoidance or mitigation measures, an analysis of gender issues, and will be conducted with full on-site stakeholder consultation. The assessment will be conducted in a participatory and inclusive manner to identify beneficiary and affected communities and individuals, paying particular attention to adverse and beneficial project impacts on identified poor and vulnerable groups. It will lead to a detailed ESMP, detailing monitoring arrangements, ongoing stakeholder participation and consultation, and a project-level grievance mechanism, all appropriate to its size and potential impact.

137. The overall project ESMP will be updated to include monitoring and evaluation procedures for the sub-projects.

5.2.3 Procedures, specific work plans/instructions, inspection checklists, incident reporting

138. Environmental procedures provide a written method describing how the management objectives for a particular environmental element are to be obtained. They contain the necessary detail to be site or activity-specific and are required to be followed for all construction works. Site and activity-specific work plans and instructions are to be issued and will follow the previously successful work undertaking similar projects by the UNDP, GoIRA and MRRD.

139. The delivery organisation (e.g. contractors) will maintain and keep all administrative and environmental records, which would include a log of complaints together with records of any measures taken to mitigate the cause of the complaints. The delivery organisation will record any incidents with regard to the ESMP using an Incident Record and enter the details into a register. Any incidents, including non-conformances to the procedures of the ESMP are to be recorded using an Incident Record and the details entered into a register. The contractors will maintain and keep all administrative and environmental records, which would include a log of complaints together with records of any measures taken to mitigate the cause of the complaints.

140. Any non-conformances to the ESMP are to be noted in weekly environmental inspections and logged into the register. Depending on the severity of the non- conformance, the camp officer may specify a corrective action on the weekly site inspection report. The progress of all corrective actions will be tracked using the register. Any non-conformances and the issue of corrective actions are to be advised to MRRD.

5.2.4 Review and auditing

141. MRRD (as national executing agency) will be responsible for the revision or updates of this document during the course of work. The ESMP will be updated from time to time by the implementing Project Management Unit (PMU)/contractor in consultation with the UNDP staff and MRRD to incorporate changes in the detailed design phase of the projects. The ESMP and its procedures are to be reviewed at least every 6 months by the Project Board/Steering Committee. The objective of the review is to update the document to reflect knowledge gained during the course of project delivery/construction and to reflect new knowledge and changed community standards (values). Any changes are to be developed and implemented in consultation with UNDP Staff. The revision or update has to be endorsed by NEPA. When an update is made, all site personnel are to be made aware of the revision as soon as possible e.g. through a tool box meeting or written notification.

142. The ESMP will be reviewed and amendments made if:

- There are relevant changes to environmental conditions or generally accepted environmental practices; or
- New or previously unidentified environmental risks are identified; or
- Information from the project monitoring and surveillance methods indicate that current control measures require amendment to be effective; or
- There are changes to environmental legislation that are relevant to the project; or
- There is a request made by a relevant regulatory authority.

5.2.5 Capacity Building

143. The NEPA in its Division for Environmental Impact Assessment and Sustainable Development has about fifty staff members with the required capacity for the review process of the ESMP and for the monitoring and supervision of its implementation. Depending on the character and significance of the project and its environmental impact the inspection and monitoring is done by NEPA's national or provincial offices. Special capacity development activities on the implementation and monitoring of the ESMP and on the specific environmental and social management issues identified will take place; they might be useful for MRRD staff in charge of the project.

144. Delivery organisations have the responsibility for ensuring systems are in place so that relevant employees, contractors and other workers are aware of the environmental and social requirements for construction, including the ESMP. All project personnel will attend an induction that covers health, safety, environment and cultural requirements. All workers engaged in any activity with the potential to cause serious environmental harm (e.g. handling of hazardous materials) will receive task specific environmental training.

5.2.6 Stakeholder Engagement

145. The ESIA/ESMP topics have been included in the public consultations as part of the stakeholder engagement plan during project preparation. These consultations are documented in Annex 6: Report on Consultations in the Project Zones.

146. The UNDP and MRRD will develop project-related information and release updates on the project on a regular basis to provide interested stakeholders with information on project status. Updates may be via a range of media, e.g. print, radio, social media or formal reports. A publicized telephone number will be maintained throughout the project to serve as a point of contact for stakeholders and the broad public. All material must be published in English, Dari and Pashtu as appropriate.

147. In addition, UNDP information disclosure requirements are addressed. The draft UNDP Social and Environmental Screening Procedure (SESP) has been made available to project stakeholders prior to project approval, and the final SESP will be made available upon approval. If/when site-specific, targeted environmental and social assessments are required, the draft assessment and findings, including specific management measures, will be made available to project stakeholders for public comment. Final assessments and plans will be disclosed upon completion. Summary reports of assessment findings should be disclosed. Stakeholders will be notified on the availability of draft and final documents.

148. The project will ensure that women and other relevant groups such as elderly, and youth receive an equitable share of benefits and that their status and interests are not marginalized. Participatory processes will include specially designed methodologies that enhance the participation of women and these other groups; therefore, it is expected to enhance the inclusion of their views into the activities of the project, using existing mechanisms for representing their views such as the municipal units and units, community-based organisations, community development associations, forestry cooperatives. During the UNDP's SESP (Annex 7) no indigenous groups were identified. In case any project activity requires a formal process of Free and Informed Prior Consent (FIPC), then the project will follow due process either under existing national mechanisms or current international standards.

149. The Stakeholder Engagement Program will build on various activities and methods, including the promotion of participatory processes, joint decision-making, and partnerships undertaken with CDCs, NGOs, and local governments. The project will also support exchange visits, training, and capacity building initiatives. Stakeholder engagement activities and required technical assistances will be funded by the project's budget as part of Component 1.

5.3 GRIEVANCE REDRESS MECHANISM

150. During the construction and implementation phases of any project, a person or group of people can be adversely affected, directly or indirectly due to the project activities. Should such a situation arise, there must be a mechanism through which affected parties can resolve such issues in a cordial manner with the project personnel in an efficient, unbiased, transparent, timely and cost-effective manner. To achieve this objective, a two tier grievance redress mechanism has been included in the ESMP for this project.

151. The project complaints and grievance process has been designed to be problem-solving mechanism with voluntary good-faith efforts. The Grievance Redress Mechanism is not a substitute for the legal process. The Grievance Redress Mechanism will as far as practicable, try to resolve complaints and/or grievances on terms that are mutually acceptable to all parties. When making a complaint and/or grievance, all parties must act at all times, in good faith and should not attempt to delay and or hinder any mutually acceptable resolution.

152. The Safeguards officer in the PMU will be designated as the key officer in charge of the Grievance Redress Mechanism. The Terms of Reference for these positions (as amended from time to time) will have the following key responsibilities:

    a. coordinate formation of Grievance Redress Committees before the commencement of constructions to resolve issues;
    b. act as the focal point at the PMU on Grievance Redress issues and facilitate the resolution of issues within the PMU;
    c. create awareness of the Grievance Redress Mechanism amongst all the stakeholders through public awareness campaigns;
    d. assist in redress of all grievances by coordinating with the concerned parties;
    e. maintain information on grievances and redress;
    f. monitor the activities of MRRD on grievances issues; and
    g. prepare the progress for monthly/quarterly reports.

153. Local communities and other interested stakeholders may raise a grievance/complaint at all times to UNDP and/or MRRD. Affected local communities should be informed about the ESMP provisions, including its grievance mechanism and how to make a complaint. All complaints and/or grievances regarding social and environmental issues can be received either orally (to the field staff), by phone, in complaints box or in writing to the UNDP, MRRD or the Construction Contractor. A publicized telephone number will be maintained throughout the project to serve as a point of contact for enquiries and concerns. Complainants may specifically contact the Safeguards Officer and request confidentiality if they have concerns about retaliation. In cases where confidentiality is requested (i.e. not revealing the complainant's identity to UNDP, MRRD and/or the Construction Contractor). In these cases, the Safeguards Officer will review the complaint and/or grievance, discuss it with the complainant, and determine how best to engage project executing entities while preserving confidentiality for the complainant.

154. All enquiries, complaints and concerns will be investigated and a response given to the complainant in a timely manner. The National Project Coordinator will be responsible for undertaking a review of all enquiries, complaints and concerns and ensuring progress toward resolution of each matter. All complainants shall be treated respectfully, politely and with sensitivity. Every possible effort should be made by the PMU and construction contractor to resolve the issues referred to in the complaint and/or grievance within their purview. All meetings in connection with the Grievance Redress Mechanism, including the meetings of the Grievance Redress Committee, must be recorded. The deliberations of the meetings and decisions taken are recorded.

155. Wherever possible, the project team will seek to resolve the complaint as soon as possible, and thus avoid escalation of issues. Some enquiries, complaints and concerns may require an extended period to address. The complainant(s) will be kept informed of progress towards rectifying the concern. Any complaint will be advised to the UNDP within 24 hours of receiving the complaint.

156. The first tier redress mechanism involves the receipt of a complaint and/or grievance at the site and/or district MRRD level. As soon as a complaint and/or grievance is received, the Safeguards Officer would issue an acknowledgement. After registering, the Safeguards Officer will study the complaint and/or grievance made in detail and forward it to the concerned officer with specific dates for replying and redressing the same. The Safeguards Officer will hold meetings with the affected persons / complainant and then attempt to find a solution to the complaint and/or grievance received. If necessary, meetings will be held with the concerned affected persons / complainant and the concerned officer to find a solution to the problem and develop plans to redress the grievance. The resolution at the first tier will normally be completed within 15 working days and the complaint and/or grievance will be notified of the proposed response through a disclosure form.

157. A Community Project Implementation Committee would be formed to oversee the first tier of the Grievance Redress Mechanism. The Community Project Implementation Committee would include:

    a. the heads of all CDCs related to the respective project site;
    b. a representative of the district council;
    c. a representative of the provincial department of MRRD;
    d. a representative of the provincial NEPA department; and
    e. Safeguards Officer of the PMU.

158. Should the grievance be not resolved within this period to the satisfaction of the complainant, the grievance will be referred to the Grievance Redress Committee, which would address the grievance in the second tier. In any case, where the issue is not addressed within 20 working days, the matter is referred to the next level. The Safeguard Officer from the PMU will coordinate with the respective Commissioner of Local Government in getting these Committees constituted for every province by the circulars issued by the Provincial Governor, who would also be the Chairman of the Committee.

159. The Structure of the committee would be:

    a. A representative of the provincial governor – Chairman;
    b. a representative of the provincial department of MRRD;
    c. a representative of the provincial NEPA department;
    d. a representative of each district authority of the territory, which the grievance concerns;
    e. a representative of each CDC of the territory, which the grievance concerns; and
    f. Safeguards Officer of the PMU.

160. The Terms of Reference for the Grievance Redress Committee are:

    a. providing support to the affected persons in solving their problems;
    b. prioritize grievances and resolve them at the earliest;
    c. provide information to the PMU and MRRD on serious cases at the earliest opportunity;
    d. coordinate with the aggrieved person/group and obtain proper and timely information on the solution worked out for his/her grievance; and
    e. study the occurring grievances and advise PMU and Project Board on remedial actions to avoid further occurrences.

161. The Grievance Redress Committee will hold the necessary meetings with the aggrieved party/complainant and the concerned officer and attempt to find a solution acceptable at all levels. The Grievance Redress Committee would record the minutes of the meeting and will communicate proposed responses to the complainant formally. If the proposed response satisfies the complainant, the response will be implemented and the complaint and/or grievance closed. In cases where a proposed response is unsatisfactory to the complainant, the Grievance Redress Committee may choose to revise the proposed response to meet the complainant's remaining concerns, or to indicate to the complainant that no other response appears feasible to the Grievance Redress Committee. The complainant may decide to take a legal or any other recourse if s/he is not satisfied with the resolutions due to the deliberations of the three tiers of the grievance redress mechanism.

162. A key part of the grievance redress mechanism is the requirement for the PMU and construction contractor to maintain a register of complaints and/or grievances received at the respective project site offices. A summary list of complaints received and their disposition must be published in a report produced every six months. All enquiries, concerns and complaints will be recorded on a register and the appropriate manager will be informed. The following information will be recorded, i) time, date and nature of enquiry, complaint or concern; ii) type of communication (e.g. telephone, letter, personal contact); iii) name, contact address and contact number; iv) response and investigation undertaken as a result of the enquiry, complaint or concern; and v) actions taken and name of the person taking action.

163. In addition to the project-level and national grievance redress mechanisms, complainants have the option to access UNDP's Accountability Mechanism, with both compliance and grievance functions. The Social and Environmental Compliance Unit investigates allegations that UNDP's Standards, screening procedure or other UNDP social and environmental commitments are not being implemented adequately, and that harm may result to people or the environment. The Social and Environmental Compliance Unit is housed in the Office of Audit and Investigations, and managed by a Lead Compliance Officer. A compliance review is available to any community or individual with concerns about the impacts of a UNDP programme or project. The Social and Environmental Compliance Unit is mandated to independently and impartially investigate valid requests from locally impacted people, and to report its findings and recommendations publicly.

164. Any grievance related to corruption or any unethical practice should be referred immediately to the Office of the Attorney General of the Islamic Republic of Afghanistan and the Office of Audit and Investigation within the UNDP in New York.

165. The Stakeholder Response Mechanism offers locally affected people an opportunity to work with other stakeholders to resolve concerns about the social and environmental impacts of a UNDP project. Stakeholder Response Mechanism is intended to supplement the proactive stakeholder engagement that is required of UNDP and its Implementing Partners throughout the project cycle. Communities and individuals may request a Stakeholder Response Mechanism process when they have used standard channels for project management and quality assurance, and are not satisfied with the response (in this case the project level grievance redress mechanism). When a valid Stakeholder Response Mechanism request is submitted, UNDP focal points at country, regional and headquarters levels will work with concerned stakeholders and Implementing Partners to address and resolve the concerns. Visit www.undp.org/secu-srm for more details. The relevant form is attached at the end of the ESMP.

5.4 Avoidance and Mitigation Measures in Relation to the AF 15 ESP Principles and other Environmental and Social Indicators

166. The project possibly has impacts on the environmental and social situation. Specific avoidance and mitigation measures on these possible impacts are planned with reference to the description of the current situation and possible impact provided in sections 3 and 4 of this ESIA. Avoidance and mitigation measures by activity are explained in section 4.3 of this ESIA and are the basis for the assessment of the finally expected impacts of the project activities in the result of implemented avoidance and mitigation measures.

167. This section refers to the AF ESP 15 principles and to other key environmental and social indicators and outlines respective management objectives, potential impacts, control activities and the environmental performance criteria against which these indicators will be measured. This section further addresses the need for monitoring and reporting of environmental performance with the aim of communicating the success and failures of control procedures, distinguish issues that require rectification and identify measures that will allow continuous improvement in the processes by which the projects are managed.

5.4.1 AF Principle 1 Compliance with the Law

168. The project complies with all regulation as mandated by the Afghanistan national laws and the AF ESP. All sub-projects have been assessed for their general compliance with the law. As the sub-projects only during implementation will be planned site-specific and in further detail, further assessment will take place during the project against the AF ESP's 15 principles. The necessary decision about the EIA will be obtained by MRRD from NEPA in accordance with the Environmental Impact Assessment Regulations. If any permission is required by the Water Law, it will be obtained by the respective entities (CDC, IA or WUA depending on the site-specific circumstances) with support by MRRD and PRRD.

Performance Criteria

169. The following performance criteria are set for the project:
    a. all subproject are screened for performance with the Afghanistan national laws and the AF ESP principles;
    b. for activities requiring special permissions, these are obtained before implementation.

170. The PMU will be responsible for compliance with the law of programme activities.

Reporting

171. Records of all screenings, permission requests made and permissions obtained and requirements are to be kept.

172. The MRRD must be notified in the event of any suspected violation and ensure that appropriate corrective action is undertaken.

Table 4: Compliance with law Measures

Issue	Action required	Action timing	Responsibility	Monitoring & reporting
L1: Compliance with law	L 1.1: Screen all subprojects	Planning/ Pre-construction	MRRD	Maintain records
	L 1.2: Obtain required permissions (if any)	Pre-construction	MRRD	Maintain records
	L 1.3: Ensure full compliance with the requirements set by national legislation	Entire construction and operation phase	MRRD	Maintain records

5.4.2 AF Principle 2 Access and Equity

173. The expected very small and insignificant potentially adverse impact on land-use, which is outweighed by positive impact, will be further mitigated by involvement in the detailed design planning of communities via the CDCs to avoid that any adverse impact on livelihoods of individual households and entire communities will be caused.

174. Where the upper catchment interventions cause loss of communal grazing land, lost grazing capacity will be assessed in the frame of participatory assessment and planning and agreed among the users of these areas. The potential loss will be more than compensated because the reduction of grazing will allow for local rehabilitation of vegetation, which can be harvested for forage and can serve as source of seeds for natural regeneration of forage plants in the surrounding

rangelands. This will be beneficial to all community members and thus possible restrictions on unsustainable land uses, causing degradation, will be broadly accepted.

175. Continuous community participation at all stages of the site specific planning and project implementation will ensure that construction/rehabilitation and operation of irrigation systems have an overall positive impact on current irrigated farming and other land-use.

Performance Criteria

176. The following performance criteria are set for the project:
    a. no resettlement will occur as a result of the project;
    b. activities requiring restrictions on land use will only be undertaken following the signing of a voluntary agreement by the CDC and (if any) the current land-user(s);
    c. where there is the need for temporary occupation of land for any project activity, the land will be returned in the same condition as it was prior to any access;
    d. ensure full compliance with the UNDP Social and Environmental Standards Guidance Note for Standard Five (5) on Displacement and Resettlement;
    e. complaint and grievance mechanisms are put in place and proactively managed; and
    f. long-term social benefits are achieved.

177. Local stakeholders and community members play a key role in the planning, implementation and monitoring of the project. Consultation with stakeholders will continue. This will help ensure that stakeholders continue to be aware of the project, its progress and any changes in the project. It will also assist in identifying any issues as they arise.

178. The PMU will be responsible for advisory support and extensions services to local beneficiaries along with being responsible for distributing material inputs and providing technical training and backstopping in the implementation of programme activities.

Reporting

179. Records of all consultations and agreements on access and equity are to be kept and reported on monthly basis.

180. The MRRD must be notified in the event of any individual or community complaint or dissatisfaction and ensure the Grievance Redress Mechanism is complied with.

Table 5: Access and Equity Measures

Issue	Action required	Action timing	Responsibility	Monitoring & reporting
AE1:	AE 1.1: Carry out community consultation on the purpose, needs for and benefits of any land access and changes to land use	Pre-construction	MRRD	Maintain records
	AE 1.2: Ensure all access is undertaken consistent with signed voluntary agreements by CDCs and affected land-users (if any)	Pre-construction	MRRD	Maintain records
	AE 1.3: Ensure full compliance with the UNDP Social and Environmental Standards Guidance Note for Standard Five (5) on Displacement and Resettlement	Entire construction and operation phase	MRRD	Maintain records
	AE 1.4: Ensure compliance with the Grievance Redress Mechanism process	Entire construction and operation phase	MRRD	Maintain records

5.4.3 AF Principle 3 Marginalized and Vulnerable Groups

181. No risks have been identified. However, for explicitly underlining the measures planned under the program performance criteria, reporting requirements and actions with respective monitoring are presented here.

Performance Criteria

182. The following performance criteria are set for the project:
    a. each community, including potentially more vulnerable groups, has been consulted and project elements have been and will be designed with their informed consultation and participation throughout the project;
    b. ensure full compliance with the applicable UNDP Social and Environmental Standards Guidance Notes;
    c. ensure no IDP, minorities and/or other vulnerable groups are discriminated against;
    d. complaint and grievance mechanisms are put in place and proactively managed; and
    e. long-term social benefits for IDP, minorities and/or other vulnerable groups are achieved.

183. The project will ensure that consultations continually take place with IDP, minorities and/or other vulnerable groups to ensure full participation and consideration of their needs.

184. Consultation with stakeholders will continue. This will help ensure that IDP, minorities and/or other vulnerable groups continue to be aware of the project, its progress and any changes in the project. It will also assist in identifying any issues as they arise.

Reporting

185. Records of all consultations are to be kept and reported on monthly basis.

186. The MRRD must be notified in the event of any individual or community complaint or dissatisfaction and ensure the Grievance Redress Mechanism is complied with.

Table 6: Marginalized and Vulnerable Groups Measures

Issue	Action required	Action timing	Responsibility	Monitoring & reporting
MV1: Full protection and inclusion of any IDP, minorities and/or other vulnerable groups	MV 1.1: Carry out community consultation with IDP, minorities and/or other vulnerable groups	Pre-construction	MRRD	Maintain records
	MV 1.2: Ensure full compliance with the applicable UNDP Social and Environmental Standards Guidance Notes	Entire construction and operation phase	MRRD	Maintain records
	MV 1.3: Ensure compliance with the Grievance Redress Mechanism process	Entire construction and operation phase	MRRD	Maintain records
	MV 1.4 Ensure IDP, minorities and/or other vulnerable groups are discriminated against	Entire construction and operation phase	MRRD	Maintain records

5.4.4 AF Principle 4 Human Rights

187. No risks have been identified. However, for explicitly underlining the measures planned under the program performance criteria, reporting requirements and actions with respective monitoring are presented here.

Performance Criteria

188. The following performance criteria are set for the project:
    a. throughout the implementation of program activities in each community, particular attention is paid to the awareness about human rights and their protection against violations in the context of the program;
    b. ensure full compliance with the applicable UNDP Social and Environmental Standards Guidance Notes on Human Rights;
    c. complaint and grievance mechanisms are put in place and proactively managed;
    d. ensure that agencies in charge follow up on human rights issues not related to the program but brought to the attention of the PMU.

189. Consultation with stakeholders will continue to ensure that community members, CDCs and other stakeholders continue to be aware of the human rights issues and the role of the program in this regard. It will also assist in identifying any issues as they arise.

Reporting

190. Records of all consultations are to be kept and reported on monthly basis.

191. The MRRD must be notified in the event of any individual or community complaint and ensure that the responsible agencies are informed and can take required action.

Table 7: Human Rights Measures

Issue	Action required	Action timing	Responsibility	Monitoring & reporting
HR1: Full protection of human rights in the context of the program	HR 1.1: Inform community members, incl. vulnerable groups, CDCs and other stakeholders about the position of the program on human rights.	Entire planning, construction and operation phase	MRRD	Maintain records

	HR 1.2: Ensure full compliance with the applicable UNDP Social and Environmental Standards Guidance Notes on human rights.	Entire planning, construction and operation phase	MRRD	Maintain records
	HR 1.3: Ensure compliance with the Grievance Redress Mechanism process	Entire construction and operation phase	MRRD	Maintain records
HR 2: Promote protection of human rights beyond the program	HR 2.1: Ensure all community members and other stakeholders are informed about human rights	Entire planning, construction and operation phase	MRRD	Maintain records
	HR 2.2: Ensure that community members have the opportunity to bring up human rights issues and that these are accordingly submitted to the agencies in charge for resolution	Entire planning, construction and operation phase	MRRD	Maintain records

5.4.5 AF Principle 5 Gender Equity and Women's Empowerment

192. No risks have been identified. However, for explicitly underlining the measures planned under the program performance criteria, reporting requirements and actions with respective monitoring are presented here.

Performance Criteria

193. The following performance criteria are set for the project:
    a. ensure the project has gender equality and women empowerment within all activities in compliance with Annex 9 Gender Action Plan;
    b. ensure the project does not have any gender-based discrimination and/or inequalities;
    c. complaint and grievance mechanisms are put in place and proactively managed; and
    d. long-term social benefits are achieved.

194. Local stakeholders and community members play a key role in the planning, implementation and monitoring of the project. Component 1 ensures involvement in assessment and planning. Component 2 will largely be implemented by local communities through their CDC. This process will be facilitated in a way especially encouraging the involvement of women during all stages.

195. Consultation with stakeholders will continue to address women specifically. This will help ensure that women continue to be aware of the project, its progress and any changes in the project and influence on it. It will also assist in identifying any issues as they arise.

196. The MRRD will be responsible for advisory support and extensions services to local beneficiaries, in particular women, along with being responsible for distributing material inputs and providing technical training and backstopping in the implementation of programme activities.

Reporting

197. Records of all consultations are to be kept and reported on monthly basis.

198. The MRRD must be notified in the event of any individual or community complaint or dissatisfaction and ensure the Grievance Redress Mechanism is complied with.

Table 8: Gender Measures

Issue	Action required	Action timing	Responsibility	Monitoring & reporting
GE1: Gender Equality and Women Empowerment	GE 1.1: Ensure the project has gender equality and women empowerment within all activities in compliance with Annex 9 Gender Action Plan)	Pre-construction	MRRD	Maintain records
	GE 1.2: Ensure the project does not have any gender-based discrimination and/or inequalities in compliance with Annex 9	Entire construction and operation phase	MRRD; CDCs	Maintain records
	GE 1.3: Where practicable, preference should be given to women for any employment in compliance with Annex 9	Entire construction and operation phase	MRRD; CDCs	Maintain records

5.4.6 AF Principle 6 Core Labour Rights

Performance Criteria

199. The following performance criteria are set for the project:
    a. ensure compliance with Afghanistan labour and occupational health and safety laws, with obligations under international law, and consistency with the principles and standards embodied in the International Labour Organisation (ILO) fundamental conventions, including freedom of association, elimination of discrimination in employment and occupation, elimination of forced or compulsory labour, and
    b. ensure no child labour exists within the frame of the project activities or as their result;
    c. where possible, local residents will be employed first for all construction activities;
    d. all employees and contractors will be paid equally;
    e. where practicable, preference should be given to women for any employment;
    f. ensure workers' health and safety is protected and overall well-being benefits derived from the project;
    g. ensure workers are trained in occupational health and safety, in particular with regard to *karez* rehabilitation in accordance with the Irrigation Technical Manual (2019) of MRRD;
    h. ensure workers are provided appropriate personal protective equipment suitable for their duties; and
    i. complaint and grievance mechanisms are put in place and proactively managed.

200. Local communities have a key role to play in the implementation and monitoring of the project and therefore wherever possible implementation will be done by the CDC of local communities with external advisory assistance and support with machinery and materials as required.

201. MRRD will be responsible for advisory support and extensions services to local beneficiaries along with being responsible for distributing material inputs and providing technical training and backstopping in the implementation of programme activities.

Reporting

202. Records of all consultations are to be kept and reported on monthly basis.

203. The MRRD should keep records on local employment and pay conditions;

204. The MRRD must be notified in the event of any individual or community complaint or dissatisfaction and ensure the Grievance Redress Mechanism is complied with.

Table 9: Labour and Working Conditions Measures

Issue	Action required	Action timing	Responsibility	Monitoring & reporting
WC1: Labour and Working Conditions	WC 1.1: Ensure compliance with Afghanistan labour and occupational health and safety laws and ILO fundamental conventions	Entire construction and operation phase	MRRD	Maintain records
	WC 1.2: Employ local residents and women first where practicable	Entire construction and operation phase	MRRD	Maintain records
	WC 1.3: Ensure workers' health and safety is protected and overall well-being benefits derived from the project	Entire construction and operation phase	MRRD	Maintain records
	WC 1.4: Ensure workers are trained in occupational health and safety	Entire construction and operation phase	MRRD	Maintain records
	WC 1.5: Ensure workers are provided appropriate personal protective equipment suitable for their duties	Entire construction and operation phase	MRRD	Maintain records

5.4.7 AF Principle 7 Indigenous Peoples

205. The Principle is not applicable due to the absence of indigenous peoples in Afghanistan. Other marginalized and vulnerable groups are addressed through the application of AF Principle 3.

5.4.8 AF Principle 8 Involuntary Resettlement

206. No risks have been identified. Other issues related to resource access are addressed through the application of AF Principle 2.

5.4.9 AF Principle 9 Protection of Natural Habitats and AF Principle 10 Conservation of Biological Diversity

207. *Avoidance and mitigation of possible impact on vegetation and flora*: For the prevention of erosion and its impact on the irrigation systems the local communities will be encouraged to reduce livestock grazing and cutting of shrubs and subshrubs at slopes above the canals. Shrubs and trees should be planted along the canals. Sets of activities in upper catchments will include measures for maintaining and rehabilitating of natural vegetation. The intake and canal structures, *karez* and physical interventions in upper catchments will be located in areas, which are potentially more vegetated. The planning and construction of all structures should care that as little as possible natural vegetation is destroyed and/or permanently modified. Forests and woodlands are to be preserved entirely. Canal lining has to take into account water needs of secondary vegetation along canals if such vegetation is considered ecologically valuable or considered socially or economically important by the local communities.

208. *Avoidance and mitigation of possible impact on fauna*: To maintain connectivity of fish populations, suitable fish passes, e.g. river bottom ramps/rock ramps (see figure 38) or fish ladders have to be integrated in the design of weirs at sites, where fishes occur and weirs would prevent their migration. Where diversion structures will not block the entire river cross-section additional fish passes will not be required.

209. Section 5.4.15 addresses the maintenance of minimum flow in rivers and streams used for irrigation.

210. The construction design of any reservoirs and ponds, in particular of reservoirs (*hauz*) at *karez* outlets for collection of water for effective irrigation, has to prevent that these reservoirs become deadly traps for amphibians, reptiles and small mammals. The maximum inclination of vertical reservoir walls (typically max. 30°) and the roughness of the applied materials have to allow such animals to leave safely these reservoirs.

Performance Criteria

211. The following performance criteria are set for the construction and operation of the projects:
    a. As much as possible preservation of vegetation during construction and minimum permanent adverse impact on vegetation during operation;
    b. no death to native fauna as a result of construction activities and operation ;
    c. locations will be surveyed for potentially sensitive terrestrial and aquatic fauna and flora during the design stage of each irrigation system;
    d. no deleterious impacts on aquatic environments and terrestrial habitats;
    e. connectivity of fish habitat maintained, where fish species detected;
    f. a flora and fauna management program will be implemented (Table 10).

Monitoring and Reporting

212. A monitoring program will be implemented (Table 10), especially focussing at:
    - Monitoring of the efficacy of fish passes;
    - Vegetation conditions in upper catchments.

213. The delivery organisation will when undertaking works, compile a weekly report to MRRD outlining:
    a. any non-conformances to this ESMP;
    b. the areas that have been rehabilitated during the preceding week; and
    c. details of the corrective action undertaken.

214. All flora and fauna monitoring results and/or incidents will be tabulated and reported as outlined in the ESMP. The MRRD must be notified in the event of any suspected instances of death to native fauna and where vegetation if detrimentally impacted.

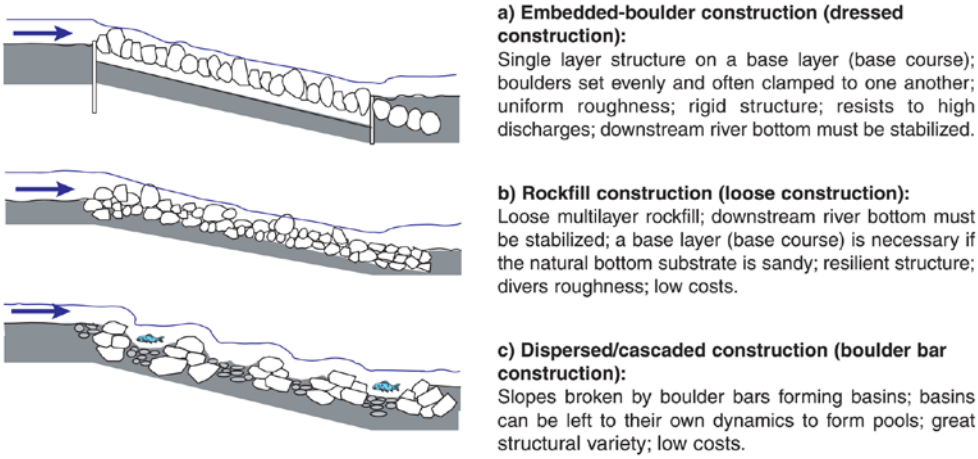


Figure 38 Construction of bottom ramps and slopes[49]

Table 10 Flora and Fauna Management Measures

[49] Source: ftp://ftp.fao.org/docrep/fao/010/y4454e/y4454e01.pdf

Issue	Action required	Action Timing	Responsibility	Monitoring and Reporting
FF1. Vegetation, flora, fauna and habitat loss	FF1.1: Survey locations for critical terrestrial and aquatic flora, fauna and habitats	Pre-construction	MRRD with involvement of NEPA experts	Once, prior construction, report to NEPA
	FF1.2: Limit vegetation clearing and minimise habitat disturbance through adequate protection and management of retained vegetation.	During construction	Camp officer	Weekly and maintain records, report to NEPA
	F1.3: Encourage and support local communities to regulate grazing and fuel wood cutting and to rehabilitate shrub and tree vegetation in upper catchments.	During planning, construction and operation	MRRD; CDCs	Once, prior construction, weekly during construction, annually, report to NEPA
	FF1.4: Ensure that valuable secondary vegetation along rehabilitated canals is maintained	During planning, construction and operation	MRRD; CDCs	Once, prior construction, weekly during construction, annually, report to NEPA
	FF1.5: Minimise disturbance to on-site fauna by adequate timing of construction activities outside of periods of special sensitiveness of critical fauna.	During construction	Contractor	Weekly and maintain records
	FF1.6: Maintain ecologically appropriate minimum residual flow in the river section downstream from intakes.	During planning, construction and operation	MRRD, Contractor and CDCs, IA, WUA	Weekly and maintain records, report to NEPA
	FF1.7: Ensure connectivity of river sections inhabited by fish species through suitable fish passes	During planning, construction and operation	MRRD, Contractor and CDCs, IA, WUA	Prior and after construction, during operation surveys during critical seasons and annual reports to NEPA
	FF 1.8: Ensure that design and construction of any water reservoirs allows for small vertebrates to leave these	During planning, construction	MRRD, Contractor	Prior and after construction report to NEPA

5.4.10 AF Principle 11 Climate Change

215. No risks for climate change have been identified. The impact of climate change trends on the results of the project activities in the mid and long term is directly addressed in the design of the program and its core purposes are increasing resilience of irrigation systems towards climate change impact through climate resilient approaches and techniques in accordance to best available practices. They will be implemented, documented, reported and monitored in the frame of the overall project implementation and its M&E system. Therefore no separate activities, reporting and monitoring are required in the frame of this ESMP.

5.4.11 AF Principle 12 Pollution Prevention and Resource Efficiency

216. *Waste*: As the implementing agency, the UNDP advocate good waste management practice. The preferred waste management hierarchy and principles for achieving good waste management is as follows: a. waste avoidance (avoid using unnecessary material on the projects); b. waste re-use (re-use material and reduce disposing); c. waste recycling (recycle material such as cans, bottles, etc.); and d. waste disposal (all petruscible and/or contaminated waste to be dumped at approved landfills).

217. *Air pollution*: Workers involved in construction and operation activities have to be familiar with methods minimising the impacts of deleterious air quality and alternative construction procedures as contained in Afghanistan's legislation or good international industry practice.

218. *Groundwater quality*: Pollution of ground water will be prevented by proper control and maintenance of machinery. The risk of leakage of hazardous liquids from machinery and storage, which concerns, e.g. fuel, oil, hydraulic liquid, brake fluid and coolants, has to be minimized by handling these liquids with care, storage on sealed ground and prevention of leakage into soil during operation and maintenance of construction machinery.

219. *Surface water quality*: For maintaining the water quality contamination with pollutants has to be prevented during construction and operation, including the avoidance of additional entry of sediments into the river and the discharge of salinized or polluted drainage water.

Performance Criteria

220. The following performance criteria are set for the construction of the projects:
    a. release of dust/particle matter must not cause an environmental nuisance;
    b. undertake measures at all times to assist in minimising the air quality impacts associated with construction and operation activities; and
    c. corrective action to respond to complaints and/or grievances is to occur within 48 hours;
    d. no decrease in the quality of groundwater as a result of construction and no influence of operational activities in proximity to the projects;
    e. development and implementation of a hazardous liquids management for any potentially hazardous liquids from construction machinery covering: storage, maintenance, application and refuelling as well as disposal procedures and location requirements related to fuel, lubricants, coolants, hydraulic liquids, brake fluid and other potentially hazardous liquids;
    f. effective implementation of site-specific measures to protect groundwater and surface water and no decrease in water quality as a result of construction and operational activities.

221. By following the management measures set out in the ESMP the project will not have a significant impact on air quality, water quality across the broader area.

Monitoring and Reporting

222. A standardised air monitoring program has been developed for the projects (Table 6). The program is subject to review and update at least every two months from the date of issue. Importantly:
    a. waste generation is minimised through the implementation of the waste hierarchy (avoidance, reduce, reuse, recycle);
    b. no litter will be observed within the project area or surrounds as a result of activities by site personnel;
    c. no complaints received regarding waste generation and management;
    d. waste oils will be collected and disposed or recycled off-site, local oil companies or shipped for recycling;
    e. the requirement for dust suppression will be visually observed by site personnel daily and by MRRD staff when undertaking routine site inspections;
    f. vehicles and machinery emissions – visual monitoring and measured when deemed excessive;
    g. Flow monitoring with suitable measurement devices will cover the withdrawal for the irrigation systems and the residual flow in the river.
    h. Table 11 outlines the management and monitoring required.

223. All waste, air and water quality monitoring results and/or incidents will be tabulated and reported as outlined in the ESMP. The MRRD and NEPA must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to waste, air quality, water quality is exceeded.

Table 11 Pollution Management Measures

Issue	Action required	Action timing	Responsibility	Monitoring & reporting
WT1: Production of wastes and excessive use of resources	WT1.1: Preference shall be given to materials that can be used to construct the project that would reduce the direct and indirect waste generated.	Pre and during construction	Contractors	Maintain records
	WT1.2: Daily waste practices shall be carried out unless these are delegated to the activities of external waste management bodies.	During construction	Contractors	Daily and maintain records
	WT1.3: The use of construction materials shall be optimised and where possible a recycling policy adopted.	During construction	Contractors	Weekly and maintain records
	WT1.4: Separate waste streams shall be maintained at all times i.e. general domestic waste, construction and contaminated waste. Specific areas on site shall be designated for their management.	During construction	Contractors	Weekly and maintain records

	WT1.5: Any contaminated waste shall be disposed of at an approved facility.	During construction	Contractors	Weekly and maintain records
	WT1.6: Recyclable waste (including oil and some construction waste) shall be collected separately and disposed of correctly.	During construction	Contractors	Weekly and maintain records
	WT1.7: Waste sites shall be sufficiently covered to ensure that wind does not move waste and domestic and wild animals do not have access.	During construction	Contractors	Daily
	WT1.8: Disposal of waste shall be carried out in accordance with the Government of Afghanistan requirements.	During construction	Contractors	Weekly and maintain records
	WT1.9: Fuel and lubricant leakages from vehicles and plant shall be immediately rectified.	During construction	Contractors	Daily and maintain records
WT1: Production of wastes and excessive use of resources	WT1.10: Major maintenance and repairs shall be carried out off-site whenever practicable.	During construction	Contractors	Weekly and maintain records
	WT1.11: Where possible, fuel and chemical storage and handling shall be undertaken at central fuel and chemical storage facilities, such as petrol stations.	During construction	Contractors	Daily and maintain records
	WT1.12: On-site storage of fuel and chemicals shall be kept to a minimum.	During construction	Contractors	Daily, maintain records and report any incidents
	WT1.13: Any waste oils and lubricants are to be collected and transported to recyclers or designated disposal sites as soon as possible.	During construction	Contractors	Daily and maintain records
	WT1.14: Any dangerous goods stored on site shall be stored in accordance with Afghanistan regulations.	During construction	Contractors	Daily and maintain records
A.1 Increase in dust levels at sensitive receptors	A1.1: Implement effective dust management measures in all areas during design, construction and operation.	Pre and during construction	Contractors	Daily and maintain records
	A1.2: Restrict speeds on roads and access tracks.	During construction	Contractors	Daily and maintain records
	A1.3: Implement scheduling/staging of proposed works to ensure major vegetation disturbance and earthworks are minimised.	Entire construction	Contractors	Daily and maintain records
	A1.4: Schedule revegetation activities to ensure optimum survival of vegetation species.	During construction	Contractors	Maintain records
	A2.1 Ensure vehicles/machines are switched off when not in use.	During construction	Contractors	Daily and maintain records

A2. Increase in vehicle / machinery emissions	A2.2 Ensure only vehicles required to undertake works are operated onsite.	During construction	Contractors	Daily and maintain records
	A2.3 Ensure all construction vehicles, plant and machinery are maintained and operated in accordance with design standards and specifications.	During construction	Contractors	Daily and maintain records
GW 1: Increase of gross pollutants, hydrocarbons, metals and other chemical pollutants in the groundwater.	GW1.1: Control daily all machinery (vehicles, pumps, generators etc.) for leakages of potentially hazardous liquids. Undertake refuelling at designated places away from water systems.	Construction phase	Contractor	Daily, with weekly reporting to MRRD and NEPA
	GW 1.2: Designated areas for storage of fuels, oils, chemicals or other hazardous liquids should have compacted impermeable bases and be surrounded by a bund to contain any spillage. Refuelling to be undertaken in areas away from water systems.	Construction phase	Contractor	Daily, with weekly reporting to MRRD and NEPA
	GW 1.3: Ensure safe storage and disposal of hazardous liquid waste (old lubricants and ot liquids).	Construction phase	Contractor	Daily, with weekly reporting to MRRD and NEPA
W2: Elevated contaminants in surface water systems.	W1.1: Implement site specific measures to address control of erosion and sedimentation and stockpiling of materials and soil during construction.	Pre and during earthworks	Contractors	Initial set up and then as required with reporting to MRRD
	W1.2: Designated areas for storage of fuels, oils, chemicals or other hazardous liquids should have impermeable bases and be surrounded by a bund to contain any spillage. Refuelling to be undertaken in areas away from water systems.	Entire construction and operation phase	All Personnel	Weekly with reporting to MRRD
	W1.3: Prevent that salinized or polluted drainage water from rehabilitated irrigation systems is spilled into rivers	Planning and operation phase	MRRD, CDC,IA, WUA	Maintain daily records

5.4.12 AF Principle 13 Public Health

224. No adverse impact on human health will be caused by the project activities. However, for explicitly underlining the measures planned under the program with particular regard to events, which may result in serious health, safety and environmental (catastrophic) damage specific performance criteria, reporting requirements and actions with respective monitoring are presented here.

225. In the event of actions occurring, which may result in serious health, safety and environmental (catastrophic) damage, emergency response or contingency actions will be implemented as soon as possible to limit the extent of environmental damage.

226. The delivery organisation will need to incorporate emergency responses into the project complying with the requirements under the Occupational, Health and Safety Policy of the delivery organisation and the relevant legislation of the Islamic Republic of Afghanistan.

Performance Criteria

227. The following performance criteria are set for the construction of the projects:
    a. no incident of fire outbreak;
    b. no failure of water retaining structures;
    c. no major chemical or fuel spills;
    d. explosives for rock blasts stored safely with all security measures according to the legislation of Afghanistan being implemented;
    e. no preventable industrial or work related accidents, including no damage caused to workers and other people during rock blasts;
    f. provide an immediate and effective response to incidents that represent a risk to public health, safety or the environment; and
    g. minimise environmental harm due to unforeseen incidents.

Monitoring and Reporting

228. An emergency response monitoring program has been developed for the projects (Table 20). The program is subject to review and update at least every two months from the date of issue. Importantly, visual inspections will be conducted by camp officer daily with reporting to MRRD and NEPA staff on a weekly basis (minimum) noting any non-conformances to this ESMP.

229. The MRRD and NEPA staff must be notified immediately in the event of any emergency, including fire or health related matter including those that have resulted in serious environmental harm.

Table 12 Emergency Management Measures

Issue	Action required	Action timing	Responsibility	Monitoring & reporting
E1. Fire and Emergency management and prevention strategies implemented	E1.1: Flammable and combustible liquids and explosives bunding/storage areas to be designed in accordance with appropriate international standards	Pre and during construction	Contractors	Daily and maintain records
	E1.2: Fire extinguishers are to be available on site	During construction	Contractors	Daily and maintain records
	E1.3: No open fires are permitted within the project area	During construction	Contractors	Daily and maintain records
	E1.4: Communication equipment and emergency protocols to be established prior to commencement of construction activities.	During construction	Contractors	Daily and maintain records
	E1.5: Train all staff in emergency preparedness and response (cover health and safety at the work site). Coordinate with NDMO.	During construction	Contractors	Daily and maintain records
	E1.6: Check and replenish First Aid Kits	During construction	Contractors	Daily and maintain records
	E1.7: Use of Personal Protection Equipment	During construction	Contractors	Daily and maintain records

5.4.13 AF Principle 14 Physical and Cultural Heritage

230. No adverse impact, which would require avoidance and mitigation, is expected. However, for explicitly underlining the measures planned under the program performance criteria, reporting requirements and actions with respective monitoring are presented here.

231. The MRRD and PMU will collaborate with the UNESCO's International Centre on Qanats and Historic Hydraulic Structures in the preservation of karez as part of the country's and region's historical and cultural heritage.

Performance Criteria

232. The following performance criteria are set for cultural heritage issues related to the project:
    a. There will be no adverse impact on any Archaeological and/or Cultural Heritage sites;
    b. Manage any so far not detected or recognized specific sites of Archaeological, and/or Cultural significance (significant sites);
    c. Work with the village communities to identify sites of cultural and/or religious significance (uses and physical form) within each project during the design and construction phases of the project;
    d. Contribute to the preservation of the small-scale irrigation systems and in particular of the *karez* as significant part of Afghanistan's historical and cultural heritage;
    e. Preserve karez of particular historical value in an as authentic as possible state.

Monitoring and Reporting

233. Assessment of the historical value of all karez considered for rehabilitation (up to 31 sites during assessment and planning stage, more intensive assessment of valuable karez during and after construction).

234. Local stakeholders and community members have to play a key role in the implementation and monitoring of the project.

235. Cultural heritage specialists of the Ministry of Information and Culture of Afghanistan will be involved if any potentially important site is detected.

236. Consultation with stakeholders will continue. This will help ensure that stakeholders continue to be aware of the project, its progress and any changes in the project. It will also assist in identifying any issues as they arise.

237. MRRD will be responsible for advisory support and extensions services to local beneficiaries along with being responsible for distributing material inputs and providing technical training and backstopping in the implementation of programme activities.

238. Records of all consultations and any findings of sites or objects of potential cultural, archaeological or historical value are to be kept and reported on monthly basis. MRRD will provide all information to the Ministry of Information and Culture of Afghanistan.

Table 13: Archaeological and Cultural Heritage

Issue	Action required	Action timing	Responsibility	Monitoring & reporting
CH1: Damage or disturbance to significant important Archaeological, Indigenous and/or Cultural Heritage during the earth disturbances and land clearing activities	CH1.1: Should any important Archaeological, Indigenous and/or Cultural Heritage sites, immediately cease work within the area that the site has been observed and consult with the Ministry of Information and Culture of Afghanistan, UNDP and archaeologist available for implementation during construction and where suitable with the UNESCO's International Centre on Qanats and Historic Hydraulic Structures.	Pre and during construction	Contractor	Maintain records and immediately notify MRRD and Ministry of Information and Culture of Afghanistan of any find
CH2. Adequate conservation of irrigation systems, in particular karez as part of the country's historical and cultural heritage	CH2.1: Identify irrigation systems and karez of particular historical and cultural significance in consultation with UNESCO's International Centre on Qanats and Historic Hydraulic Structures.	Pre and during construction	Contractor	Once, maintain records and immediately notify MRRD and Ministry of Information and Culture of Afghanistan of any find
	CH2.2: Carry out works for the rehabilitation and maintenance of irrigation systems and karez of particular historical and cultural significance in accordance to the requirements determined during planning in consultation with UNESCO's International Centre on Qanats and Historic Hydraulic Structures	Pre and during construction	MRRD, contractor	Maintain records and report to MRRD and Ministry of Information and Culture of Afghanistan

5.4.14 AF Principle 15 Land and Soil Conservation

239. No risks have been identified. However, for explicitly underlining the measures planned under the program performance criteria, reporting requirements and actions with respective monitoring are presented here.

240. *During construction*: Activities that have the potential to cause erosion should be undertaken with the likely weather conditions in mind. Construction works in rivers and canals and activities, which involve significant disturbance of soil, will take place outside of the season of rain and high discharge and will be carried out according to engineering standards in a way that substantial erosion risks are generally avoided. It is also important to ensure that all required erosion and sediment control mechanisms in such sites are in place before the onset of the wet season. Activities on drylands will be carried out in a way that minimizes disturbance of vegetation and soil structures, and resulting wind and water erosion.

241. *During operation*: Effective and efficient mitigation measures are to be planned not only to reduce impact, but to improve the conditions over the existing conditions. In upper catchments erosion control by technical means, regulation of grazing and rehabilitation of vegetation, where feasible, shall reduce erosion and protect the irrigation systems from damage by eroded materials. The weirs are to be designed in a way that minimizes impacts on the erosion, transportation and sedimentation dynamics and reduces the need for manual removal of accumulated sediment above the weirs.

242. *Seismic activity*: The project activities will not have any impact on seismic activity. Where irrigation systems are rehabilitated in areas with seismic risks, these risks are to be taken into consideration during construction of all civil structures. In particular planning of canal and karez works has to minimize risk of failure and of damage caused to human lives and to property.

243. The project does not include specific activities to deal with unexploded ordnances as all project sites are either not affected by previous armed conflict or are assumed to be cleared before any activities start. However, unknown existence of unexploded ordnances can never be completely ruled out. Therefore a protocol for unexpected detection of unexploded ordnances will be put in place in accordance to national legislation and best practices to prevent harm and ensure their safe removal and disposal.

Performance Criteria

244. The following performance criteria are set for the projects:
    a. no substantial erosion by wind and water initiated during the construction activities due to timing and minimization measures;
    b. no substantial permanent build-up of sediment in the aquatic environments and/or surface water as a result of construction and operation activities;
    c. all structures for release of water from project sites provide for best practice erosion control;
    d. no harm to staff of contractors and any other people caused by unexploded ordnances;
    e. detected unexploded ordnances are marked, reported and protected in-situ from unauthorized treatment; and
    f. treatment and disposal of unexploded ordnances by qualified authorized persons in accordance to applicable legislation and safety requirements.

245. By following the management measures set out in the ESMP, construction and operation activities will not have an adverse impact in form of erosion and sedimentation across the broader area as well as from unexploded ordnances.

Monitoring and Reporting

246. A standardised sediment control and monitoring program as well as management program for unexploded ordnances has been developed (Table 14). The program is subject to review and update as needed. The camp officer will be required to:
    a. conduct site inspections on a weekly basis, after rainfall events exceeding 20 mm in a 24 hour period and during and after events of flow discharge exceeding the average discharge by 5 times;
    b. develop a site-specific checklist to document non-conformances to this ESMP or any applicable EDSCPs; and
    c. communicate the results of inspections, ensure that any issues associated with control failures are rapidly rectified and processes are put in place to ensure that similar failures are not repeated and ensure that in cases of sediment build up above the weir and/or vertical or lateral riverbed erosion of an extent threatening infrastructure, settlements, cultivated lands or valuable habitat immediate preventive or rehabilitative measures are implemented.
    d. instruct all workers on the detection of and dealing with unexploded ordnances;
    e. develop a site-specific checklist to document non-conformances to any applicable legislation and safety instructions; and
    f. communicate the results of inspections, ensure that any detections are immediately reported, the location be secured and the required treatment process by qualified authorized persons is put in place to ensure that harm to people and property is prevented.

247. All sediment and erosion control and unexploded ordnances monitoring results and/or incidents will be tabulated and reported as outlined in the ESMP. The program on unexploded ordnances is subject to review and update as new knowledge on the presence of unexploded ordnances becomes available. The MRRD, MAIL and NEPA must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to erosion and sediment control is exceeded. The MRRD, the Mine Clearance Planning Agency (MCPA) and Organization for Mine Clearance and Afghan Rehabilitation (OMAR) or the Demining Agency for Afghanistan (DAFA) must be notified immediately in the event of detection of any suspected unexploded ordnances, which may cause harm to live, health, property or environment.

Table 14 Erosion, Drainage and Sediment Control Measures

Issue	Action required	Action timing	Responsibility	Monitoring & reporting
E1: Loss of soil material and sedimentation to the surface water from site due to earthwork activities	E1.1: Develop and implement an erosion and sedimentation control for any surface works, upper catchment interventions, intake and riverbed modifications, canal lining and other excavation work.	Construction phase	Contractors	Maintain records
	E1.2: Schedule/stage works to minimise cleared areas and exposed soils at all times.	Pre and during construction	Contractors	Maintain records
	E1.3: Schedule/stage works to ensure that major vegetation disturbance and earthworks are carried out during periods of lower rainfall and wind speeds.	Pre and during construction	Contractors	Maintain records
	E1.4: Strip and stockpile topsoil for use during revegetation and/or place removed soils back on the original site.	Pre and during construction	Contractors	Maintain records
	E1.5: Locate stockpile areas away from drainage pathways, waterways and sensitive locations.	Pre and during construction	Contractors	Maintain records

E2: Soil Contamination	E2.1: If contamination is uncovered or suspected, undertake a site contamination investigation. The contractor should cease work if previously unidentified contamination is encountered and activate management procedures and obtain advice/permits/approval (as required).	Construction phase	Contractors	Daily and maintain records
	E2.2: Adherence to best practice for the removal and disposal of contaminated soil/ material from site (if required).	Construction phase	Contractors	Daily and maintain records
	E2.3: Drainage control measures to ensure runoff does not contact contaminated areas and is directed/diverted to stable areas for release.	Construction phase	Contractors	Daily and maintain records
E3: Disposal of excess sediment/silt	E3.1: Weir structures to be designed and constructed to minimize accumulation of sediment.	Design and construction	Contractors	Maintain records
	E3.2: Gravel, stones and silt removed from dams/weirs/canals/*karez* during rehabilitation/maintenance is to be downstream put back into the river or beneficially reused e.g. for construction, composted, returned to farm land, brick making.	Operation phases	CDC,IA, WUA	Maintain records
E4: Prevention of riverbed erosion at weirs	E4.1: The design of all intake structures has to ensure the prevention of erosion with negative impact on riverbed, adjacent lands and on the irrigation systems.	All phases	Contractor; CDC,IA, WUA	Maintain records
	E4.2: The extent of erosion in the areas downstream of weirs has to be continuously monitored and detected excessive erosion to be mitigated by suitable measures, e.g. filling up with stones accumulated behind the weir.	Operation	CDC,IA, WUA	Maintain records
UO1: Deal with detected unexploded ordnances	UO 1.1: Instruction of workers on detection of unexploded ordnances during construction.	Pre and during construction	Contractors	Maintain records
	UO 1.2: Detection of unexploded ordnances during construction.	Pre and during construction	Contractors	Report immediately to above mentioned agencies
	UO 1.3: Marking and securing of detected unexploded ordnances.	Pre and during construction	Contractors	Maintain records

UO 1.4: Treatment and safe disposal of unexploded ordnances.	Pre and during construction	Qualified authorized staff of above mentioned agencies	Maintain records
UO 1.5: Clearance of site of detected unexploded ordnances.	After treatment and safe disposal	Qualified authorized staff of above mentioned agencies	Maintain records

5.4.15 Surface Water and Hydrology

248. *Flow dynamics*: The environmental and economic requirements for minimum residual flow amounts in river sections affected by withdrawal for irrigation have to be determined in the design stage specifically for each site under special consideration of water needs of downstream land-users and riverine ecosystems, especially vulnerable species of flora and fauna. During detailed design of each irrigation scheme based on use of surface water the environmental and economic requirements for minimum residual flow have to be determined and justified and accordingly minimum flows to be determined, which would minimize any adverse environmental or economic impact. The definitions of minimum flows have to adhere to different requirements for low, average and high discharge situations.

Performance Criteria

249. The following performance criteria are set for the construction of the projects:

a. reduction in terms of duration and amount of available irrigation water for downstream users due to withdrawal at project sites is limited to the extent agreed with the affected land-users;

b. determined minimum residual flows in river sections affected by withdrawal for irrigation, meeting the ecological requirements of riverine ecosystems and the needs of downstream water users, are assured.

Monitoring and Reporting

250. Flow monitoring with suitable measurement devices will cover the withdrawal for the irrigation systems and the residual flow in the river.

251. Table 15 outlines the management and monitoring required. All water flow monitoring results and/or incidents will be tabulated and reported as outlined in the ESMP. The MEW and NEPA must be notified immediately in the event of any suspected instances of material or serious environmental harm caused by not meeting minimum residual flow requirements.

Table 15 Surface Water Management Measures

Issue	Action required	Action timing	Responsibility	Monitoring & reporting
W1: Impact on discharge in river sections downstream from intake.	W1.1: Install water flow measuring devices and ensure continuous monitoring	Construction and operation	Contractors, CDC, IA, WUA	Continuously after set up with reporting to MEW and NEPA
	W1.2: Determine site specific minimum residual flow based on assessment of environmental and economic needs	Design/Pre-construction	MRRD and/ or contractors	Approval by NEPA
	W 1.3: Ensure specified minimum residual flow for environmental and economic needs, including sufficient irrigation water is available for downstream land-users	Construction and operation	Contractors, CDC,IA, WUA	Reporting to MEW and NEPA

5.4.16 Groundwater

252. In *karez* systems monitoring of groundwater levels and recharge capacity will take place and where technically feasible the regulation of withdrawal by *karez* irrigation systems will be installed.

Performance Criteria

253. The following performance criteria are set for the project:

a. no significant impact on the quantity of groundwater in proximity to the projects as a result of construction and operational activities, sustainability of use/ balance of groundwater recharge and use in karez systems.

254. By following the management measures set out in the ESMP the project will not have a significant impact on water quantity across the broader area.

Monitoring and Reporting

255. Refer to Table 16 for the management and monitoring requirements for groundwater. All groundwater table monitoring results will be tabulated and reported as outlined in the ESMP.

Table 16 Groundwater management measures

Issue	Action required	Action timing	Responsibility	Monitoring & reporting
GW 2: Unsustainable abstraction of groundwater by *karez* irrigation systems.	GW2.1: Include groundwater monitoring in assessment and planning as well as construction and operation of *karez* systems	Planning, construction and operation phases	Contractors, CDC	Weekly, with monthly reporting to MRRD and NEPA
	GW2.2: Plan, install and Maintain upper catchment intervention to ensure optimum recharge of groundwater	Planning, construction and operation phases	Contractors, CDC	Monthly, with annual reporting to MRRD and NEPA

5.4.17 Indirect and Cumulative Impacts on Environmental and Social Situation

256. No adverse impact, which would require avoidance and mitigation, is expected beyond the above described direct and indirect environmental and social impacts and no cumulative adverse impacts are possible because the locations of all project sites are located far from each other.

5.5 BUDGET

257. A budget has been prepared for the implementation of the ESMP as follows:

Table 17 Budget

Item	-	Cost
ESMP Updating and Auditing	-	$10,000
General ESMP Expenses	-	$20,000
Upper catchment and canal vegetation, habitat and fauna assessments (up to 60 sites, initial assessment, assessment at end of project)	-	$300,000
Water Discharge Monitoring installation at up to 25 sites	-	$130,000
Water Discharge Monitoring (monitoring to be undertaken over five years)	-	$100,000
Check of reservoirs for small vertebrates safety (up to 31 sites, planning stage and during/after construction)	-	$60,000
Archaeological Management	-	$25,000
Karez historical value assessment (up to 31 sites, assessment and planning stage, valuable karez during and after construction)	-	$60,000
Grievance Redress Mechanism	-	$50,000
Total	-	**$755,000**

Annex 9: Gender Assessment and Action Plan

Introduction

This gender assessment aims to provide an overview of the gender situation in Afghanistan, with a specific focus on climate change resilience, and identify gender issues that are relevant to the proposed 'Climate change resilient livelihoods advanced in rural Afghanistan' project, and to examine potential gender mainstreaming opportunities. The assessment was based upon available data from studies conducted by the government of Afghanistan, donor agencies, and multilateral development banks; and includes:

1) Undertaking a desktop review and aligning approaches in this proposal with the national priorities of Afghanistan.
2) Incorporating information and lessons learned from past studies and assessments on gender in Afghanistan from the government, the United Nations, civil society organizations, and multilateral development banks.
3) Conducting stakeholder consultations and engaging women affected by the project and incorporating all points raised; and
4) Integrating gender considerations in the project indicators, targets and activities, identifying women as leaders and decision-makers.

Resilience of smallholder farmers in Afghanistan to climate variability and extreme events Afghanistan is one of the most vulnerable countries to the impacts of climate change. A complex mix of social, political and ecological factors – low levels of development, high dependence on climate sensitive sectors, pervasive conflict and the fragility of dry mountain ecosystem- limit the adaptive capacities of communities to climate chance impacts. The Climate Change Strategy and Action Plan (CCSAP) for Afghanistan identified high levels of exposure and vulnerability, to climate change for most parts of Afghanistan. There are evidences of extreme events, with floods almost an annual occurrence in spring (every year between 2012 and 2015). There also were dry years in the country between 1996-2003, while the drought of 2008 was particularly severe. The CCSAP indicates that several key sectors are seriously vulnerable to climate change impacts including agriculture, water resources, forest and soil conservation, health and others.

Afghanistan is predominantly an agrarian society. Seven out of ten people rely on climate sensitive farming and herding for their livelihoods. Agriculture, which is the mainstay of rural economy, is primarily dependent on precipitation (rain and snow), as the climate is generally arid, and 40% of the rural households relying on agriculture do not receive any income during winter months. (With over 3000 HDDs/year the country experiences severe winter conditions). In terms of livelihood means, irrigated agriculture, livestock herders and dryland farmers are considered the most susceptible to the impacts of the various climatic hazards. The most likely adverse impacts of climate change in Afghanistan are drought related, including associated dynamics of desertification and land degradation. Floods due to untimely rainfall and a general increase in temperature are of secondary importance. However, their impacts may by amplified due to more rapid spring snow melt as a result of higher temperatures, combined with the downstream effects of land degradation, loss of vegetative cover and land mismanagement.

In its Fourth Assessment Report, the IPCC indicated that the severity of climate change impacts depends not only on changes in temperature and precipitation patterns but on a host of other factors related to the various dimensions of poverty. Human development impacts are generally exaggerated where climate patterns interact with pre-existing social and economic vulnerabilities. The poor are most vulnerable to the effects of climate change in Afghanistan. According to the 2014 National Risk and Vulnerability Assessment (NRVA), 39.1% of population lives below the poverty line, with majority working in the agricultural sector. The Initial National Communications (INC) of the Afghanistan government to the UNFCCC mentions that climate change impacts could deepen hunger and poverty by reducing livelihood opportunities, agricultural production, and the availability of water and other natural resources.

The distributional effects are more likely to fall upon women and children, and upon those involved in subsistence agriculture or pastoralism. Gender inequality is an important characteristic of poverty in Afghanistan. The vast majority of women do not participate in paid economic activities making them highly dependable on their husbands or families. Literacy rates are much lower than for men. During periods of drought, young women and children may be sold into marriage so that their families can afford to eat. Children are also highly vulnerable to climate change, given that they are responsible for small scale livestock herding and wood collection.

Existing Gender Inequality in Afghanistan

Gender inequality is one of the main indicators of inequality and is played out along political, social and cultural dimensions. It is closely linked to poverty and other development challenges which is deeply-rooted in social norms and economic conditions with a greater impact on the poor, particularly women and young people.

Poverty, food-security and labor force

Afghanistan is a Least Developed Country (LDC). With a population of around 30 million, Gross Domestic Product (GDP) was USD 19.19 in 2015.[50] The GDP per capita is USD 624. Although Afghanistan experienced healthy economic growth at an average rate of 10% per year from 2002 to 2012, growth has slowed down in recent years declining to 1.5% in 2015. Poverty has increased from 36% in 2012 to 39.1% in 2014 and unemployment and underemployment has increased from 25% in 2008 to 39% in 2014.[51]

Agriculture is the main economic source for majority of the population. 40% of labor force is engaged in agricultural sector. However, the sector only accounts for 22% of GDP. Due to low agricultural production rate, 46.3% of households engaged in agricultural sector live below poverty line (2014 National Risk and Vulnerability Assessment).

The Human Development Index (HDI) for Afghanistan is 0.465. Ranked at 171, the country has one of the lowest HDI in the world. As per the multidimensional poverty index (MPI) developed by the Oxford Poverty & Human Development Initiative (OPHI), 66.2% of the population lives in multidimensional poverty where intensity of deprivation is 53.4%. Among the poor, 39.1% face sever multidimensional poverty. According to the OPHI, 72% of rural population lives in multidimensional poverty where intensity is 54.1%.[52]

Data on food security provides a better picture of poverty profile in Afghanistan. Based on the food consumption score and food-based coping strategies, food insecurity is estimated at 33% of total population, where 12% are severely food insecure, and 21% moderately food insecure. The proportion of the food insecure is significantly higher in rural areas, with 36 percent of the rural population being food insecure, compared to 30 percent of the urban population (ibid).

While poverty is a widespread phenomenon in Afghanistan, it has strong gender dimension too. Female headed household are much more vulnerable to food insecurity. According to the 2014 NRVA data, 67.1% of food-insecure households are headed by women while food-insecurity rate of male-headed household is 34.%. Low dietary diversity (consumption of non-diversified, unbalanced and unhealthy diet) is also much higher in female-headed households (63.2%) compare to male headed households (36.2%).

Women participation in labor force is significantly lower than men. While men's labor force participation rate is at 89%, the rate for women is low, at 29% of the working age population. Of total population of women that participate in the labor force, 73% are unpaid family workers while the rate of unpaid family workers among men is only 19%. Majority of the unpaid family female workers live in the rural area and are engaged in the agricultural sector. Women make up for 70% and 44% of the labor forces of homestead based craft industries and agricultural & livestock sectors respectively (AREU/UNW, 2013, Women's Economic Empowerment in Afghanistan- 2002-2012: Information Mapping and Situational Analysis).

In recent years' participation of women in the labor force has increased. In urban areas, women mainly work in small and medium enterprises (SMEs) and a growing number of female entrepreneurs have established SMEs. Women businesses association is now an active body in the Afghanistan Chamber of Commerce and Industries (ACCI). According to the Afghanistan Women's Business Federation (AWBF), women's entrepreneurship and economic activity participation in the past decade has changed such that, for example, women who formerly traded individually have gradually started forming groups (AREU 2018).

In rural areas too, women are becoming more economically active. Through number of government and donor agency development programs, there has been a surge in establishment of women cooperatives. These cooperatives work in different areas, such as horticulture, livestock, poultry and food processing. Research on women cooperatives shows significant increase in income of members of cooperatives which in turn has has positive effect on empowerment of women including boosted role in household decision- making as well as having better social status. The final evaluation of the UNDP Afghanistan Gender Equality Program (GEP II) found that women's income on average has increased by 200% where cooperatives were supported by the program. Aliabad Cooperative- women owned- quadrupled its sell of processed food after receiving food processing machines and solar panels for operating them. The GEP intervention also created additional 40 jobs in the Aliabad area.

In sum, despite widespread poverty and lower female labor participation, the country has also witnessed number of success cases in the recent years. Afghan women entrepreneurs are slowly increasing their share of the local market and rural women are coming together in the form of cooperatives to reap higher benefits from working together. While economic participation of women is still at infancy, the potential for growth and maturity is enormous particularly if specific development intervention targets them.

Health

Over the past decade Afghanistan has made notable progress in increasing access to health services through construction of hospitals and health clinics, trainings of medical doctors and professionals and development of institutional framework governing the health sector. Life expectancy has increased from 44 to 60 years and maternal mortality has decreased from 1600 to 324 per 100,000 births. Despite recent progress, overall health condition of Afghanistan is still far from optimal. Per

[50] Socio-Economic Impacts of Climate Change in Afghanistan: A Report to the Department for International Development https://www.weadapt.org/sites/weadapt.org/files/legacy-new/placemarks/files/5345354491559sei-dfid-afghanistan-report-1-.pdf [3] National Risk and Vulnerability Assessment (NRVA) 2013-2014.

[51] http://cso.gov.af/en/page/1500/1494/nrav-report

[52] Oxford Poverty and Human Development Initiative (2016). "Afghanistan Country Briefing", Multidimensional Poverty Index Data Bank. OPHI, University of Oxford.

capita total expenditure on health is USD 55, one of the lowest in the world, and availability of physician per 10,000 people is only 2.7 (WHO 2015). According to the estimates of the Ministry of Public Health, around 40% of population, all in rural areas, lives more than 2 hours of walking distance from nearest health facility.

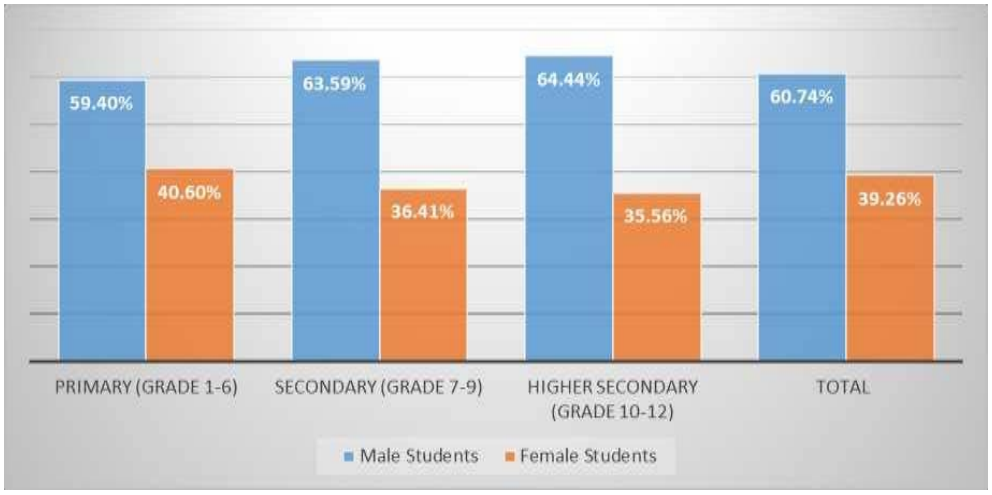
Similar to poverty, health also has strong gender dimension. While majority of both Afghan men and women do not have access to high quality health services, women relatively suffer more. The current maternal mortality rate is one of the highest in the world. In 2011, Save the Children declared Afghanistan "the worst place in the world to be a mother." According to UNICEF, around 41 per cent of deaths occur during pregnancy, 40 per cent during delivery, and 19 per cent in the two months after delivery. High fertility rate (5.3), poor antenatal care, low rates of skilled attendance at birth, adolescent pregnancies, maternal malnutrition, unequally distributed health care services and lack of obstetric care in rural areas are the major underlying causes of maternal deaths.

Introduction of increased resilience to climate change impact of the livelihoods particularly the rural women depending on irrigated arable farming by ensuring the supply of irrigation water under changing climate conditions.

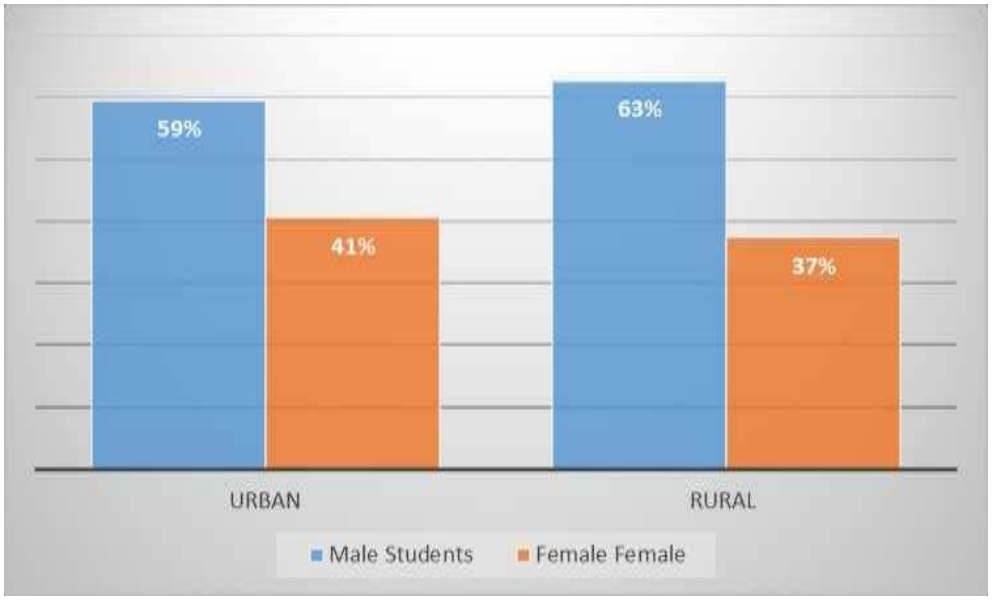
Education

Education has been the epicenter of development efforts since 2002. School enrollment has jumped from
million in 2001 to over 9 million in 2015, of which more than 3 million are female students. Number of schools has also tripled within on decade reaching to 15,510 school in 2012 from 6039 in 2002. Literacy rate has also increased but with significant gender and rural-urban gaps: 62 % of urban men and 33 % of urban women are literate, compared with only 35 % of rural men and 7 % of rural women.

The government of Afghanistan and donor agencies have made significant achievement in increasing female school enrollment. Currently more than 3 million girls go to school while the number in 2001 was almost zero. However still the ratio of male/female student is eschewed towards male students where for every two male students there is one female student. The male/female student ratio increases in higher grades; in other words, the number of female students decreases in secondary and higher secondary grades as shown in the following chart:



School enrollment gender gap is wider in rural areas. As the following charts illustrates, female students comprise 41% of students in urban areas while the figure for rural area is 37%. Lack of availability of secondary and higher secondary schools in a village is one of the reason that overall enrollment of girls is lower than boys as Afghan families not often allow their girls to walk a long distance to attend school.



School enrollment gender gap also varies among the provinces of Afghanistan. Female school enrollment is lower in Eastern and Southern provinces while it is relatively higher in Central, Northern and Western provinces.

Gender-based violence

Afghanistan is one of the worst countries in the world to be born female. It ranks 147 out of 148 on the UNDP's Gender Inequality Index. Often the news of brutal cases of violence against women in Afghanistan makes international headlines.

The report published by the Afghanistan's Independent Human Rights Commission indicates that the total number of incidences of violence against women obtained from the incidences registered by the complainants in 2014 amounts to 4873 incidences. The most widespread and common type of violence against women is physical violence, especially beating. Out of the registered figures of violence against women in 2014 almost 1468 incidences which make up 30.1 percent of the registered incidence of violence against women are related to physical violence. A total of 412 other incidences which cover 8.5 percent of all the incidences of violence against women occurred during this period are related to different types of sexual violence while 1482 incidences which make up 30.4 percent of all the registered incidences of violence against women are related to verbal and psychological violence. Similarly, 1024 incidences which make up 21 percent of all incidences of violence against women are related to economic violence against women. The remaining 487 incidences which included 10 percent of the registered incidences are related to other types of violence against women. (AIHRC Report on Violence Against Women, May 2015)

Through a Decree in 2009, President Karzai made violence against women illegal and allowing it to server as an instrument to bring perpetrators to justice. When the law was put for the review of the Parliament in 2013, it was challenged by a number of conservative members of the Parliament on the presumption that some provisions of the law were against the Islamic Law. These relate to the marriage age, conditions for polygamy and beating of the wife by the husband. The law was sent back to the Commission on Women Affairs, Civil Society and Human Rights. The law has since been with the commission and it is still feared that if it is presented to the House again, it may face a risk of rejection by the MPs.

The Government has taken a number of initiatives to facilitate prosecution of perpetrators. These measures include establishment of special courts for the cases of violence against women in 26 provinces and this is expected to increase to 34 provinces, national coverage, by December 2019. Also a decision has been made to establish a special branch within the Supreme Court to specifically rule on the cases of violence against women, juvenile and family disputes.

Gender Inequality Index

Through the years, several indices have been developed to quantify the concept of gender inequality. The United Nations Development Programme uses the Gender Inequality Index (GII) and Gender Development Index (GDI). The GII is a composite measure that shows inequality in achievement between women and men in reproductive health, empowerment and the labor market while measuring achievement in human development in three areas: health, education, and command over economic resources. The GDI considers the gender gaps on human development between men and women.

Afghanistan has a GII of 0.693 as of 2015 and ranks 4th out of 155 countries assessed. The GDI value as of 2014 is 0.6, which has ranked Afghanistan as 161 out 161. Afghans ranks lower in both GDI and GII compare to its neighboring countries as shown in the following table.

	Gender Development Index	Gender Inequality Index
Afghanistan	0.6	0.693
Pakistan	0.726	0.536
India	0.795	0.563
Iran	0.858	0.515
Tajikistan	0.926	0.357
Uzbekistan	0.947	NA

Gender issues in response to the impact of climate change

It is important to note that in order to create transformational change, women are not just seen as climate change victims or beneficiaries. Women are imperative to climate change adaptation efforts. They practice adaptive measures as a part of daily life – through farming and in the face of increasing risks – through disaster recovery and preparation[53]. By utilizing these existing skills into project design and implementation and by providing a platform in which to empower women enables women's influence to rise from a household to a community and national level. Leadership and decision-making capacities and opportunities increase.

Women from the poorest households often pay the most, sacrifice the most, are the most disadvantaged and the least resilient.

Women are impacted differently by climate change in the following ways:

- Women rely more on natural resources for their livelihoods, with staple crops providing up to 90 percent of food in farming districts of some countries and 60–80 percent of food in most developing countries. Women struggle to fulfil their key responsibility for the production of food, in spite of the detrimental impacts of climate change on agriculture.
- Women and children are often responsible for gathering water and fuel in traditional agrarian societies, tasks that are laborious, challenging and time consuming. These tasks become more time intensive due to the impact of climate

[53] http://asiapacificadapt.net/gender-sourcebook/wp-content/themes/iges/pdf/integrating-gender-sourcebook.pdf

change;

- Climate change is linked to increased incidences of tropical diseases such as cholera and malaria, which have severe impacts on women because of their limited access to medical services and their responsibility to care for the sick;
- In some societies more women are dying during natural disasters because men receive preferential treatment in rescue and relief efforts;
- Women are disproportionately affected due to vulnerability and the capacity to adapt to the process of climate change are affected by various factors, including age, education, social status, wealth, access to resources, sex, gender and many other social dimensions;
- In addition, at the time of crisis, women's needs are not considered priority in recovery programmes.

Recommendations

a. Gender analysis

The gender analysis undertaken at the onset and design of this project acts as an entry point for gender mainstreaming throughout implementation. Stakeholder consultations took place at the Gender Focal Team Meetings consist of government agencies, NGOs, CSOs and UN agencies. Results from the consultations are detailed below in the Stakeholder engagement section further below.

The gender analysis, through stakeholder engagement and consultation enabled:

- Assessment of the gender-related activities in responding to the expanding threat of climate change, including gender roles and responsibilities, resource use and management, and decision making raised by the project;
- Engagement, development and input into the design of responding to the expanding threat of climate change and building the resilience of the most vulnerable communities through climate change adaptation activities;
- Demonstration of the need for gender-disaggregated data and indicators to establish a baseline in which to measure improvements and identify areas of focus; and
- Establishment of recommendations to incorporate into the Gender Assessment Action Plan.

b. Project design and implementation

Addressing gender dimensions within the project design and implementation, this proposal identifies and integrates interventions to provide gender responsive and transformative results.

The project design will take into consideration the following gender implications:

- Women's role in agricultural production; analysis of gender division of labor (e.g. gender-differentiated roles, responsibilities, and needs);
- Women's access to, and control over, natural resources and the goods and services that they provide (Increasing women's access to and control over resources, improves the effectiveness of such projects);
- Possibilities and potential of women participation in water distribution for irrigation purposes of agricultural land;
- Assess capacity of Women run agricultural cooperatives;

Identification of gaps in equality through the use of sex-disaggregated data enabling development of gender action plan to close those gaps, devoting resources and expertise for implementing such strategies, monitoring the results of implementation, and holding individuals and institutions accountable for outcomes that promote gender equality:

- Assess how gender is currently mainstreaming in the climate change impacts, to develop need assessments, enable planning, and be effective in monitoring and evaluation;
- Involve women and men both at macro and micro level in climate resilience process;
- Evaluation of women's work time, both as paid and unpaid;
- Identify specific strategies to include / target female-headed households; and
- Promote advocacy and awareness adjusted to most effectively reflect gender-specific differences. Strategies used in the project are tailored, taking into account such differences;

The project implementation will take into consideration the following gender implications:

- Division of labor on small farms, taking into consideration gender specific views on management;
- Inclusion of a Gender Specialist position within the project to implement gender related activities;
- Inclusion of all stakeholders involved in the project to develop awareness raising / training aimed at drawing attention to the implication of climate resilience adaptation and gender equality;
- Targeting women agricultural cooperatives; and
- Undertaking community discussions and dialogue in relation to gender and climate resilience and adaptation strategies with the inclusion of indigenous knowledge.

During project implementation, qualitative assessments will be conducted on the gender-specific benefits that can be directly associated to the project. This will be incorporated in the annual Project Implementation Report, Mid-Term Report, and Terminal Evaluation. Indicators to quantify the achievement of project objectives in relation to gender equality will include men and women who had access to affordable solutions, number of men and women employed from the jobs created by the project, training opportunities, knowledge management and information dissemination.

c. Stakeholder engagement

The stakeholder consultations and engagement of women's organizations promote gender equality at the local as well as at national level. The involvement of women's organizations in the project design will assist in the identification of relevant gender issues within the country's social context, and implementation and monitoring of gender aspects of the project.

Number of consultations with the Gender Focal Team (GFT) took place during project design. The target populations were women and men as representatives of all stakeholder groups affected by this proposal.

The results captured as are follows:

- Overall knowledge about climate change issues is little;
- There is a gap in capacity (finance, human, knowledge and skill) to mainstream climate issues in relation to gender;
- There is no work integration between the Ministry of Women Affairs, Ministry of Agricultural, Irrigation and Livestock, the Ministry of Rural Rehabilitation and Development on issues related to gender and climate change adaptation; and
- Lack of sex-disaggregated data in all sectors (e.g. livelihoods, disasters' preparedness, protection of environment, health and well-being) often leads to an underestimation of women's role and contribution.

The recommendations by the Gender Focal Team include:

- Community level awareness raising at all levels;
- Involvement women starting from the need assessment to implementation by identifying and analyzing their coping mechanisms;
- Staff capacity building on gender and climate change analysis, planning, budgeting and mainstreaming;
- Identification of the issues and challenges that hinder men, women in accessing all levels of policy and decision-making processes;
- Engagement of women in order to play a leadership role promoting climate change adaptation;
- Engagement of civic associations;
- Identification and analysis of traditional versus modern community structure in relation to climate resilience and coping mechanisms. Here 'traditional structure' refers to indigenous institution and their auxiliary functions while modern community structure refers to Government and NGOs backed community organizations such as Community Development Councils (CDCs)

d. Monitoring and evaluation

Through onset analysis, data has been collated to establish a baseline. This data shall be monitored against throughout implementation and evaluation.

The analysis identified the differences between men and women within at-risk populations. In order to monitor and evaluate progress of the project, the following indicators can be measured:

Quantitative Outcomes:

- Women and men as beneficiaries;
- Female/male-headed households as beneficiaries;
- Improved livelihoods;
    - Women and men engagement in income generating activities;
    - Purchasing capacity and production of food for household consumption and income generation;
    - Distance and time saved due to availability of water for irrigation purposes of cultivating land;

Qualitative outcomes:

- Opportunities to generate additional income. Women are more likely to respond to incentives that address their family's basic needs, such as better health and nutrition, linking agriculture and food security improvements;
- Contribution to self-esteem raised and empowerment of women in the community;
- Expanded involvement in public and project decision-making as a result of initiation of women to actively participate in income generating activities;
- Support for training and educational activities which may include activities related to climate change, agriculture, water management, leadership, business, finance, entrepreneurship and decision-making, thereby empowering and increasing involvement of women to participate with confidence in community meetings;
- Effectiveness of awareness increasing; and
- Ability of women and men to identify their environmental changes and risks based on their different roles and access to resources.

Proposed Gender Action Plan

This Gender Action plan provides suggested entry points for gender-responsive actions to be taken under each of the Activity areas of the project. In addition, specific indicators are also proposed to measure and track progress on these actions at the activity level. This can be incorporated into the detailed M&E plan which will be developed at the start of implementation, and provides concrete recommendations on how to ensure gender (including disaggregated data) continues to be collected and measured throughout implementation.

Objective	Action	Indicator	Responsible Institution

Outcome 1: Strengthened individual and institutional capacity of rural communities to assess, plan, maintain and use climate change resilient irrigation infrastructure			
Activity 1.1 Participatory assessment for conditions of irrigation systems and climate related risks towards them Activity 1.2 Plans for rehabilitation and enhanced climate change resilience of irrigation systems are prepared Activity 1.3 Institutional and technical capacity at community level to maintain rehabilitated and climate change resilient irrigation systems Activity 1.4 Institutional and technical capacity at community level to efficiently manage and use irrigation water	• Collect sex-disaggregated data and gender specific information related to the possible project interventions. • Ensure the voices of women are heard and environmental or cumulative impact assessment clarify the different impacts to men and women. • Assess gender benefits of the intervention. • Collect baseline data to enable impact-oriented surveys and monitoring of: (1) increase in women's employment; (2) improved women's health; and (3) % increase in income of women. • Assess if the intervention has the potential to promote gender equality and/or women's empowerment or is likely to have an adverse gender impact or increases women's exposure to risk. • Ensure that the collection of sex-disaggregated data is systematized within the overall project management database. • Ensure that monitoring activities are gender-inclusive and participatory. • Provide technical training to project beneficiaries including both men and women. If deemed necessary, organize separate training classes for male and female participants. • Provide training to community members on vulnerability risk assessment and development of climate change adaptation plan. • Undertake training on skills development for the agriculture cooperatives (with at least 50% female participation) on use of water for irrigation to increase income generation. • Work with the religious leaders and Mullahs to raise awareness on women's rights during the Friday prayers.	• Gender disaggregated data available. • Gender impact assessment of the project. • Study paper • Participating of community women in all phases of the project. • # of community female members participate in monitoring • Baseline data • Gender impact assessment of the project. • # of women case studies • # of training programs • # of women case studies • # of Trainings • # of Friday Prayer preaches on issues related to women's right	• Project Management Office (PMO) • PMO and the community council • PMO and the community council • PMO and Ministry of Rural Rehabilitation and Development (MRRD) • PMO and the community council • PMO and Ministry of Rural Rehabilitation and Development (MRRD) • PMO and the community council • PMO • MRRD, PMO, Ministry of Haj and Religious Affairs (MoHRA) and community councils
Objective	**Action**	**Indicator**	**Responsible Institution**
Outcome 2: Social Acceptance Risk and Labour Risk de-risked by enhanced awareness and knowledge of government entities, beneficiaries and market actors on RE mini-grids			
Activity 2.1 Rainwater harvesting and surface run-off capturing structures for water collection and groundwater recharge	• Conduct a detailed study on Gender, and Climate Change. • Provide technical training to project beneficiaries including both men and women. If deemed necessary, organize separate training classes for male and female participants. • Assess if the intervention has the potential to promote gender equality and/or women's empowerment or is likely to have an adverse gender impact or	• Gender disaggregated data available. • # of training programs • # of female cooperative members trained • # of women case studies	• PMO, NEPA, MRRD, MoWA • MAIL and MRRD • PMO and MRRD

	increases women's exposure to risk.		
Activity 2.2 Rehabilitated and climate change resilient water intake structures of canal and karez systems Activity 2.3 Rehabilitated water delivery canals and *karez*, with reduced seepage losses Activity 2.4 Rehabilitated and/or newly installed efficient inter- and on-farm water distribution systems	• Provide technical training to project beneficiaries including both men and women. If deemed necessary, organize separate training classes for male and female participants. • Provide training to community members on vulnerability risk assessment and development of climate change adaptation plan. • • At least 30% of beneficiaries are women cooperatives. • Provide gender awareness training to cooperative members.	• # of training programs • # of men and women trained on income generation activities • # of female technicians trained • # of Trainings • % of women cooperatives supported by the project. • # of female cooperative members trained	• PMO • PMO • PMO • MRRD, PMO and MAIL

Annex 10: Breakdown of the IE Management Fee

UNDP Fees for Support to Adaptation Fund Project for "Climate change resilient livelihoods advanced in rural Afghanistan"		
Category	**Services Provided by UNDP**	
Identification, Sourcing and Screening of Ideas	Provide information on substantive issues in adaptation associated with the purpose of the Adaptation Fund (AF). Engage in dialogue related to a potential application to the AF Verify soundness & potential eligibility of identified idea for AF.	36,948
Feasibility Assessment / Due Diligence Review	Provide up-front guidance on converting general idea into a feasible project/programme. Source technical expertise in line with the scope of the project/programme. Verify technical reports and project conceptualization. Provide detailed screening against technical, financial, social and risk criteria and provide statement of likely eligibility against AF requirements. Determination of execution modality and local capacity assessment of the national executing entity. Assist in identifying technical partners. Validate partner technical abilities. Obtain clearances from AF.	110,843
Development & Preparation	Provide technical support, backstopping and troubleshooting to convert the idea into a technically feasible and operationally viable project/programme. Source technical expertise in line with the scope of the project/programme needs. Verify technical reports and project conceptualization. Verify technical soundness, quality of preparation, and match with AF expectations. Negotiate and obtain clearances by AF. Respond to information requests, arrange revisions etc.	147,791
Implementation	Technical support in preparing TORs and verifying expertise for technical positions. Provide technical and operational guidance project teams. Verification of technical validity / match with AF expectations of inception report. Provide technical information as needed to facilitate implementation of the project activities. Provide advisory services as required. Provide technical support, participation as necessary during project activities. Provide troubleshooting support if needed. Provide support and oversight missions as necessary. Provide technical monitoring, progress monitoring, validation and quality assurance throughout. Allocate and monitor Annual Spending Limits based on agreed work plans. Receipt, allocation and reporting to the AFB of financial resources. Oversight and monitoring of AF funds. Return unspent funds to AF.	332,530
Evaluation and Reporting	Provide technical support in preparing TOR and verify expertise for technical positions involving evaluation and reporting. Participate in briefing / debriefing. Verify technical validity / match with AF expectations of all evaluation and other reports Undertake technical analysis, validate results, and compile lessons. Disseminate technical findings	110,843
Total		738,956

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د چاپیریال ساتنې ملې اداره اداره ملی حفاظت محیط زیست

Government of the Islamic Republic of Afghanistan
National Environmental Protection Agency
International Relations Division

Date: 27/Jan/2020 No: 8188

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Endorsement for "Climate Change Resilient Livelihoods Advanced in Rural Afghanistan" Project

In my capacity as designated authority for the Adaptation Fund in Afghanistan I confirm that the above national project proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Afghanistan.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by the United Nations Development Programme (UNDP) and executed by Ministry of Rural Rehabilitation and Development (MRRD).

Sincerely,

Ezatullah Sediqi
Deputy Director General – Technical Affairs
National Environmental Protection Agency
The Government of the Islamic Republic of Afghanistan