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**United Nations Development Programme**  
**Country: Turkmenistan**  
**PROJECT DOCUMENT**

**Project Title: Supporting climate resilient livelihoods in agricultural communities in drought-prone areas of Turkmenistan**

**UNDAF Outcome(s):** Outcome 6. The national policy, legislative and institutional frameworks are responsive to climate change issues by promoting climate resilience, adaptation, climate risk management and disaster risk reduction measures at sector and community level

**UNDP Strategic Plan Environment and Sustainable Development Primary Outcome:** Goal 4: Managing Energy and the environment for sustainable development. Outcome 3: Strengthened capacity of developing countries to mainstream climate change adaptation policies into national development plans

**Expected CP Outcome(s):** Output 6. The national policy, legislative and institutional frameworks are responsive to climate change issues by promoting climate resilience, adaptation, climate risk management and disaster risk reduction measures at sector and community levels.

**Expected CPAP Output:** 6.1. New and innovative solutions developed and piloted at national and subnational levels for climate change adaptation, sustainable land, water, coastal management and ecosystem services, and safe waste disposal as part of NEPAAM

6.2. : Institutional capacities are strengthened at subnational level in adaptation/CRM planning and implementation , to promote stronger local livelihoods through sustainable use of water, land, biodiversity and coastal areas

**Executing Entity/Implementing Partner: Ministry of Nature Protection**

**Implementing Entity/Responsible Partners: UNDP**

**Brief Description**

Turkmenistan is a water stressed country and has one of the harshest climates in the Central Asian region. Climate change modeling indicates significant increases in temperature and reduction in rainfall. Temperatures are expected to increase by 2°C by 2040, with precipitation declining across all agro-ecological zones by 8-17 percent between 2040 and 2100, which coupled with increase in temperature, will lead to a decrease in total volume of water availability that is likely to have a profound impact on agricultural production systems and local farmers. The long-term solution envisaged by the Government of Turkmenistan is to mainstream climate change adaptation at the community, district, provincial and national levels in order to secure climate resilient livelihoods in agricultural communities. To help the Government meet these outcomes, the project will support three inter-related components, namely (i) improving climate related socio-economic outcomes in targeted agricultural communities in Lebap and Dashoguz velayats through the implementation of community-based adaptation solutions; (ii) Mainstreaming climate adaptation measures in agricultural and water sector development strategy and policy; and (iii) Strengthening national capacity for iterative climate change adaptation planning, implementation and monitoring in the country. The project will directly strengthen the adaptive capacity and reduce the vulnerability of around 40,000 to 50,000 persons (of which around 51.2% would be women) in the Lebap and Dashoguz velayats by helping them improve the productivity of farm operations, be better prepared for increasing water scarcity and by introducing alternative income sources. Improved water efficiency and crop production systems will bring approximately 20,000 ha of agricultural and 500,000 ha of pastoral lands under climate resilient technologies resulting in a real net household income increase of at least 15% for participating households (including at least 20% of women-headed households). The replication potential of successful efficient water management and climate resilient practices and of new climate-friendly sectoral planning, legislative and capacity development measures would indirectly benefit around 500,000 people in Turkmenistan, of which around 50% would be women).

Programme Period: 60 months	
Atlas Award ID: 00092855	
Project ID: 00097376	
PIMS # 5459	
Start date: 1-May-2016	
End Date 30-Apr-2021	
Management Arrangements	NIM
PAC Meeting Date	TBC

Total Resources required:	\$23,876,347
Total Resources allocated	\$23,876,347
o SCCF	\$3,046,347
o Government	\$20,000,000
o UNDP	\$830,000

**Agreed by Ministry of Nature Protection of Turkmenistan:**

NAME	SIGNATURE	Date/Month/Year
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**Agreed by UNDP:**

NAME	SIGNATURE	Date/Month/Year
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## ACRONYMS AND ABBREVIATIONS

CPAP	Country Program Action Plan
Daikhan	Farmer
Etrap	District
ECC	Etrap Coordinating Committee
ETpC	Etrap Field Coordinator
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GEF	Global Environment Facility
Gengesh	Local Government
Gengeshlik	Territory of a Gengesh (usually one or more villages)
GIS	Geographic Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
ICARDA	International Centre for Agricultural Research in the Dry Areas
IMC	Inter-Ministerial Council
M&E	Monitoring and Evaluation
MNP	Ministry of Nature Protection
MOA	Ministry of Agriculture
MOED	Ministry of Economy and Development
MRV	Monitoring, Reporting and Verification
NAMA	Nationally Appropriate Mitigation Plan
NAPA	National Action Plan for Adaptation
NEPAAM	National Economic Program for Action on Adaptation and Mitigation
NIDFF	National Institute of Deserts, Flora and Fauna
NIM	National Implementing Modalities
NIP	National Implementing Partner
NPC	National Project Coordinator
NPM	National Project Manager
NSSC	National Strategy on Climate Change
PAP	Participatory Adaptation Plan
PIF	Project Information Form
PPG	Project Preparation Grant
PMU	Project Management Unit
SCCF	Special Climate Change Fund
SESP	Social and Environment Screening Procedure
SIP	Stakeholder Involvement Plan
TWG	Inter-Ministerial Technical Working Group
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
UNDP	United Nations Development Program
UNDP CO	United Nations Development Program – Country Office
UNDP EEG	United Nations Development Program – Environment and Energy Group
UNDP RCU	United Nations Development Program – Regional Coordinating Unit
UNDP RTA	United Nations Development Program – Regional Technical Adviser
USD	United States Dollar
USSR	Union of Soviet Socialist Republics
Velayat	Province

# ELABORATION OF THE NARRATIVE

## I. SITUATION ANALYSIS

### 1.1. CLIMATE CHANGE – INDUCED PROBLEM

1. Turkmenistan is located in the west of Central Asia between the Caspian Sea and the Amu Darya River. The territory of Turkmenistan is a part of the Aral and Caspian Sea basins. It is predominantly a flat country containing deserts and oases, with mountainous zones along its border. The Karakum Desert, one of the largest deserts in the world, occupies 80% of the country's total land area. Turkmenistan has a sharply continental and extremely dry and hot climate.<sup>1</sup> Despite the desert nature that is distinctive for most of Turkmenistan, there are significant differences in average temperature and annual precipitation in the northern and southern parts of the country. With the low total annual rainfall, 96% of Turkmenistan is characterized as arid land, making it the most arid of the five Central Asian countries. Drought is a semi-permanent condition in the country. Water is a scarce resource and is unequally distributed across Turkmenistan. Water shortages are common, particularly in the south and west of the country. There are few rivers, the largest being Amu-Darya, with little to no surface flows across most of the desert landscapes. Turkmenistan's geography and current climate are described in more detail in the Annex 9.3.
2. Over the past 55 years, intensive warming has been observed all over the country and it is occurring at a faster pace than anywhere else on the planet. The highest temperature rise, 2°C, is observed in the winter period. Overall, the climate is becoming drier with increased frequency of strong heat periods, flash runoffs and mudflows as well as rainstorms. Trends also show that variability in monthly precipitation has been growing.<sup>2</sup> In addition, the productivity of pastures and grazing sites which is closely linked to the changing weather conditions has been severely affected, with the dry years experiencing a reduction of the volume of forage by 3-5 times. Since 1969, the Amu Darya River basin has been repeatedly affected by seasonal floods, causing damage to farmlands, homes, public utilities and infrastructure.
3. Climate change modeling indicates significant increases in temperature (Table 1) and reductions in rainfall (Table 2). Temperatures are expected to increase by 2100 by 2-3 °C (optimistic scenario) to 6–7° C (pessimistic scenario)<sup>3</sup> with precipitation declining across all agro-ecological zones by 8-17 percent between 2040 and 2100, which coupled with increase in temperature, will lead to a decrease in total volume of water availability<sup>4</sup>. The runoff of Amu Darya river (the main source of Turkmenistan's surface water) is expected to decline by 10-15 percent by 2050<sup>5</sup>.
4. In summary, predicted climate change impacts in Turkmenistan are project to include the following:
  - An increase in average annual temperature of between 2 and 7°C by 2100, which will include an increase in the number of extremely hot days (i.e. days over 40°C)<sup>6</sup>;

<sup>1</sup> Second National Communication of Turkmenistan to the United Nations Framework Convention on Climate Change (UNFCCC), 2010.

<sup>2</sup> Turkmenistan Climate Adaptation Profile. Climate Change Knowledge Portal.

[http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country\\_profile&CCCode=TKM](http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCCode=TKM).

<sup>3</sup> Second National Communication of Turkmenistan to the UNFCCC (2010)

<sup>4</sup> Second National Communication of Turkmenistan to the UNFCCC (2010)

<sup>5</sup> ibid

<sup>6</sup> These estimates are based on the findings of five general atmosphere and ocean circulation models (GCM) reported in Turkmenistan's Initial Communication on

- A reduction in annual average rainfall of between 8 and 17% by 2050<sup>7</sup>;
- An increase in average regional evaporation rates of 48% by 2050;
- An increase in the frequency and intensity of drought and flood spells<sup>8</sup>;
- A 10-15% reduction in flow rates for the Amu Darya river<sup>9</sup>; and
- A 30% reduction in flow rates of other rivers.

Table 1: Projected increase in temperatures (°C)

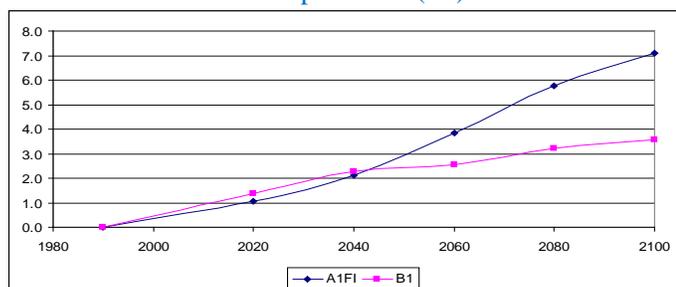
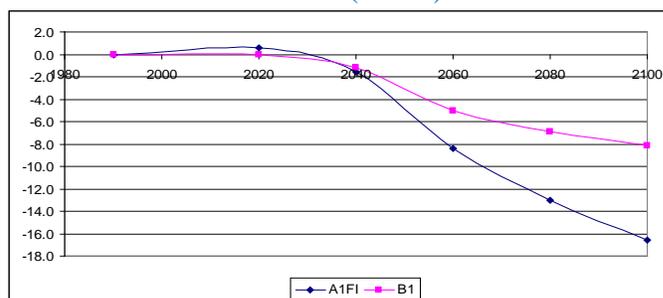


Table 2: Projected decrease in precipitation amounts (in mm)



Source: Second National Communication of Turkmenistan (2010)

5. According to national estimates, unless there is an improved efficiency in irrigation systems, these factors are likely to result in a water deficit for agriculture of up to 14 km<sup>3</sup> per annum by 2050<sup>10</sup>. This is equivalent to approximately 20% of current water use in the agriculture sector. This water deficit has the potential to result in significant economic losses to the agriculture sector. Due to unproductive land equivalencies, over the period 2015-2030, this water deficit would result in output reductions equivalent to nearly 4 million tons of wheat and more than 3 million tons of cotton. An estimated overall decrease in productivity of irrigated agriculture will be in the range of 15-50%<sup>11</sup>. The livestock productivity will drop due to dwindling areas of pasture land and a 30% decrease in fertility of the existing pastures<sup>12</sup>. Climate change is therefore likely to reduce the volume of water availability for irrigation, and subsequent limit the amount of crops produced. These trends will be accompanied by increased frequency and severity of climate induced disasters (drought, floods, strong winds).

## 1.2. VULNERABILITY OF THE TURKMENISTAN AGRICULTURAL SECTOR AND COMMUNITIES. UNDERLYING CAUSES FOR VULNERABILITY.

6. Despite the fact that only 4.1% of the land area is arable<sup>13</sup> and the challenging conditions, agriculture remains a key strategic sector of the economy, employing approximately 50% of the workforce and contributing 19% of Gross Domestic Product (GDP)<sup>14</sup> (USD \$3.8 billion). Agriculture is the basis for the

Climate Change (1998). The GCM with the most plausible results on temperature predictions was the UK89 model (equilibrium model of the United Kingdom Meteorological Agency). According to this scenario, temperature is predicted to increase by 5.5°C by 2050.

<sup>7</sup> Second National Communication of Turkmenistan to the UNFCCC (2010)

<sup>8</sup> Floods are uncommon in Turkmenistan but they do still pose a threat to communities and infrastructure (see: <http://www.preventionweb.net/english/countries/statistics/risk.php?cid=178>).

<sup>9</sup> Second National Communication of Turkmenistan to the UNFCCC (2010)

<sup>10</sup> FAO, A Review of Drought Occurrence and Monitoring and Planning Activities in the Near East Region (2008)

<sup>11</sup> CAREC, Gap Analysis on Adaptation to Climate Change in Central Asia

<sup>12</sup> CAREC, *ibid*

<sup>13</sup> World Bank, [data.worldbank.org/indicators](http://data.worldbank.org/indicators)

<sup>14</sup> FAO, Turkmenistan Agriculture Sector Review (2012)

country's food security and an important supplier of raw materials for the processing industry. Livestock, wheat and cotton are the primary areas of economic activity. Pastures occupy a large territory of the country accounting for 78 percent of land reserves. Approximately 47.77% of Turkmenistan's population lives in rural areas and depend on agriculture for their livelihoods; with a significant part of rural population being particularly vulnerable due to a combination of socio-economic factors and climate change impacts. As agriculture is one of the most climate sensitive sectors, climate change will likely affect most vulnerable rural populations and have negative consequences on economic growth and their livelihoods.

7. During the last few decades, Turkmenistan has experienced widespread changes in land cover and land use following the socioeconomic and institutional changes in the wake of the disintegration of the Union of Soviet Socialist Republics (USSR) in 1991, and subsequently followed by a decade of drought and steadily increasing temperatures. These changes in the vegetated landscape are sufficiently broad to be detectable from orbital sensors at multiple scales. The agriculture sector in Turkmenistan is not currently at its maximum productive potential. The sector is largely controlled by the state, with few private producers and farm businesses that are still very limited in terms of agriculture, livestock and processing sectors.
8. As a result of limited water resources, of the 17 million hectares available for irrigated agriculture, only 1.7 million are currently utilized for this purpose. Despite this, agriculture currently consumes 92% of all available surface waters in the country. Since agriculture is heavily dependent on irrigation, increasing temperature, a decrease in precipitation, and the probable reduction in surface water are all likely to potentially lead to an increase in aridity and accelerating desertification. Due to expected water scarcity, a decrease and degradation of natural grasslands is also anticipated, ultimately leading to a decline in sheep breeding production<sup>15</sup>. The Crops subsector: The focus of the sector is largely on state mandated crops such as cotton, wheat and sugar beet. Consequently, almost all public sector investments are directed at cotton and wheat, based on government policy of self-sufficiency in grains and maintaining the export potential for cotton products. This policy has greatly affected the structure of the agricultural sector and its potential for production, since thousands of hectares of land that were under orchards, horticulture and fodder crops have been diverted to production of winter wheat. Although in recent years, the Government has begun to recognize the need to diversify the agricultural sector and acknowledges the inefficiencies of enforcing cotton and wheat production in all regions of the country, this effort has been constrained by the increasing frequency of drought in agricultural producing regions, and the associated economic losses experienced by the state. The state has in recent years, allocated some land for crops other than the government mandated crops to be grown in each of the five provinces based on soil and climatic conditions in these regions. As a result of this, each province has been allocated land on a leasehold basis for growing maize, barley, lucerne and other forage crops, a practice aimed at promoting crop rotation and thus improving soil quality. The government is also beginning to invest in high efficiency irrigation technology for water intensive crops, to include (subsoil) drip irrigation systems, mobile sprinklers and wastewater drainage and recycling.
9. The Livestock subsector is dominated by the private sector, with more than 80% of all products produced by private farmers following the decommissioning of Soviet state livestock farms. Private rural households operate on a lease agreement, according to which the leaseholder provides feed and

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<sup>15</sup>Second national communication of Turkmenistan to the UNFCCC

veterinary services and makes sure that the livestock is kept in good condition. Based on the lease agreement the leaseholder is allocated land for growing fodder crops and receives all the livestock products produced and half of the offspring during the lease period. This lease arrangement predominantly applies to the lease of cattle, whereas sheep and goat are mainly kept by the state association themselves due to relatively easier husbandry and production conditions. Despite a lack of state investment, livestock management has managed to develop a certain degree of efficiency and productivity, and this subsector now provides a good model for further private sector development within the agricultural sector.

10. A special attention in the context of climate change should be paid to the vulnerability of natural pastures. The natural pastures have a large diversity of vegetation species and low cost maintenance with a high nutritional value. However, the pastures are of low productivity and increasingly vulnerable to a sharp seasonal and annual variability. The natural pastures as a reserve base for forage and its nutritional value vary considerably throughout the year. From summer to winter the feed volumes of the pastures are decreasing by 2.0-2.5 times. Assessment of climate change and its impact on the grasslands have shown that productivity is likely to decline in the future. Despite a sufficient resistance of plants to drought and heat, it has been observed that when drought occurs over an extended period that there is a decline in grassland productivity. Soil drought caused by decrease in the water reserve in the soil up to 4 mm. An assessment of accumulated annual precipitation and moisture deficit show that climate change-induced grassland productivity may decline to 10–15% reflecting a moisture stock decrease in the soil in the 0-20 cm layer. The reduction in pasture productivity would likely result in decreased livestock productivity resulting in reduction in meat and wool production<sup>16</sup>.
11. The Fruit and Vegetable subsector is the most independent of the agricultural sector in Turkmenistan with almost 100% of production is generated privately both by independent farmers and leaseholders. The total land area that is used for production of small-scale farming is negligible compared to the grain, cotton or livestock subsectors, but nevertheless it is highly productive and the most economically viable within the country's agricultural sector. Climatic conditions have historically allowed the country to produce high quality fruit and vegetable products and prior to collapse of the Soviet Union, Turkmenistan was a major exporter of fruit and vegetables to northern parts of the Soviet Union. Over recent years, land allocated to produce winter wheat was increased almost five times largely at the expense of areas dedicated to feed, fruit and vegetable crops. Prices and availability fluctuate between seasons, reflecting an undeveloped processing sector and lack of appropriate technology, facilities and infrastructure for cool storage. Despite the emergence of some private sector activity, this remains a key area for development, and demand for locally sourced product in the markets remains strong.
12. At present, favorable climatic conditions of Turkmenistan enable it to grow cotton, cereals, vegetable, fruits, grapes, forage crops almost over all the territory of Turkmenistan, and subtropical crops such as olives, pomegranates, persimmons, etc., in the south-west. Projected climate change in Turkmenistan is expected to directly affect the following: (i) Irrigation water demand due to transpiration intensity; (ii) Irrigated land reclamation; (iii) Agricultural crop yields; and (iv) Growing period of plants. In order to determine climate change impact on key agricultural production indicators in the main agricultural regions of Turkmenistan, three natural climatic zones – the Kopetdag and Murgab, the downstream Amudarya and the middle-stream Amudarya were studied. The calculations have been made for major

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<sup>16</sup> Second National Communication of Turkmenistan under UNFCCC, 2010

agricultural crops – cotton, wheat, lucerne, and vegetables taking into account their yield capacity. Data analysis showed that crop water demand is likely to increase by 2020 by 13%<sup>17</sup>. This is further compounded by the fact that Turkmenistan is a water-stressed country and has one of the harshest climates in the Central Asian region. The main causes of water stress are: periodic low water flows in rivers, low efficiency of irrigation system, low performing irrigation techniques, limited effective water conservation mechanisms, and limited available water resources for the further economic development of irrigated agriculture.

13. One of the key underlying causes for vulnerability of the agricultural sector in Turkmenistan is the inefficient water consumption due to outdated approaches to managing water, deteriorating irrigation infrastructure and subsidized water prices. The water subsidies make the current water system financially unsustainable, and dampen the private sector to invest in the absence of conducive financial mechanisms and economic instruments. As a result, incentives for efficient use of water are largely absent, thus large farmers use water inefficiently, and the quality of local service delivery for smaller farmers suffers. Despite inherent water scarcity, Turkmenistan has among the highest water consumption per capita in the world. However, the high water consumption levels are largely related to the inefficient irrigation systems in the country, as opposed to high household consumption. Farmers in Turkmenistan are not well prepared for climate change, particularly in relation to the efficient use of water. They are often unaware of water saving options. The vulnerability of the water sector to climate change processes directly affects water runoffs, alters rivers hydrographs, and reduces the overall quality of water. Thus, the intensive development of irrigated agriculture with the background decrease of water availability requires taking specific actions for sustainable and rational use of water resources.
14. To conclude, agriculture in Turkmenistan is extremely vulnerable to climate change, mainly connected to availability and quality of water and land resources. Given that agriculture is almost entirely based on irrigated agriculture practices, any reduction of the volume of available water resources would mainly take its toll on this sector. Effects could be the following: (i) less cultivable land as a result of less available water resources; (ii) increased demand for irrigation water (due to the increase of transpiration); (iii) declining quality of water resources as a result of growing salinity level; (iv) decreasing ameliorative conditions of irrigated lands; (v) decreasing agricultural crops productivity; and (vi) fluctuations in the vegetation periods for plants, etc.

### **1.3. VULNERABILITY OF DASHOGUZ AND LEBAP COMMUNITIES: INTRODUCING PROJECT PILOT SITES.**

15. The two out of five velayats (provinces) in the country were selected for piloting climate adaptation activities under the project. These two were selected because they have been experiencing water shortages and severe weather conditions and are considered important agricultural production areas of the country. In particular, the Dashoguz velayat is the driest velayat in the country. Further, the remaining three velayats were already receiving climate adaptation support through the Adaptation Fund. Within each of the two velayats (provinces) a single etrap (district) was selected for piloting based on a number of conditions, but more particularly because these etrap were the most productive in terms of agricultural products and livestock. These etrap were also considered to be most vulnerable in terms of climate change. In addition, the interest, responsiveness and willingness of the etrap municipalities to participate

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<sup>17</sup> Second National Communication of Turkmenistan under UNFCCC, 2010

in a climate adaptation program were extremely high, including their willingness to share experiences and best practices with other etraps and velayats in the country.

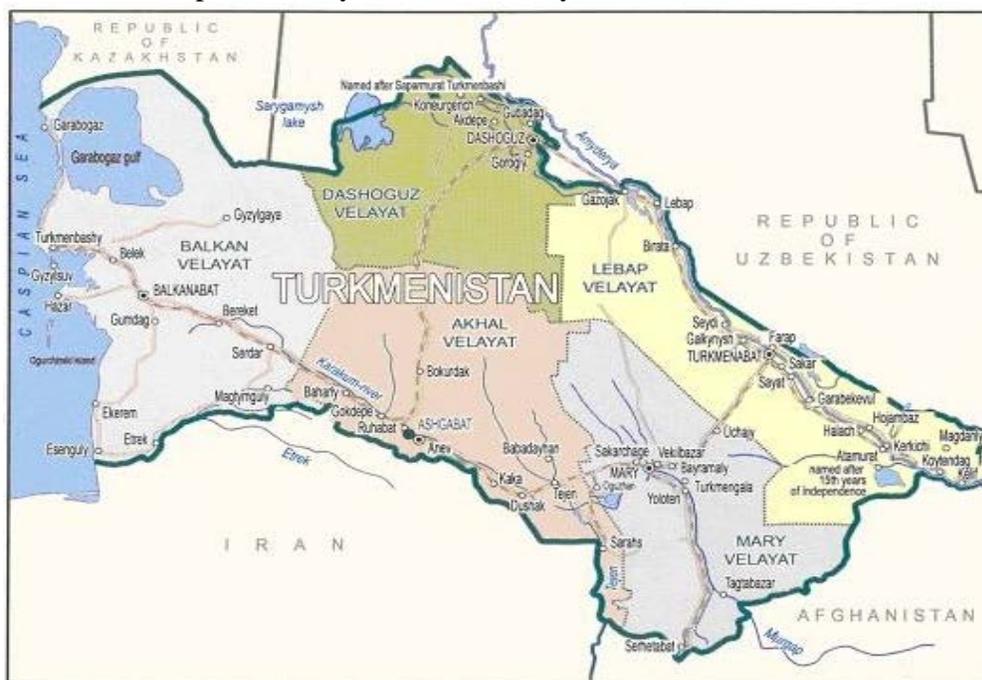
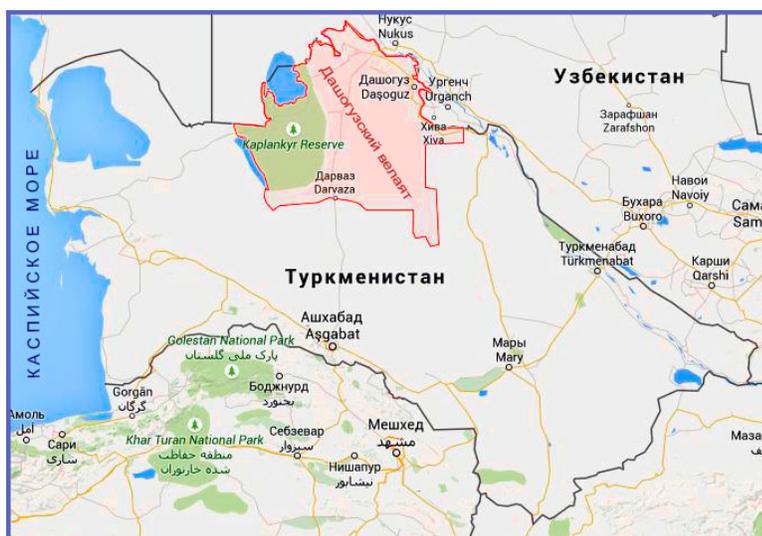


Figure 1: Map of Project Velayats and Etraps

16. Three daikhan associations and a livestock association were selected from each of these two pilot etraps for the initial phase of participatory adaptation planning and implementation. These associations were selected based on the following factors: vulnerability of communities to climate impacts, cohesiveness and maturity (based on past performance as assessed by the respective etrap municipalities) of the associations, and extent of support from the local administration. An additional three daikhan associations and another livestock farm will be selected in Year 2 for the second implementation phase of the project based on the above-mentioned criteria.

17. **Dashoguz Velayat** is located on the left bank of the Amu Darya (river) in the Karakum Desert in the northern part of Turkmenistan. In the north, northwest and northeast the province borders Uzbekistan. Most of the velayat is part of the Karakum Desert. Dashoguz province includes nine etraps (districts), one of which is the pilot etrap of Gerogly. The climate of Dashoguz region is sharply continental, with hot and dry summers and relatively warm winters. The average summer temperature is + 28°C with an absolute maximum of 43-44°C, and



between -2 to 2°C in winter. The territory of Dashoguz velayat is the most arid region of Turkmenistan. The average annual precipitation is 84 - 98 mm, most of which falls in winter and spring.

18. The main water source for the Dashoguz velayat is the Amu Darya river. In 2014, the velayat produced 25.1% of the total agricultural production (first place) of the country. In the same year, the velayat produced 20.8% of the total production of the country’s raw cotton (fourth place). The region is also one of the main producers of rice in the country (21.9%), fruits and berries (40.7%), potatoes (31.8%) and melons (31.7%). One of the main branches of agriculture is livestock. Dashoguz velayat has the largest number of cattle (43.6%) and milk production (40.8%) in the country.
  
19. The pilot Gerogly etrap is located in the southern part of Dashoguz province. The Karakum desert covers the largest part of the etrap. The main agricultural production in the etrap is wheat and cotton, its production is growing steadily due to the implementation of modern agronomic practices, crop rotation, and improved land reclamation practices. The livestock farm "Garagum" is the leader in the livestock production in Gerogly district. In 2014, "Garagum" livestock breeders have achieved the best production of livestock offspring in the velayat. The increasing productivity of sheep and cattle, the strengthening of forage provide new possibilities for a stable increase in meat and other livestock products within the farm. The pilot organizations selected for the initial phase of project interventions in the Gerogly etrap include the “Yagtylyk” Daikhan Association in the “Yagtylyk” gengeshlik (local self government unit) and the “Garagum” Livestock Farm in the “Garagum” gengeshlik. The former has a population of around 9,115 persons in seven villages within the gengeshlik, with an area of 10,814 ha of which 3,022 ha is irrigated arable land. The main source of income to this farmer association is agriculture and employment in public institutions. The “Garagum” livestock farm consist of four separate farm units that are managed under the “Garagum” Daikhan Association, covering a total area of 887,892 ha of which 99 ha is arable and the balance area is natural pastures. The Garagum Farm Association is made up of seven villages within the territory of the gengeshlik with a total population of 1,803 persons. Two of the four farms are devoted to sheep raring (27,257 heads), one for camel rearing (1,512 head) and the farm for cattle rearing (362 head). In year 3 of the project, an additional diakhan association and livestock farm will be phased in, for project support, making a total of two daikhan associations and two livestock farms that would be covered under the project in the Gerogly district of Dashoguz province.

20. **The Lebap velayat** is located in the eastern part of Turkmenistan and borders Uzbekistan in the north, and Afghanistan in the east. The climate is sharply continental. The velayat is rich in mineral resources. Agricultural activity is based on high intensity farming of cotton, grains, vegetables, viticulture, sericulture and animal husbandry. The main crops grown are cotton, wheat, rice and vegetables.



Livestock farming is an important contributor to the economy.

21. The pilot Galkynysh etrap specializes in production of cotton and wheat and animal products. Two daikhan associations, namely “Vatan” and Parakhat” in the Dovletabat and Parakhat gengeshliks respectively have been selected for the initial phase of pilot investment under the project. The “Vatan” daikhan association has a population of between 1,500 to 1,800 persons that are part of 5 villages within the Dovletabat gengeshlik that specializes in cotton, wheat and rice, and sericulture. In addition 2-3 ha of land is allocated for orchards and vineyards. The ‘Vatan” diakhan association is not involved in livestock farming. The main source of income to the farmer association comes from cultivation of cotton, wheat, melons and sericulture. The total area of the association is 900,000 ha. The “Parakhat” daikhan association comprises 7 villages within the gengeshlik covering 900,000 ha. There is no pastureland within the gengeshlik. The total population in the gengeshlik is between 1,600 to 1,900 who are mainly engaged in production of cotton, grain and sericulture. The main source of income to the association comes from growing of cotton, wheat, melons and sericulture. The source of irrigation to both farmer associations in the Galkynysh etrap is the Karshi canal and Amudarya river. In year 3 of the project, two additional diakhan associations will be phased in, for project support, based on the criteria outlined in paragraph 18, making a total of four daikhan associations that would be covered under the project in the Galkynysh district of Lebap Velayat.
  
22. The farmers of the Yagtylyk and Garagum daikhan and livestock associations respectively of the Dashoguz velayat and the farmers of Vatan and Parakhat daikhan associations of the Lebap Velayat participated in a vulnerability assessment that is presented in Tables 3 and 4 below:

**Table 3: Assessment of vulnerability and degree of risks related to climate change in Gerogly etrap of Dashoguz Velayat**

System	Adverse projected climate changes over the past 15 years	Potential biophysical impact	Potential socio-economic impact and damage	Proposed measures on adaptation (adaptation capacity)
Cotton	<ul style="list-style-type: none"> <li>• Temperature increase</li> <li>• Increase of frequency of strong winds</li> <li>• Reduced rainfall</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced crop yields</li> <li>• Reduction of fiber quality</li> <li>• Increased demand for water</li> </ul>	<ul style="list-style-type: none"> <li>• Income will significantly reduce</li> <li>• Increase of cost of reclamation work</li> <li>• Industrial dynamics will decrease</li> <li>• Increased irrigation norm</li> </ul>	<ul style="list-style-type: none"> <li>• Cleaning the irrigation canals</li> <li>• Improved land grading</li> <li>• Conduct water accounting</li> <li>• Development of water management plan</li> <li>• Installing water control sluices</li> <li>• Increase the agro-technical services</li> <li>• Ensure strict observance of crop rotation</li> <li>• Increase the number of forest belts</li> <li>• Increase soil washing</li> <li>• Conduct seminars on optimization of mineral nutrition of cotton and wheat</li> </ul>
Wheat		<ul style="list-style-type: none"> <li>• Reduced crop yields</li> <li>• Lower quality (at a temperature above 37 degrees, wheat dramatically increases growth with reduced productivity, respectively)</li> </ul>	<ul style="list-style-type: none"> <li>• Income amounts will decrease</li> <li>• Product quality will decrease</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct capital levelling</li> <li>• Use of drought-resistant varieties</li> <li>• Use of micronutrients</li> <li>• Use of sprinkler irrigation</li> <li>• Salinization control</li> </ul>
Livestock sector (pastures, animals)		<ul style="list-style-type: none"> <li>• Fast desiccation of pasture vegetation</li> <li>• Rapid evaporation of water from artificial covered reservoirs</li> <li>• Increased need for animals in water</li> <li>• Increased animal diseases (especially among young animals, pneumonia)</li> <li>• Reduced milk yields</li> <li>• Weight reduction of cattle</li> <li>• Destruction of pastures infrastructure</li> <li>• Degradation of desert pastures</li> </ul>	<ul style="list-style-type: none"> <li>• Income decrease</li> <li>• Number of livestock will be reduced</li> <li>• Increased expenses for purchase of fodder stock</li> <li>• Deterioration of pasture infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Construction of new and maintenance of existing wells</li> <li>• Establishment of mini-shops for wool and leather processing</li> <li>• Takyр cleaning</li> <li>• Construction of new and maintenance of existing sardobas (underground storages)</li> <li>• Conduct workshops and consultations on sustainable pasture management</li> <li>• Breeding revision</li> </ul>

Water resources		<ul style="list-style-type: none"> <li>• Rising level of ground water</li> <li>• Reduction of rivers and canals flows</li> <li>• Increased evaporation</li> <li>• Increased salinity of irrigation water</li> </ul>		<ul style="list-style-type: none"> <li>• Conduct land leveling</li> <li>• Drainage cleaning</li> <li>• Arrangement of new collectors</li> <li>• Increase in number of dredgers</li> <li>• Deployment of water-saving technology</li> <li>• Conduct of workshops and consultation on rational water use</li> <li>• Development of water management plan</li> <li>• Construction of new and repair of existing water control facilities</li> <li>• Water and land resources management considering climate change</li> </ul>
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**Table 4: Assessment of vulnerability and degree of risks related to climate change in Galkynysh Etrap of Lepab Velayat**

System	Adverse projected climate changes over the past 15 years	Potential biophysical impact	Potential socio-economic impact and damage	Proposed measures on adaptation (adaptation capacity)
Cotton	<ul style="list-style-type: none"> <li>• Precipitation increase</li> <li>• Temperature increase</li> <li>• Warm winter</li> </ul>	<ul style="list-style-type: none"> <li>• Yield decrease</li> <li>• Increased demand in water</li> <li>• Fiber quality decrease</li> <li>• Increase of seasonal rainfalls</li> <li>• Soil salinization and pollution</li> <li>• Pests spreading</li> </ul>	<ul style="list-style-type: none"> <li>• Decrease of production income</li> <li>• Irrigation norm increase</li> <li>• Increased expenses for land reclamation</li> </ul>	<ul style="list-style-type: none"> <li>• Improved land grading</li> <li>• Conduct water accounting</li> <li>• Development of water management plan</li> <li>• Installing water control sluices</li> <li>• Conduct seminars and consultations on rational water use</li> <li>• Ensure strict observance of crop rotation</li> <li>• Increase the number of forest belts</li> </ul>
Wheat		<ul style="list-style-type: none"> <li>• The harvest may be reduced as a result of diseases caused by insect pests, as rising temperatures speed up their reproduction</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced income from wheat production</li> </ul>	<ul style="list-style-type: none"> <li>• Use of drought-resistant varieties</li> <li>• Conduct capital land grading</li> <li>• Use of innovative technologies for irrigation (drip, sprinkler)</li> </ul>

Horticulture		<ul style="list-style-type: none"> <li>• Appearance of alien pests</li> <li>• Trees deceases</li> <li>• Reduction in fruits</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced revenues from production</li> </ul>	<ul style="list-style-type: none"> <li>• Use of drip irrigation methods</li> <li>• Improving varieties</li> <li>• Trees grafting</li> <li>• Improving soil fertility</li> <li>• Timely spraying pesticides</li> </ul>
Water resources		<ul style="list-style-type: none"> <li>• Reduced flow of Amudarya river</li> <li>• Increased groundwater level</li> <li>• Reduction of rivers and canals flows</li> <li>• Increased evaporation from the surface water sources</li> <li>• Increased salinity of irrigation water</li> </ul>		<ul style="list-style-type: none"> <li>• Drainage cleaning</li> <li>• Arrangement of new collectors</li> <li>• Deployment of water-saving technology</li> <li>• Conduct workshops and consultation on rational water use</li> <li>• Development of water management plan</li> <li>• Construction of new and repair of existing water control facilities</li> <li>• Water and land resources management considering climate change</li> <li>• Conduct land leveling</li> </ul>

#### 1.4. LEGAL, POLICY AND INSTITUTIONAL CONTEXT

23. Currently, Turkmenistan does not have a legal and institutional framework that manages climate adaptation in a holistic, integrated and comprehensive manner. There is a clear disconnect between policy, law, planning, budgeting and climate change adaptation needs; and there is no mechanism for monitoring vulnerability and adaptation indicators and using such data in development planning. In addition, adaptation opportunities are further hindered by inadequate use and availability of evidence-based methodologies and toolkits.
24. The main legislative framework dealing with the agriculture sector relates to legislation on land and water, particularly, the Code of Turkmenistan “On Water” of 2004, the Code of Turkmenistan “On Land” of 2004, the Code of Turkmenistan “On Drinking Water” of 2010 and the Code of Turkmenistan “On Pastures” of 2015.
25. The Code of Turkmenistan “On Water” defines the structure of management of water resources and the distribution of functions and powers of governance in relation to water. In accordance to this legislation, the Ministry of Water Economy is responsible for regulation of the use of water, while the Ministry of Nature Protection is entrusted with the responsibility of protection of water resources. The Code “On Water” stipulates that inter-farm irrigation and drainage networks belong to the state water management organizations, while water users having direct responsibility for operation of irrigation and drainage networks and hydro-technical facilities, at their own costs, with technical support from the water management authorities, although in practice this might not always be the case. In August 2012, Turkmenistan acceded to the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes. By joining the Convention, Turkmenistan has undertaken to review the Water Code to meet some of the basic provisions of the Convention, including the rational use of water by the transition to the basin principle of water resources management, involvement of water users in the management of water resources, and improving tariffs for water supply services to ensure its more efficient use.
26. The Code of Turkmenistan “On Land” is aimed at the rational land use and the protection, preservation and improvement of the natural environment. The Code “On Land” stipulates measures for efficient use of land resources, procedures for state land management, maintenance of state land cadastral and monitoring, measures for improving soil fertility and conservation of natural resources. The Code “On Land” includes a system of legal, organizational, economic and technological and other measures for rational use of land resources, protection from adverse anthropogenic impacts and improvement of soil fertility. The Code “On Land” recognizes two owners of land, the citizens of the Turkmenistan and the State.
27. The Code of Turkmenistan “On Pastures” stipulates measures for the rational utilization, enrichment and sustainable development of natural pastures for use by graziers, and the avoidance of degradation and destruction of pastures. The Code defines measures to ensure that rational utilization is based on management prescriptions, including determination of carrying capacity, regulations regarding use of pastures, measures to enhance productivity and sustainability of these lands, and the collective role of local government entities and grazing right holders or lessees in the effective management of these lands.
28. Other legislation that would be relevant in terms of climate change, vulnerability and adaptation are the Law of Turkmenistan “On Daikhan Associations” of 2007, the Law of Turkmenistan “On Daikhan Farm”

of 2013, the Law of Turkmenistan “On Nature Protection” of 2014, the Law of Turkmenistan on Ecological Assessment of 2014, the Sanitary Code of Turkmenistan of 2009, the Law of Turkmenistan on Fishery and Preservation of Water Biological Resources of 2011, the Law of Turkmenistan on Specially Protected Natural Areas of 2012, the Code of Turkmenistan on Administrative Violations and the Criminal Code of Turkmenistan of 2010. In addition, the legal acts of the President of Turkmenistan, in particular those focusing on the improvement of water legislation is relevant. These are the Regulations of the Ministry of Water Economy of 2000, the Regulation of “TurkmenGeology” State Corporation of 2012, the Regulations of the National Hydrometeorology Committee under the Cabinet of Ministers of 2011, and regulations of the Ministry of Nature Protection (2000) and other regulations dealing with the use and protection of water.

## **1.5. LONG-TERM SOLUTION AND BARRIERS TO BE ADDRESSED**

29. The long-term solution envisaged by the Government of Turkmenistan is mainstreaming climate change adaptation at the community, district, provincial and national levels in order to secure climate resilient livelihoods among agricultural communities. The SCCF resources will address a number of critical constraints in building resilience to climate risks for farmers. SCCF resources will be used to improve the productivity and sustainability of farm operations and to support farmers to be better prepared to manage climate induced water scarcity, as well as to diversify their production against climate risks, and introduce more sustainable and alternative income generation sources. SCCF resources would also support a concomitant effort to systematically incorporate climate change induced drought risk management and adaptation responses to these risks into sub-regional and national developing planning and budgetary processes with gender considerations as part of an effort for developing an effective and sustainable gender-sensitive adaptation planning process. Coupled with this adaptation planning and investment process, the approach is to support efforts to mainstream climate change considerations into the agricultural and water sectors with the intent to address short and medium-term development timescales. The mainstreaming of adaptation into sector policies would build on, and benefit from the learning and experience emerging from the climate resilient livelihood investments of the project in the agricultural communities in Lebap and Dashoguz velayats. Finally, SCCF resources will support iterative pathways for medium to long-term adaptation planning in tandem with the activities being implemented under the adaptation component of the proposed National Economic Program of Action on Adaptation and Mitigation to Climate Change (NEPAAM) of Turkmenistan.
30. The main identified barriers to addressing the root causes and associated risks to building community resilience to climate change in agriculture are the following:
31. (a) *Insufficient technical knowledge and proven models of climate risk reduction action in agriculture*  
There is not enough evidence, training and successful demonstrations of good practice in climate risk management in Turkmenistan sufficient for transforming decision-making in the agricultural sector at all levels. The line agencies responsible for agriculture and water management at provincial and local level, and local communities lack the understanding of how their activities lead to attenuation of climate induced impacts and what is needed for more adaptive climate adaptation and management. Several international agencies have been delivering useful training, technical support and demonstrations on efficient water management and agriculture practices. However, water management solutions almost always differ from site to site, depending on particularities of soil, topography, water sources, amounts to be managed, crop types, and local economic and administrative conditions. Therefore technology transfer is a special challenge in this sphere, requiring not only exposure to the technology but also an

understanding of how best to apply it within local constraints. Such understanding is absent in most parts of Turkmenistan, requiring concerted training, research, testing, and evaluation in localities across the country.

32. To address the lack of knowledge and proven models at the local government and community level it is necessary to pilot and facilitate the design of new agricultural and water management investments that integrate climate adaptive measures to reduce and better manage the implications of climate change impacts. Implementation of new models in agriculture and water regulation will require hands-on capacity building, training and technical support for planning and investments in improved climate resilient water and agricultural management practices to help improve resilience to climate stressors. The testing and development of climate risk reduction initiatives in agriculture and water sectors will provide learning and capacity for better understanding of the risks posed by climate change on the productive potential of the land and options for reduction of these risks (Outcome 1 of the proposed SCCF project).

33. *(b) Agricultural communities are not involved in decision-making, planning and management of water and land resources*

Current agricultural and water management practices in Turkmenistan are largely focused upon physical investments in new canals and other irrigation facilities and in meeting productivity targets in state orders rather than on participatory processes that engage local stakeholders and incorporate their knowledge and concerns into agriculture and water management planning and decision-making. There is lack of cooperation between local executive bodies, local self-governments and communities in planning of water and agricultural production systems. Communities' participation in local level planning and decision making is further constrained because: (i) collective decision making organizations (daikhan associations) at the local level are not well developed in Turkmenistan; and (ii) these associations are lacking training and technical skills to collaborate and work with regional agencies. A participatory planning and community engagement approach is fundamental to ensure local support to the efficient management of land and water resources in severely drought prone areas in order to avoid potential conflicts in water use and to ensure that economic returns are not jeopardized by top-down management solutions.

34. Participation of daikhan associations in the analysis of conditions and adaptation options are necessary because: (i) adaptation, and the decisions on how to adapt, occur at, and can be only effectively managed at the community level; (ii) adaptation measures are likely to involve significant changes to existing community practices and be controversial, and decisions on adaptation of such measures must be decided and owned by the community, rather than be imposed from above; (iii) the community is likely not to have the technical skills to properly assess the climate situation on its own, and would need guidance and technical support from the regional practitioners and other experts; and (iv) regional practitioners may not necessarily have sufficient understanding of the needs of the community in developing adaptation measures and approaches.

35. The issue of limited community involvement would require targeted action to: (i) strengthen daikhan associations through training and hands-on exercises to develop a thorough understanding of land, water and climate risk management issues and to ensure that these associations work collaboratively and effectively with regional practitioners, (ii) creating local multi-stakeholder committees with regional practitioners to jointly address climate change adaptation issues, (iii) introducing and initiating participatory agriculture, pasture and water management planning and management, and (iv) executing a public awareness program across the pilot areas to inform farmers and other stakeholders about the

impacts of climate change and options for adapting to it and mitigating its impacts on their communities. This work will be supported through the Outcome 1 of the project.

36. *(c) Water subsidies and other policy and regulatory instruments in water and agriculture sectors exacerbate underlying causes of vulnerability*

Agricultural and water resource users and land owners have no incentives to invest into climate adaptive practices as no funding and institutional mechanisms exist to cover their opportunity costs related to climate management. With the existing water subsidies consumers have essentially no financial motive to lower their water consumption. There is no market mechanism for end-users to recoup investment in water conservation. At present, direct incentives for farmers to conserve water lie only with the need to reduce and manage salinization. While the high consumption of water is largely related to the inefficiency of irrigation systems in the country, tariffs set by the government is built on the basis of a below cost recovery making the current water system financially unsustainable and as such, dampens the interest of the private sector to invest in this sector. As a result, incentives for water efficiency are largely absent, thus large farmers use water inefficiently, and the quality of local service delivery for small holders suffers. These subsidy policies have encouraged an already highly water-deficient country to have some of the highest water consumption per capita in the world, and more than twice of any other country in Central Asia. The rising water deficits are likely to further disproportionately impact the most vulnerable farmers and communities.

37. Furthermore, the current Water Code does not permit the application of an integrated basin-level approach to water management, which is necessary to address effectively the seasonal water stress and climate risk response measures. It is not sufficiently adaptable to the increased management demands that climate change imposes. To address the issue of inadequate policy and legislative mechanisms in water management, it would require the exposure of key government political leaders to international practices of basin management and require international expertise to advise the Government of Turkmenistan on policy, legal and institutional changes to promote the more efficient use of water.

38. The legislation governing the functioning of the Daikhan associations, the main organizations responsible for agricultural production at the local level, is limited in terms of its legal mandate to effectively managing climate risks. While daikhan associations are legal entities for implementation of government orders for production of wheat, cotton and other crops, in practice, the government officials at the etrap and velayats are responsible for implementation of the government orders. The daikhan associations are constrained from making key decisions on agricultural production and water use, including in particular, the management, operation and maintenance of irrigation systems as well as water distribution, factors that are critical for ensuring efficient water use and adapting to water shortages and stress. The assessment of current legislation and practice on daikhan associations is required to identify options for further delegation of responsibilities to these associations for management, operation and maintenance of water supply systems, particularly for agriculture, as well as enhance their skills and knowledge on management of water distribution infrastructure and irrigation systems at the farm level. Outcome 2 of the proposed SCCF project will address this barrier.

39. *(d) Institutional set-up, planning and management in the water and agriculture sectors do not adequately consider the long-term implications of climate change*

Current sector plans and investments in water and agriculture do not consider the long-term implications of climate change, therefore, the design of irrigation infrastructure and agricultural practices overlooks climate change-related limitations and impacts. Similarly, the selection of agricultural crops and

agricultural and grazing practices, results in production systems that are vulnerable to water stress and other climate induced impacts. Planning in the water and agriculture sector is further not equipped to undertake climate change risk and vulnerability assessments. There is limited knowledge of tools and methods for socio-economic impact assessments and planning techniques to allow for cost-effective adjustments and better preparedness of these sectors to anticipated climate risks.

40. Agricultural planning and management are largely focused on meeting state order crop targets for cotton, wheat and beet, and there is little incentive and capacity for agriculture planning to adopt to, and manage climate risks. The water resources management structure in the country is based on an administrative-territorial management system that is led by the Ministry of Water Economy. On the ground, water management is carried out by the production units of water economy under the oversight of this Ministry. Efforts at promotion of water use associations are at a very early stage. The lack of an over-arching institutional mechanism for water management at the basin level through a single organizational structure prevents to a large extent, the efficient use of water resources. The use of water resources under the current territorial management system with limited organizational structures for coordination of water resources management decision-making results in a significant waste of irrigation water.
41. Overcoming sector barriers would require a concerted effort to integrate climate resilient policies and measures into the water and agriculture sectors. In particular, this would entail: (i) inclusion of adaptation considerations in sector's strategies and plans (sector-based adaptation planning); (ii) ensuring adjustments in sectoral infrastructure investments; and (iii) building system-level and institutional capacities in the agriculture and water sectors for climate risk informed sectoral planning and management. In particular, public sector decision-making with respect to adaptation planning in the water and agriculture sectors is required at the national, regional and local levels to identify climate risk, vulnerability, responses to climate situations, identifying benefits of adaptation measures, and integrating adaptation measures into processes of planning and budgeting. These gaps will be covered through the Outcome 2 of the SCCF project.
42. *(e) Lack of access to specific and timely information to facilitate adaptation planning*  
There is low awareness and lack of specific and timely information on risks and vulnerability related to climate change, and on climate risk reduction processes at the national and local levels. In particular, local agricultural communities have no access to meteorological and climate information available with Hydromed, Ministries of Agriculture and Water Economy and other government institutions, lack of capacity and knowledge of planning processes in the water and agriculture sectors at the daikhan, etrap and velayat levels, and lack of adequate information and capacity for development of appropriate financial credit mechanisms for implementation of adaptation measures. Similarly, the measurement of water consumption among end users is essentially absent in Turkmenistan. Information on water losses in transit is available only at a highly generalized level. Without better information, it will remain very difficult to make fully informed technical, investment, and policy decisions on improving efficiency in the water sector and agriculture sectors and development of suitable mechanisms for providing credit to local agricultural communities for financing climate adaptation measures (SCCF Outcome 3).
43. *(f) Limited availability of evidence-based data, monitoring, reporting and coordination mechanisms for iterative national adaptation planning and budgeting*  
Subsequent to the approval of PIF, the National Economic Program of Action on Adaptation and Mitigation to Climate Change (NEPAAM) has been developed by the Government of Turkmenistan with the UNDP support as a follow up to the National Strategy on Climate Change (NSCC). The NEPAAM

incorporates the National Appropriate Mitigation Actions (NAMA) and National Action Plan for Adaptation to Climate Change (NAPA) and an institutional strengthening element. The NAPA is expected to provide a strategic entry point to be Turkmenistan’s iterative, medium- to long-term adaptation planning. However, effective implementation of the NEPAAM is constrained due to: (i) absence of a permanently functioning national institutional structure to address the issues of climate change; (ii) lack of evidence-based data and the monitoring, reporting and verification mechanisms; (iii) inconsistent and inefficient budgetary allocations for improving adaptation and resilience action to climate change impacts; (iv) unclear mandates and roles on policy implementation related to climate change; (v) weak performance monitoring of policies and investments; and (vi) lack of coordination amongst ministries, departments and economic sector agencies to move implementation action and progress on climate change. To enable a more strategic and inter-sectoral coordination of the implementation of NEPAAM, a high level Ministerial Council, separate inter-ministerial technical working groups for adaptation and mitigation and a Secretariat is to be established. To support the iterative adaptation planning process envisaged under the NEPAAM, technical assistance, capacity building and staffing support for the NEPAAM Secretariat and its Ministerial Council and inter-ministerial working groups is necessary to enable these institutions to effectively discharge their responsibilities (SCCF Outcome 3).

## 1.6. STAKEHOLDER BASELINE ANALYSIS

44. The project will follow a cross-sectoral and participatory approach, requiring involvement of a multitude of stakeholders at different levels whose roles and responsibilities are summarised in the Table 6 below:

**Table 5: Stakeholder Roles and Responsibilities**

Key Stakeholder	Role and responsibilities
Ministry of Nature Protection	The Ministry of Nature Protection is responsible for the protection of ecosystems, protection of surface and underground water resources and monitoring the environment and natural resources, and climate monitoring. In addition, it carries out environmental assessments of various projects. The MNP structure includes 5 velayat (provincial) Environmental Protection agencies, The National Institute of Deserts, Flora and Fauna (NIDFF), Ecological control service. Among other tasks, provincial administrations units of the MNP supervise the wastewater monitoring and control water use permit. They carry out systematic review and assessment of the environment in Turkmenistan, and develop standards for pollution control
Ministry of Agriculture	The MOA coordinates the implementation of the state policy of agricultural development; training and advisory services in agriculture; forecasting and analysis of the development of agriculture, introduction of promising Turkmen wheat, vegetables, melons and other crops; introduction of high-yielding crop varieties that are resistant to local conditions; development and implementation of advanced agricultural techniques of cultivation of crops, and science-based crop rotations; planning, implementation and monitoring of the implementation of measures to protect plants from pests and diseases, as well as weed control to prevent and avoid the loss of agricultural crops; defines priorities of scientific research in the field of agriculture, organizes the activities of subordinate research institutions, provides a measure of the wide dissemination and implementation of scientific research.
Ministry of Water Economy	It is a government body managing water sector of the country. Its system consists of 119 production associations, agencies and other enterprises and organizations. It oversees all water structures of the country, hydro-economic facilities, dams, reservoirs and irrigation networks, inter-district and inter-farm canals and reservoirs, complex hydraulic structures, etc. The Ministry of Water Economy is responsible for regulation and distribution of water resources, construction and operation of inter-farm water management facilities, development of new and reclamation of existing irrigated lands.
National Committee on Hydrometeorology under the Cabinet of Ministers of	The National Committee on Hydrometeorology established under the Cabinet of Ministers of Turkmenistan is mandated to: (i) implement state policy in the field of hydrometeorological activities; (ii) participate in development and implementation of state programs and measures in the field of

Turkmenistan	hydrometeorological activities; (iii) organization of monitoring of the atmosphere, the marine environment, surface waters (water objects), crops and pastures, the radiation environment on the Earth surface; (iv) implementation of the organizational and technical and methodical management by divisions subordinated to it; (v) ensuring development and functioning of the system for collection, storage, processing, analysis and distribution of hydrometeorological information; and (vi) preparation of drafts of regulations, the state standard rates, techniques and other obligatory requirements in the field of hydrometeorological activities.
Ministry of Economy	MOE is involved with all aspects of economic planning in the country. It is responsible for approving national development projects and programs, including foreign funded technical, financial and humanitarian assistance and grants. The National Economic Program on Adaptation and Mitigation to Climate Change (NEPAAM) will be implemented under the leadership on the Ministry of Economy and Development. The inter-Ministerial Council (IMC) that will provide overall strategic guidance and supervision of the implementation of NEPAAM and ensuring inter-ministerial coordination will be chaired by the Ministry of Economy and Development. In addition, the Secretariat for NEPAAM will be housed in the Ministry of Economy and Development, thus making the ministry a key player in the implementation of adaptation and mitigation actions to climate change.
Institute of Desert, Flora and Fauna	The leading institution in Turkmenistan for conducting studies on desertification, agronomy, energy, forestry, rangeland improvement and watering, remote sensing, saline water use, arid soil studies and classification, sand dune stabilization, climatology, etc.
Research Institute of Water Management	The institute is responsible for undertaking research in land reclamation, irrigation and drainage systems, irrigation technology and hydro-reclamation mechanization and brackish water use for irrigation.
Institute of Livestock Management	Institution responsible for undertaking research and providing guidance on management of desert pastures
Velayat (Administrative and Territorial Units at Provincial level)	A velayat is an administrative and territorial Units at Provincial level. The heads of the velayats (“ <i>Khyakim</i> ”) are appointed by the President of Turkmenistan. The Velayat municipality is responsible for coordination of planning, budgeting, implementation and monitoring of socio-economic development and provision of public services to territories within the province
Etrap (Administrative and territorial unit at district level)	An <b>Etrap</b> is a second tier administrative division of Turkmenistan. The head of the etrap ( <i>häkim</i> , "governor") is appointed by the President of Turkmenistan. The Etrap municipality is responsible for coordination of annual work planning, budgeting, implementation and monitoring of socio-economic development activities in the cities and villages within the etrap.
Gengesh (local government bodies) and Gengeshlik	A Gengesh as a representative body of people’s government. In accordance with the Constitution of Turkmenistan, a gengesh fulfills the functions of local self-government, being a representative body of people’s government in the territory of a city within an etrap, settlement or village. The territory of one village or several villages shall form a gengeshlik, where a gengesh shall be created. In the territory of a gengeshlik there may be one or several farmer associations, joint-stock companies and cooperative enterprises functioning as business entities.
Daikhan (Farmer) Associations and Livestock Associations	Daikhan and livestock associations are the land users of state-owned agricultural land that is distributed to leaseholders for cultivation. A daikhan association is the legal entity for the organization of agricultural production based on mixed (joint) ownership. All leaseholders have a land-lease (including land, livestock and other assets) contract with the association. Second, they are the authority responsible for maintaining rural infrastructure in the villages—and they receive a certain payment from the leaseholders (in percent of production revenue) for these services. Third, they are the conduit for transmitting state orders to the leaseholders and enforcing compliance, in that only agricultural crops covered by government order (wheat, cotton and sugar beet) can be cultivated in the leased out lands. Individual farmers are granted inherited ownership for life of small household plots/small holdings for their private use, where they can produce agricultural crops of their choice. The growth of crops, which are part of the government order is specified by the contract between the daikhan association and the lessor. In the state livestock associations that are under the supervision of the State livestock Association, the state owns approximately 12-15% of the livestock, while the remaining is in private hands.
Daikhan farms	Daikhan farm is an agricultural enterprise set up by members or one or several families for joint operation of agricultural production. The daikhan farm is based on private ownership and independent in terms of operation and management. The produce made by the daikhan farm, including that which is produced by the daikhan farm lessee in excess of the contractual agreement remains at its disposal and

	independent of the market price.
Daikhan Bank	Banking to agriculture in general and to private farmers in particular is the monopoly of the state-controlled Daikhan Bank. Private farmers are allowed to hold individual accounts and to conduct financial transactions with Daikhan Bank only. Credit to farmers is provided exclusively through special government programs administered by Daikhan Bank. For strategic crops seasonal credit is provided at 1% interest/year, and since 2008, all agricultural producers can get privileged credit for 1-10 years at 5% interest. Daikhan association set up special guarantee funds with producers to ensure repayment of the loans.

45. During the PPG phase, detailed stakeholder consultations were organised at national, provincial and local levels. Section IV, Part IV (Stakeholder Involvement Plan) of the UNDP Project Document defines the roles and responsibilities of key stakeholders and the specific mechanisms and strategies for their direct involvement in project activities.

## 1.7. BASELINE ANALYSIS

46. In terms of climate risk management, the baseline is the **National Climate Change Strategy (NCCS)** that was adopted by the Government in 2012, which is intended to give substance to Turkmenistan's commitments to both climate change mitigation and adaptation, while supporting the nation's continued economic growth through modernization, diversification, and strengthening global competitiveness. The NCCS sets forth the following principles:

- Addressing climate change challenges should contribute to sustainable development of the country's economy.
- Promoting innovative technologies, transfer of technology, scientific and technological progress is the basis for advances in climate change mitigation and adaptation.
- Addressing climate change challenges shall be based on a comprehensive/integrated approach.
- Measures to reduce GHG emissions shall be coordinated with adaptation measures.
- The UNFCCC, the Kyoto Protocol, and associated decisions of the Conference of Parties reflect the common understanding of international community, including Turkmenistan.
- Combating climate change shall involve collective effort of all of Turkmen society.

47. In 2014, the Government began developing national plans on climate-change mitigation and adaptation that will become key tools to implement the NCCS. This process culminated in the development of the **National Economic Program of Action on Adaptation and Mitigation to Climate Change (NEPAAM)**. The NEPAAM is an implementation framework for the adaptation and mitigation priorities identified in the NCCS. It represents a multi-year, participatory process involving the public sector and academia, under the leadership of the Ministry of Economic Development that is guided by two-multi-stakeholder, multi-disciplinary working group. The NEPAAM presents a set of cross-cutting activities and processes to address potential barriers to the implementation of adaptation and mitigation plans, that is primarily aimed at developing the enabling architecture for its plans: the legislation, policies and planning capacities needed to transform the economy to a low emission and climate resilient economy. These are encapsulated in the following five enabling components:

- Coordination mechanism and governance structure
- Political and legal framework
- Mainstreaming into sector plans
- Financing
- Monitoring, reporting and verification

48. Each of these enabling components will enable economy-wide action, as well promoting the continuity and replication of adaptation and mitigation priorities. The SCCF project is designed specifically to build consistency with the above principles and ensure that climate change concerns are fully integrated in the articulation of the NEPAAM.
49. In terms of specific activities, the Government has adopted a number of national program and plans, which are designed to boost the socio-economic development of the country, with major focus on modernizing and building infrastructure and bringing new efficient technology. Some of this are listed as follows:
- National Program of Socio-economic Development of Turkmenistan for the period of 2011 – 2030 including a separate plan for each velayat (including Dashoguz and Lebap velayats) and Ahal Region
  - National Program of the President of Turkmenistan on Improvement of Social and Living conditions in villages, towns and district centers for the period up to 2020.
  - National Program on Securing Safe Drinking Water to towns and settlements in Turkmenistan.
  - National Healthcare System Development Program “Saglyk”.
  - Program of Development of Agricultural Sector in Turkmenistan for 2012 - 2016 and its Action Plan.
  - National Forestry Program of Turkmenistan and its Action Plan.
50. All of the programs and plans offer a number of measures contributing to increasing the adaptive capacity of the country’s economy to climate change. Specific programs addressing water and land challenges under these programs include the following:
51. **Turkmen lake:** One of the major governmental projects is the construction of a Turkmen lake. The main purpose of this lake is to establish an organized system for diverting drainage and salinized waters from irrigated fields into this lake. The salinity volume is currently estimated to be in between 23-28 million tons a year. It is expected that diverting salinized waters will decrease the salinity volume by 4-5 million tons. The project of the Turkmen lake also seeks to expand and improve the operational effectiveness of the existing drainage network. It will result in an increased agricultural quality of irrigated lands. An increased quality of soil will allow a decrease in the need for soil washing and will thus reduce associated water losses. An ultimate outcome will become an increase in agricultural crops. Furthermore, this improved drainage system will prevent flooding of wells and pastures. As a result, about 4,000 km<sup>2</sup> desert pastures will be rehabilitated for further agricultural use. It also aims at expansion of the acreage of halophytes in the Turkmen Lake for winter feeding of livestock.
52. **Irrigation networks:** Comprehensive reconstruction of the irrigation network is another project the country has started. This project includes the following measures:
- Construction of related drainage network
  - Coating of irrigation canals with anti-filtration lining material
  - Introduction of automation and water measurement equipment
  - Irrigation using sprinkler technology
  - Improvement of crop irrigation technology (lase land levelling, use of irrigation pipes, tubes and siphons)
  - Use of waste and brackish drainage water for irrigation
  - Construction of new and reconstruction of existing hydraulic facilities

53. The main purpose of the irrigation improvement program is to reduce water losses in the irrigation network and enhance the state of irrigated lands. Increasing the efficiency ratio by just 0.01 could result in a saving of 25 million m<sup>3</sup> of water. This amount of water is sufficient for irrigation of more than 3,000 hectares of land. The project is estimated to increase the efficiency ratio of the irrigation network to 0.65-0.7. As part of the improvement in irrigation systems, these programs are also aimed at enhancing the capability of irrigated lands and pasture through the following measures:

- Reconstruction of irrigated lands
- Reclamation of existing irrigated lands
- Supplying water to natural pastures
- Improvement of natural grasslands by planting shrubs and semi-shrubs
- Construction of solar and wind power plants for remote livestock farms

54. **Rational use of water resources:** The government has recently adopted a national program for rational use of water resources and reconstruction of the Karakum canal, which is the biggest canal in Turkmenistan. The waters delivered through this canal irrigate approximately 60% of all the irrigated lands in the country. This program plans to construct/ repair five hydro-technical facilities and a water reservoir at the end of the Karakum canal. Furthermore, the program includes reconstruction and construction of five pumping stations.

55. **Safe drinking water:** In 2011, the Government of Turkmenistan started a ten-year national program on ensuring safe drinking water for towns and human settlements of Turkmenistan. The program plans to construct and repair 55,643 km of water pipelines, 1,874 wells, treatment facilities with a capacity of 1,520,000 m<sup>3</sup> a day, 9,398 km of sewage lines and sewage treatment facilities with a capacity of 1,520,000 m<sup>3</sup> a day. This program will result in prevention of substantial water losses and will contribute to optimization of the drinking water consumption rate.

56. **Forestry program:** In 2014, the Government of Turkmenistan adopted a national forestry program. The purpose of the program is to ensure forest protection, rational use, recovery, and increase of environmental, economic resource potentials of the forestry. The forestry program is part of the larger national greening campaign implemented nationwide. The campaign targets to plant tens of millions trees in the vicinity of cities, towns and villages. One of the objectives of the forestry program is to enhance ground cover and reduce water losses.

57. **Biodiversity Action Plan:** The Government is currently preparing a National Biodiversity Strategy and Action Plan. *The Goal* of the National Biodiversity Strategy is to take urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services. It is organized under 5 strategic goals with a total of 13 main targets that should be achieved by 2020. These targets focus on mainstreaming biodiversity conservation and ecosystem services into key economic sectors while defining the economic benefit of these actions.

58. These programs call for the strengthening capacity of the water and land development sectors for implementing of a number of adaptation measures. However, the focus of these programs is mostly on expanding supply side capacity, particularly in terms of water storage, to support agricultural irrigation for government-managed croplands and the provision of drinking water. It is likely that while the large-scale farms will continue to benefit from government interventions, small holders with limited access to finance will become more vulnerable to climate change due to lack of access to irrigation infrastructure.

Additionally, the low level of application of innovative water management techniques/technologies will lead to increased supply/demand constraints as climate change impacts accelerate.

59. In terms of integrating climate change considerations into agricultural and water sectors, some measures have been initiated, including development of a new Water Code, but it is not been adapted to address climate change impacts. Moreover, there is a gap between the provisions of the Code and practice in the field. There are no provisions on water saving, water measurement and although there are provisions on licensing they are not implemented. In terms of the recently approved Code of Turkmenistan “On Pastures” (2015) it is unclear to what extent climate risk management would become integrated into the management of pastures, but subsequent experiences would enable the assessment of its usefulness as a tool for ensuring adaptive management. Recent climate change policies have highlighted the sectoral risks created by climate change. The Second National Communication and the National Climate Change Strategy highlight the vulnerability of the water sector in Turkmenistan and the expected impacts on both the agriculture and water sectors. Some activities to identify adaptation mainstreaming capacity gaps have been initiated, for example by the **Central Asian Climate Risk Management Program** (UNDP), however, there was no effort yet to comprehensively address sectoral capacity gaps to enable the mainstreaming of adaptation with gender considerations.
60. Although climate change actions in the agriculture and water sector are being supported by a number of initiatives in Turkmenistan, the magnitude of the problem calls for a systematic approach across vulnerable sectors. However, none of the State programs approach the issues of adaptation to climate change in a systematic way, though they briefly or indirectly touch upon climate change (e.g. National Program of Socio-economic Development of Turkmenistan for the period of 2011 – 2030, National Program of the President of Turkmenistan on Improvement of Social and Living conditions in villages, towns and district centers for the period up to 2020, etc.). The required medium- to long-term and cross-sectoral planning that would enable a comprehensive assessment of the benefits and trade-offs of climate change adaptation interventions for society have not been undertaken so far. However, the recently completed NEPAAM recognizes the need for coordinated action to manage the impacts of climate change, including the promotion of sectoral planning on climate change in sector ministries and a consolidated government effort to meet the challenges of climate change. A more specific discussion of the baseline initiatives that provide direct co-financing for the three components of the project and relationship with the SCCF activities is presented in Section 2.4 of this document.

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## II. STRATEGY

### 2.1. PROJECT RATIONALE AND POLICY CONFORMITY

61. The project was developed in accordance with SCCF eligibility criteria as laid out in GEF/C.24/12 (paragraph 40) as it respects the principles of national ownership, country-drivenness and cost-effectiveness, and explicitly takes into account national communications, climate change strategies and adaptation plans. The project objective of supporting climate resilient livelihoods in agricultural communities in Lebap and Dashoguz velayats in Turkmenistan is fully consistent with the overall goal of SCCF which is to increase resilience to the adverse impacts of climate change through *near- and long-term adaptation measures in affected sectors, areas and communities leading to a reduction of expected socio-economic losses associated with climate change and vulnerability*. The project, through its three outcomes, directly contributes to the GEF strategic objectives under CC adaptation Focal Area: CCA-1 -

*Reduce the vulnerability of people, livelihoods, physical assets and natural systems to the adverse effects of climate change; CCA-2 - Strengthen institutional and technical capacities for effective climate change Adaptation; and CCA-3 - Integrate climate change adaptation into relevant policies, plans and associated processes.*

62. The project was designed to fully address the climate change adaptation priorities for the agriculture sector identified by the Government in several governmental policy documents and has been developed in such a way as to ensure sustainability and replicability beyond project completion. The activities supported through the project have been identified among the governmental climate change adaptation priorities as reflected in the National Climate Change Strategy and the National Economic Program of Action on Adaptation and Mitigation to Climate Change. These investments seek to increase agriculture resilience to climate change risks, boost rural income by improving agriculture productivity and access to markets, and enhance food security by expanding local food supply and creating new income and livelihood opportunities. The two velayat (provinces) targeted by the SCCF project have been chosen in close consultations with national and provincial governments and sectoral agencies and with the leadership of the Government of Turkmenistan. Lessons and experiences that have already been demonstrated in the on-going Adaptation Fund supported “Addressing climate change risks to farming systems in Turkmenistan at national and community level” project, have been fully integrated in the design of the proposed SCCF project. In particular, it builds on best practices for adapting to climate change through pilot community based planning and implementation of adaptation models, evidence-based verification, modeling, and creating dedicated financial instruments in support of farmer-level climate adaptation action.

## **2.2. COUNTRY OWNERSHIP: COUNTRY ELIGIBILITY AND COUNTRY DRIVENNESS**

63. Turkmenistan ratified the UN Framework Convention on Climate Change in 1995 and eligible for the SCCF support. The project is endorsed by the GEF Operational Focal Point in Turkmenistan. The project is fully in line with the national priorities. The **Second National Communication** identified the agriculture and water sectors as the most acute adaptation priorities. The project builds on priorities identified through development of the **National Climate Change Strategy** and the President of Turkmenistan’s **Program for social and economic development** for the period 2012-2016.
64. The Government of Turkmenistan recognizes that the country is highly vulnerable to climate change and thus early and coordinated actions to the unavoidable impacts of climate change will help Turkmenistan to minimize the impacts of costly disruptions and safeguard the long-term prosperity of the environment, economy and communities. Recognizing that the sustainable development of the country may be hampered by the negative impacts of global climate change, the country adopted a **“National Strategy on Climate Change of Turkmenistan”** in 2012. In order to implement the strategy the government established two inter- ministerial technical working groups to develop an inter- ministerial plan that would define the actions to be taken by targeted line ministries to start to move towards a low carbon climate resilient economy. One of the technical working group focused on defining the actions to move to a low carbon economy with the view to mitigating climate change, while the other defined the actions on how to manage more effectively water resources and protect the environment as an approach to adapt to climate change and become more climate resilient. The actions of both working groups has been compiled into an inter- ministerial plan called the **National Economic Program of Action on Adaption and Mitigation to Climate Change (NEPAAM) defined for the period 2016- 2020**. A set of specific objectives were developed for NEPAAM to promote the development of long – term sectoral planning on

climate change in sector entities and promote an inter- sectoral planning approaches to climate risk management. It is also focused on implementation of sustainable actions to improve the livelihood of farmers as one of the most vulnerable groups affected by climate change and promote a behavioral change towards a “rational use of water resources” and to become “energy conscious” in sector production and in the daily lives of the people as the country moves to an industrialized economy.

65. The Ministry of Nature Protection of Turkmenistan has participated actively in all stages of development of this project. All elements of the proposal have been developed in order to advance and lend concrete substance to the existing directions defined by the Ministry of Economy and Development and the country, while also fulfilling SCCF objectives. The Ministry of Nature Protection is also committed to serving as the national implementing partner of the project, while other national agencies also offer their support.

### 2.3. DESIGN PRINCIPLES AND STRATEGIC CONSIDERATIONS

66. The objective of the project is *to support climate resilient livelihoods among agricultural communities in Lebap and Dashoguz velayats in Turkmenistan*. These are some of the driest regions in the country primarily due to their downstream location of the major water runoffs in Turkmenistan. The project will build on the current baseline activities, to help facilitate the introduction of new practices in water, land and agricultural management so that farmers are better adapted to address climate change risks.

67. **At the national level**, the current baseline of law and policy, institutional programs and capacity lacks the necessary legal basis, modern tools and methods, and participatory approaches that are critical to successful adaptation to climate change impacts. In the baseline project, attention will continue to be focused upon narrow top-down high-cost structural sectoral measures and solutions to water and land management and agricultural productivity improvements. The current low emphasis on water management which has evolved slowly in recent times, still continues to use narrow, sectoral, structurally oriented solutions. But water stress caused by climate change has imposed new challenges on this slowly evolving baseline, and placed new demands on outdated water management practices.

68. **At the regional and local level**, in the business as usual baseline, agricultural communities in these two velayats will continue to have to deal with water scarcity, as well as lesser than optimum productivity from agriculture and livestock. However, with the onset of climate change, these same communities are now faced with more frequent droughts, higher temperatures and water scarcity, which pose much higher risk of greater danger and damage to their communities. Regional authorities and communities have little knowledge and experience on how to cope with this increased risk due to climate change. The proposed project is designed to provide additional, new and innovative, non-structural tools to enable farmers and other stakeholders to reduce vulnerability to water stress and climate risks.

69. The reasoning for the additional SCCF resources is reflected in the three primary outcomes and their associated outputs of the project that is described in detail below. Under Component 1, SCCF resources will be used to address the existing adaptation deficit and build resilience at local community level. The project will help farmers improve the productivity of farm operations and be better prepared for increasing water scarcity and at the same time introduce alternative income sources. Options that are ‘no or low regret’ will be implemented along with some capacity building activities. However, as drought risk is an everyday reality, adaptation action needs to be systematically incorporated into national development planning processes and supported by budgetary allocations. Therefore, SCCF resources will

be used to work with the Ministries of Nature Protection, Economic Development, Finance, Agriculture and Water Economy to establish a multi-sectoral planning and budgeting framework, as part of the adaptation planning process (SCCF Component 2). Best practices from Component 1 will be scaled up under Component 2, which will focus on mainstreaming climate change considerations into agricultural and water sectors and will aim to address short- to medium-term development timescales. Finally, Component 3 will look into creating iterative pathways for medium- to long-term adaptation planning through building the evidence base and then creating feedback loops for planning purposes.

70. The proposed project provides a basis for developing an evidence-based integrated approach to vulnerability reduction and adaptation in the water and agricultural sectors based on a ‘flexible adaptation pathways’ approach. In leveraging the concept of adaptation as an on-going and dynamic process, the approach uses risk-based decision frameworks that focus on contextually relevant livelihood-focused thresholds (rather than points in time) allowing for systematic adjustments in response to new information and changing circumstances by decision-makers at all levels. This provides a scale-neutral framework that inherently enables consideration of decision-making and adaptation planning at both local and national levels for consistency in the scaling of interventions. Establishment of the national adaptation interactive planning and monitoring process under Outcome 3 will support the Government of Turkmenistan’s institutional and coordination arrangements under the NEPAAM for national adaptation action in support of its National Strategy for Climate Change.

**Table 6: Baseline and Alternative Outcomes**

<b>Baseline</b>	<b>Alternative</b>
Irrigation management and operation with no consideration of future water availability and water use efficiency needs.	Climate-proof irrigation and agricultural practices favors water saving and optimal use of water
Crop productivity system enhanced without considering the climate change exacerbation of drought events, strong winds and unpredictable rainfall.	Promotion of soil fertility and soil moisture improvements and water conservation farming systems and technologies based on existing climate change modeling of selected crops, that enhance the resilience and productivity of crop value chains.
Consideration of soil erosion problems affecting irrigation schemes and farmland due to climate-related risks that are likely to be further exacerbated due to climate change	Landscape restoration measures with vegetative and bio-engineering technologies prevent soil erosion and siltation impacts that enhance crop productivity and reduce livelihood uncertainty
Regional entities are unable to improve farmers’ knowledge and provide inputs needed to reduce climate change risks on agriculture and livestock production and post-harvest losses	Training programs and funding facilitate the access and dissemination of knowledge, inputs and technologies to farmer and livestock associations to improve their capacity to deal with climate change impacts.
Considerations of climate change not systematically recognized in sector planning and budgeting prevent recognition of opportunities for effective address of climate risks	Assessments of the risks posed by climate change on water availability and agriculture production systems help identify socio-cultural factors underlying climate change-exacerbated impacts and build resilience to, and the ability to address climate-sensitive concerns, preparedness and response to consequences of extreme weather events
Enabling legislation in water and other sectors unlikely to reflect specific action on climate change	Comprehensive recommendations for legislative changes to promote efficient use of water resources and enhanced mandates and roles of Daikhan Associations in water resources management decision-making
Ecosystem values of key natural systems remain undefined and their effective management remains a	Methodological framework for assessing carrying capacity options for sustainable pasture use and management in

challenge in a changing climate scenario	changing climate scenarios
Government investment policy in the agriculture and water sectors unlikely to mainstream active considerations for future climate risks at the farmer level	New technical capacity and skills enable assessment of impacts of agro-ecological changes in relation to climate change that facilitate solutions for farmer adoption to climate change
Absence of permanently functioning national institutional structure for mainstreaming climate adaptation will likely prevent collaboration across sectors in addressing climate change risks	New NEPAAM institutional structure facilitates effective coordination and mainstreaming of climate adaptation actions in Turkmenistan.

71. The implementation of measures to increase the availability and reliability of water for irrigation and crop production would require a concomitant mix of complementary measures to increase the fertility and water-retention capacity of the soils, minimize the excessive and wasteful use of water and curtail unsustainable agronomic practices (e.g. overuse of water and salinization problems; the removal of windbreaks and soil desiccation and erosion).
72. The SCCF financing will enhance the adaptive capacity of rural people to address climate change and its potential impact on the agriculture and livestock sector by focusing on measures that promote the improved management of scarce/threatened key resources such as water and soil fertility, reduce environmental risks, increase yields and create opportunities for marketing higher value products. Complementary to the activities carried out under the baseline, the SCCF project will aim at covering the additional costs associated with: (i) the investments in management systems and technologies for climate-resilient efficient irrigation and conservation agriculture; (ii) the adoption of climate-proof methods and technologies for the rehabilitation of irrigation and soil conditions and the restoration of agriculture and pasture productivity; (iii) the training of trainers and on-farm demonstration trials to raise awareness and build the capacity of farmers on adaptive agricultural production, post-harvesting and marketing, (iv) the institutional and legislative measures for mainstreaming climate change adaptation; and (v) implementation of an iterative mechanism for coordination of inter-sectoral planning, implementation and monitoring of responses to manage climate risks in the country.
73. The core target group will be agriculture producers, public and private sector entities, farmer and livestock associations and research and training institutions that will play a major role in the testing of climate-resilient farming systems and technologies and the provision of services and on-farm learning opportunities. Due to the inclusive nature of the proposed irrigation effectiveness and agricultural, land and pasture improvement, other farmers in the target areas and other agriculture areas of Turkmenistan where the Ministries of Agriculture and Water Economy are implementing projects may also benefit. The incremental value of the SCCF funding will substantially expand the scope of baseline investments. SCCF pilot actions could become models for replication and scaling up in the agriculture areas in other etraps and velayats in Turkmenistan.
74. The project will directly strengthen the adaptive capacity and reduce the vulnerability of around 40,000 to 50,000 persons (comprising 8,000 to 10,000 households), of which about 51.2% are women, in six pilot farmer associations and two livestock farms in the Lebap and Dashoguz velayats by helping them improve the productivity of farm operations, be better prepared for increasing water scarcity and by introducing alternative income sources. Improved water efficiency and crop production systems will bring approximately 20,000 ha of agricultural and 500,000 ha of pastoral lands under direct climate resilient technologies resulting in a real net household income increase of at least 15% for participating households (of which at least 20% are women-headed households). The replication potential of

successful efficient water management and climate resilient agricultural and sustainable pasture management practices of the pilot adaptation models and implementation of new climate-friendly sectoral planning, legislative and capacity development measures would indirectly benefit around 500,000 persons (comprising 100,000 households), of which around 50% would be women within the two pilot velayat regions and in other remote agricultural areas in the country.

75. The additional national and local benefits that will be delivered primarily include the adoption of climate adaptation practices that will reduce vulnerability of local agricultural communities to the impact of climate change, build capacity of local communities and local public sector entities to identify and assess climate risks, build community resilience and action to mitigate and manage such risks and enhance the effective and efficient use of scarce water resources in a situation that is exacerbated by climate change. The associated global benefits to which the project measures would contribute include reduced land degradation, reduced carbon emissions from agricultural sector and improved management of transboundary fresh water resources.

## 2.4. PROJECT GOAL, OBJECTIVE, OUTCOMES AND OUTPUTS/ACTIVITIES

76. The *objective* of the proposed project is to support climate resilient livelihoods in agricultural communities in the Lebap and Dashoguz velayats in Turkmenistan. The project's incremental value lies in enabling farmers in one of the driest regions of the country to overcome the critical barriers described above that prevent them from reducing the vulnerability to climate change induced water stress and other environmental hazards in the agricultural sector. It will develop and demonstrate a matrix of climate adaptation solutions for further replication outside of the two velayats. The experience will be shared and replicated beyond project boundaries through a series of lesson sharing events. The project will attempt to achieve this objective through the design of the following three inter-related outcomes and their respective outputs and activities:

- Outcome 1: **Improved climate related socio-economic outcomes** in the targeted agricultural communities in Lebap and Dashoguz velayats through the implementation of community-based adaptation solutions;
- Outcome 2: **Mainstreamed climate adaptation measures** in agricultural and water sector development strategy and policy; and
- Outcome 3: **Strengthened national capacity** for iterative climate change adaptation planning, implementation and monitoring

77. The three Outcomes, their respective baselines and proposed alternatives are outlined below.

*Outcome 1: Improved climate related socio-economic outcomes in the targeted agricultural communities in Lebap and Dashoguz velayats through the implementation of community-based adaptation solutions*

78. Achievement of Outcome 1 is supported through the following outputs:

- Participatory vulnerability and adaptation assessments in selected communities to identify priority adaptation solutions;
- Development and implementation of local gender sensitive adaptation plans;
- Implementation of innovations focused on providing additional income and supporting climate

resilient livelihoods;

- Participatory mechanisms for implementing and monitoring changes in community climate resilience; and
- Dissemination and up-scaling of successful adaptation measures.

79. *Baseline condition for this outcome (without SCCF project):*

Communities in the dry regions of the country are highly vulnerable to water stresses and other environmental risks, which is further being exacerbated by climate change. Climate change, in particular the rise in temperature and reduction in rainfall, will increase water scarcity as higher temperatures would result in higher evaporation and transpiration rates from their agricultural and pasture lands. The agricultural communities do not have the capacity to cope with these increasing threats or adapt to their changing environment. Local agricultural communities throughout the two velayats do not have sufficient knowledge to fully understand the climate changes and their impacts, the options for adaptation or to contribute meaningfully to the identification and implementation of solutions to the problems. They are not fully aware of the basic reasons of changes that are occurring from a climate perspective and how these may affect them. This is further aggravated by the fact that the current framework and institutional structure for water and agricultural planning and management do not permit local community to participate in the decision making process on these issues. For the communities to be able to adapt adequately to reduce their vulnerability they must build their knowledge and be able to effectively participate in the decision making process at the local level.

80. To address the increasing water scarcity discussed above, the Government of Turkmenistan has invested significant resources, particularly in the water sector over the last 5-10 years. Major governmental programs have been initiated, including “*Program for Development of Agriculture Water Management System of Turkmenistan until 2030*”, the “*Concept of water resources development of Turkmenistan until 2030*” and “*Proposals for the development of water resources in Turkmenistan until 2030*”. However, the focus of these programs are mostly on expanding supply side capacity, particularly in terms of water storage, to support irrigation for government managed croplands and the provision of drinking water. Additionally, the low level of application of innovative water management techniques/technologies are likely to lead to increased supply/demand constraints as climate change impacts accelerate. The *President of Turkmenistan’s Program for social and economic development for the period 2012-2016* lists among priorities of agricultural sector development of irrigated cropping and rational use of water and land resources as well as other efforts in support of research and development through the Academy of Science of Turkmenistan. These programs collectively addresses: (i) the improvement of fertility of cultivated land and the modernization of equipment and technology for agricultural irrigation, (ii) the implementation of new forms of agriculture in cultivated areas, taking account of optimal water supply for fields and implementation of new means of irrigation of agricultural crops, (iii) expanding crop rotation, the renovation and planting of new shelterbelts and woodlands, as measures to conserve soil and moisture, (iv) development and implementation of standards for use of fertilizer and other chemicals, and (v) measures for conservation and qualitative improvement of land, with implementation of new technologies for afforestation of desert and revision of structures for cultivated areas of agriculture. Similarly, the Ministry of Water Economy is carrying out measures for the accumulation and distribution of water resources, rational use of water, construction of water management facilities, and assurance of their good working condition, correct operation, and timely maintenance and repair where needed. For development of water management infrastructure of the country, significant volumes of capital are allocated: from MWE’s own funds, funds of the state budget, the state hard-currency fund, the state fund for development of the oil and gas industry and mineral resources, and other sources. While all of these

programs are important and geared towards enhancing water management and improving agricultural productivity, these do not however make an effort to integrate local farmer climate risk management and resilience into the design and management of water and land resources. The more-recently approved Adaptation Fund Project “*Addressing climate change risks to farming systems in Turkmenistan at national and community level*” provides an approach to improve water efficiency and water management at the farm level, stabilize sand dunes and develop and test water harvesting techniques, demand side efficiency measures and soil moisture management approaches that can support the livelihoods of agro-pastoralists within three velayats in the country. While, this is an interesting and pioneering effort at enhancing the adaptive capacity of the local communities, the results of which would provide learning and experience in climate risk management, it is focused on specific adaptation actions rather than on promotion of a broader bottom-up multi-sectoral planning approach to climate risk management.

81. Alternative for this outcome (with SCCF project):

The alternative is a more active and fully engaged communities who are able to take charge of their own adaptation to climate change risks, in collaboration with the professional staff of the regional organizations responsible for water, agriculture and livestock management. Outcome 1 will build on and further develop an informed and active community which can collaborate with regional organizations and baseline programs for water, agriculture and livestock management and be fully engaged in introducing and developing community based planning for land, water, agriculture and animal husbandry that actively integrates climate risk management systems. Communities will become aware of the risks and potential impacts of climate change, how these impacts will affect their communities and their livelihoods and the options for mitigating these impacts. The intent is to complement existing baseline activities, by facilitating the mainstreaming of climate risks considerations into the design and management of water, land and pasture development efforts, in particular at the ground level, so as to enhance community resilience and adaptive capacity. This Outcome is aimed at preparing the communities and the responsible government organizations to be able to identify and respond to climate change threats.

82. To achieve this outcome, the project will work in two etraps (districts) of two different velayats (provinces) of Turkmenistan. These are the Gerogly etrap of Dashoguz velayat and Galkenesh etrap of Lepab velayat. The etraps were identified at the recommendation of the Government. The project has selected three pilot daikhan associations and a livestock farm in the two velayats and will start working with these daikhan associations and farms, including individual farmers/households and private farms, in the initial phase of the project to demonstrate adaptation options for various types of agricultural activities (crop production, horticulture and livestock). The pilots are the Yagtylyk daikhan association and Garagum livestock (cattle ranch) farm in the Gerogly etrap of Dashoguz velayat and the Vatan and Parakhat daikhan associations in the Galkenesh etrap of Lapab velayat. The criteria that was applied for the selection of the daikhan associations were climate vulnerability, availability of financing from the government, ability to demonstrate a range of demonstrative and replicable adaptation options, good management and etrap/velayat support, accessibility, etc. In year 3 of the project, three additional daikhan associations and a livestock farm would be selected from the two pilot etraps for project support based on the same criteria discussed above. This would bring a total of six daikhan associations and two livestock farms under the project pilot effort.

83. *Output 1.1 Participatory vulnerability and adaptation assessments carried out in selected communities to identify priority adaptation solutions*

In order to develop locally acceptable strategies for adaptation to climate change, a bottom-up local-level participatory community planning process will be established that complements existing planning processes at the local level. The first step to understand the climate and environmental related issues and options for their adaptation and mitigation would entail a **bio-physical and socio-economic resource mapping** within the pilot daikhan associations and livestock farms. Such an exercise would entail the delineation of:

- scale of water use, agriculture land and pasture utilization;
- existing dependencies in terms of livelihood practices, including agricultural practices, their suitability and opportunities for improving the management of these practices;
- extent of land degradation and condition of lands and potential productivity erosion threat areas;
- existing unsustainable resource uses, and the type, nature and extent of such uses;
- rights and overlapping or conflicts in water use within the areas operated by the farmer associations;
- condition of irrigation and agriculture infrastructure, water supply and erosion control structures; and
- farm level economics (i.e. revenue resources, costs, investments, etc.) and nature of support systems.

84. Such an exercise would enable the identification of causes and incidence of agricultural land degradation at the daikhan association level to identify “hot-spots” and to assess the presence or absence of incentives that currently guide unsustainable land and water use and farming and grazing practices and inform community decisions

85. The undertaking of a **Vulnerability assessment and mapping** of vulnerability and local adaptive capacities within the pilot daikhan associations and livestock farms (cattle ranches) will build on the participatory resource mapping exercise. Broadly, the vulnerability assessment should cover the physical (related to weather), social (related to various socio-economic and socio-demographic groups), governance (related to institutional and policy aspects), and economic (related to costs of agricultural losses at the household, community, regional and national economy levels) vulnerability dimensions. The steps in undertaking the vulnerability assessment would include the following aspects:

- a compilation of readily available data from reliable resources on existing climate conditions and future climate projections
- develop an understanding of historic natural and human events that have influenced the lives of the communities;
- identify climate change events and risks posed by climate change on farmers (small holder farmers, commercial farmers, graziers, agro-processors and consumers) and agricultural productivity (state owned crops, horticulture and fruit crops, and livestock) and changes in abundance of crop diseases and their cause;
- identify specific farmer community views, concerns and possible ways to solve or address them;
- define community agricultural and water related assets or cultural values that they wish to maintain into the future;
- root cause analysis to identify the many parts of a problem, the dominant causes and the most effective areas for action;
- evaluate congruence or conflict with current policies, planning and practices, and barriers to implementation of adaption at the local level
- communities perceptions of climate change and impact on their lives and how they would like their future to be like instead;
- analysis of the financial consequences of climate change for key income and expenditure variables within the community;

- existing and available coping, preventive and adaptive strategies being employed by the communities to address changes in climatic and seasonal weather patterns;
  - current constraints to the application of climate adaptation measures and opportunities for addressing such constraints; and
  - identification of a range of additional options (investments, policies and practices) that could be undertaken to address issues relating to impacts of climate change and assessment of the appropriateness of each of these possible actions for each climate change issue or objective
86. SCCF funds will be used to contract a national consultant team to support the bio-physical and socio-economic mapping and vulnerability and adaptation assessment. The national consultant team will support each etrap administration/municipality updating of the bio-physical and socio-economic inventory in the pilot areas through the following key steps:
- review of existing bio-physical and socio-economic inventory to evaluate the extent to which information on climate related aspects and values have been considered in local level planning;
  - collection, collating and maintaining key environmental and climate information to update inventory and mapping information; daikhan associations and households, graziers, and other community groups to establish norms and criteria to assess needs and trade-offs;
  - defining clear guidelines to enhance current community based decision making processes on allocation of water and land and other resources for different uses and guidance for assessing and defining trade-offs between different users;
  - providing technical guidance for integration of environmental information into the mapping and planning processes; and
  - providing on-the-ground training and capacity development for etrap and other regional staff and daikhan association members on bio-physical and socio-economic inventory and mapping techniques, assessment of climate and environmental risks and in the interpretation of information arising from these exercises.
87. The final product from the bio-physical and socio-economic mapping would be the information and maps on existing land, water, agriculture and livestock use and vulnerability assessments that identifies a range of options to address issues relating to impacts of climate change and assessment of the appropriateness of each of these possible actions for each pilot daikhan association and livestock farm.
88. *Output 1.2 Local Gender Sensitive Adaptation Plans developed and effectively addressing climate risks*  
 Output 1.2 would entail the **Participatory Gender-Differentiated Village Adaptation Action Planning** to define community agriculture, livestock and water management and climate adaptation investments. The multi-year action planning process would be based on the biophysical and socio-economic and vulnerability mapping exercises and result in the preparation of Participatory Adaptation Management Plans (PAMPs). The Participatory Adaptation Management Plans developed with the involvement of the communities will serve as the basis for funding activities under the project. The grant allocation at the pilot sites would be determined in consultation with the etrap daikhan associations and livestock farm based on the level of climate impacts, socio-economic vulnerability, number of farmers participating, extent of degradation of agriculture and irrigation assets, and opportunities for climate adaptive measures. The SCCF project would support training, consultation workshops and investment support for implementation of adaptation plans. Etrap administration and diakhan associations will guide the adaptation planning process with technical support from the Project Management Unit (PMU). About 3,000 farmers and pastoralists will directly benefit from on-the-ground training during the adaptation

planning and implementation exercise to better assess and develop climate resilient water, agriculture and livestock management practices.

89. The result from this activity would be PAMPs that includes a range of options agreed with the pilot daikhan associations and livestock farm to enhance agriculture and livestock productivity, improve livelihood and incomes, reduce their vulnerability, increase resilience and enhance the adaptive capacity to climate induced events and impacts. The PAMPs will reconfirm a shift from the current emphasis on investment in irrigation infrastructure and agricultural production to a more holistic approach of management of agricultural landscape for multiple benefits of land and water conservation, climate amelioration, ecosystem services, water retention and evaporation minimization, sustainable pasture management and community livelihood and income improvement. The PAMPs will emphasize management practices for the different components of the agricultural landscape, including state crop production (state guaranteed order crops), privately managed horticulture crops and livestock estate to ensure multiple benefits and climate adaptation outcomes. These adaptation framework plans would be integrated into existing developing planning processes at the etrap and velayat levels to secure their sustainability through leveraging government resources.
90. This output would help establish a range of adaptation management practices across the pilots in the two etraps. The specific investments to be undertaken in the pilots would be defined through the participatory planning process, but would broadly fall within the following categories on response measures:
- improving irrigation and water management (e.g. laser land leveling, installing water control sluices and water measuring devices, repair and restoration of irrigation and drainage systems, construction of drip and sprinkler and other water-saving technologies, construction of water collection structures, use of drainage waters, improved water management and improved regulations and systems for accounting for water use);
  - improving agricultural practices (e.g. crop rotation, use of drought resistant and improved crop varieties, crop pest and disease forecast and pest control and management, improved agronomic services, use of micro-fertilizers and nutrients, increased shelter belts, greenhouses, improved soil fertility management and soil washing, etc.);
  - improving pasture and livestock management (e.g. geo-botanical inventory of natural pastures, construction of new and rehabilitation of wells and dew mounds, repair of rain water harvesting systems, cleaning of silt/clay water-collection depressions (takyr), artificial insemination, wool and leather processing facilities, rotational grazing and sustainable pasture management and monitoring, etc.);
  - capacity building of daikhan associations and farms, pasture users and local authorities to adopt to climate change (e.g. training and advisory services for climate risk management and adaptation; specialized district centers for training in adaptation technologies, seminars and consultation on rational use of water and land resources; training of women and most vulnerable farmers to adjust cropping patterns based on climate variability, sustainable agricultural systems for nutrition and high-value added products, sustainable land management, disaster risk management and early warning systems will facilitate adaptation);
  - improved coordination and cooperation with etrap, velayat and national bodies relevant to climate change and adaptation (e.g. establish focal points for climate change adaptation for each etrap, climate adaptation local coordinating bodies, etc.); and
  - documented and disseminated existing best practices and experiences in climate adaptation (e.g. efficient use of irrigation systems, advanced irrigation and water saving measures, use of drainage waters, use of technology for collection and use of rain water in desert pastures, modern technologies

of solar and wind powered plants for livestock watering in natural pastures, etc.). In addition, there are numerous examples (funded by investments from the UNDP, World Bank, FAO, ICARDA, and other international and regional agencies with resources from a variety of sources (UNDP core, Adaptation Fund finance etc.) of improved sustainability of agricultural productivity, irrigation farming, sustainable land management and prevention of land degradation and improved efficiency of transhumance as a means to reduce the impact of climatic and anthropogenic factors and adapting agriculture to climate change that can provide valuable lessons for replication in the pilot etraps and the country as a whole that needs to be disseminated.

91. To determine the eligibility of activities for inclusion in the PAMPs for funding under this project, certain pre-requisite conditions should be met. It is suggested that the prioritized PAMPs activities:

- *establish clear and transparent linkages* between the proposed investment and reduction of vulnerability or enhancing adaptation to climate change, that include reducing the risk, exposure or sensitivity of human, and agricultural and pastoral systems to climate variability and change, increases the potential or capacity of a system to adapt to effects and impact of climate stimuli, builds problem solving capacity to develop responses to climate variability and change; actively incorporates climate hazard risk information into decision-making, or addresses impacts exclusively linked to climate variability and change;
- *provide equitable share of benefits to local communities and mitigate any negative impacts* to people within the community who are currently most vulnerable to climatic events;
- *are socially sound and institutionally feasible* ensuring that associated activities are culturally acceptable and do not impose an unnecessary heavy burden on individuals and that local institutional capacity is adequate to organize resource management, implement income and livelihood improvements and distribute benefits from common resources;
- *contribute to diversification of livelihoods and its security* by enhancing existing agricultural practices and/or diversifying incomes and products;
- *are low cost and financially feasible* so that costs are within acceptable norms, returns are sufficient to compensate for any resource restrictions, market linkages are adequate, cash flow requirements are viable, and returns compare favorably with alternative investment options;
- *are technically feasible* so that inputs and technical advice are adequate, physical conditions are suitable and the activity is technically sound;
- *are environmentally sustainable* and avoid detrimental environmental impacts and those activities that cannot be mitigated or managed effectively;
- *are selected and owned by agricultural communities* as ensured by a budgetary constraint mechanism, community contribution or co-financing requirement, and a commitment by the community to bear maintenance costs of any infrastructure component;
- *are supported by some level of community in-kind contribution (15%) to ensure ownership and demonstrate collective responsibility*
- *are supported by training and capacity development* for strengthening community or farmer organizations and other inherent capacity building; and
- *are supplemental or incremental in nature* to ensure that activities supported under the project are not a substitution for what should be supported by the government through its on-going or future projects as part of their development responsibilities.

92. To support, the implementation of the PAMPs, the project would seek to promote the use of innovative financial instruments for fund-transfer to intended beneficiaries. The project would collaborate with the

Daikhanbank for expansion of the preferential credit lines to farmer associations, daikhan farms, landowners and other land users in the pilot areas for supporting climate resilient livelihoods in agriculture and livestock production, including water saving improvements, land development and levelling, agriculture and pasture improvements, etc.

93. The end-product of this Output would be the formalization of eight gender sensitive adaptation plans for the pilot daikhan associations and livestock farms, the implementation of improved agriculture, pasture and livestock management practices, water conservation and management practices, capacity building and improved coordination and collaboration, the documentation of climate resilient practices and the testing of innovative financial mechanisms for fund allocation and transfer. The project will provide technical assistance and training and grants for adaptation action at the daikhan level.

94. *Output 1.3 Innovations focused on providing additional income and supporting climate-resilient livelihoods implemented*

Sustainable agriculture would entail improved access to basic goods and services, and technology and practices (on-farm agro-biodiversity management, integrated pest management, home garden and vegetable production, shift from extensive low nutrition agricultural productive systems to intensive high nutrition ones, etc.). The improvement of seed storage facilities at the etrap level, and agricultural and food storage practices at the field level are necessary post-harvest practices to proactively manage climate related risks. Diversification of the agricultural economy (e.g. bee-keeping, mobile dairy farms, etc.) would ensure food security in times of climatic extremes and help cope in times of economic difficulty.

95. As part of this activity, the project would support strategies for risk management at the micro-level to maximize benefits and opportunities, improve processing and storage facilities, support seed improvement and high value chain development activities, support testing of new technologies for improving incomes and up-scaling, including alternate energy (micro-hydro, solar, etc.) for community based processing, drying and cooking, gravitational irrigation, improved village storage, packing, better transport methods to markets to reduce damage, microfinance, etc. In terms of vegetable seed improvement activities, the project can promote better primary level processing and handling at the farm level to reduce labor costs, improve and introduce better livestock breeds and fodder management and improved feeding methods, and sustainable harvest methods to reduce damage to fodder trees. To achieve this outcome, the SCCF project would provide technical support, training and project grant funding to local communities (pilot daikhan associations and livestock farm), the latter based on partial sharing of costs. The planning of alternative income options will be defined through the participatory adaptation planning process in Output 1.2.

96. Grant financing would be performance-based and designed on the basis of ensuring transparency and extensive consultations with daikhan associations and other relevant stakeholders, be well coordinated and promoted through effective technical support to daikhan associations and etrap municipalities, regular review of implementation arrangements and the use of monitoring and evaluation information to adjust and refine the system in consultation with the stakeholders. Grants would be typical cash for work payments that would be based on the following principles: (i) competitive assessment and tender to select local adaptation projects/beneficiaries; (ii) selection of beneficiaries in accordance with transparent criteria (to be defined early in the project but will include co-financing criteria); (iii) upfront payment (percentage of payment to be defined in consultation with stakeholders); and (iv) balance payment on successful completion and verification of work. Efforts will also be made to try to identify additional funding and support for this activity from existing government and local development programs and

schemes. The output from this activity would be enhanced incomes to farmers and pastoralists from alternative livelihood activities to supplement existing earnings.

97. *Output 1.4 Participatory mechanisms for implementing and monitoring change in community climate resilience*

Participatory monitoring systems would be designed to capture the new approach to multi-sectoral planning methodologies and results. This will specifically address organizational costs and benefits, institutional and financial sustainability, farmer incentives and impacts of the on-the-ground investments on community climate resilience, vulnerability and incomes. Monitoring criteria will be set up together with stakeholders in the pilot sites and include explicit criteria related to gender, land use, incomes and climate resilience. Data from the physical and socio-economic surveys, profiles and baselines that feed into the Participatory Adaptation Management Plans will guide the development of these time-bound indicators that are simple to collect. Monitoring data from the pilot sites will be consolidated at velayat level and later at the national level to consolidate lessons for wider application and potential policy guidance. PMU specialists will provide technical support and guidance for the development of the participatory monitoring framework and train local communities and government institutions to carry out the monitoring and analysis of the monitoring outcomes.

98. *Output 1.5 Successful adaptation measures up-scaled*

This activity would help facilitate a horizontal and vertical exchange of information and knowledge to strengthen decision support systems available to the farmers and facilitate knowledge exchange through field visits and awareness trainings, identify promising and good practice adaptive mechanism relevant to agriculture, irrigation, livestock and natural resources management, promote establishment of model demonstrations by involving smallholder farmers to showcase such best practices, and document and disseminate and share results of adaptive approaches for up-scaling. It would promote localized information dissemination mechanisms (field demonstrations and site visits, workshops, training events and media publicity) and support programs to improve awareness and capacities of farmers and community groups and enhance the use of information communication technologies to disseminate adaptation best practices.

99. This activity would also help strengthen institutional mechanisms at the local and regional levels for effective coordination and extension of climate change related tasks by supporting the enhancement of operational and technical capacities of agricultural, irrigation and livestock support services. It would support the preparation of guidelines for formulation of gender sensitive adaptation plans, and develop curriculum for local level training in adaptation planning for integration into regular etrap and velayat agriculture, irrigation and livestock training programs. It would also establish information in the project velayats to cover livelihood vulnerabilities, data and baselines on climate related events, information of coping mechanisms and indigenous adaption practices and traditional agricultural and cropping patterns.

100. As part of a strategy to influence and mainstream adaptation in national and sector policy, this activity component would help identify and document best practices and based on field experiences will prepare notes for integration of adaptation into sector policy. It would also promote dialogue and discussion between research institutions, community institutions and velayat and national level policy makers to build linkages between practice and policy.

101. This output would also support national and regional workshops to facilitate dissemination of field lessons and help inform legal and policy reform relevant to climate change. Specific topics of learning

and success that might evolve from the pilot sites might include the participatory vulnerability assessment, participatory adaptation planning, outcomes or impacts of specific adaptation actions in agriculture, water and sustainable pasture management, livelihood diversification, financial instruments for climate adaptation and resilient agriculture development, and participatory monitoring, as well integration of adaptation planning in etrap development planning, soil, land and water management, etc. The initial documentation of these lessons will be included as part of the participatory monitoring process, that would be complemented by additional national technical support to distil and document the lessons and experiences. The project will support regular workshops at the regional level (Year 3 onwards) to share lessons and experiences and a national workshop at the end of Year 5 to facilitate the sharing of lessons more widely, but importantly to be able to further develop and refine successful approaches for replication and introduction nationally.

102. Efforts would be made to institutionalize some of the best practices through promotion of sectoral and/or national regulatory instruments that is planned under Outcome 2 of the project in order to secure sector/nation-wide replication and up-scaling. In order to expand access to finance for replication and up-scaling of resilience agricultural and water management technologies and practices the project will collaborate with the Daikhanbank for expansion of the preferential credit lines to farmer associations, daikhan farms, landowners and other land users.

103. ***Outcome 2: Adaptation mainstreamed in agricultural and water sector development strategy and policy***

Achievement of Outcome 2 is supported through the following six targeted outputs:

- Capacity development for agriculture and water sector enabling effective adaptation planning with gender considerations;
- Guidelines to water and agriculture sector ministries on using gender disaggregated data in planning, conducting specific assessments on the needs of women and using these in sector adaptation planning and budgeting;
- Regulation and guidelines for inclusion of adaptation in national and local development planning and budgeting developed and linked to sector based planning, coordination and monitoring processes;
- Institutional and legal mechanisms for water resource management integrate key principles of efficient use and climate risk management.
- National sectoral planning and rural development investments take account of and address climate change related risks
- Ecosystem services valued and potential impacts of climate change on natural pastures assessed to inform pasture management decision-making

104. ***Baseline condition for this outcome (without SCCF project):***

There have been some attempts to integrate climate change considerations into agricultural and water sectors in the past. These include the development of the Code of Turkmenistan “On Water”. However, the Code of Turkmenistan “On Water” has not been adapted to fully address climate change impacts. Moreover, there is a gap between the provisions of the Code and practice in the field. Recent climate change policies have highlighted the sectoral risks created by climate change. The Second National Communication and the National Climate Change Strategy highlight the vulnerability of the water sector in Turkmenistan and the expected impacts on both the agriculture and water sectors. **The existing integrated strategy on water and agriculture recognizes the role of water in delivering growth in agricultural production, productivity and yield, and promote both the supply and demand side solutions to ensure the efficient use of water within the agro-industrial system. The development of the integrated**

strategy is largely focused on (i) integrated water resources management within the agro-industrial system; (ii) optimization modelling for agricultural production based on water use; (iii) improvements to existing irrigation systems through education and awareness; (iv) widespread introduction of drip and sprinkler irrigation technologies; (v) development of additional reservoirs for agricultural irrigation purposes; (vi) development and introduction of drought resistant crops; and (vii) reuse of drainage and waste water for agricultural purposes. Similarly, the revision of the Water Code focuses on specific aspects of water management and protection, such as (i) ownership of water and water resources; (ii) procedures for design and construction of water and hydro-technical facilities; (iii) permit procedures for water use, rights and obligations of water users; (iv) protection of water resources and prevention of water pollution; (v) monitoring of water resources; and (vi) public participation in water related issues. While, both the integrated water and agriculture strategy and the Water Code as of paramount importance to enhance the efficient use of scarce water resources for agriculture and other purposes, there is little effort to directly address climate risk management within the framework of the relevant legislation, policies and budgetary processes. Some activities to identify adaptation mainstreaming capacity gaps have been initiated, for example by the Central Asian Climate Risk Management Program, however, there was no effort yet to comprehensively address sectoral capacity gaps to enable mainstreaming of adaptation with gender considerations. The work is on-going in the country to introduce further changes to the Water Code to bring in a more progressive tariff structure and build capacity among relevant Ministries and authorities to design, for example, appropriate water tariffs that are socially sensitive and consider return value optimization, which would serve to change utilization practices for water. More recently, the Government of Turkmenistan has prepared a National Economic Program of Action on Adaptation and Mitigation to Climate Change (NEPAAM), which is expected to serve as the vehicle for mainstreaming climate change in sector policies, programs and plans. In terms of the water sector, specifically, the current situation in relation to the water management is based on an administrative-territorial structure and decisions on water management are made and carried out by district/provincial production units. The absence of basin-level management principles constraints the efficient use of water resources and is a significant barrier to promoting adaptation to climate change. In addition, the lack of delegation of responsibility for management, operation and maintenance of water supply systems to water users and the imperfect water tariff norms further constrain the application of sensible water use practices in agriculture.

105. *Alternative for this outcome (with SCCF project):*

The SCCF alternative will complement on-going government baseline activities, but support more directly the integration of climate resilient policies and measures into the water and agriculture sectors as well as local level planning systems. The project will do it in the following ways: (i) by developing legal, structural and institutional capabilities that recognizes and integrates for climate risk management climate adaptation; (ii) by including adaptation considerations in sector's strategies and plans and budgetary processes; and (iii) by making adjustments in etrap planning and investments to build measures for climate risk management at the local level. This will build on the proposed measures of the NEPAAM for Turkmenistan. For example, the SCCF project will use the NEPAAM's proposed inter-ministerial consultation platform to develop a sectoral capacity development strategy that will be elaborated based on sectoral capacity needs assessments and implemented at the national level and in target regions. This will include, for example, training on climate change integration in local development planning, policies and regulation and capacitating key sectors to assess and document economic losses due to impacts of climate change in their sectors. Guidelines will be developed for the water and agriculture sector ministries on identifying and addressing gender specific vulnerabilities and needs and including these in agriculture sector adaptation planning and budgeting processes. Relevant changes in legislation on land

and water and institutional structures of relevant ministries and departments will be investigated and addressed to the degree these are found relevant. The following outputs are planned under this component:

106. *Output 2.1 Capacity development for agriculture and water sectors enabling effective adaptation planning with gender considerations*

The initial step under this output will be a detailed institutional capacity review to identify specific gaps in addressing climate risks and to clarify and refine the specific training needs for key institutions to enable them to develop and apply a robust adaptive strategy for agricultural management in drought prone areas of Turkmenistan. An Institutional expert would be recruited through the project to support the water management, agricultural and pasture and land management sector agencies in undertaking the institutional capacity review. The capacity review and needs assessment will be undertaken through a collaborative and participatory process, linking directly with the Ministry of Nature Protection at the national level, and the Velayat and Etrap administration at the regional level, and other relevant institutions, including the Ministries of Agriculture and Water Economy and others. It will initially involve the offices of the organizations named above from the pilot provinces and districts (Dashoguz and Lebap velayats and Gerogly and Galkenesh etraps) and at the national level. The product will be a report on the review highlighting the needs for improvement and training. The training needs assessment will be completed by the end of Year 1 and will inform the development of the training program.

107. Working from the results of the institutional review and needs assessment, a comprehensive and targeted training program will be designed. The training will focus upon enabling stakeholders to apply practical steps in their daily work to strengthen the adaptive elements of current water and agriculture management capacity. Among the areas of focus to be covered by the training program will include:

- General information on anthropogenic climate changes and impacts on water and soil resources and agricultural productivity
- Concepts of risks, vulnerability, adaptation and resilience
- Concepts of risk and vulnerability assessments to enable practitioners to carry out community based climate risk assessments and identify steps in vulnerability mapping
- Information management covering hydro-meteorological data, water deficiency and availability, and agriculture and land use
- Concepts of integrated management of water (watershed and river-basin management) and its customization and application in the context of the climate situation in Turkmenistan
- Water and soil conservation measures, in particular for agriculture and livestock uses, and to train agricultural communities on identification and application of conservation measures at the local level with the intent of balancing demand with supply
- Case studies of good water and soil management, adaptation management and climate resilient practice and demonstration
- Steps in design of adaptive and climate resilient water, soil and agricultural management practice
- Concepts in participatory local level monitoring and evaluation of climate adaptive practices

108. As has been noted earlier, climate change has led to greater temperature and lower precipitation as well as droughts and arid conditions in the project area. The current irrigation systems may not be appropriate to the new conditions created by climate change, but the regional authorities may not have the specialist knowledge needed to improve the structures to adjust to the changing climate induced needs. Including training on modern approaches to integrated water management will make the project more encompassing of the larger climate change process. The preparation of the training package will be

completed by end of Year 2.

109. Implementation of the training program will be done by the training specialist or training institution with support from the provincial technical specialists. The participants in the training will be drawn from the strategic cross section of institutions and stakeholders that underlie effective adaptation centered water, land and agriculture management in project areas and elsewhere, including: MNP, MOA and MOWE, Velayat and Etrap Municipalities and farmer associations. Training will encompass all six pilot daikhan associations and two livestock farms in the project area and also be open to participants from other daikhan associations that might be interested in replicating the adaptation models. It is anticipated that about 100 government staff will participate in the training. The training program will take place from Years 2 and 3. The impact of the training program will be assessed on an ongoing basis. In addition, the project would provide technical support to velayat and etrap municipalities to manage climate impacts on water and land resources on an ongoing basis to enable the Implementation of necessary changes in their own agencies, and supported by the development of recommendations for institutional changes for continued considerations of climate change risks in their development planning processes.
110. This training program will give participants a solid basic grounding in adaptation-critical knowledge and skills. The training under Output 2.1 will enable stakeholders to build on this knowledge by applying specific tools and approaches for adaptation under Outcome 1. The project will also set up linkages with suitable national institutions such as the Agricultural Institute of Dashoguz, Agricultural University of Ashgabat, National Research Institute “Turkmensuwlymtaslama” and the Land Management Service under the Ministry of Agriculture to ensure continuity and sustainability of the capacity building and training effort. It would support training of trainers, design of training modules and preparation of training materials.
111. *Output 2.2 Guidelines provided to water and agriculture sector ministries on using gender disaggregated data in planning, conducting specific assessments on the needs of women and using these in sector adaptation planning and budgeting*  
The intent of this activity is to facilitate the wider adoption of a gender-sensitive approach in the water and agriculture sectors: (i) to achieve greater, more effective, sustainable, and equitable climate change results, outcomes and impacts, (ii) to build equally women and men’s resilience to, and ability to address climate change, and to ensure that women and men will equally contribute to, and benefit from activities that address climate change, (iii) to address and mitigate against assessed potential risks for women and men associated with adaptation activities, and (iv) to contribute to reducing the gender gap of climate change-exacerbated social, economic and environmental vulnerabilities. Such a gender-sensitive approach is required as climate change impacts women and men differently, and existing gender inequalities are likely to exacerbated by climate change.
112. The project will encourage a paradigm shift to a climate adaptation approach in the water and agriculture sectors through development of guidelines and tools for addressing climate change in the respective sectors. The main requirements for adoption of climate resilient measures in planning and implementation of sector plans are the following: (i) **Tools and techniques** to assist in analysis and simplifying the linkages between climate change and agricultural sector outcomes; to predict and respond to climate change risks and potential vulnerabilities of the population; undertake scenario building for adaptation options under different conditions; communicate and monitor climate change adaptation processes to decision makers and stakeholders; (ii) **Competent human resources and institutional systems** will require considerable skills, knowledge and systems not currently in place. The systems will

include platforms for translating climate change research into knowledge; facilitate inter-disciplinary dialogue and information dissemination; and (iii) **Budgets:** While the most appropriate and realistic way to budget for climate change response is to integrate climate change adaptation activities and plans within the normal budgeting process, it is obvious that most climate change responses will relate to emergencies, preparedness, and capacity building, research and information management.

113. Guidelines and actions to mainstream climate change adaptation should typically cover the following key aspects:

- Comprehensive assessments of the risks posed by climate change on water availability and agriculture production systems and the economy, identifying socio-cultural factors underlying climate change-exacerbated gender inequality, and the potential contribution of women and men to societal changes in order to build resilience to, and the ability to address, climate change;
- Integrated agricultural environment surveillance;
- Delivery of interventions for the effective management of climate-sensitive agricultural sector concerns; preparedness for, and response to, the consequences of extreme weather events;
- Agricultural and environmental/climatology research; and
- Strengthening of human and institutional capacities and inter-sectoral coordination.

114. At the national level, the Ministry of Economy and Development, Ministry of Agriculture and Ministry of Nature Protection would take responsibility for overseeing its implementation. Guidelines and other tools for integration of adaptation to climate change must also be embodied within the land, water and environmental legislation, as well as in the form of regulations at the departmental levels, complemented by improved competence within these departments and agencies to their adoption. The project would provide technical assistance, training and communication for enhancing understanding of linkages between climate events and water availability and agricultural production, guidelines for integration of climate change considerations in the planning and budgeting of investments in the agriculture and water sectors, provision of new tools and techniques for integrated climate adoption planning and budgeting, and monitoring the effectiveness of adaptation measures to climate change impacts.

115. *Output 2.3 Regulation and guidelines for inclusion of adaptation in national and local development planning and budgeting developed and linked to sector based planning, coordination and monitoring processes.*

A successful and sustained effort to address climate change impacts and improve community resilience requires the alignment of the local level planning with the national plan for adaptation (included in the NEPAAM). However, the biggest challenges to achieving this objective will be the quality of governance at all levels and the challenge of establishing linkages across national, provincial, district and village levels for vulnerability assessments, adaptation planning and implementation within the framework of the NEPAAM. In an effort to link national sectoral adaptation planning (as defined in NEPAAM) with local level actions, the SCCF project will provide technical assistance and training to improve the understanding and awareness of etrap and velayat municipality staff in the pilot areas to the linkages between climate change and its impacts on local level agricultural productive, livelihoods and the economy as the first step towards trying to mainstream climate adaptation into etrap and velayat level planning and budgetary processes. Secondly, it would identify tools and methodology (that have been tested and demonstrated elsewhere) to integrate climate adaptation actions that could be modified and applied in the local planning and budgeting context. Thirdly, it would support the preparation of planning guidelines and other tools to facilitate linkage of local level adaptation plans with national

adaptation planning and budgeting processes for the water and agriculture sectors. The intent of this activity is to be able to mainstream climate adaptation actions in the etrap and velayat level planning by year 4 of the project. If successful, the project will support the preparation of case studies and other information to promote its replication elsewhere in the country. Also this output will inform and guide development of the national sectoral adaptation plans for the water and agriculture sectors envisaged under the Output 2.5 below.

116. *Output 2.4 Institutional and legal mechanisms for water resource management integrate key principles of efficient use and climate risk management.*

To overcome the barriers associated with inefficient water use and management, the project would support efforts towards enhancing local recognition of the institutional and legal changes required for improving water resources management. It will support the review of current legislation in the water sector, including in particular the Code of Turkmenistan “On Water” and make recommendations on required legislative and institutional changes to move towards a “basin” approach to water resources management, enhancement of incentive mechanisms for efficient water use and conservation, including the introduction of differential rates for supply of water and standards for water measurement, and strengthening the role and responsibilities of water users in the management, operation and maintenance of water supplies. While the project will facilitate a shift to basin management, it will also promote the application of integrated water resources management (IWRM) principles and approaches. The project will also support the review and revision of the laws on daikhan (farmer) associations to enhance their mandates to cover management, operation and maintenance of irrigation networks as well as water distribution. This would entail ensuring some level of economic independence to daikhan associations and expanding their role to implement inherent functions of water use and management, without drastic alteration of their current responsibilities of agricultural production. The product from Output 2.4 would be comprehensive recommendations for changes to the Code of Turkmenistan “On Water” to promote efficient use of water resources, and revision of laws on Daikhan Associations to enhance their mandates and roles of daikhan associations in water resources management. The project would provide technical assistance and support for workshops and meetings to review and revise legal instruments related to water management and daikhan associations.

117. *Output 2.5 National sectoral planning and rural development investments take account of, and address climate change related risks*

The project will support the development of sectoral adaptation plans in the agriculture and water sectors that would help integrate climate adaptation measures into sectoral programs, plans and budgets. In particular, this activity would complement the proposed support to the inter-ministerial work under NEPAAM in Outcome 3 of the project. The overall aim of this activity is to ensure a sustainable, profitable agricultural and water sectors, in general, and the reduction in vulnerability of key sectors and dependent communities to climate change, avoidance of maladaptation options within sectoral planning, and improved medium and long-term resilience to climate change, in particular. The work on the sectoral adaptation plans will be informed by the guidance developed under the Output 2.3 and will benefit from cooperation with the UNDP/UNEP NAP Global Support Programme. The objectives of the climate change sector plans are to: (i) minimize or reduce the negative impacts and risks associated with climate change in order to increase and improve agricultural productivity and efficient water use; (ii) promote climate programs in each sector that will build capacity, increase awareness and improve education and training in agriculture and water use; (iii) ensure a sound knowledge base, information management and targeted research on management of climate risks; (iv) ensure an effective climate change implementation program; and (v) ensure compliance with international obligations on climate change. It

will also address institutional arrangements, vulnerability assessment and adaptation responses with the individual sectors. The sector adaptation plans will be developed on the basis of a range of views and experiences and information on distributional impacts of climate change. The development of the sector adaptation plans would be led by the respective sector agencies (e.g. Ministry of Agriculture and Ministry of Water Economy). Since climate change is a cross cutting issue, the preparation of the sector plans would require support from all stakeholders involved in climate change within and outside the respective sector ministries to order to achieve the above-mentioned objectives.

118. To facilitate the development of the sector adaptation plans in agriculture and water sectors at the national level, the project will provide technical and policy support to the Ministry of Economy and development to coordinate this effort. The sector plans will serve as a over-arching framework for public-sector decision making on adaptation planning and a first step towards strengthening activities at the national and sub-national level to identify and address climate risks and linking these results to regular process of planning and budgeting.
119. *Output 2.6 Ecosystem services valued and potential impacts of climate change on natural pastures assessed to inform sustainable pasture management decision-making*  
Significant part of the territory of Turkmenistan is occupied by rangelands (78% of land reserves). Natural and climatic conditions allow grazing through the year. The vast majority of plants growing in the plains and mountainous parts of the country are considered of grazing value to livestock. Natural pastures are therefore of great economic value at the local, regional and national levels. They provide invaluable ecosystem services such as conservation of catchment basins, pollination services, pastures value and conservation of wild relatives of crops, etc.
120. To maximize the value of the ecosystem services it is essential to ensure continued sustainable management of pastures as ecological systems and reduce the risk of pasture degradation by over-grazing and other human impacts. The use of economic valuation as a tool for improved understanding of the ecosystem services is therefore important for policy making on sustainable pasture management. Economic valuation will enable raising awareness among decision makers and the local population about the importance of preserving natural services and in the development of actions for sustainable management of pastures, development and introduction of appropriate incentives for conservation grazing and introduction of financing mechanisms and payments for sustainable management of pastures. Accordingly, such information would make it possible to calculate the carrying capacity of pastures and determine the most appropriate and efficient grazing practices based on the condition of the pasture and water availability and soil and other environmental conditions.
121. The project will support field geo-botanical surveys in the two pilot etraps to enable a valuation of the ecosystem services from the natural pastures (to be repeated every 10-15 years) that would then help develop and implement long-term policies and programs for sustainable climate sensitive livestock production. The pilot effort will help refine and develop the methodological framework for economic valuation of natural pastures, facilitate the development of guidelines and methodologies for assessing carrying capacity of the pastures, develop a range of tools and methodology for assessing possible impacts of climate change on the productivity and carrying capacity of the pastures, and help develop a menu of options for sustainable management of these pastures for livestock production, ecosystem services, improving the quality soil and climate amelioration in the context of a changing climate scenarios. The project will undertake this activity through the provision of technical assistance, training, consultations and disseminations. The overall intent of this Output is to develop a methodological

framework for assessing the carrying capacity of, and developing options for sustainable pasture use and management in changing climate scenarios that can then influence national policy and practice on pasture management.

122. ***Outcome 3: Strengthened national capacity for iterative climate change adaptation planning, implementation and monitoring***

Outcome 3 is specifically designed to facilitate the operationalization of the National Economic Program of Action on Adaptation and Mitigation to Climate Change (NEPAAM) that is the main vehicle/framework for implementation of the adaptation (and mitigation) priorities identified in the National Climate Change Strategy (NCCS) of Turkmenistan. This Outcome comprises the following four targeted outputs:

- Mechanism for iterative monitoring, reporting and verification of implementation of the mainstreamed adaptation actions established
- Vulnerability/resilience indicators and protocols for gender-disaggregated data collection, storage, processing and use in planning and decision-making
- Actions to build the evidence base for robust decision making implemented.
- Communication and outreach strategy to support the medium and long-term adaptation planning of NEPAAM developed and implemented.

123. ***Baseline condition for this outcome (without SCCF project):***

In recent years, Turkmenistan has made progress towards its objective to become a prosperous country with a high quality of life of all its citizens. In the context of the commitment to developing an effective and dynamic market economy, the government recognizes that Turkmenistan is highly vulnerable to environmental pressures in its economic development sectors. Early and coordinated actions to the unavoidable impacts of climate change to minimize the impacts of costly disruptions and safeguard the long-term prosperity of the environment, economy and communities resulted in the country adopting a “National Strategy on Climate Change of Turkmenistan” in 2012. In order to implement the strategy the government compiled an inter- ministerial plan called the **National Economic Program of Action on Adaption and Mitigation to Climate Change (NEPAAM) defined for the period 2016-2020**. The key objectives for NEPAAM in the specific context of adaptation in Turkmenistan are aimed at (i) moving towards a consolidated government approach to climate change; (ii) promoting the development of long – term sectoral planning on climate change within ministries and where possible promote an inter- sectoral planning approaches; (iii) to define and approve an inter- ministerial coordination and institutional arrangements to move towards a consolidated government approach to climate change; (iv) use NEPAAM as the basis for possible international funding; (vi) to implement the relevant Sustainable Development Goals and targets expected to be approved by the in 2015; and (ix) to become a regional leader in promoting a focus on climate change. The NEPAAM (2016-2020) sets out the first phase of consolidated sector actions to implement the NCCS approved in 2012. However, the effective implementation of NEPAAM would require a concerted effort and support from national and international entities to establish and support the proposed inter-sectoral coordination and governance structures for mainstreaming, monitoring and reporting of climate adaptive measures. Without international financial and technical support, the effective implementation of NEPAAM remains uncertain.

124. ***Alternative for this outcome (with SCCF project):***

The alternative is an operationalization of NEPAAM, including the identified priority adaptation programs (promotion of sustainable pasture management, promotion of innovation in the management of

water for irrigation and the use of drought resistant crops, the sustainable management of drainage water; and balancing grazing, environmental protection and biodiversity conservation to cope with climate change), that are covered to some extent in Outcome 1 of the project. More importantly, the SCCF project will support the government baseline investments in NEPAAM by helping to establish institutional structure and capacity to enable oversight of inter-sectoral implementation of coordination and governance, mainstreamed planning, financing and monitoring, reporting and verification of climate actions, and enhancing awareness and understanding of NEPAAM adaptation measures and their effectiveness. Without SCCF support, the actions proposed in NEPAAM would likely be unfunded or poorly funded resulting in slow progress in achieving planned measures for climate adaptation mainstreaming in sector planning, programs and budgeting. The SCCF project would provide the momentum and oversight to build a solid foundation on which NEPAAM can develop and sustain itself into the future.

125. In particular, the effective operationalization of NEPAAM requires technical and administrative support for the proposed **coordination mechanism** across sectors and ensuring that the following coordination structures are functional and effective:
- The high level inter-ministerial climate change council (IMC) that will provide overall strategic inter-sectoral guidance to the implementation of the NEPAAM, including providing overall coordination of sector agency programs related to climate change adaptation and mitigation and strengthening inter-ministerial cooperation and facilitating sector agencies in planning for adaptation and mitigation to climate change.
  - Inter-ministerial technical working groups (TWG) for adaptation and mitigation that will assist in promoting inter-sectoral approaches to the planning, implementation and monitoring of NEPAAM actions
  - A Secretariat to be placed within the Ministry of Economy and Development to support the work of the IMC and support ministries to coordinate their actions.
126. To achieve this alternative, the component will provide hardware (physical set-up) and software to build capacity for operationalization of NEPAAM at different layers of government (national, provincial, district and local levels) in particular for monitoring, verification and reporting, development of statistical systems for data management, enhancing the evidence base for decision-making and enhancing communication and outreach in support of adaptation planning.
127. *Output 3.1 Mechanism for iterative monitoring, reporting and verification of implementation of the mainstreamed adaptation actions established*  
SCCF financing will be used to create a mechanism for monitoring, reporting and verification of implementation of adaptation actions under NEPAAM. As policies and plans for mainstreaming adaptation is being implemented by sectoral agencies, it is necessary to review these actions to ensure that these still represents the optimal path to achieve the country's climate change management vision. Reliable monitoring and assessment system also becomes an important part of the assessment of the compliance with the international obligations.
128. In order to assess the effectiveness of NEPAAM programs it is necessary to measure changes in vulnerabilities and sustainable development benefits from such investments. It is also necessary to outline clear responsibilities at different levels of operationalization of adaptation actions, including at the local, district (etrap), provincial (velayat) and national levels as well as at the sectoral level.

129. The NEPAAM Secretariat to be created in the Ministry of Economy and Development will be overall responsible for coordination of NEPAAM related actions, including monitoring, reporting and verification of implementation of, and measurement of changes in vulnerability of adaptation (and mitigation) actions, and mainstreaming and financing of such actions in sector plans and programs. To enable the Secretariat to establish and effectively coordinate this function, the SCCF project will provide technical support for defining the roles, responsibilities and procedures for monitoring, reporting and verification, defining the institutional framework for these functions, and development of reporting and verification formats. The project would support the hiring of 2-3 key technical staff to support the Secretariat in coordination, mainstreaming, funding and measurement, reporting and verification of adaptation (and mitigation) actions; provide support for training of staff at sectoral and administrative levels for undertaking the monitoring, reporting and verification of adaptation (and mitigation) actions, and providing facilitation support to sector agencies for mainstreaming of adaptation actions into their respective sector plans and programs.
130. *Output 3.2 Vulnerability/resilience indicators and protocols for gender-disaggregated data collection, storage, processing and use in planning and decision-making*  
The ability to measure changes in vulnerability from adaptation mainstreaming and investment actions, as well as other sustainable development benefits requires the establishment of indicator frameworks and protocols for data collection, storage, processing, use and verification. In particular, this would require: (i) the development of a set of indicators to measure adaptation vulnerability and climate resilience; (ii) the establishment of procedures for collecting data, undertaking data analysis, communicating results, submitting reports and archiving; (iii) the establishment and operationalization of an assessment, review and verification process; (iv) definition of coordinating procedures for information management with sector and administrative entities; (v) establishment of quality assurance and quality control procedures; and (vi) a process for continuous feedback, evaluation and improvement.
131. The indicator framework for measuring adaptation vulnerability and resilience to climate change would necessitate a range of indicators that measure biophysical (e.g. climate variability, climate hazards, climate response, habitat quality, water availability, physical infrastructure, land use, and frequency, duration and magnitude of climate events, etc.) and socio-economic (e.g. economic diversity, wealth, poverty, knowledge, technology, social cohesion, equity, governance, etc.) vulnerabilities that result in the consequential extent (e.g. terms of harm, impact, outcome and cost) and likelihood (probability, distribution, confidence, return intervals, etc.) of climate vulnerability and risk. The SCCF project will provide technical support, training and equipment to facilitate the establishment of the monitoring framework, and demonstration of the operationalization of this system in the pilot areas covered under component 1 of the project.
132. *Output 3.3 Actions to build the evidence base for robust decision making implemented.*  
The intent of Output 3.3 is to provide a better understanding of the emerging state of adaptation research and practice in the agriculture sector in Turkmenistan so as to be able to inform public and private (including local communities and other stakeholders) decision-makers, improve awareness of adaptation issues and challenges, and contribute to the uptake of successful adaptation approaches by stakeholders and sectors most likely to be impacted by climate change in the country. This approach further adds value to existing research and practice by aggregating the findings of individual reports and publications to extract common themes relating to climate change vulnerability, adaptation and resilience.

133. Specifically, this Output would cover the following tasks: (i) collation and review of adaptation research and practice in the agriculture sector that is country specific to Turkmenistan; (ii) evaluation of the current state of adaptation research and knowledge in the country; (iii) assessment of the relevance of existing adaptation research and practice in the country; (iv) preparation of agriculture sector (relevant to farmland, pasture and related water management) reports, mapping linkages between direct and indirect climate change impacts, consequences for the agriculture sectors and across other sectors (e.g. human health, community well-being, food security, etc.) and the adaptation responses and implementation actions; (v) identification of approaches to ensure how adaptation research and practice lessons and recommendations may be replicated and better implemented; (vi) providing information to inform adaptation policy, investment and decision-making; and (vii) identification of critical information gaps, barriers, and research and practice opportunities as a basis for future planning of investments to develop and implement adaptation policy. This effort is expected to provide a foundation upon which the country can undertake a more detailed adaptation planning at the sector or regional specific level. It is anticipated that such an outcome will allow the agriculture sector in Turkmenistan to understand future environmental risk and inform sectoral adaptation policies and plans, operationalizing adaptation practice, as well as enhance an appreciation for adaptation to become more integrated and mainstreamed into core business development decision-making and policy making in the country. The project will define a mechanism and appropriate institutional location for continuation of this task.
134. Under this activity, the project will also support the government in developing more detailed modeling of its agro-ecological zones that would help inform long-term government investment policy in the agriculture and water sector to deal with future climate scenarios. More specifically, this activity will: (i) help predict future change scenarios using biophysical data (soils, slope, land use and aspect) with the combination of the changing parameters of climate data (temperature and precipitation) at the agro-ecological level; (ii) assess the impacts of agro-ecological changes in relation to changes in climate; and (iii) help find solutions that farmers can adopt in the changing time and climate and still maintain the economic value of their agricultural lands. The agro-ecological zones approach is considered appropriate as it represents a GIS-based modeling framework that combines land evaluation methods with socioeconomic and multiple-criteria analysis to evaluate spatial and dynamic aspects of agriculture.
135. The SCCF project will provide technical assistance, consultations through workshops, stakeholder meetings, training and dissemination to achieve this outcome. This work will result in a series of publications on the status and relevance of research and investments on climate risk and adaptation related opportunities in the agriculture sector, key gaps in improving understanding of, and responding to climate risks, and opportunities for operationalizing and mainstreaming adaptation practice in sector policy and legislation. This modeling of agro-ecological zones will be undertaken through international expertise and local research institutions using national data and by applying a combination of climate, crop, water and economic models, it would provide a higher resolution understanding of potential impacts, economic costs and benefits of adaptation action, and design a mechanism by which the evidence will be evaluated and integrated into development planning. This Output will also leave technical capacity and skills within the participating local research institutions that would enable further update and development of the models as new and more improved climate data becomes available in the future.
136. *Output 3.4 Communication and outreach strategy to support the medium and long-term adaptation planning of NEPAAM developed and implemented.*  
One of the overall goals of the NEPAAM is to ensure that Turkmenistan has a system and capacity for

medium and long-term adaptation planning and budgeting with the overall goal of reducing vulnerability of the population and key sectors to the impacts of climate change. To achieve such an objective requires the improved understanding and participation of key target groups (decision makers and staff from key sectors of environment, agriculture, water, economy, health and provincial and district development), non-governmental organizations, farmer associations, water use associations and community groups, researchers and others, including in particular women and the most vulnerable segments of the population. The preparation and implementation of a communication and outreach strategy is intended to promote meaningful stakeholder participation in the adaptation action, implement direct outreach to diverse communities and communicate adaptation implementation activities and outcomes to the broader public.

137. The Communication and outreach strategy will lay out the following approaches:
- (A) *Partnership arrangements* for direct engagement with (i) media houses and non-governmental organizations to develop outreach materials for information dissemination to community groups and academic institutions and conduct workshops to ensure that the adaptation message reaches the target audience; (ii) with policy and learning institutions to convert research findings into policy and practice; (iii) with the media (newsprint, radio and television) for expanding awareness to the links between climate change and impacts on agricultural productivity; (iv) through online collaborations that would serve as an effective tool for textual and multimedia messaging;
  - (B) *Direct communications* with local communities within the pilot sites. In particular, this would entail the management, analysis and assessment of knowledge disseminated to the pilot communities through regular and direct interactions by project staff using: (i) workshops, field visit and face to face conversations with community members (pilot farmer association and livestock farm households); (ii) workshops with government decision makers and technical staff to increase understanding and facilitate policy and legal reform to mainstream climate adaptation in sector policies; and (iii) with farmers to encourage innovative ideas for climate adaptation through information of best practices;
  - (C) *Use of mass media* to ensure information distributed is informative, interesting and entertaining enough to attract and sustain the attention of the target audience, creating interest for discussions and seeking further information with regards to the research and practice; and
  - (D) *Feedback mechanisms* through public meetings, social media, websites, radio shows, etc. to obtain feedback from the users of the information.

138. The communications plan will involve packaging information on the various aspects covered by the project and using that information to increase awareness. The engagement plan will involve the production of a technical outreach document, training curriculum and manual, posters and brochures, journal articles, press releases, video and television documentaries, policy briefs, websites, etc. The SCCF project would provide technical assistance, communications facilitator, workshops and training to support the preparation and implementation of the communications and outreach plan to support medium and long-term adaptation planning.

## 2.5. RISKS AND ASSUMPTIONS

139. The following are the key risks and assumptions in relation to the management of potential risks from the SCCF increment (Table 7):

**Table 7. Project Risks Assessment and Mitigation Measures**

Risk	Level	Mitigation Measures
The government is not	Medium	The recently developed National Economic program of Action on Adaptation and

committed to implement institutional and policy changes proposed during the implementation of the project		Mitigation of Climate Change (NEPAAM) defines the measures for instituting institutional and policy changes to address climate change related risks in their development planning and sets out institutional arrangements for overcoming existing sectoral barriers to climate risk management. The project will provide staffing, training and other support to facilitate the institutional and policy changes recognized in the NEPAAM. The project team will also closely monitor the developments and establish partnership with the NEPAAM coordination institutional arrangements for design, implementation and monitoring policy and planning measures for climate risk management and adaptation.
National government does not give permission for data sharing and cooperation between institutions and at the local level	Medium	The project will be agreed at a high level with the Cabinet of Ministers, with permissions sought for cooperation with the necessary ministries and state bodies. State committees will be used as key elements of the project steering committee. Permission to engage with local communities will be sought from relevant ministries and bodies.
Coordination among national institutions is often problematic and their capacities are limited.	Medium	The intervention will contribute to addressing these issues through a sustained capacity building and engagement effort. Policy dialogue will give priority to emphasizing the criticality of increased commitment to climate proofing to decrease climate vulnerability, increase productivity, generate revenues and contribute to food security.
The process involved in modification of sectoral policy and plans to address climate change adaptation may require a long time	Low	The Government is committed to implementation of the National Strategy on Climate Change of 2012 and the National Economic program of Action on Adaptation and Mitigation of Climate Change (NEPAAM) of 2015, the latter is represents the government's vision for addressing adaptation to climate change in order to deliver the country's development objectives, economic and social growth. The NEPAAM recognizes the inherent need to introduce climate change adaptation measures in sectoral planning and policies. To complement the NEPAAM process, the SCCF project will provide technical support, capacity building and consultative meetings to facilitate mainstreaming of climate adaptation measures in the water and agriculture sectors
Governance issues, including "Elite capture" with the "plausible recurrent risk" of deviation and capture of the benefits accrued from the project by the more influential persons	Low	The project will support daikhan associations as a collective group, through the proposed participatory planning process. Specific criteria and guidelines will ensure that investment decisions at the local level are made through a collective decision-making process that would be facilitated by technical staff provided by the project. Regular monitoring and oversight provided by the project is intended to ensure that benefits are fairly well distributed to all participating households, including women.
There is a risk of community institutions not adopting the adaptation planning approach and financing mechanism adequately.	Medium	The measures to overcome the risk are: ) the project will target established farmer associations and livestock farm that is the most matured community institution in the pilot etraps. The rules of engagement with participating community institutions will be clearly spelt out during the initial engagement with the farmer associations and livestock farm; (ii) there will be a strong emphasis on strong participatory adaptation planning processes; technical assistance with resource allocation will be provided to the etraps and farmer associations and livestock farm in an efficient and effective manner through an effective support structure and financial institutions.
Climate change impacts may increase to the extent that even if the project reduces vulnerability, it may not be enough to make a significance difference	Medium	The project's approach to building capacity for adaptation focuses on practical tools and principles for water management and agricultural productivity improvements that will enable communities to modify and/or adjust their adaptation approaches to the proper scale and scope necessary. Under Component 1, the project will attempt to incorporate core elements of adaptation in the local planning process, while in Component 2, it will facilitate the mainstreaming of adaptation at the local and national sectoral planning level, and enhance capacity using specific tools for adaptation work and under Component 3, it will strengthen national planning, monitoring and budgeting capacity to ensure that climate risk management receives central focus in national economic development.

## **2.6. SOCIO-ECONOMIC BENEFITS**

140. The project goal is to reduce vulnerability to water and climate stress and damages. The primary socioeconomic benefits to be delivered by this project derive from enabling stakeholders to reduce these vulnerabilities to climate change. Loss of productivity due to climate change is believed to be substantial, but has not been fully estimated. The damage to agricultural assets would be reduced significantly as a result of this project, though it is not possible to quantify the reduction in financial terms at this stage.

141. By strengthening the adaptive capacity and reducing the vulnerability of over 40,000 to 50,000 persons (8,000 to 10,000 households) among the pilot daikhan and livestock associations in the Lebap and Dashoguz target regions, the project would help farmers improve the productivity of their farm operations, be better prepared for increasing water scarcity and introduce alternative income sources. The replication potential is to at least half a million people within the Lebap and Dashoguz velayats and other remote agricultural areas in the country. Successful replication of efficient water management and climate resilient agricultural and sustainable pasture management practices of the pilot adaptation models and implementation of new climate-friendly sectoral planning, legislative and capacity development measures would have an indirect effect on extending the benefits of climate adaptation measures in the country. In the long term these examples could be expanded to all the agricultural areas in the country (51% of population). The project will focus on increasing the resilience of water resources for the most vulnerable and water-stressed communities, that are engaged in non-state agriculture and livestock management and that are unlikely to benefit from government's large-scale water supply and storage infrastructure.

142. There are additional, indirect socioeconomic benefits. The project will develop community-based climate-risk oriented planning methods which are new to Turkmenistan, which are collaborations between community members and practitioners from etrap and velayat administrations. In addition to improving water and agricultural practices, effective water and land management has the further benefit of improving the environment of their communities and the sub-basin in which they are situated. The new approach will lead to an increase in cultivable land, which has far reaching socioeconomic benefits and opportunities for improving livelihoods. There may be increased agricultural productivity through better land and water management.

143. The project is working at several levels simultaneously – community, regional and national. The project draws lessons from its activities at the community and regional administration levels and uses them to modify the governing legislative and policy base at the national level. Changes to policy and law in turn will result in improved adaptation practices in water, agriculture and pasture management not just in the project area, but across the country, and with them, the socioeconomic benefits of reduced vulnerability to water stress.

## **2.7. GENDER CONSIDERATIONS**

144. Turkmenistan adopted legislation and a National Action Plan for Gender Equality for 2015-2020 that was approved by the Resolution of the President of Turkmenistan in January 2015. In the pilot farmer associations and livestock farm, women account for, on the average around 51-52% of the population. They are mainly engaged in housekeeping, teaching, and administrative support services. Many more women form part of the unpaid family labor in home farming and lease of agricultural lands. The different responsibilities that women generally have in agricultural activities include: (a) participation in planting and harvesting

activities in the production of state crops (around 30% by women), and particularly in growing vegetables and fruit crops in the private household plots (in the latter case, 65-70% of cultivation in household plots is done by women); (b) at the household level, many hours a day in the preparation of food for the farm workers, raising livestock and poultry, fetching water and engaging in non-farm activities; (c) some women are responsible for managing farm finances and marketing products from private household plots; (d) despite these roles, women have limited role in control of land and decision making on agricultural practices; and (e) have limited access to capacity-building services and training. The different roles that women play in agriculture require a targeted set of adaptation and resilience measures addressing their needs. This indicates a need for rethinking the role of women and their treatment as land and water users for production purposes, beyond domestic needs. Regional experience shows that insufficient attention is paid to participation of women in user association management, and that without leadership examples women do not try to enter into boards or become user association managers. Management positions within the municipal authorities and daikhan associations are occupied predominantly by men. Thus, women at the local level have generally less access to decision making, capacity building and knowledge. This can be explained by both current conditions of land and water use and poor awareness and knowledge among women.

145. The project has been designed taking into account the above situation and constraints. While, efforts would be made to integrate and engage women in all of the project activities, women's participation and role in decision-making would be specifically enhanced through the following activities:

- *Output 1.1 Participatory vulnerability and adaptation assessments carried out in selected communities to identify priority adaptation solutions.* This will entail the preparation of gender differentiated vulnerability assessments in the pilot daikhan associations and livestock farms that would access particular vulnerabilities and impacts on women;
- *Output 1.2 Gender Sensitive Adaptation Plans developed and effectively addressing climate risks* This Output will result in the promotion of a Participatory Gender-Differentiated Village Adaptation Action Planning process to define community agriculture, livestock and water management and climate adaptation investments. A particular focus of this Output would be the development and implementation of participatory adaptation management plans that would include specific targeted activities for women to enable them to cope with the impacts of climate change. This would also entail improved measures for management and use of water, improved crop production and marketing facilities in private small holdings, crop disease and pest management, etc., all of which would have significant impact on women.
- *Output 1.3 Alternative income and livelihood innovations enhancing climate-resilience of agricultural communities.* An important activities under this output would be the diversification of the agricultural economy to include specific alternative income generation activities, such as bee-keeping, value addition to agricultural products, small-scale cottage industries, crafts, etc. that would be largely directed at women to help them cope in times of climatic extremes and economic difficult;
- *Output 2.1 Capacity development for agriculture and water sectors enabling effective adaptation planning with gender considerations.* An institutional capacity review will help identify gaps in addressing specific climate risks and to clarify and refine specific training needs of staff and farmers, including vulnerable farmers and women. The ensuing training program would focus on a target effort to enable stakeholders to apply steps to strengthen the adaptive elements of their agricultural activities. Specific training curriculum and programs would be designed to target women and vulnerable farmers.
- *Output 2.2 Guidelines provided to water and agriculture sector ministries on using gender disaggregated data in planning, conducting specific assessments on the needs of women and using these in sector adaptation planning and budgeting.* This output will facilitate the wider adoption of a gender-

sensitive approach in the water and agriculture sectors to achieve greater, more effective, sustainable, and equitable climate change results, outcomes and impacts and to build equally women and men's resilience to, and ability to address climate change, and to ensure that women and men will equally contribute to, and benefit from activities that address climate change, as well as to mitigate against assessed potential risks for women and men associated with adaptation activities and to contribute to reducing the gender gap of climate change-exacerbated social, economic and environmental vulnerabilities.

- *Output 3.2 Vulnerability/resilience indicators and protocols for gender-disaggregated data collection, storage, processing and use in planning and decision-making.* Under this output, specific efforts would be directed at develop an indicator framework that would differentially measure vulnerabilities on a gender basis so as to be able to develop specific targeted adaptation measures for women.
- *Output 3.4 Communication and outreach strategy to support the medium and long-term adaptation planning of NEPAAM developed and implemented.* This output is directed at improving understanding and participation of key target groups, including women and vulnerable segments of the population on climate risk and adaptation options. The communication and outreach strategy is intended to promote meaningful stakeholder participation in the adaptation action, implement direct outreach to diverse communities and communicate adaptation implementation activities and outcomes to the broader public, including women and the vulnerable communities.

## **2.8. COST-EFFECTIVENESS**

146. The project is designed primarily to ensure that investments are the most cost-effective to ensure that project approaches and institutional mechanisms are easily replicated and scaled up using existing budgetary constraints that operate within the region and country. Removing the barriers to the climate adaptation and risk management as discussed in previous sections of this document that currently impede sustainable agriculture and efficient use of water and land resources will increase the dividends from these resources and provide a real incentive for local communities to engage in sustainable management of land, agriculture and water resources. Cost effectiveness would be ensured through the design features of the project.

147. The project will use existing government, and local level institutional arrangements for delivery of project interventions, rather than creating additional and costly alternative project-specific institutions. The project will operate through the existing institutional arrangements within the respective velayat and etrap municipalities to help coordinate, oversee and implement project related activities. At the community/village level, the project will work through existing daikhan and livestock associations, but will institute a local level planning process to plan and deliver activities that are related to climate and vulnerability risk reduction and adaptation, as well as help coordinate other socio-economic development investments available at the local level, to the extent feasible. The planning process will be instituted through administrative approaches that are envisaged under existing government policy rather than create new systems that are not cost-effective

148. The project will make available lower-cost methods and tools to aide climate adaption measures. It will draw from the lessons of the UNDP Climate Risk Management Program and the on-going Adaptation Fund supported Addressing Climate Change Risks to Farming Systems in Turkmenistan at National and Community Level that demonstrated the intrinsic value and cost effectiveness of using risk and vulnerability assessment at community level as a tool for developing appropriate solutions to management of climate risks. These two projects have demonstrated the cost effectiveness of investing in construction of new and renovation of the water systems, protection and rational use of spring waters, introduction and enhancement of drip irrigation for growing vegetables and fruits, as well as improvement of the soil fertility on the basis of production and use of compost and bio-humus as means for adapting to climate change. The cost effectiveness of combating soil erosion in the water harvesting area, construction of underground water storage reservoirs and rain pits, cleaning of surface takyrs (natural water harvesting areas) with the

purpose to increase the volume of runoff waters formed by atmospheric precipitation and fixation of sands and afforestation of moving sand dunes have been successful and cost effective means to protect local houses and infrastructure from moving sands. The demonstration of the value of hydraulic and agro-ameliorative activities including construction of new and reconstruction of existing drainage systems in the farms and those shared among the farms, construction of regulation facilities for in-farm irrigation systems, planning of the irrigated lands by application of laser technology means, establishment of field protection belts to provide microclimate and biological drainage for more efficient use of irrigation waters. The implementation of these and other adaptation and mitigation measures have demonstrated their value = to a more rational use of water (reducing its consumption per unit of cultivated product), and in general, providing the required productivity of irrigated fields, and satisfying the requirements for environmental safety. The proper management of agricultural lands and natural pastures will ensure the prevention of their further degradation. The environmental benefits of the project's proposed investments will also contribute to the cost-effectiveness, sustainability and feasibility of the low cost project alternative. These benefits include a maintenance and enhancement of existing land, water and pasture resources through better management and adaptation approaches.

149. On the basis of the Environmental and Social screening process undertaken during the design of the project (Section IV, Part III), it is clear that the proposed project would not potentially cause adverse impacts to the environment, natural habitats and/or ecosystems and ecosystem services. The Project would likely not generate potential adverse trans-boundary or global environmental concerns and would not result in secondary or consequential development activities that could lead to adverse social and environmental effects, nor would it generate cumulative impacts with other known existing or planned activities in the area.

150. The proposed project will not result in significant greenhouse gas emissions nor would enhance climate change impacts. However, the benefits from improved pasture management and more efficient tillage can include reduced green-house gas emissions from the soil and improved carbon storage. The project is not likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future. The project does not involve large-scale infrastructure development. The project will not involve support for employment or livelihoods that may pose a potential risk to health and safety of communities and/or individuals or to biodiversity and ecosystem functions. The project would not potentially involve temporary or permanent physical displacement, nor will there be the need for land acquisition or access restrictions – even in the absence of physical relocation. It would not exacerbate land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources.

## **2.9. COORDINATION WITH OTHER INITIATIVES**

151. “*Addressing climate change risks to farming systems in Turkmenistan at national and community level*” project (2012-16), financed through the Adaptation Fund, has a number of complementary objectives: (i) Support policy development in the areas of more efficient water use for agriculture through reform of the water code and improving the knowledge base around water pricing and economics of climate change; (ii) Promote adaptation measures in three agro-ecological zones (mountain, irrigated agriculture and desert pasture), benefiting more than 30,000 farmers; (iii) Develop community level water management structures for more rational use of available water resources. The proposed project will build on the work done to adjust water sector legislation and will replicate successful adaptation practices in Lebap and Dashoguz target velayats.

152. The proposed project will also build on lessons and experiences from the *UNDP Central Asian Climate Risk Management Program* that assisted the five Central Asian countries in adjusting their national development processes to address risks posed by current climate variability and future climate change. In Turkmenistan, the project sought to improve the enabling environment by mainstreaming climate risk management concepts into national policies and regulations. It also sought to increase national capacities to develop climate risk information at the national and local levels, and proposed changes to institutional mandates. At the same time, the project encouraged the effective use of climate risk information in rural communities by developing pilot initiatives. For example, the project promoted

linkages between Turkmen hyromet to support the development of information products for vulnerable rural agricultural communities.

153. The project will strongly coordinate and share experiences with the recently approved UNDP and GEF-supported “*Energy Efficiency and Renewable Energy for Sustainable Water Management in Turkmenistan*”. The above-mentioned project intends to introduce new technologies in irrigated agriculture water conservation, and sustainable land management, scale-up investment in new and expanded efficient water-management infrastructure and deliver local and region-specific planning and educational outreach for IWRM and SLM among farmers and water-sector designers and managers. The proposed project will work closely with the relevant agencies involved in water and agriculture management to build synergies, share lessons and ensure complementarity between the two projects

154. The project will also cooperate with the GEF-financed project Regional Integrated Natural Resources Management in Drought-prone and Salt-affected Agricultural Production Systems in Central Asia and Turkey. This regional project is extremely relevant to the SCCF project and provides an opportunity for collaboration and shared learning in terms of knowledge of costs of land degradation and benefits of integrated natural resources management; approaches to integration of resilience into policy and legal frameworks; approaches to management of drought risks in pastoral and irrigated and rain-fed lands; technologies for management of salt affected landscapes, etc. This Project and the proposed SCCF are being overseen by the Ministry of Nature Protection, which makes sharing of information and experiences and collaboration easier. The SCCF project will also draw lessons from the completed GEF-financed project “Capacity Building and on-the-ground Investments for Integrated and Sustainable Land Management” (2007-2010), in particular those related to stakeholder consultation mechanisms, governance, replication and sustainability considerations, information management and policy and institutional lessons related to local level management of land resources.

155. The project will ensure coordination with the *UNDP-UNEP NAP Global Support Program* that helps in integrating medium- to long-term planning for adaptation to climate change. The program ensures that the NAPs are integrated within or aligned with the current development planning and budgeting processes within each country to ensure that a successful NAP is not a stand-alone document, but integrated into existing development and poverty reduction plans. Since, the NAP process is country-driven, continuous, participatory, progressive and iterative, this process enables countries to identify, finance and implement appropriate adaptation measures, and to balance sectoral and cross-sectoral priorities, at national, sub-national and local levels. Importantly, the medium- to long-term adaptation planning underpinning the NAPs are to be multi-stakeholder oriented, and based on and guided by the best available science, rigorous collection and analysis of appropriate data, and consideration of experiences and good practices within, and outside, countries. The learning and experience from the UNDP-UNEP NAP Global Support Program, including methodologies, technical support and consultations would benefit the Outcome 2 of the SCCF project.

156. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) implements a number of projects in Central Asia. Among these is the Transboundary Water Management in Central Asia Program, where together with the Ministry of Nature Protection, a pilot project on “Drainage Waters of Khankhowuz Irrigation System” is being implemented. This includes development and update of maps; annual cycle of hydro-ecological monitoring and capacity building. The project will draw lessons from this project. The project is relevant as it includes best practice examples for sustainable planning and management, involving national and local partners, along with other stakeholders. The capacity building efforts and diverse pilot projects with water management organizations provide lessons that the SCCF can build on in the design of training programs and revision of legislation of daikhan associations to enhance their role in water management and decision making. The pilot activities in rehabilitation of water infrastructure, introduction of water-efficient irrigation to the construction of a small hydropower plant in a remote area, creation of data bases and maps using GIS (Geographic Information Systems) are directly relevant to the SCCF project as well. Such systems would help in the improved availability and predictability of water, better functioning infrastructure and better planning for natural hazards.

157. At a broader national level, overall coordination of climate adaptation measures would be established through the institutional structures to be established under the auspices of the Ministry of Economy and Development for the implementation of NEPAAM. The coordination mechanism for implementation of NEPAAM would provide the platform to move towards a comprehensive government approach to climate change with targeted sector responsibilities for addressing climate risks. A high-level inter-ministerial climate change council (IMC), inter-ministerial technical working groups for adaptation and mitigation that will assist in promoting inter-sectoral approaches to planning, implementation and monitoring of climate actions, and a Secretariat to support the Ministry of Economy and Development to support the work of the IMC and support ministries to coordinate their actions.

## **2.10. SUSTAINABILITY**

158. Sustainability of action at provincial and local level:

Long-term sustainability will be sought through a broad capacity building effort designed to create a critical mass of efficient practitioners at the etrap and national level, and among all agricultural practitioners. Training will be a key component of this program, and in particular with an emphasis on learning by doing. The capacity building process will integrate participatory elements to fully address issues that affect the long-term sustainability of natural resources and the welfare of local agricultural and livestock communities (continuous training and on-farm demonstrations to consolidate adoption of adaptation technologies and encourage replication). In addition, participating farmers and pastoralists will contribute towards the cost of investments (mostly in the form of labor) that would build ownership to project-supported adaptation measures and ensure some level of commitment to sustain these investments. Daikhan and livestock associations are already the main field organizations engaged in agricultural and livestock production in the country and it is anticipated that the project-supported participatory adaptation planning process, strengthened roles and responsibilities envisaged through legislative changes, capacity building and training and strengthening of linkages with local-level financial institutions would provide an adequate incentive to galvanize their support towards maintaining, continuing and sustaining the adaptation efforts. Further, the strengthening of etrap and velayat adaptation planning efforts and integration of climate resilient measures in local level planning and budgeting and sectoral planning and budgetary processes will provide further options for sustaining and expanding adaptation measures in agriculture. In addition, Output 2.4 will support the review and revision of the laws on daikhan associations to enhance their mandates to cover management, operation and maintenance of irrigation networks as well as water distribution. This would entail ensuring some level of economic independence to daikhan associations and expanding their role to implement inherent functions of Water Users Associations, without drastic alteration of their current responsibilities of agricultural production. This will also contribute to ensure the sustainability and maintenance of water systems and water distribution at the field level.

159. Institutional and financial sustainability:

The project through Outcome 3 will support operationalization and implementation of the adopted NEPAAM and with build national systems, capacities and instruments for on-going iterative adaptation planning and reporting. The direct linkages with NEPAAM will provide a long-term institutional mechanism for mainstreaming climate risk adaptation measures into key sector strategies, programs and budgetary instruments and become the main government vehicle for managing climate risks and improve resilience to climate change. The sustainability of the project is also guaranteed by the full involvement and empowerment of key government actors throughout the multi-stakeholder processes in the various components of NEPAAM. Farmers' organizations (e.g. water users organizations and daikhan associations) will be the main targets of the awareness raising and capacity building program, and they will be the main beneficiaries of the pilot adaptation improvement component and the provision of new technologies. In

addition, partnerships with these organizations will be further strengthened by changes in key legislation that will facilitate their increasing role in decision-making on investments in climate-resilient technologies, and the production and processing of agricultural and livestock products. The promotion of performance-based grant financing to daikhan associations for adaptation investments based on transparent criteria would further ensure the sustainability of investments.

## **2.11. REPLICABILITY**

160. Replicability will be ensured through the dissemination of lessons learnt in the pilot etrap sites and demonstration, and the locally adapted efficient irrigation technology and conservation agriculture management systems adopted by the beneficiaries in the pilot daikhan and livestock associations. The provision of adequate technologies and equipment that is adapted to the local context will also contribute to replicability. Output 1.5 is specifically designed to secure replication and scaling-up of successful adaptation measures. In addition, sustainability and replicability will be further achieved through sectoral policy and legislation frameworks that are conducive to the replication and dissemination of new experiences and achievements (under the Outcome 2 of the project). The project will engage in a policy dialogue, and with work closely with all concerned decision makers and branches of the administration in order to reach the desired policy targets. Climate-proof irrigation infrastructures and landscape restoration will contribute to reduce climate change related risks and improve environmental services needed for sustainable agriculture and livestock production. Furthermore, the economic use of alternative income and livelihood operations increase economic opportunities for smallholders, and especially for women, and serve as a learning experience for diversification of livelihoods in a challenging climate environment, that can be further replicated elsewhere.

161. The SCCF project addresses the adaptation priorities identified in the NEPAAM reports, in terms of awareness raising, capacity building, adaptation technologies, field implementation measures and mainstreaming adaptation needs into sectoral policies, namely agriculture and water. The results of the pilot adaptation actions will be widely disseminated within and outside the project area, and beyond the scope of the project. The project will be linked to ongoing national, regional and global programs to ensure exchanges and dissemination of information at a wider scale using the UNDP website, UNFCCC, GEF and other platforms for experience sharing.

162. The replication potential of the project's adaptation practices amplify the adaptation benefit. The project's work of modifying the agricultural and water sector plans and policies specifically for climate change adaptation will provide guidance for replication and serve as a model for developing or improving sector planning and other relevant legislation in other countries. With water becoming scarce and water demands rising due to climate change across the larger region, greater reliance on water efficiency will be necessary. The IWRM approach to be supported in this project can serve as model in many parts of the broader region with the comparable conditions. The project introduces participatory preparation of agro-ecological climate risk mapping that can be replicated to any area that is affected by increasing climate risks.

163. The project is seeking to promote the use of innovative financial instruments for fund-transfer to intended beneficiaries through collaboration with the Daikhanbank for expansion of the preferential credit lines to farmer associations, daikhan farms, landowners and other land users in the pilot areas for supporting climate resilient livelihoods in agriculture and livestock production, including water saving improvements, land development and levelling, agriculture and pasture improvements, etc. The learning and experience from this effort will help move the preferential credit facility for resilient agricultural technologies and water beyond the pilot sites to enable its replication elsewhere in the country.

## **2.12. INNOVATION**

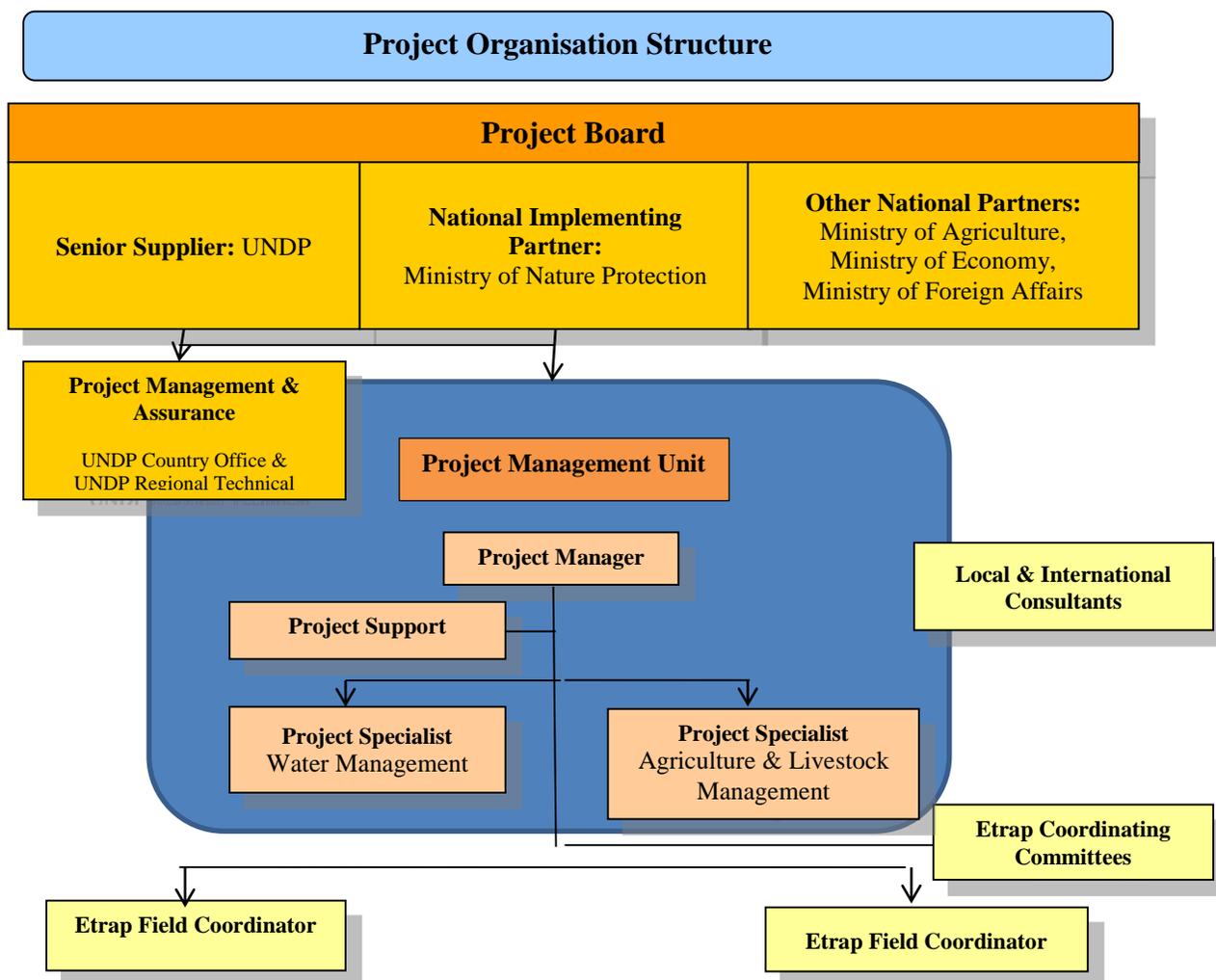
164. The project seeks to support innovation in the project through the testing, demonstration and replication of adaptation practices in the following areas: (i) participatory planning processes that integrates adaptation into agricultural and water investments at the local level; (ii) integration of adaptation approaches at the sectoral policy level in agriculture and waters sectors; (iii) mainstreaming adaptation into the national planning and budget allocation process; (iv) technological innovations for efficient water use, soil and water conservation and adaptive agricultural practices and crop practices; and (v) enhanced responsibilities for water management at the daikhan association level. The innovative measures are the following: (i) Participatory adaptation planning at local level: Outcome 1 seeks to develop an informed and active community which can collaborate with regional organizations responsible for water, agriculture and livestock management and be fully engaged in introducing and developing community based planning for land, water, agriculture and animal husbandry that actively integrates climate risk management systems. An innovative, bottom-up local-level participatory community planning process will be established that complements existing planning processes at the local level. The first step (Output 1.1) would seek to allow farmers to better understand the climate and environmental related issues and options for their adaptation and mitigation through a bio-physical and socio-economic resource mapping exercise within the pilot daikhan associations and livestock farms. The assessment of vulnerability and local adaptive capacities within the pilot daikhan associations and livestock farms (cattle ranches) will build on the participatory resource mapping exercise. Output 1.2 would entail the involvement of the farmers in a Participatory Gender-Differentiated Village Adaptation Action Planning exercise to define community agriculture, livestock and water management and climate adaptation investments. The Participatory Adaptation Management Plans developed with the involvement of the communities will serve as the basis for funding activities under the project. (ii) Sectoral planning: Outcome 2 will be innovative in encouraging a paradigm shift to a climate adaptation approach in the water and agriculture sectors and support the development of sectoral adaptation plans in the agriculture and water sectors that would help integrate climate adaptation measures into sectoral programs, plans and budgets. It would also help municipality staff in the pilot areas to identify linkages between climate change and its impacts on local level agricultural productive, livelihoods and the economy as the first step towards trying to mainstream climate adaptation into etrap and velayat level planning and budgetary processes, identify tools and methodology to integrate climate adaptation actions that could be applied in the local planning and budgeting context. (iii) National level adaptation planning: Outcome 3 will support institutional structures and capacity for inter-sectoral coordination and governance, mainstreaming planning, financing and monitoring, reporting and verification of climate actions of adaptation measures and their effectiveness at the national level. It would also support creation of a mechanism for monitoring, reporting and verification of implementation of adaptation measures. This is an innovative approach to broader national collaboration in adaptation planning, monitoring and budgeting. (iv) Technological innovations: Some solutions for water management and efficiency and agricultural crop productivity are well understood among specialists in Turkmenistan. Other technical solutions are expected to be new. The project is expected to introduce new engineering design for water efficiency use and soil moisture improvements, crop diseases control, etc. that could be adapted and then replicated widely, and (v) Water management associations: The project will support the enhancement of the mandates of the daikhan associations (Output 2.4) to cover management, operation and maintenance of irrigation networks as well as water distribution. This is an approach to provide some level of economic independence to the daikhan associations and expand their role to implement inherent functions of water use and management, without drastic alteration of their current responsibilities of agricultural production.

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### III. STAKEHOLDER INVOLVEMENT PLAN

Stakeholder involvement plan is presented in Annex 9.4.

## IV. MANAGEMENT ARRANGEMENTS



165. The project will be carried out under a **National Implementation Modality (NIM)**. Following consultations on the project implementation UNDP and the Government agreed that the UNDP country office will provide support services to the project at the request of the National Implementing Partner. These support services may include assistance with reporting requirements, procurement and direct payments (see Annex 9.7). In providing such support services, the UNDP country office shall ensure that the capacity of the Government-designated institution is strengthened.

166. **National Implementing Partner:** As the national implementing partner (NIP), the **Ministry of Nature Protection of Turkmenistan** will oversee all aspects of project implementation. This role is consistent with MNP's role as the national agency responsible for environmental protection and use of natural resources in Turkmenistan, in defining overall policy directions and responsibility for the protection of ecosystems, protection of surface and underground water resources and monitoring the environment and natural resources, and climate monitoring. MNP is accountable to the government and UNDP for ensuring (1) the substantive quality of the project; (2) the effective use of both national and UNDP resources allocated to it; (3) the availability and timeliness of national contributions to support project implementation; and (4) the proper coordination among all project stakeholders, particularly national parties.

167. Overall governance of the project will be carried out by the **Project Board**, which will include MNP, Ministries of Agriculture, Water, Economy, and UNDP. The Project Board may invite other agencies to join as members, with the roster to be definitively set and approved no later than the project's inception period. The National Project Coordinator (NPC) will serve as Chair of the Project Board, with assistance from UNDP in organizing and running all meetings and other exchanges of information. Meetings of the Project Board will take place at least once annually in time for approval of the following year's Annual Work Plan. Additional meetings may be called as needed by the NPC.

168. **The Project Management Unit (PMU)** will be established in MNP. It will comprise of a National Project Manager (NPM), Project Administrative Officer (PAO), Project Finance and Human Resources specialist and other technical and administrative staff as relevant. The PMU, in collaboration with the MNP will have overall management and administrative responsibility for facilitating stakeholder involvement and ensuring increased veloyet and etrap level ownership of the project. The PMU staff will be located in Ashgabat to ensure coordination among key stakeholders at the national level and with Velayet administration during the project period. It will also ensure close collaboration with the institutional structures established under the auspices of the Ministry of Economy and Development for implementation of the NEPAAM. In addition, the PMU will also recruit two field coordinators, one for each pilot etrap who will facilitate and coordinate the planning and implementation of the adaptation programs of the pilot farmer and livestock associations, as relevant.

169. **Coordination Committee at etrap level:** A committee of stakeholders would be constituted at the etrap level sector specialists in Agriculture, Water and Livestock working in the pilot areas as well as representatives of the farmer and livestock associations in the pilot areas. The committee will meet bi-monthly to review the progress, identify problems in achieving the development outcomes and milestones, facilitate coordination across sector agencies and programs, help resolve conflicts over resource use and develop future plans for the relevant pilot sites landscape. The minutes of the meeting would be recorded.

170. **Quarterly Meetings with key stakeholders:** On quarterly basis, Project Management Unit will organize meetings with the main farmer and livestock associations with the aim of discussing achievements, challenges faced, corrective steps taken and future corrective actions needed for the implementation of planned activities. It would be ensured that the groups of farmers have the participation of women and vulnerable persons. Result based management and reporting would consider inputs taken from stakeholders during such meetings. Copies of the annual and quarterly progress reports and work plans would be circulated to main stakeholders to inform them about project implementation and planning and outcomes.

171. **UNDP** will provide quality assurance, in accordance with requirements of the SCCF and UNDP Policies and Procedures. Most of UNDP's work for the project will be based in its Country Office (CO) in Ashgabat, under the supervision of the Programme Specialist for Environment and Energy and other senior programme staff, including the UNDP Resident Representative and Deputy Resident Representative as warranted. UNDP will also engage contractors to carry out Midterm and Final Evaluations of the project. The UNDP Regional Technical Advisor, based in the UNDP Istanbul Regional Hub, will provide technical support in terms of project cycle management and oversight support, to ensure consistency with expectations from UNDP and SCCF.

172. Day-to-day operations of the project will be carried out by full-time project staff, headed by the **Project Manager**. The Project Manager will be responsible for carrying out the activities of the project as set forth in this Project Document and any revisions approved by the Project Board. At least one month in advance of the start of each project year, the Project Manager will prepare Annual Work Plans. These plans will be reviewed and approved by the Project Board and thereafter will be used by project staff as tools for planning, implementing, and tracking work flows. In addition, for each meeting of the Project Board, the Project Manager will prepare a full status report on project activity, including recent accomplishments, risks, and proposed mitigation measures. The Project Manager will also be responsible for preparing all required annual reports for UNDP and GEF.

173. The Project Manager will directly supervise two Project Specialists. The Project Specialists will be responsible for the implementation of the technical, policy-related, and educational aspects of all project components, including pilot projects. It is expected that the specialists will include one person with strong technical expertise in efficient water-management systems, and one with expertise in agriculture, pasture and land management. Because of the components are all so interdisciplinary and often deeply intertwined, it is expected that both specialists will work across all Components, in close mutual support of each other. In addition, the project will recruit field coordinators for the two pilot etraps. The field coordinators will report directly to the Project Manager and will work closely with pilot farmer and livestock associations and etrap administration to implement climate resilient measures. Etrap level coordination committees consisting of representative of pilot farmer and livestock associations, sector representatives of etrap municipality and local technical experts will guide and advise the implementation of pilot activities, facilitate coordination among the different socio-economic development programs, monitor and oversee progress and facilitate the dissemination of best practices and lessons to other etraps within the two pilot velayats. The Terms of Reference for these positions and the overall staff structure may be revised based on project needs and on availability of suitably-skilled candidates.

174. Apart from the standard project implementation support and oversight provided by UNDP to the implementation of the SCCF project, UNDP will provide specific support services at the request of the Government of Turkmenistan. The services are charged on an item by item basis against UNDP's Universal Price List (UPL) according to the form of a Letter of Agreement between the Government and UNDP. Refer to Annex 9.7 for the list of support services envisaged as well as the Letter of Agreement to be signed before the inception of the project.

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## V. MONITORING AND EVALUATION FRAMEWORK

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

### **Project start:**

176. A Project Inception Workshop will be held within the first 3 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 program advisors as well as other stakeholders. The first disbursement of project funding will be made within 1-2 months of project signature. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan. The Inception Workshop should address a number of key issues including:

- a) Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and MNP 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.
- b) 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.
- c) 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.
- d) Discuss financial reporting procedures and obligations, and arrangements for annual audit.
- e) 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.

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

177. Quarterly:

- 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 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:**

178. Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and SCCF reporting requirements.

The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
- Project outputs delivered per project outcome (annual).
- Lesson learned/good practice.
- AWP and other expenditure reports
- Risk and adaptive management
- ATLAS QPR
- Portfolio level indicators (i.e. GEF focal area tracking tools) are used by most focal areas on an annual basis as well.

179. Periodic Monitoring through site visits:

UNDP CO and the UNDP IRH 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 IRH and will be circulated no less than one month after the visit to the project team and Project Board members.

180. Mid-term of project cycle:

The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation (insert date). 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; 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-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the [UNDP Evaluation Office Evaluation Resource Center \(ERC\)](#). The relevant Tracking Tool for Climate Change Adaptation Projects will also be completed during the mid-term evaluation cycle.

181. End of Project:

An independent Final Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and GEF guidance. 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-GEF. The 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 \(ERC\)](#).

182. The relevant Adaptation Tracking Tool for Climate Change Adaptation Projects will also be completed during the final evaluation. During the last three months, the project team will prepare the Project Terminal 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.

183. Learning and knowledge sharing:  
 Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums.  
 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, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects.  
 Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

184. Communications and visibility requirements:  
 Full compliance is required with the SCCF and 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>. Amongst other things, these guidelines describe when and how the UNDP logo needs to be used, as well as how the logos of donors to UNDP projects needs to be used. For the avoidance of any doubt, when logo use is required, the UNDP logo needs to be used alongside the GEF logo. The GEF logo can be accessed at: [http://www.thegef.org/gef/GEF\\_logo](http://www.thegef.org/gef/GEF_logo). The UNDP logo can be accessed at <http://intra.undp.org/coa/branding.shtml>. Full compliance is also required with the GEF’s Communication and Visibility Guidelines (the “GEF Guidelines”). The GEF Guidelines can be accessed at: [http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08 Branding the GEF%20final 0.pdf](http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08_Branding_the_GEF%20final_0.pdf). Amongst other things, the GEF Guidelines describe when and how the GEF logo needs to be used in project publications, vehicles, supplies and other project equipment. The GEF Guidelines also describe other GEF promotional requirements regarding press releases, press conferences, press visits, visits by Government officials, productions and other promotional items. Where other agencies and project partners have provided support through co-financing, their branding policies and requirements should be similarly applied.

### Monitoring and Evaluation Workplan and Budget

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team staff time</i>	Time frame
Inception Workshop and Report	<ul style="list-style-type: none"> <li>▪ Project Manager</li> <li>▪ UNDP CO, UNDP-GEF</li> </ul>	Indicative cost: 6,000	Within first two months of project start up
Measurement of Means of Verification of project results.	<ul style="list-style-type: none"> <li>▪ UNDP-GEF RTA/ Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members.</li> </ul>	To be finalized in Inception Phase and Workshop. Indicative cost: 12,000 (cost built into PMU budget)	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on	<ul style="list-style-type: none"> <li>▪ Oversight by Project Manager</li> <li>▪ Project team</li> </ul>	To be determined as part of the Annual Work Plan’s preparation.	Annually prior to ARR/PIR and to the definition of annual

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team staff time</i>	Time frame
<i>output and implementation</i>		Indicative cost: 12,000 (cost built into PMU budget)	work plans
ARR/PIR	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ UNDP RTA</li> <li>▪ UNDP EEG</li> </ul>	None	Annually
Periodic status/ progress reports	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> </ul>	None	Quarterly
Mid-term Evaluation	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ UNDP RCU</li> <li>▪ External Consultants (i.e. evaluation team)</li> </ul>	Indicative cost: 35,000	At the mid-point of project implementation.
Final Evaluation	<ul style="list-style-type: none"> <li>▪ Project manager and team,</li> <li>▪ UNDP CO</li> <li>▪ UNDP RCU</li> <li>▪ External Consultants (evaluation team)</li> </ul>	Indicative cost : 35,000	At least three months before the end of project implementation
Project Terminal Report	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ local consultant</li> </ul>	0	At least three months before the end of the project
Audit	<ul style="list-style-type: none"> <li>▪ UNDP CO</li> <li>▪ Project manager and team</li> </ul>	Indicative cost per year: 3,000 (total 15,000)	Yearly
Visits to field sites	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ Government representatives</li> </ul>	10,000	Yearly
<b>TOTAL indicative COST</b> Excluding project team staff time and UNDP staff and travel expenses		US\$ Approx: 125,000 (+/- 5% of total budget)	

## VI. LEGAL CONTEXT

185. This document together with the CPAP signed by the Government of Turkmenistan and UNDP which is incorporated by reference constitute together a Project Document as referred to in the SBAA and all CPAP provisions apply to this document.

186. Consistent with the Article III of the Standard Basic Assistance Agreement, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner.

187. The implementing partner shall:

- a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
- b) assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

188. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

189. The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

190. The UNDP Resident Representative in Turkmenistan is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by the UNDP Regional Coordination Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:

- Revision of, or addition to, any of the Annexes to the Project Document;
- Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
- Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
- Inclusion of additional Annexes and attachments only as set out here in this Project Document.

191. Audit Clause: The Audit will be conducted in accordance with UNDP Financial Regulations and Rules and applicable audit policies on UNDP projects

## VII. STRATEGIC RESULTS FRAMEWORK (SRF)

<p><b>This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD: Outcome #6:</b> The national policy, legislative and institutional frameworks are responsive to climate change issues by promoting climate resilience, adaptation, climate risk management and disaster risk reduction measures at sector and community levels.</p>					
<p><b>Country Programme Outcome Indicators:</b></p> <p><b>Indicator 6.1.1:</b> Share of sustainable, climate change land/water/ biodiversity/coastal management innovations and safe waste disposal piloted as part of NEPAAM  <b>Baseline:</b> 0 implemented <b>Target:</b> 10% of total such NEPAAM activities on adaptation by 2020;  <b>MoV:</b> NEPAAM reports; project reports</p> <p><b>Indicator 6.1.2:</b> Number of communities benefitting from adaptation measures  <b>Baseline:</b> Three communities in Ahal and Mary provinces  <b>MoV:</b> Programme reports</p> <p><b>Indicator 6.1.3:</b> Number of new research products produced on climate change adaptation, climate risk management /biodiversity/water and coastal management used by policy makers and local actors involved in implementation  <b>Baseline:</b> 0 <b>Target:</b> Five research publications by 2020;  <b>MoV:</b> National institute, UNDP, other partners</p> <p><b>Indicator 6.2.1:</b> Extent to which targeted institutional capacities at subnational level are strengthened in adaptation/CRM planning and implementation, to promote increased local livelihoods through sustainable use of water, land, biodiversity and coastal areas  <b>Baseline:</b> To be established in 2016  <b>MoV:</b> Project reports.</p>					
<p><b>Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one):</b> 3. Promote climate change adaptation</p>					
<p><b>Applicable GEF Strategic Objective and Program:</b> CCA 1, 2 and 3</p>					
<p><b>Applicable GEF Expected Outcomes:</b></p> <p><b>CCA-1:</b> 1.1 <i>Vulnerability of physical assets and natural systems reduced</i>  <b>CCA-1:</b> 1.3 <i>Climate resilient technologies and practices adopted and scaled up</i>  <b>CCA-2:</b> 2.4 <i>Institutional and technical capacities and human skills strengthened to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures</i>  <b>CCA-3:</b> 3.2 <i>Policies, plans and associated processes developed and strengthened to identify, prioritize and integrate adaptation strategies and measures</i></p>					
<p><b>Applicable GEF Outcome Indicators:</b></p> <p><b>CCA-1:</b>  <b>Indicator 1:</b> <i>Number of direct beneficiaries (percentage of whom are female)</i>  <b>Indicator 2:</b> <i>Type and extent of assets strengthened and/or better managed to withstand the effects of climate change (ha of cropland/rangeland)</i>  <b>Indicator 4:</b> <i>Extent of adoption of climate-resilient technology/practice (measured in number or percentage of users, of whom are female) or geographical area</i></p> <p><b>CCA-2:</b>  <b>Indicator 9:</b> <i>Number of people (percentage of whom are female) trained to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures</i></p> <p><b>CCA-3</b>  <b>Indicator 12:</b> <i>Number of regional, national and sector-wide policies, plans and processes developed and strengthened to identify, prioritize and integrate adaptation strategies and measures</i></p>					
	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
<b>Project Objective<sup>18</sup></b> <i>Supporting climate resilient livelihoods</i>	Number of hectares of agricultural land under more resilient management utilizing	Some of the coping mechanisms employed by farmers and pastoralists in the pilot etraps are	At least 20,000 ha of agricultural lands and 500,000 ha of natural pasture lands receiving reliable irrigation	- Baseline and impact surveys - Interviews/focus groups - Studies and surveys - M&E reports	<u>Assumptions:</u> - Local farmers and other key actors are willing to become involved in

<sup>18</sup> Objective (Atlas output) monitored quarterly ERBM and annually in APR/PIR

<p><i>in agricultural communities in Leahap and Dashoguz velayats in Turkmenistan</i></p> <p><b>(equivalent to output in ATLAS)</b></p>	<p>climate resilient technologies, efficient irrigation management and improved crop production systems (CCA TT Indicator 2)</p>	<p>increasingly strained by mounting water deficits. A combination of innovative and traditional measures for climate adaptation has not been systematically utilized (beyond individual fragmented pilots) to improve water capture, optimize water demand and improve water efficiency, as well as improve soil fertility and soil moisture regimes and ensure less water consumptive agricultural practices Baseline value: 0</p>	<p>water supply from climate-proof rehabilitated and properly maintained irrigation schemes and/or managed under improved soil fertility, soil moisture regimes or crop and pasture production systems</p>	<p>- Etrap and Velayet data</p>	<p>climate adaptation - Decision-making on planning of climate adaptation measures by farmer associations enhanced</p> <p><u>Risks:</u> - The cost of adaptation measures are higher than anticipated negating efforts to address risks - Unexpected and extreme weather events during project implementation period make adaptation less likely to be successful on the short-term and there is no appetite for investment for more longer-term solutions</p>
	<p>Number and percentage of targeted farmers/ households adopting improved on farm soil and water conditions through climate-resilient efficient irrigation technologies and improved crop production systems that enhance productivity and water efficiency (CCA TT Indicator 4)</p>	<p>Agricultural and pastoral communities not effectively applying irrigation and agricultural technologies that enhance resilience to climate risks Baseline value: 0</p>	<p>Climate-resilient agriculture and livestock production practices are adopted by at least 3,000 (or at least 30%) targeted farmers/households of which at least 30% are women/women-headed households.</p>	<p>- Baseline and impact surveys - Interviews/focus groups - Studies and surveys - M&amp;E reports - Etrap and Velayet data</p>	<p><u>Assumptions:</u> - Local farmers and other key actors recognize the benefits of water efficiency improvements and good agronomic practices</p> <p><u>Risks:</u> -Management of land and water for collective adaptation benefit might impinge on individual farmers access to current resource use levels, with misunderstanding that needs to be managed</p>
	<p>Number of direct beneficiaries (percentage of whom are female) (CCA TT Indicator 1)</p>	<p>Baseline value: 0</p>	<p>40,000 (including 50% women)</p>	<p>- Baseline and impact surveys - Interviews/focus groups - Studies and surveys - M&amp;E reports - Etrap and Velayet data</p>	<p><u>Assumptions:</u> - Local farmers and other key actors are willing to become involved in climate adaptation</p>

					<p>- Decision-making on planning of climate adaptation measures by farmer associations enhanced</p> <p><u>Risks:</u></p> <ul style="list-style-type: none"> <li>- The cost of adaptation measures are higher than anticipated negating efforts to address risks</li> <li>- Unexpected and extreme weather events during project implementation period make adaptation less likely to be successful on the short-term and there is no appetite for investment for more longer-term solutions</li> </ul>
<p><b>Outcome 1</b> <i>Climate related socio-economic outcomes improved in target agricultural communities in Lepab and Dashoguz velayats through the implementation of community based adaptation solutions</i></p>	<p>1.1. Number of targeted communities adopting participatory gender sensitive adaptation plans</p>	<p>Coping mechanisms currently not conceived within a common planning platform at the farmer association level and with a committed budget. Consequently most current efforts are individualistic, uncoordinated and not very effective Baseline value: 0</p>	<p>At least eight farmer and/or livestock associations adaptation plans designed and budgeted through the project and linked to collective community based actions on water savings and efficiency improvements as well as soil fertility and moisture improvements as follows: (i) four adaptation plans by MTR; and (ii) eight adaptation plans by end of project</p>	<ul style="list-style-type: none"> <li>- PMU reports</li> <li>- M&amp;E reports</li> <li>- Mid-term and final consultant evaluation reports</li> </ul>	<p><u>Assumptions:</u></p> <ul style="list-style-type: none"> <li>-The GoT and Velayet and Etrap Municipalities actively promoting and supporting climate change adaptation principles, planning and practice</li> <li>-The GoT and Velayat and Etrap Municipalities maintain suitable incentives to ensure that changes in water and land use practices are effective</li> </ul> <p><u>Risks:</u></p> <ul style="list-style-type: none"> <li>- Failure to effectively engage local farmers and other stakeholders leads to conflict and inaction at the ground level</li> </ul>
	<p>1.2 Number and percentage of farmers</p>	<p>Annual irrigation norms vary by soil type. For</p>	<p>At least 3,000 (or 30%) of targeted agricultural farmers and</p>	<ul style="list-style-type: none"> <li>- Baseline and impact surveys</li> <li>- Interviews/focus groups</li> </ul>	<p><u>Assumptions:</u></p> <ul style="list-style-type: none"> <li>- Extension services</li> </ul>

	(disaggregated by gender) reporting improved crop production systems and livelihoods	medium and heavy-loam soils, norms are 6,700 m <sup>3</sup> /ha for cotton; 4,500 m <sup>3</sup> /ha for winter wheat; and 29,000 m <sup>3</sup> /ha for rice. Baseline value: 0	pastoralists (30% of which are women) reporting improved production of major crops and natural pasture	- Studies and surveys - M&E reports - Etrap and Velayet data	available to farmers for improved crop production facilitation -Robust monitoring system in place to capture changes in income and production  <u>Risks:</u> -Extraneous events (climate and other) undermine effectiveness of adaptive measures
	1.3. Percentage additional income earned by participating households from alternative climate-resilient livelihoods	Farmer associations and farmers constrained by lack of opportunities (beyond the growing of state mandated crops that have high demands) to broaden their livelihood base to cope with climate risks Baseline value: 0	At least 50% of the households supported through alternative climate-resilient livelihood opportunities reporting an increase of >15% of real net household farm income, of which at least 20% are women-headed households	- Baseline and impact surveys - Interviews/focus groups - Studies and surveys - M&E reports - Etrap and Velayet data	<u>Assumptions:</u> -Farmers are willing and committed to trying new and diverse methods for income generation -Financial institutions committed to financing risks associated with diversification  <u>Risks:</u> - Elite capture at the local level would prevent most vulnerable farmers from benefiting from the project - Engaging local farmers more robustly in decision-making contains some risks, given that centralized approaches are still the norm in Turkmenistan
<b>Outcome 2:</b> <i>Adaptation mainstreamed in agricultural and water sector development strategy and policy</i>	2.1 Number of staff (national, velayat and etrap levels) and farmers reporting good knowledge of climate change risk reduction measures in irrigated agriculture and soil and water management	Crop production and water use at farmer level not using climate risk management approaches Baseline value: 0	At least 3,000 (30% women) of agricultural and pastoral farmers and 100 government staff (20 % women) are trained in on-the-ground application of climate adaptation-related technologies as follows: (i) 1,000 farmers (30% women) and 50 government staff (20%	Ministry of Nature Protection and PMU reports  Training completion reports  Interviews with farmers and farmer associations	<u>Assumptions:</u> - Government staff, Farmers and pastoralists willingness to engage in planning and management of adaptation actions -Farmers and pastoralists recognize benefits of

	(CCA TT Indicator 9)		women) by MTR; and (ii) 3,000 farmers (30% women) and 100 government staff (20% women) by end of project		adaptive planning - Training design simple and easy to apply in the field  <u>Risks:</u> - Failure of national and Velayet municipalities to effectively engage local farmers in adaptive management decision-making --Staff turnover may constraint improvement in capacity development
	2.2 Number of articles included in the Water Code and Laws “On daikhan farm” and Environmental Code supporting non-structural climate change adaptation practices and their implementation	National water code and daikhan laws adopted, but no regulations or other sub-legislative acts for IWRM, roles and capacities of farmer and water use associations	A package of amendments to the legislation with economic instruments and support for water delivery and local level decision making under increased communal control (refer Output 2.4 for details of proposed legislative measures)	Ministry of Water Economy Documents and Websites  Legislative notices	<u>Assumptions:</u> - Water management authorities willing and committed to adaptive planning and management  <u>Risks:</u> -National government less conducive to change existing narrowly focused water policies and priorities
	2.3 The number of approved sector strategies and plans in the water and agriculture domain that include climate change adaptation considerations and budgetary allocations (CCA TT Indicator 12)	Water and agriculture policies remain outdated as well as poorly enforced due to underdeveloped regulations and subsidiary legislation. Tools and methods are missing to identify the most cost-effective adaptation options in the water and agriculture policies. Baseline value: 0	At least two sector plans (agriculture and water) integrate climate adaptation considerations and budgetary allocations	Ministry of Agriculture and Ministry of Water Economy Documents and Websites	<u>Assumptions:</u> -There is a willingness in national, regional and local administrations to integrate climate change risks into water and agricultural management and budgeting systems  <u>Risks:</u> - Government unwilling to adjust budget planning to integrate costs of climate adaptation would constrain its effectiveness
<b>Outcome 3</b> <i>National Capacity</i>	3.1 Functional iterative national monitoring,	Absence of a coordination structure for inter-sectoral	National monitoring, reporting and verification system to	Ministry of Economy reports and websites, including	<u>Assumptions:</u> -GoT fully committed to

<i>for iterative national adaptation planning established</i>	reporting and verification system for adaptation planning and management operational	approach to climate change that balances respective priorities of different government agencies	measure changes in vulnerabilities from adaptation actions with functional procedures and rules in place	NEPAAM website	<p>implementation of NEPAAM measures and institutional structures and procedures</p> <p>-Capacity and technical support available for establishing MRV system</p> <p>-Sector ministries committed and actively participating in mainstreaming and action for climate risk management</p> <p><u>Risks</u></p> <p>-GoT unwilling to provide adequate budgetary resources and personnel for undertaking MRV</p>
	3.2 Number of agro-ecological zones with established climate change models of potential impacts, economic costs and benefits of adaptation actions	<p>Planning of regional development investments with little consideration of adaptation costs and benefits</p> <p>Baseline value: 0</p>	Five agro-ecological zones in the country models developed that integrate impacts, costs and adaptation actions	<p>Ministry of Nature Protection Reports and Websites</p> <p>Agro-ecological climate model reports</p>	<p><u>Assumptions:</u></p> <p>-GoT committed staff and resources for undertaking climate modelling of agro-ecological zones</p> <p><u>Risks:</u></p> <p>-Lack of adequate information to make qualified and quantified modelling for climate change</p>

## VIII. TOTAL BUDGET AND WORKPLAN

<b>Award ID:</b>	00092855		<b>Project ID(s):</b>	00097376								
<b>Award Title:</b>	Supporting climate resilient livelihoods in agricultural communities in drought-prone areas of Turkmenistan											
<b>Business Unit:</b>	TKM10 (UNDP Turkmenistan)											
<b>Project Title:</b>	Supporting climate resilient livelihoods in agricultural communities in drought-prone areas of Turkmenistan											
<b>PIMS no.</b>	5459											
<b>Implementing Partner (Executing Agency)</b>	Ministry of Nature Protection of Turkmenistan											
SCCF Outcome/Atlas Activity	Responsible Party (Implementing Agent)	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount (USD) Year 1	Amount (USD) Year 2	Amount (USD) Year 3	Amount (USD) Year 4	Amount (USD) Year 5	Total (USD)	Budget Note (explanation below)
<b>COMPONENT 1:</b> <i>Improved climate related socio-economic outcomes in the targeted agricultural communities in Lebap and Dashoguz velayats through the implementation of community-based adaptation solutions</i>	MNP	62180	SCCF	71200	International consultants	45,000	43,000	45,000	53,000	35,000	<b>221,000</b>	<b>1, 15</b>
				71300	Local consultants	30,000	32,000	35,785	22,000	17,000	<b>136,785</b>	<b>2</b>
				71400	Contractual service-individual (PM)	8,000	8,000	8,000	8,000	8,000	<b>40,000</b>	<b>3</b>
				71600	Travel	22,000	25,000	24,000	21,000	18,000	<b>110,000</b>	<b>4</b>
				71400	Contractual services-individual	12,000	12,000	12,000	12,000	10,000	<b>58,000</b>	<b>3</b>
				72100	Contractual services – companies	25,000	28,000	30,000	25,000	22,000	<b>130,000</b>	<b>5</b>
				72200	Equipment	11,000	5,000	5,000	5,000	4,000	<b>30,000</b>	<b>4, 6</b>
				72600	Performance-based Grants	125,000	250,000	250,000	150,000	125,000	<b>900,000</b>	<b>16</b>
				74200	Audio Visual&Print Prod Costs	8,000	8,000	9,000	10,000	9,000	<b>44,000</b>	<b>7</b>
				75700	Workshops and meetings	25,000	30,000	30,000	22,000	20,000	<b>127,000</b>	<b>8</b>
<b>TOTAL OUTCOME 1</b>						<b>311,000</b>	<b>441,000</b>	<b>448,785</b>	<b>328,000</b>	<b>268,000</b>	<b>1,796,785</b>	
<b>COMPONENT 2:</b> <i>Adaptation mainstreamed in agricultural and water sector development strategy and policy</i>	MNP	62180	SCCF	71200	International consultants	12,000	22,000	14,000	22,000	10,000	<b>80,000</b>	<b>1, 15</b>
				71300	Local consultants	8,000	10,000	10,000	10,000	6,000	<b>44,000</b>	<b>2</b>
				71400	Contractual service-individual (PM)	8,000	8,000	8,000	8,000	8,000	<b>40,000</b>	<b>3</b>
				71600	Travel	10,000	12,000	12,000	12,000	9,000	<b>55,000</b>	<b>4</b>
				71400	Contractual services-individual	12,000	12,000	12,000	12,000	12,000	<b>60,000</b>	<b>3</b>
				72200	Equipment	9,000	9,000	8,000	8,000	7,000	<b>41,000</b>	<b>4, 6</b>
				74200	Audio Visual&Print Prod Costs	2,000	3,000	3,000	2,000	2,000	<b>12,000</b>	<b>7, 11</b>

				75700	Workshops and meetings	35,000	36,000	42,000	38,000	30,000	<b>181,000</b>	<b>8</b>	
	<b>TOTAL OUTCOME 2</b>					<b>96,000</b>	<b>112,000</b>	<b>109,000</b>	<b>112,000</b>	<b>84,000</b>	<b>513,000</b>		
<b>COMPONENT 3:</b> <i>Strengthened national capacity for iterative climate change adaptation planning, implementation and monitoring</i>	MNP	62180	SCCF	71200	International consultants	25,000	33,440	35,000	30,000	25,000	<b>148,440</b>	<b>1, 15</b>	
				71300	Local consultants	15,000	23,000	20,000	18,000	18,000	<b>94,000</b>	<b>2</b>	
				71400	Contractual service-individual (PM)	7,560	7,560	7,560	7,560	7,560	<b>37,800</b>	<b>3</b>	
				71400	Contractual services-individual	12,000	12,000	12,000	12,000	12,000	<b>60,000</b>	<b>3</b>	
				71600	Travel	4,000	5,000	6,000	6,000	4,000	<b>25,000</b>	<b>4</b>	
				72200	Equipment	9,000	12,000	10,000	10,000	8,000	<b>49,000</b>	<b>4, 6</b>	
				72400	Communication & Audio Visual Equipment	8,000	17,000	20,000	10,000	5,000	<b>60,000</b>	<b>6, 11</b>	
				74200	Audio Visual&Print Prod Costs	10,000	15,000	22,258	20,000	20,000	<b>87,258</b>	<b>7</b>	
				75700	Workshops and meetings	6,000	7,000	8,000	6,000	3,000	<b>30,000</b>	<b>8</b>	
	<b>TOTAL OUTCOME 3</b>						<b>96,560</b>	<b>132,000</b>	<b>140,818</b>	<b>119,560</b>	<b>102,560</b>	<b>591,498</b>	
<b>Project Management</b>	MNP	62180	SCCF	71400	Contractual services-individual (Project Manager)	2,100	2,100	2,100	2,100	2,100	<b>10,500</b>	<b>3</b>	
				71400	Contractual services-individual (Project support staff)	3,000	4,000	5,000	5,000	3,000	<b>20,000</b>	<b>9</b>	
				71600	Travel	7,000	9,000	9,000	7,525	6,000	<b>38,525</b>	<b>4</b>	
				74200	Audio Visual&Print Prod Costs	3,159	6,000	3,000	4,000	2,000	<b>18,159</b>	<b>11</b>	
				74598	Direct Project Costs	12,880	12,000	12,000	10,000	11,000	<b>57,880</b>	<b>14</b>	
	<b>TOTAL OUTCOME 4</b>						<b>28,139</b>	<b>33,100</b>	<b>31,100</b>	<b>28,625</b>	<b>24,100</b>	<b>145,064</b>	
	MNP	04000	UNDP	71400	Contractual service-individual (Project Support staff)	9,000	9,000	9,000	9,000	8,000	<b>44,000</b>	<b>9</b>	
				71600	Travel	2,000	3,000	3,000	3,000	2,000	<b>13,000</b>	<b>4</b>	
				72200	Equipment and furniture	4,500	2,500	2,000	2,000	2,500	<b>13,500</b>	<b>10</b>	
				72400	Communications and audiovisual equipment	2,500	2,500	2,500	2,000	2,000	<b>11,500</b>	<b>11</b>	
72500				Office supplies	1,500	2,000	1,500	1,500	1,500	<b>8,000</b>			
73100				Rental of premises	1,000	1,000	1,000	1,000	1,000	<b>5,000</b>	<b>12</b>		
74500				Miscellaneous	1,000	1,000	1,000	1,000	1,000	<b>5,000</b>	<b>13</b>		
<b>UNDP TOTAL OUTCOME 4</b>						<b>21,500</b>	<b>21,000</b>	<b>20,000</b>	<b>19,500</b>	<b>18,000</b>	<b>100,000</b>		
					<b>TOTAL (SCCF)</b>	<b>531,957</b>	<b>718,100</b>	<b>729,445</b>	<b>590,185</b>	<b>476,660</b>	<b>3,046,347</b>		
					<b>TOTAL (SCCF + UNDP)</b>	<b>553,457</b>	<b>739,100</b>	<b>749,445</b>	<b>609,685</b>	<b>494,660</b>	<b>3,146,347</b>		

## Summary of Funds

Source of Funding	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Amount Year 5	Total
SCCF	531,957	718,100	729,445	590,185	476,660	3,046,347
UNDP (Cash)	21,500	21,000	20,000	19,500	18,000	100,000
UNDP (parallel financing)*	200,000	200,000	150,000	150,000	30,000	730,000
Government of Turkmenistan (cash)	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	20,000,000
<b>TOTAL (USD)</b>	<b>4,753,457</b>	<b>4,939,100</b>	<b>4,899,445</b>	<b>4,759,685</b>	<b>4,524,660</b>	<b>23,876,347</b>

\* UNDP will provide parallel co-financing for closely related work on supporting a Green Economy Strategy, which will emphasize water resource management. Parallel co-financing for this work is expected to total approximately \$730,000.

	Budget Notes
1	International consultants will be hired by competitive tender processes in accordance with UNDP rules. It is estimated here that consultant fees will average \$3500 per week. International consultants will be engaged to share best practices and to provide quality control in all three components. Specific assignments are expected with regard to several areas, including development of regional action plans; legal/regulatory reform; project evaluation; design and implementation of the irrigation demonstration polygon; and adaptation measure on water supply. Development of methodological framework for assessment of change of community vulnerabilities.
2	National consultants will also be hired to assist the project team in design and implementation of demonstration projects, (including innovative technics in irrigation, smart systems, water supply); education and outreach; development of regional action plans; legal/regulatory reform; and project evaluation. Fees will vary, but are estimated at \$300-400 per week. Local coordinators in pilot regions will be hired via Individual Contracts. Household surveys and measurement of perception of change in vulnerabilities and adaptive capacity.
3	The project will engage five full-time staff members under individual service contracts: a Project Manager and four Project Specialists (one in water management, one in land management, one mitigation specialist and one adaptation specialist). Salary and benefits are projected at \$2275 per month for the Project Manager and \$1301 per month for the Project Specialists. The Project Manager's time is apportioned in this budget as follows: 10 percent to project management; 30 percent to Component 1; 30 percent to Component 2; and 30 percent to Component 3. The Project Specialists' time are apportioned primarily to Components 1, 2, and 3. This line item also covers the time of support staff hired under UNDP individual service contracts, such as a driver (total \$750 per month).
4	International consultants will travel to Turkmenistan approximately once per year for major assignments. The home location of the consultant will have a very significant influence on travel costs. The budget also includes travel by the Project Manager and Project Specialists for all components in all project years, to monitor the extensive demonstration project activity throughout the country. Travel within Ashgabat and to two pilot regions in Dashoguz velayat and Lebap velayat will be carried out by a car and driver. Basing on the project needs it is planned to purchase one motor vehicle. Costs of use and servicing of UNDP-owned motor vehicles, may be shared with other projects. Justification and logging of all motor vehicle travel will be carried out according to UNDP rules. The amount for covering the costs of vehicle were distributed among components 1, 2 and 3, BL 72200.
5	Contracted companies may be hired in Turkmenistan. Their work will be largely similar to that of individual national consultants, but administrative procedures for hiring may differ superficially. Depending on availability of suitable candidates, it can be expected that funds budgeted for national consultants might be used instead for contracted companies, or vice versa. This line item includes design and other technical services but does not include installation costs for major investment/demonstration projects.

6	Components 1 and 2 include the costs of equipment, materials, and installation associated with investment/demonstration projects. Components 1 and 2 include the costs of equipment, materials, and installation associated with investment/demonstration projects. This would include office equipment (computers, printers, furniture, etc.) and field level equipment
7	All four components include activity on communications and outreach via print and electronic media.
8	All components will include workshops and meetings for planning and outreach. This line item includes the direct costs of such meetings – space, special equipment, coffee, services, etc.
9	This item includes the salaries, benefits, and associated personnel costs of various administrative staff members, hired under individual service contracts, who will provide regular administrative support in management oversight, procurement, logistics, accounting, and other functions, each according to specialized areas of responsibility. This line item is assigned entirely to project management, not to components. UNDP co-financing will cover a share of this line item.
10	Project funds will be used to pay for office equipment for the Project Manager and four Project Specialists, including five workstations, a printer, a modem and a wireless router, a photocopier machine, needed furniture, and other standard items of a modern office.
11	This line includes expected charges for phone, mobile phone (including roaming within Turkmenistan), and Internet for the Project Manager and Project Specialists, as well as a partial share of such costs for project support staff based in the country office, based on known monthly charges issued by Turkmenistan’s carriers. UNDP co-financing will cover a share of this line item.
12	Office space for the Project Manager and Project Specialists is to be provided by project partners free of charge. This line item represents a share of rent (\$200 per month) for one room in the UNDP country office, where four staffers in administrative support work. This share will be split between SCCF funding (\$100 per month) and UNDP co-financing (\$100 per month).
13	Miscellaneous costs shown here are bank charges (0.7 percent for almost all banking transactions in Turkmenistan). UNDP co-financing will cover a share of these expenses.
14	Direct Project Costs (DPC) are the costs of administrative services (such as those related to human resources, procurement, finance, and other functions) provided by UNDP to the Government of Turkmenistan in relation to the project. Services and associated fees are to be formalized in a Letter of Agreement between UNDP and the Government. Please see Annex 8.4. Total projected Direct Project Costs amount to \$57,880.
15	Audit costs, monitoring and evaluation of the project was also distributed among the components 1,2 and 3, BL 71200;(mid-term and terminal evaluations of the project at roughly \$35,000/each )
16	Performance-based Grants to daikhan associations and daikhan farms for implementation of climate adaptation measures. Typical grants would be cash for work payments based on: (i) competitive assessment and tender to selected beneficiaries; (ii) selection of beneficiaries in accordance with transparent criteria: (iii) partial upfront payment; and (iv) balance payment on successful completion and verification of work

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## **IX. ANNEXES**

### **9.1 CO-FINANCING LETTERS**

*-- See separate file—*

## 9.2 TRACKING TOOL FOR CLIMATE CHANGE ADAPTATION PROJECTS

-- *See separate file*—



### 9.3 TURKMENISTAN GEOGRAPHY AND CURRENT CLIMATE

Turkmenistan is located in the west of Central Asia between the Caspian Sea and the Amu Darya River. The territory of Turkmenistan is a part of the Aral and Caspian Sea basin. It is predominantly a flat country containing deserts and oases, with mountainous zones along its border (mainly in the south). The Karakum Desert, one of the largest deserts in the world, occupies 80% of the country's total land area. The rest of the land area is covered by mountain. Turkmenistan has a sharply continental and extremely dry and hot climate.<sup>19</sup> Despite the desert nature that is distinctive for most of Turkmenistan, there are significant differences in average temperature in the northern and southern parts of the country. The northern part, located in the Siberian anticyclone area, is characterized by severe and long winters with continuous snow cover and average yearly temperatures fluctuating between 13°C and 16°C. The southern part of the country, on the other hand, is characterized by mild winters with only occasional snow cover and average yearly temperatures ranging between 18°C and 22°C.<sup>20</sup> In the warm period of the year (from May to September), the daily air temperature often exceeds 40°C, and has occasionally even surpassed 50°C (in Repetek, southeast Karakum Desert). Meanwhile, during the coldest part of the year, temperatures are usually below zero °C and have even been recorded at levels as low as -36°C<sup>21</sup> (in Dashoguz velayat).<sup>22</sup> In terms of the historical trends related to the average mean temperature, meteorological data series show a steady increase of 1.4°C since the 1960s.<sup>23</sup>

The annual precipitation across Turkmenistan also varies greatly, ranging from 76 mm to 380 mm. In the northern part of the country, most of the precipitation occurs in the periods from March to May and from October to February, with the summer months experiencing quite low levels of precipitation, accounting for only 8.4 % of the total annual amount.<sup>24</sup> In the southern parts of Turkmenistan, much of the precipitation falls between December and April (87.8 % of the total annual amount), with quite low levels seen during the summer months (only 1.9 % of the total amount). In addition, while the desert areas experience precipitation only in the winter, the mountainous areas are characterized by a high frequency of precipitation throughout the year, often causing flash floods and mudflows.<sup>25</sup> Trends show that variability in monthly precipitation has been growing and that the amount of precipitation during recent years has slightly increased, particularly in spring months, with the lowest precipitation values being observed in summer.<sup>26</sup> With the low total annual rainfall, 96% of Turkmenistan is characterized as arid land, making it the most arid of the five Central Asian countries. Drought is a semi-permanent condition in the country. There are few rivers, the largest being Amu-Darya, with little to no surface flows across most of the desert landscapes. Water is a scarce resource and is unequally distributed across Turkmenistan, with 95% coming from the Amu Darya river, and the remaining 5% from all other rivers, streams and springs. The southern Murghab, Tedzhen and Sumbar rivers, and the smaller rivers of the foothills of the Kopet Dag, are fully exploited for irrigation. The building of the

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<sup>19</sup> Second National Communication of Turkmenistan to the United Nations Framework Convention on Climate Change (UNFCCC), 2010.

<sup>20</sup> Ibid.

<sup>21</sup> Ibid

<sup>22</sup> velayat refers to province.

<sup>23</sup> Turkmenistan Climate Adaptation Profile, Climate Change Knowledge Portal.

[http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country\\_profile&CCCode=TKM](http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCCode=TKM).

<sup>24</sup> Second National Communication of Turkmenistan to the UNFCCC.

<sup>25</sup> Ibid.

<sup>26</sup> Turkmenistan Climate Adaptation Profile. Climate Change Knowledge Portal.

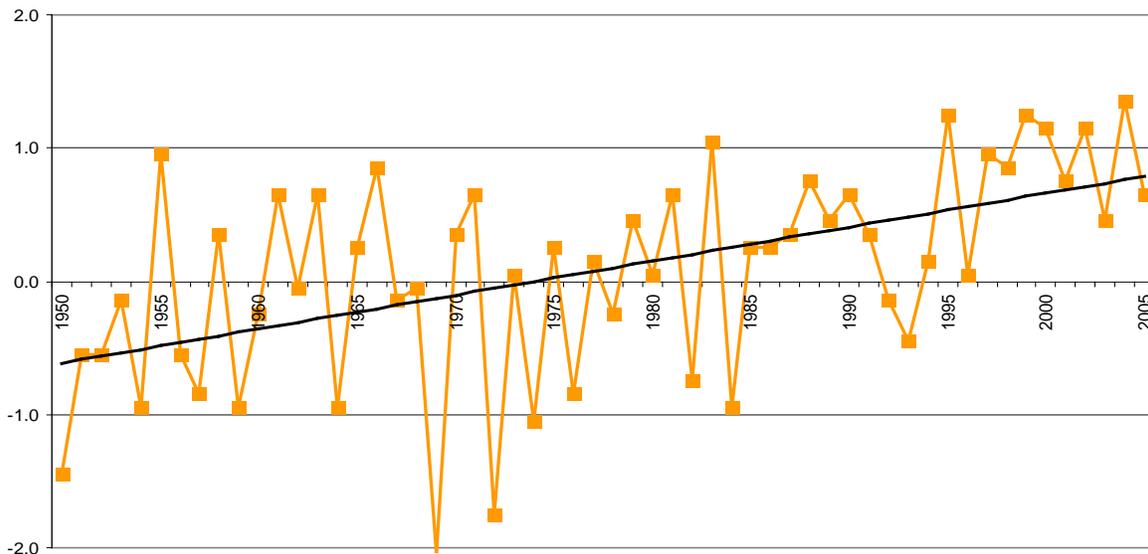
[http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country\\_profile&CCCode=TKM](http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCCode=TKM).

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Karakum Canal has changed the distribution of water resources across the country. It has removed the imbalance in the distribution of water between the larger areas of cotton growing land in one part of the country and the water resources in the other. Water shortages are common, particularly in the south and west of the country.

Over the past 55 years, intensive warming has been observed all over the country and it is occurring at a faster pace than anywhere else on the planet. The highest temperature rise, 2°C, is observed in the winter period. Overall, the climate is becoming drier with increased frequency of strong heat periods; flash runoffs and mudflows as well as rainstorms. In addition, the productivity of pastures and grazing sites which is closely linked to the changing weather conditions has been severely affected, with the dry years experiencing a reduction of the volume of forage by 3 - 5 times. Since 1969, the Amu Darya River basin has been repeatedly affected by seasonal floods, causing damage to farmlands, homes, public utilities and infrastructure.

Table: Mean annual change in air temperatures  
(temperature deviation from average indicators recorded 1961 – 1990)



Source: Ministry of Nature Protection

## 9.4. STAKEHOLDER INVOLVEMENT PLAN

Purpose of Stakeholder Involvement Plan (SIP) for the project is the long-term sustainability of the project achievements, based on transparency and the effective participation of the key stakeholders. The objectives include the following: (a) to identify the main stakeholders of the project and their basic roles and responsibilities in relation to the project; and (b) to take advantage of the experience and skills of the main stakeholders and safeguard their active participation in different activities of the project to reduce obstacles in its implementation and sustainability after completion of the project. The approach is based on the principles of fairness and transparency in selection of stakeholders, ensuring consultation, engagement and empowerment of relevant stakeholders comprehensively for better coordination between them from planning to monitoring and assessment of project interventions; access of information and results to relevant persons; accountability of stakeholders; implementing grievances redress mechanism and ensuring sustainability of project interventions after its completion.

Stakeholder involvement is guided by the objective of the project to promote climate resilient livelihoods in agricultural communities in Lebap and dashoguz velayats in Turkmenistan. The **Ministry of Nature Protection (MNP)** will be instrumental in establishing coordinative and collaborative links with national and velayat and etrap government entities and other stakeholders. Velayet and etrap administrative entities will coordinate with pilot farmer and livestock associations and other stakeholders, may hire the services of local Support agencies in consultation with PMU. Overall governance of the project will be carried out by the interagency **Project Board**, which will include key institutional stakeholders - MNP, Ministries of Agriculture, Water, Economy, and UNDP. The Project Board may invite other agencies to join as members, with the roster to be definitively set and approved no later than the project's inception period (see Management Arrangements Section).

Following initiatives would be taken to ensure participation of stakeholders in project initiatives:

### Identification of Potential Stakeholders

The SIP was prepared through the identification of the stakeholders that would be involved as partners in the pilot sites. Stakeholders at national, velayat, etrap and gengeslik levels including relevant federal ministries, research institutes and farmer and livestock associations will be engaged in project implementation.

### Project inception workshop

Project stakeholders would participate in the multi-stakeholder inception workshop of the project that would be held within three months of the start of the project. The purpose of the workshop would be to create awareness amongst stakeholder of the objectives of the project and to define their individual roles and responsibilities in project planning, implementation and monitoring. The stakeholders would be acquainted with the most updated information (objectives, components, activities, roles and responsibilities of stakeholders, financial information, timing of activities and expected outcomes) and the project work plan. The workshop will assist the partners to understand the project design, understand their role and responsibilities in the project including implementation, monitoring, reporting and communication, conflict resolution and grievance redress mechanisms. The workshop will be the first step in the process to build partnership with the range of project stakeholders and ensure that they have ownership of the project.

### Participatory approach for involving local communities

A participatory strategy would be developed and implemented to ensure effective participation of stakeholders, including farmer and livestock associations and their involvement in design and implementation of project activities. The strategy would ensure that all relevant stakeholders are informed

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about the project's objectives; the proposed activities; and the opportunities for their involvement in various activities. Various communication techniques and approaches that are appropriate to the local context will be suggested. The strategy would also include a mechanism for providing technical assistance to the farmer and livestock associations through relevant public agencies and etrap administration, the management of farmer association community initiatives in climate adaptation; a mechanism for involvement of local farmers of both men and women for participatory resource and climate risk assessments and identification of local adaptation in project pilot sites and a system for participatory monitoring and evaluation of the impact of the project activities; a road map for stakeholders' participation in project activities highlighting what, how, who, when and where, considering capacity of stakeholders and sustainability of implemented interventions would also be developed. The participatory approach will facilitate the involvement and participation of households within the farmer and livestock associations, including the vulnerable and marginalized members of the community (including women) in the planning and implementation of the project activities. The members of farmer and livestock associations would be trained in the participatory approach. To ensure full participation of local farmers, the PMU will develop terms of partnership and sign the same with the pilot farmer and livestock associations before implementation of main activities of the project.

#### Coordination Committee at etrap level

A committee of stakeholders would be constituted at the etrap level sector specialists in Agriculture, Water and Livestock working in the pilot areas as well as representatives of the farmer and livestock associations in the pilot areas. The committee will meet bi-monthly to review the progress, identify problems in achieving the development outcomes and milestones, facilitate coordination across sector agencies and programs, help resolve conflicts over resource use and develop future plans for the relevant pilot sites landscape. The minutes of the meeting would be recorded.

#### Quarterly Meetings with key stakeholders

On quarterly basis, Project Management Unit will organize meetings with the main farmer and livestock associations with the aim of discussing achievements, challenges faced, corrective steps taken and future corrective actions needed for the implementation of planned activities. It would be ensured that the groups of farmers have the participation of women and vulnerable persons. Result based management and reporting would consider inputs taken from stakeholders during such meetings. Copies of the annual and quarterly progress reports and work plans would be circulated to main stakeholders to inform them about project implementation and planning and outcomes.

#### Role and responsibilities of key stakeholders and their Involvement Mechanisms and Strategies

Mechanisms and strategies for stakeholder involvement will ensure that the relevant stakeholders receive and share information and provide their inputs in the planning, design, implementation, monitoring and evaluation of project initiatives and play a role in sustaining the initiatives during and after the closure of the project. Roles and responsibilities of main stakeholders of the project are summarized in the following table.

A description of their roles is presented in the following table:

Stakeholders/Partners	Roles and responsibilities	Involvement Plan and mechanisms
Ministry of Nature Protection	National implementing partner. Will provide overall project oversight and coordination with national initiatives and strategies regarding water management. Will join UNDP project team in leading design and execution of all project	Chair of Project Board. Will join UNDP project team in leading design and execution of all project components at

	components at both national and velayat levels (including demonstration/investment projects for climate resilient agriculture and pasture management, as well as etrap climate adaptation action plans and national policies).	both national and velayat levels (including demonstration/investment projects for climate resilient agriculture and pasture management, as well as etrap climate adaptation action plans and national policies).
Ministry of Agriculture	Responsible for design and delivery of all project activity at the farm level, as well as accompanying training for farmers. Participate in development of national, regional, and local action plans on sustainable agricultural and land management. Will coordinate all connections between the project and local farmers' associations.	Project beneficiary, Member of the project Board, participation in project design of pilot activities
Ministry of Water Economy	Will provide overall project oversight and coordination with national initiatives and strategies regarding water management. Will join UNDP project team in leading design and execution of all project components at both national and velayat levels (including demonstration/investment projects for low-water irrigation, municipal water supply, and canal linings, as well as regional action plans and national policies).	Project beneficiary Member of the Project Board, participation in project implementation
National Committee on Hydrometeorology under the Cabinet of Ministers of Turkmenistan	Monitoring, O&M of observation network, preparation of drafts of regulations related to hydro-meteorological activities	Project Advisor
Ministry of Economy	Support design and delivery of all project activity. Ministry will provide support especially in projects related to infrastructure and scaling up of investment activity. Will be responsible for ensuring implementation on NEPAAM	Member of the Project Board. Manage institutional structures for NEPAAM implementation
Institute of Desert, Flora and Fauna	Conservation and sustainable use of desert ecosystems and their resources	Project advisor
Research Institute of Water Management	Research on water quality and quantity issues	Project advisor
Institute of Livestock Management	Will participate in the design, implementation and valuation of the pilot of the livestock association in the desert pastures, provide technical input for the assessment of ecosystem values of natural pastures in the pilot etraps	Will participate in the design, implementation and valuation of the pilot of the livestock association in the desert pastures, provide technical input for the

		assessment of ecosystem values of natural pastures in the pilot etraps
Velayat (Administrative and Territorial Units at Provincial level)	Oversight and support for the implementation of the vulnerability assessment and planning, implementation and monitoring of the participatory adaptation plans in the pilot etraps.	Member of the Project Board
Etrap (Administrative and territorial unit at district level)	Direct participation in adaptation planning, implementation and monitoring of farmer and livestock association adaptation plans.	Implementing partner and member of etrap coordinating committees
Gengesh (local government bodies)	Support for agriculture and livestock associations adaptation planning and implementation. Member of etrap coordinating committee	Member of etrap coordinating committee
Daikhan (Farmer) and Livestock Associations	Participation and decision making at all stages of all activity related to agriculture, irrigation, drainage, and sustainable land and pasture management in the pilot entraps. For demonstration projects, formal letters of understanding outlining mutual commitments will be jointly prepared and signed.	Project implementers and direct beneficiaries
Daikhan farms	Participation as part of the pilot daikhan associations that also include a few daikhan farms. These farms will be directly involved at all stages of all activity related to agriculture, irrigation, drainage, and sustainable land and pasture management in the pilot entraps. For demonstration projects, formal letters of understanding outlining mutual commitments will be jointly prepared and signed.	Project implementers and direct beneficiaries
Daikhan Bank	The Daikhan Bank will be the key financial institution for providing credit funding to the pilot daikhan associations for implementation of the participatory adaptation management plans	Financial Institution supporting credit facilities for daikhan associations and diakhan farms

## **9.5. TERMS OF REFERENCE FOR KEY PROJECT STAFF**

The following are the indicative TORs for the project management staff to be recruited under the project TORs for these positions will be further discussed with UNDP so that roles and responsibilities and UNDP-GEF reporting procedures are clearly defined and understood.

### ***9.5.1 Project Board***

The Project Board will be establishment and co-chaired by the Ministry of Nature Protection and UNDP. The Board will have high level, cross-sectoral representation including of representatives of the MNP, as the key governmental agency in charge of natural resources and environment and will ensure that other governmental agencies are duly consulted and involved as per their mandate (such as the Ministry of Agriculture, Ministry of Water Economy, Ministry of the Economy, Ministry of Energy and Industry, and Ministry of Finance). The Board may also include representatives of other national or local agencies. Other participants can be invited into the Board meetings at the decision of the Board, as and when required to enhance its efficacy. It will meet at least twice a year or as needed. The Project Management Unit will serve as the Secretariat of the Project Board and the National Project Director (NPD) will take responsibility for calling its meetings, preparation of agenda, documentation and distribution of minutes and ensuring that decisions of the Board are implemented in letter and spirit. Specific responsibilities of the Project Board would include the following:

- Provide strategic direction and guidance for implementation of the project;
  - Review project's progress, review and evaluation reports and make and ensure for follow-up actions for timely and quality implementation;
  - Approve annual work-plans and budgets and any essential deviations from the original plans and budgets;
  - Provide coordination and conflict resolution forum for implementing agencies and key stakeholders i.e. concerned ministries, provincial line departments, and relevant research institutions;
  - Oversee and support the commitment and funding and other support for the project;
  - Oversee prudent and efficient use of project budgets and other resources;
  - Decide on conceptual and design changes and other recommendations of external mid-term review; and
  - Provide guidance on post-project sustainability, institutional and financial arrangements, keeping in view the recommendations of external reviews.
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### ***9.5.2 National Implementing Partner and National Project Coordinator***

The Ministry of Nature Protection of Turkmenistan will serve as National Implementing Partner for the project. As a representative of the Government, the National Implementing Partner has the main responsibility to ensure that the project is executed in accordance with Government priorities, as well as with the Project Document and the UNDP guidelines. Expectations for the National Implementing Partner include:

- Assurance of compatibility between the themes of the UNDP/SCCF project and the authority of the leading Ministry;
- Integration of the project into the plans and operations of the leading Ministry;
- Taking the lead in solving problems and challenges for the project when they arise;
- Establishment of a mechanism by which Ministry staff could be assigned to the project;
- Taking the lead in helping the UNDP team in designing and implementing the project;
- Provision of office space for the project team during implementation, such that Ministry staff and UNDP project staff can work closely and effectively together;
- Leadership of a Working Group on project development and implementation, which would include all other interested agencies of the Government of Turkmenistan, including calling and chairing periodic meetings.

MNP will assign a senior staff member as National Project Coordinator to personally oversee the work of the Ministry as National Implementing Partner. The National Project Coordinator will work closely with UNDP and project staff in all aspects of planning and management of the project.

### ***9.5.3 UNDP Country Office***

The UNDP Country Office (UNDP-CO) will be responsible for Project Assurance that supports the Project Board by carrying out objective and independent project oversight and monitoring functions. The project is to be nationally executed (NEX), in line with the Standard Basic Assistance Agreement between the UNDP and the Government of Turkmenistan and with the Country Program Action Plan (CPAP). The proposed Project will be executed in accordance with the rules and procedures laid down under the National Implementation Modality (National Implementation of the UNDP Supported Projects). A UNDP staff member will be assigned the responsibility for the day-to-day management and control over project finances. The following aspects need to be checked by the Project Assurance throughout the project:

- Maintenance of liaison throughout the project between the donors and project implementers;
  - Beneficiary needs and expectations are being met or managed;
  - Risks are being controlled;
  - Adherence to the Project Justification;
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- Providing financial and audit services to the project through appointment of independent financial auditors and evaluators;
- Overseeing financial expenditures against project budgets approved by the Project Board;
- Ensuring that all activities including staff and equipment procurement and financial services are carried out in strict compliance with UNDP procedures
- The project remains viable, so that the scope of the project is not “creeping upwards” unnoticed;
- Internal and external communications are working;
- Applicable standards are being used and followed;
- Any legislative constraints are being observed; and
- Adherence to quality assurance standards.

#### **9.5.4 National Project Manager**

The National Project Manager will work under the supervision and guidance of the National Project Director (NPD) of the Ministry of Nature Protection, and look after day to day management of National Project Management Unit, its staff and consultants; including general and financial administration, work planning, progress reporting, monitoring and quality control of Project inputs and delivery of its outputs. The NPM will be responsible for the following technical, administrative and managerial tasks:

Operational project management in accordance with the Project Document and the UNDP guidelines and procedures for implementation of project activities, including:

- Management and supervision of project implementation and evaluation across all components. Assurance of successful completion of the project in accordance with the stated outcomes and performance indicators summarized in the Project Results Framework.
  - Regular communication and coordination with the National Implementing Partner, members of the Project Board, and all other partners and interested stakeholders, with regard to all project activity. Organization of Project Board meetings at least once, or ideally twice, per year, subject to availability of members.
  - Regular communication with senior UNDP management with regard to all project activity. Assurance of coordination with other UNDP projects and broad strategic initiatives.
  - Preparation of Annual Work Plans, including monthly targets and deliverables as well as annual spending targets in accordance with the Project Document. Tracking of work outputs throughout the year in light of these Annual Work Plans.
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- Tracking and managing of project spending in accordance with the project budget, as well as UNDP rules and procedures, to ensure transparency, responsibility, and timely fulfilment of both program targets and budget targets.
- Preparation and submittal of annual Project Implementation Reviews and other required progress reports to the Project Board, UNDP, and GEF in accordance with applicable requirements, in all required languages (English, Russian, and/or Turkmen, using outside translation as needed).
- Supervision of the experts working for the project, including both Project Specialists as well as international and national consultants.
- Supervision of regular data collection and analysis, as well as reporting and public outreach via the mass media, events, and other means, to disseminate the results of the project and to promote water use efficiency, sustainable water and agriculture management, and sustainable pasture management as part of a national strategy to address climate risks in Turkmenistan.
- Oversight of the overall administration of the project office.
- Regular travel within Turkmenistan to organize and monitor project activity; possible travel outside the country for participation in directly relevant international meetings.
- Support of independent Midterm and Terminal Evaluations of the project.

**Expected Qualifications:**

- University degree in management, economics, water management, engineering, agriculture, natural resource management, or another field with direct relevance to the project
  - At least 10 years of experience in managing large-scale projects on climate change mitigation, energy efficiency, water management, and/or sustainable land management in Turkmenistan
  - Close familiarity with the roles, activities, and priorities of the Government of Turkmenistan, and particularly the Ministry of Water Economy and other national partners, with regard to energy efficiency, water management, agriculture, and sustainable land management
  - Basic technical understanding of water management, irrigation, sustainable land management, and agriculture
  - Demonstrated ability to work effectively with a broad range of stakeholders
  - Demonstrated ability to work effectively under close supervision, as well as under minimal supervision
  - Superior skills in organization and management, including past experience with planning, tracking, evaluation, and supervision of consultants and/or employees
  - Strong skills in financial tracking and budget management
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- Close familiarity with the operations and rules of UNDP is not a requirement but will be viewed with favor
- Fluency in Russian and English, in reading, writing, and speaking. Fluency in Turkmen will be viewed as a strong asset.

### ***9.5.5 Project Specialist in Water Management***

The Project Specialist on Water Management will serve as the project's leading expert on technical and issues in water management, use and efficiency. Under the supervision of the Project Manager and with the assistance of various national and international consultants as well as project partners, the Project Specialist on Water Management will manage the following project activities, as elaborated in the Project Document, and will be responsible for timely and complete fulfilment of these outputs. For several activities, responsibility will be shared with the Project Specialist on Agriculture and Livestock Management.

- *Output 1.1: Participatory vulnerability and adaptation assessment:* Providing technical guidance to map vulnerabilities in the pilot project areas in vulnerabilities assessment and climate adaptation planning at the farmer association level (*joint responsibility with the Project Specialist on Agriculture and Livestock Management*)
  - *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks:* Providing technical guidance on low-water and efficient irrigation and SLM in agricultural croplands development and implementation and auditing and monitoring water delivery and networks on farms in the pilot etraps (*joint responsibility with the Project Specialist on Agriculture and Livestock Management*)
  - *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks:* Providing technical guidance on application of energy efficient and renewable-energy applications of water harvesting, storage and conservation in remote pasture areas in pilot etraps (*joint responsibility with the Project Specialist on Agriculture and Livestock Management*)
  - *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks:* Providing technical guidance for reduction of water losses and land salinization, including various technologies, with documentation of results and recommendations and cost analysis for replication (*joint responsibility with the Project Specialist on Agriculture and Livestock Management*)
  - *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks:* Supporting development of farm association work plans that integrate considerations of SLM, climate adaptation and water conservation and efficiency improvements and overseeing and guiding their implementation and monitoring (*joint responsibility with the Project Specialist on Agriculture and Livestock Management*)
  - *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks:* Education and direct training provided to water-management system designers, local
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water management staff and farmer associations in the pilot etraps on water systems and irrigation maintenance, and other aspects of efficient water management and SLM (*joint responsibility with the Project Specialist on Agriculture and Livestock Management*)

- *Output 1.5: Successful adaptation measures up-scaled:* Project evaluation and compilation of lessons learned (*joint responsibility with the Project Specialist on Agriculture and Livestock Management*)
- *Output 2.1: capacity development for agricultural and water sectors enabling effective adaptation planning with gender considerations:* Supporting capacity needs assessment at the velayat and etrap levels, designing capacity building programs and coordination with universities and vocational training institutions for delivery of training (*joint responsibility with the Project Specialist on Agriculture and Livestock Management*)
- *Output 2.4: Institutional and legal mechanisms for water resources management integrate key principles of efficient use and climate risk management:* Supporting review of institutional and legal measures for water management and providing guidance on key constraints and shortcomings in addressing efficient use and climate risk management in water sector.
- *Output 2.5: National sectoral policy and rural development investments takes account of climate change related risks:* Supporting development of water and agriculture sector policy to integrate climate adaptation measures (*joint responsibility with the Project Specialist on Agriculture and Livestock Management*)
- *Outcome 3: Strengthened national capacity for iterative climate change adaptation planning, implementation and monitoring:* Providing technical support and advise to NEPAAM Secretariat and working groups, as required for planning, monitoring and overseeing specific adaptation related activities
- Supporting policy and state budget framework for improving water efficiency and adaptation to climate change
- Supporting and guiding dialogue and consultation for reform for implementation of integrated water resource management and sustainable land management (*joint responsibility with the Project Specialist on Agriculture and Livestock Management*)

**Specific duties and responsibilities:**

- Development, execution, and tracking of plans for timely fulfilment of the activities and outcomes enumerated above. Detailed Annual Work Plans with monthly activities and targets will be the main tool for planning and tracking project activity.
  - Participation in design, and then direct oversight and quality control over the implementation of pilot projects enumerated above, including regular site visits
  - Oversight of the technical content and design parameters of all project activity enumerated above, especially pilot projects, to ensure that they fulfil quantitative targets for energy savings, avoided emissions, water savings, climate adaptation and other indices set forth in the Project Results Framework
-

- Very frequent communication with project partners and interested stakeholders to ensure mutual support, coordination, and timely fulfilment of all steps needed to complete activities.
- Collaboration with international and national consultants.
- Regular data collection and analysis, as well as reporting and public outreach via the mass media, events, seminars, in-field training, and other means, to disseminate the results of the project and to promote energy efficiency, sustainable water management, and sustainable land management in Turkmenistan.

**Expected Qualifications:**

- Technical expertise in the design and implementation of low-water and efficient irrigation systems, reduction of losses from canals, efficient operation of water delivery systems and climate adaptation
- Advanced university degree in water management and/or water efficiency
- At least 10 years of working experience on water management in Turkmenistan, including some previous experience working with UNDP or other international agencies
- Basic technical understanding of energy efficiency, climate change mitigation, agriculture, and sustainable land management
- Close familiarity with the institutional processes and organizations involved with water management and irrigated agriculture in Turkmenistan
- Demonstrated ability to work effectively under close supervision, as well as under minimal supervision, and to meet deadlines
- Strong abilities in writing, as well as delivery of presentations and classroom instruction
- Fluency in Russian and Turkmen, in reading, writing, and speaking. Fluency in English will be viewed as an asset.

***9.5.6 Project Specialist on Agriculture and Livestock Management***

The Project Specialist on Agriculture and Livestock Management will serve as the project's leading expert on agriculture, reclamation of salinized land, productivity of pastures and irrigated croplands, and sustainable land management. Under the supervision of the Project Manager and with the assistance of various national and international consultants as well as project partners, the Project Specialist on Agriculture and Livestock Management will manage the following project activities, as elaborated in the Project Document, and will be responsible for timely and complete fulfilment of these outputs. For several activities, responsibility will be shared with the Project Specialist on Water Management.

- *Output 1.1: Participatory vulnerability and adaptation assessment:* Providing technical guidance to map vulnerabilities in the pilot project areas in vulnerabilities assessment and climate adaptation planning at the farmer association level (*joint responsibility with the Project Specialist on Water Management*)
-

- *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks:* Providing technical guidance on land management and agricultural practices in agricultural croplands development to adapt to climate risks and implementation and auditing and monitoring agricultural services delivery in the pilot etraps (*joint responsibility with the Project Specialist on Water Management*)
  - *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks:* Providing technical guidance on application of improved land practices, soil fertility improvements and diversification of crops, sustainable pasture management and livestock practices, pest and diseases management in crops and conservation in remote pasture areas in pilot etraps (*joint responsibility with the Project Specialist on Water Management*)
  - *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks:* Providing technical guidance for reduction of climate risks, including various technologies, with documentation of results and recommendations and cost analysis for replication (*joint responsibility with the Project Specialist on Water Management*)
  - *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks:* Supporting development of farm association work plans that integrate considerations of SLM, climate adaptation and water conservation and efficiency improvements and overseeing and guiding their implementation and monitoring (*joint responsibility with the Project Specialist on Water Management*)
  - *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks:* Education and direct training provided on climate resilient agricultural practices, land management practices to etrap municipality staff and farmer associations in the pilot etraps (*joint responsibility with the Project Specialist on Water Management*)
  - *Output 1.3: Alternative income and livelihoods innovation enhancing climate resilience of pilot agricultural communities:* Coordinating with relevant agencies and institutions, the planning and development of alternative livelihood opportunities, including value addition, processing and marketing of agricultural and non-agricultural products.
  - *Output 1.5: Successful adaptation measures up-scaled:* Project evaluation and compilation of lessons learned (*joint responsibility with the Project Specialist on Water Management*)
  - *Output 2.1: capacity development for agricultural and water sectors enabling effective adaptation planning with gender considerations:* Supporting capacity needs assessment at the velayat and etrap levels, designing capacity building programs and coordination with universities and vocational training institutions for delivery of training (*joint responsibility with the Project Specialist on Water Management*)
  - *Output 2.4: Institutional and legal mechanisms for water resources management integrate key principles of efficient use and climate risk management:* Supporting review of institutional and legal measures for agricultural management t and providing guidance
-

on addressing key constraints and shortcomings in addressing efficient use and climate risk management in agriculture and livestock sectors.

- *Output 2.5: National sectoral policy and rural development investments takes account of climate change related risks:* Supporting development of water and agriculture sector policy to integrate climate adaptation measures (*joint responsibility with the Project Specialist on Water Management*)
- *Output 2.6: Ecosystems services valuation and assessment of potential impacts of climate change on natural pastures:* Supporting and coordination of the above-study
- Providing technical guidance in vulnerabilities assessment and climate adaptation planning at the farmer association level (*joint responsibility with the Project Specialist on Water Management*)
- Project evaluation and compilation of lessons learned (*joint responsibility with the Project Specialist on Water Management*)
- Administrative reform for implementation of climate resilient agricultural practices and sustainable land and pasture management (*joint responsibility with the Project Specialist on Water Management*)

#### **Specific duties and responsibilities:**

- Development, execution, and tracking of plans for timely fulfilment of the activities and outcomes enumerated above. Detailed Annual Work Plans with monthly activities and targets will be the main tool for planning and tracking project activity.
  - Participation in design, and then direct oversight and quality control over the implementation of pilot projects enumerated above, including regular site visits
  - Oversight of the technical content and design parameters of all project activity enumerated above, especially demonstration projects, to ensure that they fulfil quantitative targets for energy savings, avoided emissions, water savings, and other indices set forth in the Project Results Framework
  - Very frequent communication with project partners and interested stakeholders to ensure mutual support, coordination, and timely fulfilment of all steps needed to complete activities.
  - Collaboration with international and national consultants.
  - Regular data collection and analysis, as well as reporting and public outreach via the mass media, events, seminars, in-field training, and other means, to disseminate the results of the project and to promote energy efficiency, sustainable water management, and sustainable land management in Turkmenistan.
-

### **Expected Qualifications:**

- Technical expertise in agriculture and land management, including both irrigated croplands and desert pasture, as well as other land affected by water management (land along canals and drainage facilities, etc.)
- Advanced university degree in agriculture and/or land management
- At least 10 years of working experience on agriculture and land management in Turkmenistan, including some previous experience working with UNDP or other international agencies
- Basic technical understanding of energy efficiency, water management, and climate change mitigation
- Close familiarity with the institutional processes and organizations involved with water management, irrigated agriculture, and pasture management in Turkmenistan
- Demonstrated ability to work effectively under close supervision, as well as under minimal supervision, and to meet deadlines
- Strong abilities in writing, as well as delivery of presentations and classroom instruction
- Fluency in Russian and Turkmen, in reading, writing, and speaking. Fluency in English will be viewed as an asset.

### ***9.5.7 Etrap Field Coordinators***

The Etrap Field Coordinators (two) will work under the supervision and guidance of National Project Manager with additional reporting line to the etrap municipalities. He/she will be responsible for day-to-day management of planning, implementation and monitoring of adaptation plans at the pilot farmer and livestock associations, including general and financial administration, work planning, progress reporting and monitoring of implementation of the project activities. The Etrap Field Coordinators will liaise with the Specialists on Water Management and Agriculture and Livestock Management in delivering the following technical and management tasks:

- *Output 1.1: Participatory vulnerability and adaptation assessment:* Providing orientation and oversight in the mapping of vulnerabilities in the pilot project areas and supporting training and capacity building of pilot farmer and livestock associations in socio-economic and resource mapping and climate risk assessment (*with technical support from Specialists in Water and Agriculture and Livestock Management*)
  - *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks:* Support pilot agricultural and livestock associations on defining climate resilient land management and agricultural practices in agricultural croplands development to adapt to climate risks (*with technical support from Specialists in Water and Agriculture and Livestock Management*)
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- *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks: Providing oversight and planning support on measures for improved land practices, soil fertility improvements and diversification of crops, sustainable pasture management and livestock practices, pest and diseases management in crops and conservation in remote pasture areas in pilot etraps (with support from Specialist in Agriculture and Livestock Management)*
  - *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks: Providing oversight and on-the-ground training for reduction of climate risks, including various technologies (with technical support from Specialists in Water and Agriculture and Livestock Management)*
  - *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks: Facilitating the development of farm association work plans that integrate considerations of SLM, climate adaptation and water conservation and efficiency improvements and overseeing and guiding their implementation and monitoring (with technical support from Specialists in Water and Agriculture and Livestock Management)*
  - *Output 1.2; Gender sensitive adaptation planning effectively addressing climate risks: Education and direct training provided on climate resilient agricultural practices, land management practices to etrap municipality staff and farmer associations in the pilot etraps (with technical support from Specialists in Water and Agriculture and Livestock Management)*
  - *Output 1.3: Alternative income and livelihoods innovation enhancing climate resilience of pilot agricultural communities: Coordinating with relevant agencies and institutions, the planning and development of alternative livelihood opportunities, including value addition, processing and marketing of agricultural and non-agricultural products (with technical support from Specialist Agriculture and Livestock Management)*
  - Keep close contact with the etrap and velayat municipality staff for ensuring smooth implementation of project interventions
  - Effectively coordinate implementation of the project activities, including monitoring and quality assessment of activities in the pilot etraps per work plans
  - Timely preparation of quarterly and annual progress review reports and work plans, expenditure plans and advance budget requests and submission of these documents to the Project Management Unit
  - Identification of project implementation problems and conflicts assistance to the PMU in their resolution
  - Assist in organizing meetings of Etrap level Coordinating Committees
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**Expected Qualifications:**

- Technical expertise in agriculture and land management, including both irrigated croplands and desert pasture, as well as other land affected by water management (land along canals and drainage facilities, etc.)
  - Advanced university degree in agriculture and/or land management
  - At least 10 years of working experience on agriculture and land management issues at the local or farmer association level
  - Basic technical understanding of water management, and climate change risk management
  - Close familiarity with the institutional processes and organizations involved with water management, irrigated agriculture, and pasture management in Turkmenistan
  - Demonstrated ability to work effectively under close supervision, as well as under minimal supervision, and to meet deadlines
  - Strong abilities in writing, as well as delivery of presentations and classroom instruction
  - Fluency in Russian and Turkmen, in reading, writing, and speaking. Fluency in English will be viewed as an asset.
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**9.6. UNDP ENVIRONMENTAL AND SOCIAL SCREENING**  
*-- See separate file—*

## **9.7 DIRECT PROJECT COSTS: STANDARD LETTER OF AGREEMENT BETWEEN UNDP AND THE GOVERNMENT OF TURKMENISTAN FOR THE PROVISION OF SUPPORT SERVICES**

### **HOW TO USE THIS LETTER OF AGREEMENT**

- This agreement is used to provide appropriate legal coverage when the UNDP country office provides support services under national execution.
- This agreement must be signed by a governmental body or official authorised to confer full legal coverage on UNDP. (This is usually the Minister of Foreign Affairs, the Prime Minister /or Head of State.) The UNDP country office must verify that the government signatory has been properly authorised to confer immunities and privileges.
- A copy of the signed standard letter will be attached to each PSD and project document requiring such support services. When doing this, the UNDP country office completes the attachment to the standard letter on the nature and scope of the services and the responsibilities of the parties involved for that specific PSD/project document.
- The UNDP country office prepares the letter of agreement and consults with the regional bureau in case either of the parties wishes to modify the standard text. After signature by the authority authorised to confer immunities and privileges to UNDP, the government keeps one original and the UNDP country office the other original. A copy of the agreement should be provided to UNDP headquarters (BOM/OLPS) and the regional bureau.

Dear Mr. Babageldi Annabayramov ,

1. Reference is made to consultations between officials of the Ministry of Nature Protection of Turkmenistan (hereinafter referred to as “the Government”) and officials of UNDP with respect to the provision of support services by the UNDP country office for nationally managed programmes and projects. UNDP and the Government hereby agree that the UNDP country office may provide such support services at the request of the Government through its institution designated in the relevant programme support document or project document, as described below.

2. The UNDP country office may provide support services for assistance with reporting requirements and direct payment. In providing such support services, the UNDP country office shall ensure that the capacity of the Government-designated institution is strengthened to enable it to carry out such activities directly. The costs incurred by the UNDP country office in providing such support services shall be recovered from the administrative budget of the office.

3. The UNDP country office may provide, at the request of the designated institution, the following support services for the activities of the programme/project:

- (a) Identification and/or recruitment of project personnel;
- (b) Administration of project personnel (Payroll, banking administration, extensions, entitlements etc.)
- (c) Payments to vendors and project personnel;
- (d) Issue/Apply deposits;
- (e) PCA reports review and certification;
- (f) F10 Settlement;
- (g) Identification and facilitation of training activities;
- (h) Procurement of goods and services;

4. The procurement of goods and services and the recruitment of project and programme personnel by the UNDP country office shall be in accordance with the UNDP regulations, rules, policies and procedures. Support services described in paragraph 3 above shall be detailed in an annex to the programme support document or project document, in the form provided in the Attachment hereto. If the requirements for support services by the country office change during the life of a programme or project,

the annex to the programme support document or project document is revised with the mutual agreement of the UNDP resident representative and the designated institution.

5. The relevant provisions of the Standard Basic Assistance Agreement between the Government of Turkmenistan and the United Nations Development Programme signed on 05 October 1993 (the “SBAA”), including the provisions on liability and privileges and immunities, shall apply to the provision of such support services. The Government shall retain overall responsibility for the nationally managed programme or project through its designated institution. The responsibility of the UNDP country office for the provision of the support services described herein shall be limited to the provision of such support services detailed in the annex to the programme support document or project document.

6. Any claim or dispute arising under or in connection with the provision of support services by the UNDP country office in accordance with this letter shall be handled pursuant to the relevant provisions of the SBAA.

7. The manner and method of cost-recovery by the UNDP country office in providing the support services described in paragraph 3 above shall be specified in the annex to the programme support document or project document.

8. The UNDP country office shall submit progress reports on the support services provided and shall report on the costs reimbursed in providing such services, as may be required.

9. Any modification of the present arrangements shall be effected by mutual written agreement of the parties hereto.

10. If you are in agreement with the provisions set forth above, please sign and return to this office two signed copies of this letter. Upon your signature, this letter shall constitute an agreement between your Government and UNDP on the terms and conditions for the provision of support services by the UNDP country office for nationally managed programmes and projects.

Yours sincerely,

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Signed on behalf of UNDP Turkmenistan  
*Jacinta Barrins*  
*Resident Representative*

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For the Government  
Mr. Babageldi Annabayramov  
Minister of Nature Protection of Turkmenistan

“ \_\_\_\_\_ ” \_\_\_\_\_ 2016

### 9.5.1 Description of UNDP Country Office support services

1. Reference is made to consultations between UNDP office in Turkmenistan; the institution designated by the Government of Turkmenistan and officials of UNDP with respect to the provision of support services by the UNDP country office for the nationally managed project “*Supporting climate resilient livelihoods in agricultural communities in drought-prone areas of Turkmenistan*”, Award ID: 00092855; Project ID: 00097376, “the Project”.

2. In accordance with the provisions of the letter of agreement signed on \_\_\_\_\_ and the project document, the UNDP country office shall provide support services for the Project as described below.

3. Support services to be provided:

<b>Support services</b>	<b>Cost to UNDP of providing such support services per case/person in USD</b>	<b>Number of case</b>	<b>Percent of UNDP FT staff involvement</b>	<b>DPC Total Amount in USD</b>
<b>1. Human Resources</b>				
a) TOR review and post classification + creation	34.35	45	50	772.88
b) Advertisement	92.22	45	50	2,074.95
c) Short-listing (including long-listing)	184.44	45	50	4,149.90
d) Writing test preparation (questions)	53.57	45	50	1,205.33
e) Writing test arrangement and administration	91.40	45	50	2,056.50
f) Test Evaluation	88.83	45	50	1,998.68
g) Interviewing	184.44	40	50	3,688.80
h) Reference check	40.06	40	50	801.20
i) Review recruitment case	25.85	45	50	581.63
j) Contract issuance	72.22	45	50	1,624.95
k) Recurrent personnel management services: staff payroll & banking administration & management (for whole contract period)	353.27	45	50	7,948.58
l) <i>Payroll validation, disbursement</i>	123.64	45	50	2,781.90
m) <i>Extension, promotion, entitlements</i>	105.98	40	50	2,119.60
n) <i>Leave monitoring</i>	17.66	18	5	15.89
o) <i>Leave monitoring - Absence data management in Atlas only</i>	5.70	18	6	6.16

p) Staff HR & Benefits Administration & Management ( <i>one time fee, per staff. Services incl. contract issuance, benefits enrollment, payroll setup - this price applies to the separation process as well</i> )	160.80	6	5	48.24
<b>2. Finance</b>				
a) Issue check only (Atlas Agencies only)	12.82	450	30	1,730.70
b) Vendor profile only (Atlas Agencies only)	15.44	150	30	694.80
c) Journal Voucher or General Ledger Journal Entry (GLJE)	35.67	150	30	1,605.15
d) PCA reports review and certification	25.80	150	30	1,161.00
e) F10 Settlement	24.82	450	30	3,350.70
f) Issue/Apply Deposits Only	16.36	15	30	73.62
<b>3. Procurement</b>				
a) Procurement not involving CAP - below US\$ 50,000				
- Issue Purchase Order	41.95	240	25	2,517.00
- Follow-up	41.95	240	25	2,517.00
b) Procurement process involving CAP (and/or ITB, RFP, requirements) - above US\$ 50,000		0		
- Identification & selection	489.45	13	40	2,545.14
- Contracting/Issue Purchase Order	104.07	13	25	338.23
- Follow-up	107.07	13	25	347.98
c) Consultant recruitment			25	0.00
- Advertising	36.11	130	25	1,173.58
- Contract issuance	72.22	130	25	2,347.15
d) Procurement involving RACP (goods, services & consultant > US\$150,000)				
- Contracting	60.67	20	25	303.35
- Issue PO	41.95	19	25	199.26
- Follow up	60.67	20	25	303.35
Asset disposal (without CAP)	28.77	20	25	143.85
Asset disposal involving CAP	229.40	20	25	1,147.00
<b>4. Admin Support</b>				
a) Issue/Renew IDs (UN LP, UN ID, etc.)_UPL	40.10	18	20	144.36
b) Registration for stay in TKM	71.83	30	20	430.98
c) Custom Clearance- Diplomatic cargo	332.46	30	20	1,994.76

d) Visa request (excl. government fee)	59.55	30	20	357.30
e) Transportation Arrangement	15.90	30	20	95.40
f) Hotel Reservation	17.63	30	20	105.78
g) Transportation Voucher Arrangement	10.14	20	20	40.56
h) Ticket request (booking, purchase)	71.79	15	20	215.37
i) Travel Authorization	27.12	14	20	75.94
j) Miscellaneous Letters	12.55	18	20	45.18
<b>Total DPC</b>				<b>57,880</b>

4. Description of functions and responsibilities of the parties involved:
5. As the national implementing partner, the **Ministry of Nature Protection of Turkmenistan** will oversee all aspects of project implementation. MNP is responsible for the protection of ecosystems, protection of surface and underground water resources and monitoring the environment and natural resources, and climate monitoring. In addition, it carries out environmental assessments of various projects. The MNP structure includes 5 velayat (provincial) Environmental Protection agencies, The National Institute of Deserts, Flora and Fauna (NIDFF), Ecological control service. Among other tasks, provincial administrations units of the MNP supervise the wastewater monitoring and control water use permit. They carry out systematic review and assessment of the environment in Turkmenistan, and develop standards for pollution control. MNP will appoint a senior staff member to serve as the National Project Coordinator (NPC), who will be the lead individual responsible for overseeing the project.
6. Overall governance of the project will be carried out by the **Project Board**, which will include MNP, other national agencies including the Ministries of Agriculture, Water Economy, Economy and Development, Foreign Affairs, National Committee on Hydrometeorology, Institute of Desert, Flora and Fauna, Research Institute of Water Management, Institute of Livestock Management, Velayat and Etrap (Administrative and Territorial Units at Provincial level) and UNDP. The Project Board may invite other agencies to join as members, with the roster to be definitively set and approved no later than the project's inception period. The National Project Coordinator will serve as Chair of the Project Board, with assistance from UNDP in organizing and running all meetings and other exchanges of information. Meetings of the Project Board will take place at least once annually in time for approval of the following year's Annual Work Plan. Additional meetings may be called as needed by the NPC.
7. **UNDP** will join MNP in managing the project and providing quality assurance, in accordance with plans approved by the Project Board. Most of UNDP's work for the project will be based in its Country Office (CO) in Ashgabat, under the supervision of the Programme Specialist for Environment and Energy and other senior programme staff, including the UNDP Resident Coordinator and Deputy Resident Coordinator as warranted. UNDP will also engage contractors to carry out Midterm and Final Evaluations of the project. The UNDP Regional Technical Advisor, based in the UNDP Regional Service Centre in Istanbul, will provide technical support, assistance with coordination, and overall project monitoring to ensure consistency with expectations from UNDP and SCCF. The day-to-day operations of the project will be carried out by five full-time project staff, headed by the **Project Manager**. The Project Manager will be responsible for carrying out the activities of the project as set forth in this Project Document and any revisions approved by

the Project Board. At least one month in advance of the start of each project year, the Project Manager will prepare Annual Work Plans. These plans will be reviewed and approved by the Project Board and thereafter will be used by project staff as tools for planning, implementing, and tracking work flows. In addition, for each meeting of the Project Board, the Project Manager will prepare a full status report on project activity, including recent accomplishments, risks, and proposed mitigation measures. The Project Manager will also be responsible for preparing all required annual reports for UNDP and GEF.

8. UNDP country office staff will assist the Project Manager in all the administrative work of the project, including logistics and clerical work. In addition, the country office will provide administrative support to the Government with regard to various specific administrative functions, whose costs will be billed as Direct Project Costs according to this Letter of Agreement.

9. Responsibilities of other entities of the Government are set forth in the table below

Stakeholders/Partners	Roles and responsibilities	Involvement Plan and mechanisms
Ministry of Nature Protection	National implementing partner. Will provide overall project oversight and coordination with national initiatives and strategies regarding water management. Will join UNDP project team in leading design and execution of all project components at both national and velayat levels (including demonstration/investment projects for climate resilient agriculture and pasture management, as well as etrap climate adaptation action plans and national policies).	Chair of Project Board. Will join UNDP project team in leading design and execution of all project components at both national and velayat levels (including demonstration/investment projects for climate resilient agriculture and pasture management, as well as etrap climate adaptation action plans and national policies).
Ministry of Agriculture	Responsible for design and delivery of all project activity at the farm level, as well as accompanying training for farmers. Participate in development of national, regional, and local action plans on sustainable agricultural and land management. Will coordinate all connections between the project and local farmers' associations.	Project beneficiary, Member of the project Board, participation in project design of pilot activities
Ministry of Water Economy	Will provide overall project oversight and coordination with national initiatives and strategies regarding water management. Will join UNDP project team in leading design and execution of all project components at both national and velayat levels (including demonstration/investment projects for low-water irrigation, municipal water supply, and canal linings, as well as regional action plans and national policies).	Project beneficiary Member of the Project Board, participation in project implementation
National Committee on Hydrometeorology under the Cabinet of Ministers of Turkmenistan	Monitoring, O&M of observation network, preparation of drafts of regulations related to hydro-meteorological activities	Project Advisor
Ministry of Economy	Support design and delivery of all project activity. Ministry will provide support especially in projects related to infrastructure and scaling up of investment activity. Will be responsible for ensuring implementation on NEPAAM	Member of the Project Board. Manage institutional structures for NEPAAM implementation

Institute of Desert, Flora and Fauna	Conservation and sustainable use of desert ecosystems and their resources	Project advisor
Research Institute of Water Management	Research on water quality and quantity issues	Project advisor
Institute of Livestock Management	Will participate in the design, implementation and valuation of the pilot of the livestock association in the desert pastures, provide technical input for the assessment of ecosystem values of natural pastures in the pilot etraps	Will participate in the design, implementation and valuation of the pilot of the livestock association in the desert pastures, provide technical input for the assessment of ecosystem values of natural pastures in the pilot etraps
Velayat (Administrative and Territorial Units at Provincial level)	Oversight and support for the implementation of the vulnerability assessment and planning, implementation and monitoring of the participatory adaptation plans in the pilot etraps.	Member of the Project Board
Etrap (Administrative and territorial unit at district level)	Direct participation in adaptation planning, implementation and monitoring of farmer and livestock association adaptation plans.	Implementing partner and member of etrap coordinating committees
Gengesh (local government bodies)	Support for agriculture and livestock associations adaptation planning and implementation. Member of etrap coordinating committee	Member of etrap coordinating committee
Daikhan (Farmer) and Livestock Associations	Participation and decision making at all stages of all activity related to agriculture, irrigation, drainage, and sustainable land and pasture management in the pilot entraps. For demonstration projects, formal letters of understanding outlining mutual commitments will be jointly prepared and signed.	Project implementers and direct beneficiaries

## 9.8 THEORY OF CHANGE

Expected Outcome	Output	Barrier	Barrier Type	Overall Risk Category	Risk Mitigation
<i>Component 1: Improved climate related socio-economic outcomes in the targeted agricultural communities in Lebap and Dashoguz velayats through the implementation of community-based adaptation solutions</i>	<i>Output 1.1 Participatory vulnerability and adaptation assessments carried out in selected communities to identify priority adaptation solutions</i>	1.1.1 Lack of understanding of the climate and environmental related issues and options for community adaptation	Technical	M	1) bio-physical and socio-economic resource mapping to develop understanding of key environmental and climate changes in the natural resource base
		1.1.2 Lack of ability to identify causes and incidence of agricultural land degradation to identify “hot-spots” and to assess the presence or absence of incentives that guide unsustainable land and water use and farming and grazing practices and inform community decisions;	Technical	M	2) Surveys and assessment to identify root causes of vulnerabilities and unsustainable resource uses
		1.1.3 Lack of tools and methods for mapping vulnerability and local capacities within agricultural communities	Technical	M	3) Assessment and mapping of vulnerability and local adaptive capacities within the pilot daikhan associations and livestock farms
	<i>Output 1.2 Gender Sensitive Adaptation Plans developed and effectively addressing climate risks</i>	1.2.1 Agricultural communities do not have the opportunity to participate in the decision making process on water and agricultural activities	Institutional	M	1) Introduction of Participatory Gender-Differentiated Village Adaptation Action Planning to define community agriculture, livestock and water management and climate adaptation investments.
		1.2.2 Existing local planning does not include incorporation of CC risks	Institutional	M	2) The multi-year action planning process would be based on the biophysical and socio-economic and vulnerability mapping exercises and result in the preparation of Participatory Adaptation Management Plans that integrates climate considerations
		1.2.3 Lack of guidance on adaptation planning at the farmer level	Regulatory/ Behavioral	M	3) Etrap administration and daikhan associations will guide the adaptation planning process with technical support from the Project Management Unit (PMU).
		1.2.4 Lack of adequate and substantial financial incentives for promotion of adaptation measures	Financial/ Institutional	M	4) the project would promote the use of innovative financial instruments for fund-transfer to intended beneficiaries, including collaboration with the Daikhanbank for expansion of the preferential credit lines to farmer associations, daikhan farms, landowners and other land users in the pilot areas for supporting climate resilient livelihoods in agriculture and livestock production
	<i>Output 1.3 Alternative income and livelihood innovations enhancing</i>	1.3.1 Lack of access to basic goods and services, technology and practices to manage climate	Institutional/ Behavioral	L	1) risk management at the micro-level to maximize benefits and opportunities, improved processing and storage facilities, seed improvement and high value chain

<i>climate-resilience of agricultural communities</i>	risks			development activities, testing of new technologies for improving incomes and up-scaling, including alternate energy (micro-hydro, solar, etc.) for community based processing, drying and cooking, gravitational irrigation, improved village storage, packing, better transport methods to markets to reduce damage, microfinance, etc. In terms of vegetable seed, better primary level processing and handling at the farm level to reduce labour costs, improved livestock breeds and fodder management and improved feeding methods, and sustainable harvest methods to reduce damage to fodder trees
	1.3.2 Lack of diversification of incomes and livelihoods as means for managing climate risks	Institutional	M	2) Programs for diversification of the agricultural economy (e.g. bee-keeping, mobile dairy farms, etc.) to ensure food security in times of climatic extremes and help cope in times of economic difficulty.
	1.3.3 Lack of technical support, capacity and funding to local communities for enhanced practices and diversified incomes	Institutional/ Financial	L	3) The project would provide technical support, training and project grant funding to local communities (pilot daikhan associations and livestock farm) for improved risk management and income diversification
<i>Output 1.4 Participatory mechanisms for implementing and monitoring change in community climate resilience</i>	1.4.1 Lack of programs to access impact of development activities	Technical	L	1) Participatory monitoring systems designed to capture the impacts of the on-the-ground investments on community climate resilience, vulnerability and incomes. Monitoring criteria will be set up together with stakeholders in the pilot sites and include explicit criteria related to gender, land use, incomes and climate resilience
	1.4.2. Lack of capacity and tools to measure changes in community resilience	Institutional	L	2) technical support and guidance for the development of the participatory monitoring framework and training of local communities and government institutions to carry out the monitoring and analysis of the monitoring outcomes.
<i>Output 1.5 Successful adaptation measures up-scaled</i>	1.5.1 Limited documentation of best practices on adaptation	Institutional	L	1) identification and document best practices based on field experiences and preparation of notes Promotion of dialogue and discussion between research institutions, community institutions and velayat and national level policy makers to build linkages between practice and policy.
	1.5.2 Lack of opportunity for building learning into policy	Policy	L	2) Promotion of dialogue and discussion between research institutions, community institutions and velayat and national level policy makers to build linkages between practice and policy. National and regional workshops to facilitate dissemination of field lessons and help inform legal and policy reform relevant to climate change
	1.5.3 Lack of sharing of experiences and successful models of climate risk management	Institutional	L	3) Promotion of localized information dissemination mechanisms (field demonstrations and site visits, workshops, training events and media publicity) and support for programs to improve awareness and capacities of

					farmers and community groups and enhance the use of information communication technologies to disseminate adaptation best practices.
<i>Component 2: Adaptation mainstreamed in agricultural and water sector development strategy and policy</i>	<i>Output 2.1 Capacity development for agriculture and water sectors enabling effective adaptation planning with gender considerations</i>	2.1.1 Lack of knowledge of gaps in institutional capacity for mainstreaming of adaptation with gender considerations.	Institutional	M	1) Detailed institutional capacity review to identify specific gaps in addressing climate risks and to clarify and refine the specific training needs for key institutions to enable them to develop and apply a robust adaptive strategy for agricultural management in drought prone areas of Turkmenistan
		2.1.2 Lack of effort to comprehensively address sectoral capacity gaps to enable mainstreaming of adaptation with gender considerations.	Institutional	M	2) Development and implementation of a comprehensive and targeted training program that would focus upon enabling stakeholders to apply practical steps in their daily work to strengthen the adaptive elements of current water and agriculture management capacity.
		2.1.3 Absence of clear institutional mandates and responsibilities for long-term delivery of climate adaptation and risk management training and capacity development programs	Institutional	M	3) The project will set up linkages with suitable national institutions such as the Agricultural Institute of Dashoguz, Agricultural University of Ashgabat, National Research Institute “Turkmenuwlymtaslama” and the Land Management Service under the Ministry of Agriculture to ensure continuity and sustainability of the capacity building and training effort. It would support training of trainers, design of training modules and preparation of training materials.
	<i>Output 2.2 Guidelines provided to water and agriculture sector ministries on using gender disaggregated data in planning, conducting specific assessments on the needs of women and using these in sector adaptation planning and budgeting</i>	2.2.1 Absence of appropriate tools for planning, assessment and budgeting for climate adaptation in agriculture and water sectors	Regulatory	M	1) Guidelines and other tools for integration of adaptation to climate change embodied within the land, water and environmental legislation, as well as in the form of regulations at the departmental levels, complemented by improved competence within these departments and agencies to their adoption
		2.2.2 Lack of capacity and understanding of linkages between climate events and water availability and agricultural production,	Institutional	M	2) The project would provide technical assistance and training and communication for enhancing understanding of linkages between climate events and water availability and agricultural production.
	<i>Output 2.3 Regulation and guidelines for inclusion of adaptation in national and local development planning and budgeting developed and linked to sector based planning, coordination and monitoring processes</i>	2.3.1 Adaptation planning at national and local level challenged by quality of governance at all levels and the challenge of establishing linkages across national, provincial, district and village levels for vulnerability assessments, adaptation planning and implementation within the framework of the NEPAAM.	Institutional	M	1) provision of technical assistance and training to improve the understanding and awareness of etrap and velayat municipality staff in the pilot areas to the linkages between climate change and its impacts on local level agricultural productive, livelihoods and the economy as the first step towards trying to mainstream climate adaptation into etrap and velayat level planning and budgetary processes.

		2.3.2 Lack of expertise and experience in local level adaptation planning and budgeting	Institutional	M	2) identification of tools and methodology (that have been tested and demonstrated elsewhere) to integrate climate adaptation actions that could be modified and applied in the local planning and budgeting context.
		2.3.3. Lack of clear guidelines and approaches for integrating local adaptation planning with national planning and budgeting processes	Regulatory	L	3) supporting preparation of planning guidelines and other tools to facilitate linkage of local level adaptation plans with national adaptation planning and budgeting processes for the water and agriculture sectors.
	<i>Output 2.4 Institutional and legal mechanisms for water resource management integrate key principles of efficient use and climate risk management</i>	2.4.1 Absence of single organization structure for water management based on basin principles constraints the efficient use of water resources and is a significant barrier to promoting adaptation to climate change.	Institutional	H	1) The project will facilitate a shift to basin management and promote the application of integrated water resources management (IWRM) principles and approaches.
		2.4.2 Lack of delegation of responsibility for management, operation and maintenance of water supply systems to water users	Regulatory	M	2) The project will support the review and revision of the laws on daikhan (farmer) associations to enhance their mandates to cover management, operation and maintenance of irrigation networks as well as water distribution.
	<i>Outcome 2.5 National sectoral planning and rural development investments take account of, and address climate change related risks</i>	2.5.1 Sectoral plans in the agriculture and water do not integrate climate adaptation measures into programs, plans and budgets.	Institutional	M	1) The project will provide technical and policy support to the Ministry of Economy and Development to coordinate the process for integrating climate adaptation and risk management into public-sector decision making and budgeting in the agriculture and water sectors.
	<i>Output 2.6 Ecosystem services valued and potential impacts of climate change on natural pastures assessed to inform sustainable pasture management decision-making</i>	2.6.1 Lack of tools for economic valuation of the ecosystem services constraint sustainable pasture management.	Institutional	M	1) developing a methodological framework for assessing the carrying capacity of, and developing options for sustainable pasture use and management in changing climate scenarios
		2.6.2 Lack of proven models for assessing impacts of climate change on the productivity and carrying capacity of the pastures,	Institutional	M	2) Sustainable climate resilient pasture management plans developed and implemented in pilot etraps
<i>Component 3: Strengthened national capacity for iterative climate change adaptation planning, implementation and monitoring</i>	<i>Output 3.1 Mechanism for iterative monitoring, reporting and verification of implementation of the mainstreamed adaptation actions established</i>	3.1.1 Absence of reliable monitoring and assessment system to assess vulnerabilities and sustainable development benefits from investments	Institutional	M	1) The project would finance the creation of a system for monitoring, reporting and verification of implementation of adaptation actions under NEPAAM.
		3.1.2 Absence of institutional arrangements for coordination, mainstreaming, funding and	Institutional	L	2) The project would support the hiring of 2-3 key technical staff to support the proposed NEPAAM Secretariat in coordination, mainstreaming, funding and measurement,

	measurement, reporting and verification of adaptation (and mitigation) actions; provide support for training of staff at sectoral and administrative levels for undertaking the monitoring, reporting and verification of adaptation (and mitigation) actions, and providing facilitation support to sector agencies for mainstreaming of adaptation actions into their respective sector plans and programs.			reporting and verification of adaptation (and mitigation) actions
	3.1.3 Lack of capacity at sectoral and administrative levels for undertaking the monitoring, reporting and verification of adaptation (and mitigation) actions	Institutional	L	3) The project would provide training of staff at sectoral and administrative levels for undertaking the monitoring, reporting and verification of adaptation (and mitigation) actions, and providing facilitation support to sector agencies for mainstreaming of adaptation actions into their respective sector plans and programs.
<i>Output 3.2 Vulnerability/resilience indicators and protocols for gender-disaggregated data collection, storage, processing and use in planning and decision-making</i>	3.2.1 Lack of indicator frameworks and protocols for data collection, storage, processing, use and verification for adaptation. In particular, this would require: (i) the development of a set of indicators to measure adaptation vulnerability and climate resilience; (ii) the establishment of procedures for collecting data, undertaking data analysis, communicating results, submitting reports and archiving; (iii) the establishment and operationalization of an assessment, review and verification process; (iv) definition of coordinating procedures for information management with sector and administrative entities; (v) establishment of quality assurance	Institutional/ Regulatory	L	1) The project would support: (i) the development of a set of indicators to measure adaptation vulnerability and climate resilience; (ii) the establishment of procedures for collecting data, undertaking data analysis, communicating results, submitting reports and archiving; (iii) the establishment and operationalization of an assessment, review and verification process; (iv) definition of coordinating procedures for information management with sector and administrative entities; (v) establishment of quality assurance
	3.2.2 Lack of capacity and skills for monitoring of vulnerability and adaptive capacity	Institutional	M	2) The project will provide technical support and training to core sector staff for operationalization of the monitoring system in the pilot areas covered under component 1 of the

				project.
<i>Output 3.3 Actions to build the evidence base for robust decision making implemented.</i>	3.3.1 lack of clear linkage between research and practice in the agriculture sector in Turkmenistan in climate risk and vulnerability assessment and adaptive actions that constraints ability to inform public and private (including local communities and other stakeholders) decision-makers to uptake of successful adaptation approaches	Institutional	L	1) The project would support evaluation of the current state of adaptation research and knowledge in the country, assessment of the relevance of existing adaptation research and practice in the country and identification of approaches to ensure how adaptation research and practice lessons and recommendations may be replicated and better implemented
	3.3.2 Lack of clear understanding of climate risks and impacts at the agro-ecological level that constraints ability to adopt to changing climate scenarios	Institutional	L	2) The project will also support the development of more detailed modeling of agro-ecological zones that would help inform long-term government investment policy in the agriculture and water sector to deal with future climate scenarios.
<i>Output 3.4 Communication and outreach strategy to support the medium and long-term adaptation planning of NEPAAM developed and implemented.</i>	3.4.1 Lack of capacity for medium and long-term adaptation planning and budgeting within the overall goal of reducing vulnerability of the population and key sectors to the impacts of climate change.	Institutional	M	1) The preparation of a communication and outreach strategy to promote meaningful stakeholder participation in the adaptation action, implement direct outreach to diverse communities and communicate adaptation implementation activities and outcomes to the broader public.
	3.4.2 Lack of understanding and participation of key target groups in climate risk management	Institutional	M	2) Implementation of communication and awareness plan through training curriculum and manual, posters and brochures, journal articles, press releases, video and television documentaries, policy briefs, websites, etc.