



Project Identification Form (PIF) entry – Full Sized Project – GEF - 7

Conservation and Sustainable Management of Land Resources and High Nature Value Ecosystems in the Aral Sea Basin for Multiple Benefits

Part I: Project Information

GEF ID

10352

Project Type

FSP

Type of Trust Fund

GET

CBIT/NGI

☐ CBIT

☐ NGI

Project Title

Conservation and Sustainable Management of Land Resources and High Nature Value Ecosystems in the Aral Sea Basin for Multiple Benefits

Countries

Turkmenistan

Agency(ies)

UNDP

Other Executing Partner(s)

Ministry of Agriculture and Environmental Protection

Executing Partner Type

Government

GEF Focal Area

Multi Focal Area

Taxonomy

Focal Areas, Land Degradation, Sustainable Land Management, Sustainable Forest, Sustainable Pasture Management, Ecosystem Approach, Income Generating Activities, Community-Based Natural Resource Management, Sustainable Livelihoods, Restoration and Rehabilitation of Degraded Lands, Improved Soil and Water Management Techniques, Sustainable Agriculture, Integrated and Cross-sectoral approach, Land Degradation Neutrality, Land Cover and Land cover change, Land Productivity, Forest, Forest and Landscape Restoration, Biodiversity, Protected Areas and Landscapes, Community Based Natural Resource Mngt, Terrestrial Protected Areas, Productive Landscapes, Biomes, Wetlands, Grasslands, Temperate Forests, Lakes, Desert, Mainstreaming, Agriculture and agrobiodiversity, Species, Threatened Species, Influencing models, Convene multi-stakeholder alliances, Demonstrate innovative approach, Strengthen institutional capacity and decision-making, Stakeholders, Type of Engagement, Information Dissemination, Partnership, Participation, Consultation, Private Sector, SMEs, Individuals/Entrepreneurs, Civil Society, Academia, Community Based Organization, Communications, Education, Behavior change, Awareness Raising, Beneficiaries, Local Communities, Gender Equality, Gender Mainstreaming, Sex-disaggregated indicators, Gender-sensitive indicators, Women groups, Gender results areas, Access and control over natural resources, Capacity Development, Participation and leadership, Access to benefits and services, Knowledge Generation and Exchange, Learning, Capacity, Knowledge and Research, Indicators to measure change, Theory of change, Adaptive management, Innovation

Rio Markers**Climate Change Mitigation**

Climate Change Mitigation 1

Climate Change Adaptation

Climate Change Adaptation 0

Duration

60 In Months

Agency Fee(\$)

435,404

Submission Date

10/3/2019

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
LD-1-1	GET	1,408,356	14,291,214
LD-1-4	GET	1,408,356	14,291,214
BD-2-7	GET	1,766,484	18,147,572
Total Project Cost (\$)		4,583,196	46,730,000

B. Indicative Project description summary

Project Objective

To promote land degradation neutrality, restore and improve the use of land and water resources in Turkmenistan's Amu Darya watershed to enhance the sustainability and resilience of livelihoods and globally significant ecosystems.

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
1. Promoting Land Degradation Neutrality	Investment	<p>Outcome 1: Land degradation neutrality in Aral basin promoted, as evidenced through:</p> <ul style="list-style-type: none"> - LDN-compatible land use in 760,000 ha of production landscape; - crop resilience to salinization improved in 10,000 ha - 50,000 ha of degraded pasture and forest land restored; - improved livelihoods of 5,000 farmers (50% women) directly, with immediate replication potential for 100,000 people. <p><i>(All values to be confirmed at PPG stage)</i></p>	<p>Output 1.1 Integrated landscape plans for priority areas of Dashoguz and Lebap provinces (incl. mapping; long-term land restoration plans for priority areas in and around KBAs and associated agricultural landscapes; regional Land Degradation Neutrality (LDN) targets established and action plans and monitoring systems agreed for attaining them).</p> <p>Output 1.2 Investment in community-based restoration of degraded arable and forest lands in 2 provinces, including saxaul and/or sea buckthorn planting in degraded areas; introduction of salt-tolerant crop varieties, and facilitating natural regeneration of tugai forest, with high potential for income for local communities.</p> <p>Output 1.3 Efficient water management of irrigated land in 4 priority districts, incl: maintenance of water management infrastructure;</p>	GET	2,500,000	26,800,000

operationalization of multi-stakeholder Water User Groups (involving local communities); introduction of best practice irrigation technologies.

Output 1.4 Sustainable pasture management regimes in 4 priority districts introduced raising productivity of livestock management for local communities, incl: sustainable pasture management plans focusing on rotational grazing and efficient and sustainable livestock watering infrastructure.

2. Securing Critical Ecosystems for Biodiversity and Ecosystem Services	Investment	<p>Outcome 2: Secured biodiversity status in >0.5 mln ha of KBAs in the Amu Darya basin, as evidenced by:</p> <ul style="list-style-type: none"> - non-deterioration of globally threatened species, including Egyptian Vulture, Saker Falcon, Dalmatian Pelican, Houbara Bustard, Cinereous Vulture, Ferruginous Duck; - Management effectiveness increased for targeted protected areas from ~20% to ~40%; - New protection mechanisms established covering additional 50,000 of currently unprotected KBAs, increasing PA 	<p>Output 2.1 Management effectiveness supported for 8 existing PAs, including: (1) support to critical activities on improvement of status of species in PAs, including patrolling; (2) support to local tourism infrastructure to facilitate additional income generation at for local communities at targeted PAs; (3) control over illegal activities (e.g. poaching, illegal tree cutting).</p> <p>Output 2.2 New conservation areas operationalized through new and innovative approaches covering 50,000 hectares of unprotected high priority ecosystems, supported by:</p> <ul style="list-style-type: none"> - Gap analysis; 	GET	1,375,000	15,000,000
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coverage of KBA area in the target landscape by ~5%, to roughly 50%

(All values to be confirmed at PPG stage)

- Feasibility studies and technical documentation for PA establishment;

- Analysis of ecological flow water requirements for maintenance and conservation of KBAs at new sites

- Mapping, management, and financial plan preparation, with clear guidance for core and buffer zones, community-based conservation activities and monitoring.

Output 2.3 Implementation of biodiversity-friendly sustainable use regimes in PA buffer zones and corridors covering 600,000 ha aiming to provide alternative income to local communities (*pls. see details in the main text*).

3. International knowledge sharing and cooperation for the Aral Sea Basin	Technical Assistance	<p>Outcome 3: Strengthened and better-informed engagement of Turkmenistan in implementation of regional cooperation under the International Fund for Saving the Aral Sea (IFAS) for improved management and restoration of Aral basin land and water resources, as evidenced by:</p> <ul style="list-style-type: none"> - Turkmenistan is represented at key regional fora and events supporting the restoration of the Aral Sea - Support provided to international dialog and cooperation on IFAS <p><i>(To be confirmed at PPG stage)</i></p>	<p>Output 3.1 Higher capacity for government and scientific institutions for participating in IFAS. IFAS sanctioned activities for the implementation of global and regional initiatives put forward by Turkmenistan to save the Aral Sea, (e.g. Special Programme for Saving the Aral Sea)</p> <ul style="list-style-type: none"> - At least 3 IFAS meetings attended by Turkmenistan delegation where Turkmenistan contributes to decisions at IFAS, - Targeted knowledge management and exchange products (web-based, TV programs, trainings for communities and decision makers) on LD and BD issues in the Aral Sea - Outreach and awareness raising on the problems of the Aral Sea basin, supporting Turkmenistan's efforts to address degradation <p>Output 3.2 Knowledge management and M&E</p> <ul style="list-style-type: none"> - Lessons documented and disseminated within project partners and amongst stakeholders - Project monitoring and evaluation activities 	GET	489,949	4,630,000
Sub Total (\$)					4,364,949	46,430,000

Project Management Cost (PMC)

GET	218,247	300,000
Sub Total(\$)	218,247	300,000
Total Project Cost(\$)	4,583,196	46,730,000

C. Indicative sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Government	The Ministry of Agriculture and Environment protection	Public Investment	Recurrent expenditures	18,710,000
Government	The State Committee of Turkmenistan on Water Economy	Public Investment	Recurrent expenditures	27,820,000
GEF Agency	UNDP	Grant	Investment mobilized	50,000
CSO	Various NGOs	In-kind	Investment mobilized	50,000
Government	Dashoguz and Lebap Velyats	Public Investment	Investment mobilized	100,000
Total Project Cost(\$)				46,730,000

Describe how any "Investment Mobilized" was identified

Clarification on co-financing: Public investment (USD 18.71 mln), under the Program of Development of the Agricultural Complex of Turkmenistan for 2019-2025 provides relevant co-financing for Outcome I, specifically for improvements in crop agriculture/soil improvement technologies, irrigation. It also provides co-financing for Outcome 3 as it covers some of the aspects (e.g. agricultural research) relevant to the functioning of IFAS. Protected areas management authorities will also participate in co-financing, as own funds and fixed and current assets will be used, including those coming from the state and local budgets, which is important co-financing for Component 2.. The co-financing from programs managed by the State Committee on Water Management (USD 27.82) covers water facility maintenance and repair costs in the districts, targeted under Output 1.3. Co-financing by local governments will be provided mostly from the budget of Dashoguz and Lebap branches of Ministry of Agriculture and Environmental Protection and State Committee for Water Economy in the lower (Dashoguz) and middle (Lebap) Amu Darya landscape, and the 4 district governments from the targeted priority districts. These funds will be committed for the improvement of water management and distribution, agriculture and pasture management, conservation and sustainable use of biological and landscape diversity, and development of the protected area system in the Amu Darya landscape. The project will engage non-governmental and civil society organizations. For instance, it is expected that the following national and local NGOs could be engaged into gender mainstreaming, community engagement and capacity building work of the project: "Nature Conservation Society of Turkmenistan", "Bosphorus", "Keik okara", "Yenme". These NGOs have been active in the areas of environmental protection and awareness, environmental education, SME support, rural development, women empowerment and could be engaged in the community outreach and gender mainstreaming work of the project. Project beneficiaries will also be expected to provide their own in-kind support for project activities that involve project investments with direct benefits for local resource users. Per GEF co-financing guidelines, in-kind contributions by civil society and project beneficiaries catalyzed by project activities are considered as investment mobilized. In addition, UNDP TRAC grant financing (\$50,000) will be mobilized to support the project. Each of these co-financing commitments will be discussed at PPG with the entity providing the co-financing. The amounts will be confirmed. The linkages and

relevance to specific project sites/project activities will be agreed as well. Letters of co-financing will be obtained that will confirm amounts, relevance and coordination with relevant project elements.

D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
UNDP	GET	Turkmenistan	Land Degradation	LD STAR Allocation	2,816,712	267,588	3,084,300
UNDP	GET	Turkmenistan	Biodiversity	BD STAR Allocation	1,766,484	167,816	1,934,300
Total GEF Resources(\$)					4,583,196	435,404	5,018,600

E. Project Preparation Grant (PPG)**PPG Amount (\$)**

120,000

PPG Agency Fee (\$)

11,400

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
UNDP	GET	Turkmenistan	Land Degradation	LD STAR Allocation	60,000	5,700	65,700
UNDP	GET	Turkmenistan	Biodiversity	BD STAR Allocation	60,000	5,700	65,700
Total Project Costs(\$)					120,000	11,400	131,400


Core Indicators

Indicator 1 Terrestrial protected areas created or under improved management for conservation and sustainable use

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
594,423.00	0.00	0.00	0.00

Indicator 1.1 Terrestrial Protected Areas Newly created





Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
50,000.00	0.00	0.00	0.00

Name of the Protected Area	WDPA ID	IUCN Category	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
Community-conservation Areas (Output 2.2)	NA	Protected area with sustainable use of natural resources	50,000.00			

Indicator 1.2 Terrestrial Protected Areas Under improved Management effectiveness

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
544,423.00	0.00	0.00	0.00

Name of the Protected Area	WDPA ID	IUCN Category	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)	METT score (Baseline at CEO Endorsement)	METT score (Achieved at MTR)	METT score (Achieved at TE)
Amu Darya State Nature Reserve		Strict Nature Reserve	49,484.00						
Gaplaňgyr State Nature Reserve (including Sarygamysch Sanctuary and Shasenem Sanctuary)		Strict Nature Reserve	282,200.00						

Kelif Sanctuary (zakaznik)	Habitat/Species Management Area	103,000.00	
Koytendag State Nature Reserve	Strict Nature Reserve	27,139.00	
Pitnyakskiy zakaznik of the Amudarinskiy zapovednik	Habitat/Species Management Area	48,000.00	
Repetek State Nature Reserve	Strict Nature Reserve	34,600.00	

Indicator 3 Area of land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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60000.00	0.00	0.00	0.00
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Indicator 3.1 Area of degraded agricultural land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
4,700.00			

Indicator 3.2 Area of Forest and Forest Land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
5,300.00			

Indicator 3.3 Area of natural grass and shrublands restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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50,000.00

Indicator 3.4 Area of wetlands (incl. estuaries, mangroves) restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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Indicator 4 Area of landscapes under improved practices (hectares; excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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760000.00

0.00

0.00

0.00

Indicator 4.1 Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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600,000.00

Indicator 4.2 Area of landscapes that meets national or international third party certification that incorporates biodiversity considerations (hectares)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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Type/Name of Third Party Certification

Indicator 4.3 Area of landscapes under sustainable land management in production systems

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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160,000.00

Indicator 4.4 Area of High Conservation Value Forest (HCVF) loss avoided

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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Documents (Please upload document(s) that justifies the HCVF)

Title	Submitted
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Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	2028250	0	0	0
Expected metric tons of CO ₂ e (indirect)	0	0	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	2,028,250			
Expected metric tons of CO ₂ e (indirect)	0			

Anticipated start year of accounting	2024
Duration of accounting	15

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)				
Expected metric tons of CO ₂ e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)
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Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	2,500			
Male	2,500			
Total	5000	0	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

a The proposed project aims to work with 8 existing PAs, which in total cover 544,423 ha. In addition, the project aims to establish protected area coverage over an additional 50,000 ha of currently unprotected KBA area; the specific locations and number of PAs (or expansion of PAs) that this may encompass will be specified in the PPG stage. b Sum of: 4,700 ha of agricultural land restored, 5,000 ha of desert saxaul forest restored, and 300 ha of tugai forest restored, 50,000 ha of pastures. The project directly supports Aichi Target 12. c Output 2.3: Implementation of biodiversity-friendly sustainable use regimes in protected area buffer zones and corridors covering 600,000 hectares. Output 1.3 Improved water management systems to improve efficiency, reduce salinization, and maintain ecological flows over 100,000 ha of irrigated land in 4 priority districts in Dashoguz and Lebap provinces. Output 1.4. Improved agricultural land and water use in 4 priority districts to reduce land degradation over 10,000 ha of irrigated land and 50,000 ha of pastureland. d To be confirmed during the PPG phase. This is conservatively estimated as the number of residents most directly and closely located to the project areas that are expected to have the most intensive interventions. The project will work directly with local land and water users and residents on a variety of activities under multiple outputs in order to improve the land and water management in these areas, and to conserve biodiversity in these areas. It is expected that the actual number is likely much higher, but confirming this will require further planning and consultation that will be carried out during the PPG phase. * GHG emissions avoided as a result of improved crop management (at 10,000 ha) and improved pastures (50,000 ha). Calculated using FAO Exact tool. The copy of the calculation can be presented on request.

Part II. Project Justification

1a. Project Description

Target Landscape

The area targeted by the project roughly encompasses the lower Amu Darya river basin, feeding into the Aral Sea basin. This area is administratively covered by two of Turkmenistan's five provinces ("velyats"): Dashoguz (along the lower Amu Darya) and Lebap (along the middle Amu Darya). These two provinces cover 16,716,000 ha (although some of this area is strictly Karakum desert area, and is beyond the scope of the proposed project). Within these two provinces approximately 1,200,000 ha have been identified as Key Biodiversity Areas (KBAs), which are primarily lakes, wetlands, rivers, and associated vegetated ecosystems, including floodplain (tugai) forests. Across the desert landscape areas of saxaul "forest" are also often areas of high desert biodiversity. Both forest types are within the scope of the proposed project.

Of the remaining 15.5 million hectares, approximately 12.8 million ha is classified as "pasture", including large areas of desert pasture. Turkmenistan is 80% flat desert and semi-desert plains lying between 0-200 m above sea level; the remaining 20% is occupied by mountains. Turkmenistan's soft and sandy soils have low humus content, caused by low levels of precipitation and high surface temperatures. Consequently a considerable amount of water is lost to infiltration into deep soil layers inaccessible to the roots of plants, which limits the development of vegetation. Approximately 1.0 million ha in Dashoguz province is considered "arable" land, while around 400,000 ha are irrigated. Approximately 290,000 ha in Lebap province are irrigated.

The two provinces combined have a total population of roughly 2.7 – 3.0 million people, with a relatively low average population density of 5.5 ha per person; however, in reality the majority of the population is concentrated along the narrow strip of developed (and irrigated) territory flanking the southwestern bank of the Amu Darya river. This corridor is also where a majority of the landscape's KBAs are found (please refer to Annex E for a detailed presentation of the KBAs targeted by the project).

Please refer to Annex D for a detailed presentation of information relevant for this project, namely: the agricultural land-use, state of pastures and pasture management regulations, land tenure and user rights, water management, protected areas, forest management, gender context.

Threats, Root Causes and Key Barriers

According to the 2012 Environmental Performance Review for Turkmenistan, the salinization of irrigated lands, desertification and biodiversity loss remain the most pressing environmental challenges for Turkmenistan, despite some policy progress in the prior decade. Turkmenistan started developing its environment-related strategies and programmes in early 2000. The priority areas of the State policy have been air quality, development of "green belts", protection of water, land and forest resources, and the conservation of biodiversity. Turkmenistan is party to multiple international environmental treaties, and continues making efforts to bring its legislation in line with its international obligations. Among recent progress was the accession by Turkmenistan to the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes in August 2012, which has been important for ongoing regional efforts to restore the Aral Sea basin.

In total there are three major threats relating to the integrated issue of sustainable land management, including the conservation of biodiversity and maintenance of critical ecosystem services. These threats have a number of underlying root causes. These are discussed below; understanding them may be assisted by annexes on the project context and KBA mentioned earlier.

Soil Degradation from Salinization, Waterlogging and Desertification

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The major types of land degradation in Turkmenistan are secondary salinization in irrigated lands, soil erosion in the rainfed and mountainous areas, and loss of vegetation, desertification or detrimental change in the vegetation composition in the rangelands. The major proximate causes include unsustainable agricultural practices, the expansion of crop production to fragile and marginal areas, inadequate maintenance of irrigation and drainage networks, and overgrazing near settlements. Water management is one of the key issues for Turkmenistan. Almost 90% of its water resources go to irrigation. Irrigation water often does not meet the State standards for mineral content, and chlorides and sulphates are excessive. Secondary salinization is the major land degradation problem in the irrigated areas in the region, covering an estimated 40–60 % of these irrigated areas. The salinization is especially acute in the downstream areas: almost all irrigated areas in Turkmenistan (and the provinces of Uzbekistan and Kazakhstan bordering the Aralkum desert (the former Aral Sea)) are affected with secondary salinization. At the same time, significant water losses together with the extensive use of old irrigation technology, which uses increasing amounts of water, induces water logging. Waterlogging and salinization has resulted in a decline in crop yield in Turkmenistan of some 25% from 2002-2012. It has been estimated that the cost of land degradation in Turkmenistan in 2009 was 870 million US dollars, equivalent to \$1,083 US dollars per capita and 4% of GDP (Mirzabaev et al, 2015).

Underlying drivers of land degradation are likely to be more important in terms of triggering these land degradation trends. The former Soviet policies of cotton and grain self-sufficiency had led to massive expansion of irrigated cotton and rainfed wheat production to marginal areas. Subsequently, there was a lack of resources and incentives to maintain those irrigation and drainage networks and adequately operate the expanded rainfed areas under the conditions of market economy. The dismantling of former collective farms into much smaller and fragmented farmer plots has also created a mismatch with the irrigation system planned and operated for large-scale centralized farming and the needs of the new smallholder farmers. This had resulted in an institutional vacuum on sharing the responsibilities for the maintenance of the irrigation and drainage networks. At the same time, the lack of irrigation water pricing effectively means subsidizing excessive water use by agricultural producers. Some underlying policy factors act through these proximate causes. Irrigated cotton production with inadequate drainage remains promoted. Continued subsidies for irrigation create disincentives to economize on water. Other key underlying drivers of land degradation include land tenure insecurity, and the breakdown of collective action institutions regulating and facilitating access to common pool rangeland resources. The combination of these factors has led to lack of incentives for land users to adopt sustainable land management practices.

Habitat Destruction from Agricultural Encroachment and Illegal Taking in Critical Ecosystems

Turkmenistan is highly vulnerable due to the fact that desert, steppe and mountain ecosystems are very fragile and easily degraded. Ecosystem degradation can have a negative impact on economic, health and food security. The biodiversity of Turkmenistan has declined significantly over the past century due to desertification, land degradation and overexploitation. Turkmenistan's biodiversity is mainly threatened by loss and degradation of habitat through encroachment from the direct conversion of natural ecosystems, and overgrazing by domestic livestock. The main anthropogenic threats are agriculture, especially irrigated cotton production, hunting and poaching, and the overuse of woody plants for firewood and silk production. Overgrazing of livestock occurs in non-irrigated areas. Unregulated construction of roads threatens especially fragile desert ecosystems. The vegetation of the sand deserts of Turkmenistan is the most vulnerable to these anthropogenic influences, but riparian ecosystems have greatly suffered as well.

Saxaul and other trees and shrubs are cut extensively for fuel wood. Areas occupied by the communities of saxaul (*Haloxylon album*, *H. persicum*) and psammophyte shrubs have been reduced by more than two thirds of their original area, leaving the topsoil prone to erosion. Many natural forests (e.g., saxaul, tugai, pistachio and juniper forests) have been significantly reduced and degraded in the recent past. Additional pressures include overexploitation of species through hunting and over-fishing. The decline of sturgeon, Caspian seal and leopard populations in the country are the most striking examples. With the decline of the enforcement capacity in the existing protected areas, unregulated hunting has significantly decreased the population of many wild ungulates in Turkmenistan, notably goitered gazelles (*Gazella subgutturosa*), Urial sheep (*Ovis ammon*), and Bezoar ibex (*Capra aegagrus*). Many wildlife species have been all but extirpated outside of protected areas, notably endangered species such as Urial sheep, goitered gazelle, Asiatic wild donkeys, pheasants, see-see partridges, black francolins, leopards and snakes.

Insufficient Water for Agriculture and Critical Ecosystems

The free allocation of water for agricultural use does not provide any incentives for water-saving practices. The biodiversity and high-value ecosystems of Turkmenistan are under threat from desertification and land degradation, significantly linked to a reduction in the available water table, as massive amounts of water have been withdrawn from the Amu Darya river over the past 70-100 years, leading to the great diminishment of the Aral Sea and other smaller water bodies in the region.

Demand for water in Turkmenistan's agriculture sector is likely to increase, leading to reduced availability of water for biodiversity and associated ecosystem services. Higher evaporation rates are predicted due to climate change, and are likely to increase the water requirements for irrigating crops by 30-40%, thereby aggravating existing water scarcity and irrigation concerns. Increased water demand of up to 60% is expected for vegetables, a growing subsector. In the case of cotton and wheat, the two most important crops in the country, water demand is expected to increase by close to 20% and 10% per unit of area by 2040, respectively. By 2100 these figures will be close to 40% and 20%. Irrigation norms for key crops are likely to have to increase by 13% by 2030-2040.

At the same time water availability is likely to decrease. On the supply side, increasing temperatures, a decrease in precipitation, and the likely reduction in surface water availability are all likely to lead to an increase in aridity and accelerate desertification. River flows are expected to reduce drastically. An increase in the evaporation rates will also contribute to a significant reduction of water available for irrigation. According to estimates from Uzbekistan, the flow of the Amy Darya is likely to decrease by 15% by 2050. Flow rates of other rivers are expected to decline at even faster rates (up to 30% reduction). Turkmenistan is also likely to be heavily impacted by changes in the glacier systems in the Pamir Alai in the longer term. The average reduction in run off rates in terms of surface water collected in national storage and distribution systems is expected to be 10%, whereas during vegetation periods the reduction in run off rates will reach 30-40%.

Due to the dry hot and sharply continental climate and the geographical location of the country in the desert zone, Turkmenistan's biodiversity is especially vulnerable. The country is dependent on maintaining important ecosystem services, including natural services related to the collection and purification of natural water and climate stabilization.

Barrier 1: Lack of technical capacity and information for sustainable land and water management and integration of biodiversity conservation in production landscapes

The GEF, with UNDP support, plus other multilateral (e.g. Adaptation Fund) and bilateral donors have been investing for a number of years in developing Turkmenistan's national capacity for sustainable land and water management, with some progress. Nonetheless, there remain significant gaps, given the country's low initial baseline, and the preliminary scope of initial efforts. Previous efforts have included the GEF-funded MSP "Capacity Building and on-the-ground Investments for Integrated and Sustainable Land Management," (GEF ID #3239) under the CACILM Partnership Framework, from 2008-2010. While the terminal evaluation of the project rated it as generally satisfactory, the scope was clearly limited, and the first recommendation of the terminal evaluation was that relevant government agencies *"take steps to initiate a review of the approach/philosophy, policy, legislation and institutional framework for land management in Turkmenistan with the aim of removing barriers that are standing in the way of SLM."*

However, the most significant issue is that technical capacity and know-how for sustainable land and water management remains centralized in the capital, or localized in the sites of previous interventions. The CACILM MSP targeted the regions of Nokhur, Karakum, and Sakar Chaga, where measures such as sustainable pasture management, sand stabilization, reduction in wood cutting, and desalinization were applied. These efforts were generally successful, but have not been disseminated and scaled up to the most critical areas of Turkmenistan – in Dashoguz and Lebap provinces, which have a majority of Turkmenistan's degraded land (and a majority of the KBAs). Therefore, at decentralized provincial levels there is a lack of awareness of sustainable land management approaches (best practices and technologies), and the absence of delivery and distribution platforms (both public and private) for extension services that can strengthen the skills and awareness of farmers on sustainable land and water management.

There is only limited capacity to advise farmers on sustainable water/land management practices, and related conservation of critical ecosystems. There is also limited access to sustainable land management information products tailored for the needs of the farmers. State institutions dealing with land and water management issues has received significant investment in equipment financed by the Government of Turkmenistan in recent years. However, these agencies lack the capacity to develop tailored and user-oriented sustainable land and water management information services for agricultural sector. Existing state-managed research sites, while having access to land, remain primarily focused on state order crops (cotton, wheat, sugar beet), are poorly funded and lack technical and scientific capacity. Another gap is the lack of consideration of biodiversity values and ecosystem services within existing agricultural practices, training approaches and information materials. There have been few efforts within Turkmenistan thus far addressing the documentation and financial measurement of ecosystem services. UNDP has lead an initial expert assessment of the valuation of biodiversity in Turkmenistan (with the output the report "Nature and Economics: the Results of an Economic Valuation of Ecosystem Services in Turkmenistan"), but this has not yet been mainstreamed into the agriculture sector, in terms of adjusting management practices or policy decisions.

Barrier 2: Limited human and financial resources in the management of PAs

The lack of capacity at the individual, institutional and systemic levels is a limiting factor in biodiversity conservation and PA management in the country. The national PA system's effectiveness is limited by its small area of coverage, restricted range of PA categories and governance types, insufficient devolution of decision-making and financial authority, and the restricted participation of local stakeholders and resource users.

The 15 KBAs targeted under this project are partially covered by PAs, though 6-7 KBAs are not covered by any PAs, and in total approximately 650,000 hectares of KBAs are not covered by PAs. Even though there are 8 existing PAs within the scope of this project, this does not mean that they are effectively managed to conserve their biodiversity values. As in many countries in the region, Turkmenistan's PAs in general have a shortage of human and financial resources, and conservation actions are only partially implemented. The implementation and enforcement of laws and regulations relating the PA management is not at a high level, and is uneven throughout the country. Some PAs do not have dedicated staff (depending on the level of the PA), and for PAs that do have rangers, patrolling is carried out inconsistently, and not in a structured manner. Reliable, up-to-date information on the status of and trends in biodiversity is an indispensable prerequisite for proper biodiversity management and decision-making. Yet, the comprehensive, up-to-date assessment of the conservation state of ecosystems and species throughout Turkmenistan is undermined by the incomplete system of biodiversity monitoring. Consequently the level of illegal activity in and around PAs is not effectively controlled, and not well documented. In cases when illegal activity is detected, there is not a consistent or effective approach to prosecution or penalties (monetary or otherwise). The low level of enforcement is exacerbated by limited infrastructure such as ranger stations, and inadequate equipment (e.g. binoculars, uniforms, packs, weapons) and transport for rangers. Ranger salaries are also low, and with harsh working conditions there are few financial (or other) incentives for staff to pursue a long-term career, with corresponding personal and professional capacity development. Individual and institutional capacity is lacking in terms of management, technical and professional skills.

Current baseline METT scores for the PAs within the scope of this project will be completed during the PPG phase. A few of the PAs within the scope of this project were also supported through a previous UNDP-GEF project on strengthening the national system of PAs. At the end of that project in 2012 the following METT scores were recorded for the below PAs: Repetek – 48%; Gaplankyr – 50%; Amu Darya State Nature Reserve – 44%; Koyten Dag – 66%. A similar level or lower METT scores are expected for the remaining PAs in the scope of this project. It was not possible at the PIF stage to conduct a full analysis of these METTs to determine the specific gaps and priority needs for the PAs, in order to specifically plan project activities under Output 2.1.

In terms of integration in the wider landscape, PA boundaries are not well demarcated or recognized by many stakeholders and resource users. In addition, there is typically little input by local resource users to PA management decision making. Poverty is high in rural areas, and local inhabitants depend on natural resources for their daily survival. There are low levels of awareness among local resource users about the significance of much of the biodiversity in the targeted PAs. In addition, local decision makers also do not have high levels of awareness or understanding of the significance and role biodiversity plays in the ecological functioning of their territories, buttressed by PAs.

Barrier 3: Insufficient awareness, coordination and cooperation for effective management of shared water resources and restoration of the Aral Sea basin

The Amu Darya river forms a major portion of the border between Turkmenistan and Uzbekistan, and both countries draw water from the river for agricultural and other uses. In addition, Turkmenistan is a downstream country along the Amu Darya river, which originates in Kyrgyzstan, Tajikistan and Afghanistan. The project area, and much of the northern part of Turkmenistan, falls within the wider Aral Sea basin, which has been devastated in the past few decades by poor water management and agricultural practices, and is currently one of the most degraded landscapes in the world.

Truly addressing sustainable land and water management across the Aral Sea basin landscape requires regional cooperation, effective coordination, and the cultivation of synergies among all stakeholders. Regional coordination on the Aral Sea is currently undertaken through the International Fund for Saving the Aral Sea (IFAS), and Turkmenistan has recently become more active in this forum. However, there is still inadequate understanding and awareness of the overall problems of sustainable land and water management in the country, and government institutions do not have sufficient capacity to effectively engage at a regional level in order to substantively contribute to sustainable land and water management solutions, and to restoration of the Aral Sea basin landscape. There is a need for greater awareness and understanding among local resource users, local decision makers, and national authorities about the nature and extent of the land and water issues along the Lower Amu Darya, within the Aral Sea basin. Turkmenistan must increase the capacity of government authorities to manage these issues, and to engage at the regional level in order to effectively work with all partner countries within IFAS to continue resolving the problems of the Aral Sea basin.

II.1a.2) the baseline scenario and associated baseline projects

National Implementing Organization	Brief description, time period, budget, and relevance to project
Ministry of Agriculture and Environment Protection	<p>Social and Economic Development of Turkmenistan for 2019-2025 This national government investment program foresees a wide range of investments. The program of Development of the Agricultural Complex of Turkmenistan for 2019-2025 foresees a range of activities to improve the status of land and water management practices. Special attention will be given to the measures in the Aral Sea basin, and work of the IFAS.</p> <p><u>Synergies:</u> This government investment program is a major source of project co-financing, as the program goals align fully with the proposed project. <i>Period: 2019-2025</i> <i>Total budget: \$233 m USD.</i></p>
Ministry of Agriculture and Environment Protection	<p>Social and Economic Development of Turkmenistan for 2019-2025 The majority of investments under this government program are foreseen in the agriculture sector.</p> <p><u>Synergies:</u> This government investment program is a major source of project co-financing, as the program goals align fully with the proposed project. <i>Period: 2019-2025</i> <i>Total budget: \$1.94 billion USD</i></p>
Ministry of Agriculture and Environment Protection	<p>UNDP-GCF Project "Enhancing the resilience to water stress of wheat and cotton farmers in Turkmenistan, through the widespread adoption of efficient irrigation techniques and modernization of irrigation infrastructure."</p> <p><u>Synergies:</u> The proposed project includes a strong focus and attention to climate resilient land management approaches. The project will significantly draw on the lessons and good practices of this ongoing effort. <i>Period: TBD</i> <i>Total budget: TBD ~ \$10-12 m USD</i></p>
Ministry of Agriculture and Environment Protection	<p>Regional Programme Sustainable and climate land use for economic development in Central Asia (SUSTAIN-CA) Land users, government agencies and the private sector in Central Asia adopt integrated, economically and ecologically sustainable forms of land use, taking climate change into account.</p> <p><u>Synergies:</u> The proposed project includes a strong focus and attention to climate resilient land management approaches. The project will significantly draw on the lessons and good practices of this ongoing effort. <i>Total budget: 5.70 m EUR (GIZ)</i> <i>Period: 2016-2020</i></p>
Ministry of Agriculture and Environment Protection	<p>Regional Program "Transboundary Water Management in Central Asia"</p> <p>The measures being implemented are based on a strategy jointly developed with local and regional partner organizations. Phase III of the program focuses primarily on strengthening regional institutions and sustaining the experiences gained in the previous phases. The program supports the Central Asian institutions regulating matters of water distribution at regional level. As such it strengthens their political position in the region. Moreover, it advises the relevant regional, national and local institutions on the formulation of legal provisions and guidelines, and supports the development of</p>

Ministry of Agriculture and Environment Protection; State Committee on Water Management	<p>and local institutions on the formulation of legal provisions and guidelines, and supports the development of practical measures for integrated water resources management. These activities are complemented by a number of pilot projects in selected river basins, which demonstrate the potential benefits of improved water use.</p> <p><u>Synergies:</u> In the Amu Darya landscape the most basic and fundamental aspect of ensuring the maintenance of ecosystem services and the conservation of biodiversity, along with sustainable livelihoods, relates to the efficient and effective management of water. The proposed project will seek to draw on lessons and replicate good practices relating to integrated water resources management developed under this related project.</p> <p><i>Period: 2016-2019</i> <i>Total budget: Ongoing (GIZ)</i></p>
Ministry of Agriculture and Environment Protection	<p>EuropeAid Project "Support to further sustainable agriculture and rural development in Turkmenistan - III Phase"</p> <p>Overall objectives of SARD III is to support Turkmenistan to achieve national objectives for sustainable agriculture & rural development and support key institutions that service agriculture.</p> <p>Purpose of SARD III:</p> <ol style="list-style-type: none"> 1) Increase productivity & competitiveness through improved production, processing & marketing. 2) Strengthen the capacity of supporting institutions <p><u>Synergies:</u> The proposed project bring together sustainable agriculture, and the ecological linkages to sensitive ecosystems through water management, land use planning, and integrated landscape management. The proposed project will therefore build on the lessons, good practices, and experiences of this project.</p> <p><i>Period: 2016-2020</i> <i>Total budget: 3.45 m EUR (European Union)</i></p>

II.1a.3) the proposed alternative scenario with a brief description of expected outcomes and components of the project;

Long-term Solution: The long-term solution for sustainable development and conservation of high value ecosystems in Turkmenistan's Amu Darya landscape has multiple key goals, but revolves around the concept of Land Degradation Neutrality (LDN). These includes promotion of models of non-depleting farming, but at the same time effective conservation of critical ecosystem services. These ecological goals must be achieved within the context of supporting and securing sustainable and resilient livelihoods for local resource users, whose daily existence depends greatly on the integrity and productivity of these high value arid ecosystems. Therefore the long-term solution is one where government resource managers and local communities plan and implement integrated natural resource use practices that are neutral from the point of view of land degradation, biodiversity friendly, and support healthy soil and vegetation.

The project's theory of change is that multiple types of benefits can be unlocked when land and water resources are managed in an integrated way that takes the full range of ecosystem services into consideration. The project's three components are closely aligned and linked to ensure a landscape approach within Turkmenistan's Aral basin for sustainable land and water that ensures the continuity of ecosystem services that sustain livelihoods. This is why the project targets multiple types of geographic areas: irrigated agricultural land, pasture land, and critical ecosystems (protected and otherwise). For an integrated landscape approach, a coherent and complete picture of the landscape must be visualized, and addressed through multiple types of related management measures. For example, agricultural land uses must be implemented that do not diminish the ability of soils to provide benefits for people and biodiversity, and water must be managed in a way that facilitates sustaining flows necessary for ecological integrity. In addition, protected areas must be carefully planned and managed, appropriately contextualized within the landscape. Both biodiversity and resilient livelihoods depend on soil that is not degraded, and vegetation that is resilient and provides fodder and critical habitats. Both livelihoods and ecosystems depend on adequate flows of water. In addition, in many respects, sustainable livelihoods within Turkmenistan's Aral basin are dependent on different components of biodiversity. The project aims to put all the different types of on-the-ground management practices in place that are necessary for an integrated approach to landscape management: efficient water management, sustainable and biodiversity friendly land management for arable land and pasture land, and effective protected area management. The project does not have

the scope to fully implement efficient water management and sustainable land management throughout the entire landscape, but by introducing these good practices in priority areas in Dashoguz and Lebap provinces, and through capacity strengthening of responsible government institutions the project results will be sustained and replicated throughout Turkmenistan's Amu Darya basin.

Within the two targeted provinces, Dashoguz and Lebap, there are 19 districts ("etrapsh"), which each encompass approximately 8-10 settlements ("gengeshes"). Fewer than half of these districts have KBA territories within their boundaries, although all depend on the irrigation canals and hydrological infrastructure that draws water from the Amu Darya river. Some aspects of the project will address the wider landscape as a whole, while some project activities will be targeted within approximately 4 priority districts, to be further identified during the PPG stage, based on relevance to LDN (LDN Checklist), objective ecological and socio-economic criteria. It is anticipated that 2 priority districts will be identified in each province, but further analysis will be carried out during the PPG stage to determine the exact geographic scope of the project.

Component 1 of the project focuses on the promotion of the LDN principles, restoration and sustainable management of land and water resources to improve productive while at the same time securing critical ecosystem services. This includes setting up LDN targets, action plan and monitoring system for the landscape, strengthening the institutional capacity to address sustainable land and water resource management in the Amu Darya basin, but this component goes further by implementing on the ground measures to actually restore degraded landscapes, and improve the efficiency of water resource management. Addressing sustainable land management and efficient water resource management in an integrated manner, linked with the maintenance of ecosystem services, is necessary to progress toward a sustainably managed landscape. To achieve this goal, government authorities and resource-users need geo-spatial data on the location, extent and type of land degradation in the Amu Darya basin. Existing information on land degradation in Turkmenistan is sparse, and has low resolution. Turkmenistan has made addressing land degradation a national priority, as it is critical for the country's long-term sustainable development goals. The project will help codify and rationalize that commitment through the establishment of a national Land Degradation Neutrality target. Component 1 of the project supports implementation of the LDN target through the restoration of high priority mosaic areas of agricultural lands and critical ecosystems. Turkmenistan has used several techniques to manage desertification, including establishing protective forest shelter belts, fixing moving sands, selecting and introducing appropriate resistant species, introducing advanced technology and agrotechnology, and applying more advanced methods in the organization of forestry work. The efficient use of water resources is inextricably linked to the long-term existence of high value ecosystems, as well as to sustainable livelihoods. Therefore the scope of the project's work includes attention to the rehabilitation of water management infrastructure, and the establishment of rationale use regimes, including through the establishment of Water User Groups, which have been recently authorized in national water management legislation.

Output 1.1: The project will specifically address government capacity to implement sustainable land management, particularly as undertaken in the framework of Land Degradation Neutrality. To increase the level of information and understanding of land degradation in the targeted geography the project will support the mapping of degraded lands in Dashoguz and Lebap provinces, targeting high priority districts. The preliminary strategy is to target four high priority districts – 2 in Dashoguz province and 2 in Lebap province – but this will be further assessed during the PPG phase. Mapping will be carried out through the analysis of remote sensing data, combined with sampled ground-truthing. In addition, the project will complete a mapping of historical ecosystems and land cover. This will support the identification of priority land and forest restoration zones, and further contribute to a long-term planning strategy for and integrated and sustainable land management. This process will include detailed analysis of land use and land tenure in agricultural zones bordering Key Biodiversity Areas (e.g. Muskinata, Amu Darya, Gorelde, Nargyz, Tallymerjen, Koyten Dag KBAs). The project will work with local communities, governments and agricultural authorities to develop long-term land restoration plans that would ensure long-term productivity benefits without exceeding the natural carrying capacity of soil, water and vegetation. Output 1.2: The project will support land and forest restoration efforts in high priority areas identified under Output 1.1, with an end-of-project target total of 10,000 hectares restored (to be affirmed during the PPG phase). This will include restoration of desert forest landscapes with communities through the planting of saxaul and sea buckthorn in degraded desert areas (planned 5,000 ha). The natural regeneration of tugai forest (planned 300 ha) will be supported through appropriate community-based management measures, including livestock exclusion, control of illegal cutting, and the return of critical areas to natural status. For the restoration of agricultural lands the project will support the identification of drought and salt-tolerant varieties of crops, again with clear benefits to crop productivity important for local communities. The most promising varieties will be scaled out through planting in degraded lands (planned 4,700 ha). Output 1.3 addresses the efficiency of water management in the production landscapes of the Amu Darya landscape. Planned activities include the repair of water management infrastructure (e.g. pumps, canals) in Dashoguz province, and the application of international best practices, and innovative technologies and methods for the efficient cleaning and maintenance of this infrastructure. This output will also extend the efficient use of water to the field level, where the project will work with local farmers and agricultural producers to scale out cutting edge irrigation and farming technologies such as drip irrigation (demonstrated as the most cost-effective approach for efficient water use), laser leveling, and other related approaches. Under Output 1.4 the project will work with livestock-dependent communities to address sustainable pasture management in and around KBAs,

including the availability of water resources for livestock, which are often concentrated around available water points (significantly increasing land degradation in those areas). This activity will mainly focus on the desert pasture surrounding two specific landscapes: i) the saxaul forest zone around the Goyungyrlan and Akjagaya KBAs, and in the buffer zone of Gaplaňgyr Nature Reserve; ii) within the Koyten Dag KBA, in the buffer zone of the existing Koyten Dag Nature Reserve (to be confirmed during the PPG phase).

Component 2 of the project aims to more specifically address the KBAs within the Amu Darya landscape, and the effective management of the PAs intended to conserve them. Turkmenistan's PA system is not yet extensive, but the strategic approach of this project is not to widely expand the national PA system, but rather to ensure that PAs currently existing within the Amu Darya landscape are secured, and well-integrated within the wider landscape. On the one hand it is important to ensure that PAs have effective management, and the capacity to implement the conservation actions necessary to protect their biodiversity. However, PAs cover less than 50% of the KBA territory targeted within this project, and it is therefore also necessary to ensure the sustainable use of resources within the buffer zones and corridors surrounding PAs. Project activities under this component will engage PA administrations and local resource users to increase the environmental protection of ecosystems, flora and fauna over 1,200,000 ha of KBAs.

Output 2.1. will improve the management of 8 existing PAs within the geographic scope of the project. Each of these PAs is concurrent with a portion of the targeted KBA. In total the PAs cover 544,423 ha (to be confirmed during the PPG stage). The project will make a specific and targeted set of investments for each of the PAs (to be determined based on baseline METTs and capacity needs assessment during the PPG, taking into account the latest internationally acknowledged conservation technologies) with the goal of addressing the most important needs and raising the level of their management effectiveness (as measured by the METT). The project will support management planning, including financial gap analysis and business planning, as well as monitoring and research capacities, particularly as it relates to understanding the future impacts of climate change on these sensitive ecosystems. The project will work to actively engage local communities in the management of the PAs, through the establishment of consultative bodies (i.e. local management boards), and education and awareness raising efforts. Output 2.2. will aim to increase the PA coverage of KBAs to a reasonable extent (~50%), with a goal of 50,000 ha of new coverage. To begin a gap analysis will be conducted to identify the most critical habitats and ecosystem zones that are currently not included within the PA system, and which are under the greatest threat. The specific type of PAs to be employed under this output is to be determined, and may include formally agreed community conservation areas, rather than national government-adopted areas. Also under this output the project will carry out an analysis of the ecological flow requirements for the KBAs that depend on water resources, with the goal of supporting sustainable management of water resources in the wider landscape in order to preserve critical ecosystems. Output 2.3 will aim to improve the integration of PAs within the wider production landscape, with attention to the sustainability of land and water use in the buffer zones and corridors of PAs, within the overall KBA areas. The project will work with authorities and local resource users to further identify buffer zones and corridors, and develop cooperative land use planning and management agreements for these areas. The project will map critical habitats, buffer zones and corridors, and identify spatial and temporal habitat use patterns (e.g. bird nesting times, calving zones, etc.). The work under this output will synergize with the activities under Output 1.4 relating to the implementation of sustainable pasture management measures.

Component 3 addresses the wider synergies and cooperation aspects of the project. Although the project will operate fully within Turkmenistan's national boundaries, it will not be operating in isolation from the regional Amu Darya landscape and wider Aral Sea basin. For much of its course the Amu Darya river forms the border between Turkmenistan and Uzbekistan. The Amu Darya river is one of the two major tributaries to the Aral Sea (along with the Syr Darya river), and the Aral Sea basin stretches across Turkmenistan, Uzbekistan and Kazakhstan. At the same time, Turkmenistan is a downstream country on the Amu Darya, which has its headwaters in Tajikistan, Kyrgyzstan, and Afghanistan. Therefore it is critical that Turkmenistan be strongly engaged with regional efforts relating to the restoration of the Aral Sea basin, including the efficient use and management of the waters from the Amu Darya river. Beyond this, this component also encompasses the necessary knowledge management, monitoring and evaluation activities of the project.

Output 3.1 will provide support to facilitate the engagement of Turkmenistan in the activities of the International Fund for Saving the Aral Sea (IFAS), including implementation of Turkmenistan's Special Programme for Saving the Aral Sea, per its relevance within the geographic and thematic scope of the project. This will include supporting Turkmenistan to integrate the relevant institutional and legal framework relating to IFAS, for the development and implementation of regional efforts for the restoration of the Aral Sea. This will also include broad scale outreach (e.g. targeted awareness raising among high-level decision-makers) on the problems of the Aral Sea basin, and current efforts to address these problems. Output 3.2. covers the project's knowledge management, and monitoring and evaluation activities. While the project will be building on recent good practices and experiences in Turkmenistan, it will also be pushing boundaries, innovating, and developing new approaches. It is critical that these new experiences and lessons are documented, formed into targeted

messages, and disseminated to relevant stakeholders. This will be done through multiple knowledge management platforms, including web-based communication channels, newsletters, lesson notes, case studies, and workshops. In addition, key project monitoring and evaluation activities will be supported, such as the mid-term review and terminal evaluation.

II.1a.4) alignment with GEF focal area and/or Impact Program strategies

The project is consistent with the objectives and will contribute to the outcomes and outputs of the GEF's Biodiversity focal area.

GEF-7 Biodiversity Results Framework

Objective	Sub-objective	Strategic Priority	GEF-7 Sub-indicators
3D Objective II. Address direct drivers to protect habitats and species	F) Enhance the effectiveness of protected area systems	BD-2-7: Address direct drivers to protect habitats and species and Improve financial sustainability, effective management, and ecosystem coverage of the global protected area estate	<p>1.1: Terrestrial protected areas newly created</p> <p><i>Project contribution:</i> 50,000 hectares of new PAs created to address critical gaps in coverage of KBAs</p> <p>1.2: Terrestrial protected areas under improved management effectiveness</p> <p><i>Project contribution:</i> 8 PAs covering 544,423 hectares of protected areas under improved management effectiveness</p>

The project is also supportive of the Land Degradation focal area strategies.

GEF-7 Land Degradation Results Framework

Objective	Sub-objective	Strategic Priority	GEF-7 Sub-indicators
3D Objective 3. Reduce pressures on natural resources from competing land uses and increase resilience in the wider landscape	N/A	LD-3-4: Reduce pressures on natural resources from competing land uses and increase resilience in the wider landscape	<p>3.1 Area of agricultural land restored</p> <p><i>Project contribution:</i> 4,700 hectares of irrigated land restored</p> <p>3.2: Area of forest and forest land restored</p> <p><i>Project contribution:</i> 5,000 hectares of saxaul woodlands restored; 300 hectares of tugai forest restored through natural regeneration</p> <p>3.3: Area of natural grass and shrublands restored</p> <p><i>Project contribution:</i> 50,000 hectares of pastureland restored through SLM</p>

II.1a.5) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing; and II.1a.6) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF);

State of ecosystems under baseline	Summary of GEF incremental intervention	Benefits
Sustainable Land Management		

Land Management

<p>Continued degradation of arable lands from ineffective and inefficient irrigation techniques, and inappropriate crop prioritization</p> <p>Degradation of critical lake, wetland, and riparian ecosystems from reduced water availability, and encroachment by livestock and agricultural land use</p> <p>Further destruction of critical and sensitive tugai and saxaul forest ecosystems, with continuing degradation of the important ecosystem services they provide</p> <p>Pasture managers do not have capacity or data to implement sustainable grazing and management practices in their respective pasturelands</p> <p>Overgrazed pastures: exceeding carrying capacity by [1.5-2] times resulting in reduced provision of ecosystem services, leading to reduced economic and ecological productivity, and diminished livelihoods;</p> <p>Livestock numbers continue to increase beyond ecological carrying capacity;</p> <p>Poor agricultural land management near protected areas;</p> <p>Wildlife is negatively impacted by livestock presence in key biodiversity areas at critical times of year.</p>	<ul style="list-style-type: none"> Integrated sustainable land management approaches implemented in priority areas of critical interface between production systems and high value ecosystems, including mapping of various land use and land cover information National Land Degradation Neutrality target established for the landscape and action plan agreed for achieving target 5,000 ha of saxaul and/or sea buckthorn planted in degraded areas 4,700 ha of salt tolerant crop varieties planted Measures facilitating natural regeneration of 300 ha of tugai forest Efficient water management for 100,000 ha of irrigated land in 4 priority districts Water management infrastructure repaired Water User Groups operationalized Sustainable pasture management regimes in 4 priority districts 	<ul style="list-style-type: none"> LDN promotion in a concrete landscape (pls. see on LDN Checklist compatibility under the table), Stabilized ecosystem services in 760,000 ha of production landscape in Dashoguz and Lebap provinces along Amu Darya; Crop resilience to salinization improved in 10,000 ha; Sustainable pasture management in 500,000 ha; 50,000 ha of degraded pastureland restored; Improved livelihoods of 5,000 farmers (50% women) directly with immediate replication potential for 100,000 people.
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Biodiversity

<p>Baseline government support for the 8 protected areas in the landscape covering 544,423 hectares will continue to have low management effectiveness, failing to fully achieve their biodiversity conservation objectives. The PA will continue to be inadequately integrated in the wider landscape through implementation of land use planning that fully mainstreams biodiversity considerations.</p> <p>Under the baseline situation the identified 15 high value arid ecosystems covering 1,200,000 ha of Turkmenistan's Lower Amu Darya landscape will continue to have their biodiversity degraded, as resource use is unsustainable and land use patterns do not adequately reflect biodiversity considerations. More than 7,000 ha of HCVF tugai forest and hundreds of thousands of ha</p>	<ul style="list-style-type: none"> Management effectiveness supported for 8 existing PAs, including: (1) support to critical activities on improvement of status of species in PAs, including patrolling; (2) support to local tourism infrastructure to facilitate additional income generation at targeted PAs; (3) control over illegal activities (e.g. poaching, illegal tree cutting). New conservation areas operationalized through new and innovative approaches covering 50,000 hectares of unprotected high priority ecosystems, supported by: <ul style="list-style-type: none"> Gap analysis of PAs and KBAs; Feasibility studies and technical documentation for PA establishment; Analysis of ecological flow water 	<ul style="list-style-type: none"> Secured biodiversity status in 1,200,000 of KBAs in the Amu Darya landscape Non-deterioration of globally threatened species, including Egyptian Vulture (<i>Neophron percnopterus</i>), Saker Falcon (<i>Falco cherrug</i>) Dalmatian Pelican (<i>Pelecanus crispus</i>), Houbara Bustard (<i>Chlamydotis undulata</i>), Cinereous Vulture (<i>Aegypius monachus</i>), Ferruginous Duck (<i>Aythya nyroca</i>) Management effectiveness increased for 8 existing PAs covering 544,423 hectares from ~20% effectiveness to ~40% (as measured by METT) New protection mechanisms established covering additional
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<p>at forest and hundreds of thousands of hectares of dry saxaul forest will continue to be degraded through agricultural encroachment and overgrazing, with additional losses of already highly-depleted forest zones.</p> <p>Populations of threatened species are likely to continue decreasing due to loss of habitat, poaching, and poor natural regeneration. These include numerous rare bird species, such as the Saker falcon (<i>Falco cherrug</i>), Egyptian vulture (<i>Neophron percnopterus</i>), Greater Sandplover (<i>Charadrius leschenaultia</i>), Common Pochard (<i>Aythya ferina</i>), Red-crested Pochard (<i>Netta rufina</i>), Ferruginous Duck (<i>Aythya nyroca</i>), Tufted Duck (<i>Aythya fuligula</i>), Dalmatian Pelican (<i>Pelecanus crispus</i>), Great White Pelican (<i>Pelecanus onocrotalus</i>), Great Cormorant (<i>Phalacrocorax carbo</i>), and Gull-billed Tern (<i>Sterna nilotica</i>).</p>	<p>requirements for maintenance and conservation of KBAs at new sites</p> <ul style="list-style-type: none"> - Mapping, management, and financial plan preparation, with clear guidance for core and buffer zones, conservation activities and monitoring. - Implementation of biodiversity-friendly sustainable use regimes in PA buffer zones and corridors covering 600,000 ha 	<p>tional 50,000 of currently unprotected KBAs, increasing PA coverage of KBA area by ~5%, to roughly 50%</p>
Capacity Development and Knowledge Management		
<p>Regional efforts on the conservation and restoration of the Aral Sea basin land and water resources are inadequate, not fully implemented, and do not effectively engage all stakeholders</p> <p>Turkmenistan representatives remain limited in their ability to engage effectively with regional counterparts regarding the long-term sustainable management of land and water resources in the Aral Sea basin</p> <p>Land and water managers in the Lower Amu Darya landscape do not have capacity, knowledge, or awareness to implement strategies for sustainable land and water management practices</p> <p>Critical ecosystems continue to be negatively impacted by poor land and water management practices, with associated ecosystem services degrading over time</p> <p>Protected area staff and managers do not have the capacity and resources for effective PA management, and PAs continue to lose their nature conservation values</p> <p>Baseline information on the distribution, abundance, seasonality, and recruitment rates of rare and endangered species remains incomplete</p>	<ul style="list-style-type: none"> - Capacity strengthening for government and scientific institutions for participating in IFAS - Targeted knowledge management and exchange products (web-based, TV programs, trainings for communities and decision makers) on LD and BD issues in the Aral Sea - Direct exchange of good practices and lessons (particularly on SLM in arid ecosystems) with ongoing regional initiatives and knowledge management platforms, including CACILM, WOCAT, and CARE C - Outreach and awareness raising on the problems of the Aral Sea basin, supporting Turkmenistan's efforts to address degradation - Lessons documented and disseminated within project partners and amongst stakeholders - Project activities comprehensively monitored, evaluated, and well-documented 	<ul style="list-style-type: none"> - Strengthened engagement of Turkmenistan in and implementation of regional cooperation under the International Fund for Saving the Aral Sea (IFAS) for improved management and restoration of Aral basin land and water resources - Turkmenistan is represented at regional fora and events supporting the restoration of the Aral Sea - Commitment to Aral Sea region restoration is secured at the highest levels of government - Decision-makers from provincial and national levels are fully engaged with and aware of efforts to restore the Aral Sea region

Note: The PIF design has been based on the **LDN Checklist developed by UNCCD** (<https://www.thegef.org/documents/checklist-land-degradation-neutrality-transformative-projects-and-programmes-draft>). Summary of project's adherence to the checklist:

Criterion A: Fundamental LDN principles:

- Use landscape approach: Amu Darya river basin landscape (pls. ref Part II Target landscape, and maps).
- Promote no-net loss: Component 1 includes activities to set the no-net-loss target for the landscape and action plan to attain it.
- Avoid-reduce-reverse hierarchy. The project stems from integrated planning (Output 1.1 that will define areas where productivity loss is going to be avoided, as well as areas that need mitigation or restoration. Concrete investment in restoration is all about the nature of Outputs 1.2, 1.3, and 1.4).
- Contribute to sub-national targets. Under Component 1, the project sets up a sub-national (landscape-based) target and implements key activities to trigger its achievement.
- Be site/country-tailored. The project has been fully tailed to the national and landscape context.
- Include LDN monitoring system: present as part of Output 1.1.
- Gender considerations and stakeholder engagement: Addressed, please see a corresponding sub-sections.

Criterion B. Deliver multiple benefits.

- link to multiple SDGs, focal area benefits and sustainable livelihoods. This si the essence of the project, its rational, objective and design are fully in line with the multiple-benefits philosophy.
- Provide economic incentives to local actors: The project incentivizes local actors away from destructive behavior through engaging them in alternative economic activities (e.g. Output 1.2 and 1.4), as well as biodiversity-friendly livelihoods under Output 2.3. Other incentive mechanisms are discussed in Section Private Sector Engagement.
- Base land decisions on the "assessment" approach. The integrated and multi-stakeholder nature of land use planning is fully evidenced form Output 1.1.

Criterion C. Promotion of inclusive governance

- safeguard land rights of local users. As explained in the description of Output 1.1, the idea behind the integrated land use planning is exactly about ensuring that the rights of land users are respected while enabling them to derive maximum long term benefits form use of ecosystem products and services. UNDP has a Social and Environmental Safeguard Procedure (SESP) which screens projects (including for this criterion) and does not allow projects that do not comply.
- ensure prior informed consent; avoid forced displacement; put in place grievance redress mechanism. Addressed through UNDP SESP protocol (mentioned above).
- define gender responsive engagement. Addressed, as discussed in the corresponding subsection.

Criterion D. Promotion of scaling out.

- Employ science-based approaches and local knowledge. The project is going to be only based on proper science and consideration of established good-practices in development of all of its outputs.
- Apply innovation. Addressed, please refer to the innovation sub-section.
- Capture and disseminate knowledge. Knowledge capture, dissemination and practical use is covered in Component III.

Criterion E. Enhance national ownership and capacities.

- employ awareness raising, public campaigns, education and capacity building. The project does this through Output 1.1, as well as through the fact that implementation of investment activities (e.g. Outputs 1.2, 1.3, 1.4) are clearly vested in the current national baseline programs and co-financing. Education and awareness raising are part of Component III.
- identify and obtain co-financing. This is addressed as part of a GEF standard for ensuring co-financing.
- ensure sustainability. Addressed, as per sustainability sub-section.

Criterion F. Promoting innovative financing.

- include/prepare for a component that leverages private sector mobilization. The project does this, within the limitations of the concrete country, as further discussed in the Private Sector Engagement sub-section.

- foster income generation for communities. The project creates alternative income generation through saxaul and buckthorn plantations, introduction of salt-tolerant crop, engagement in regeneration of tugai forests, as well as improved livestock productivity resulting from sustainable pasture management (Output 1.4).

II.1a.7) innovation, sustainability and potential for scaling up

Innovation

The most conceptually innovative aspect of the project is the introduction and application of the idea that sensitive ecosystems and productions systems are inextricably linked in a mutual feedback cycle, where ecosystems depend on proper management and adequate attention to ensure they continue to provide the necessary and highly valuable variety of ecosystem services that in-turn benefit production systems. The strategy for this project is to identify and secure critical ecosystems (Key Biodiversity Areas), while addressing upstream land and water management practices to improve the status of critical systems, maintain their ecosystem services, and increase the sustainability of agricultural production. In practical terms the project will apply a number of innovative technologies and land management practices. There are a variety of innovative approaches the project will apply in land and water management, including land restoration techniques based on the latest international best practices, and the most efficient water use technologies, such as laser leveling and drip irrigation. In addition, the project will include the use of remote-sensing data in mapping and geospatial analysis. The project will also support community-based resource management approaches that remain innovative in Turkmenistan. These include the continuing implementation of the new approach of Water User Groups in Turkmenistan, and engagement of community consultation processes in the management of protected areas.

Sustainability

The project design and implementation will play close attention to sustainability, and it's four components: financial, institutional, socio-economic, and environmental. Sustainability of the project results after completion will ultimately depend on ensuring stakeholder ownership by key public institutional partners, and securing their long-term commitment (regulatory, policy, funding and resources) to scale-up and replicate best practices in sustainable land and water management for sustainable livelihoods, and to secure critical ecosystems. Sustainability will be ensured through strengthened government commitment to both sustainable management of land and water resources, and the effective management of protected areas in Turkmenistan's Aral basin landscape. Local communities and governments will be empowered with increased capacity in water management data, mapping, and planning to continue implementing sustainable land use practices in and around KBAs. In addition, the project's approach of strengthening the effective management of PAs within the wider landscape will be sustained through the government's ongoing strengthening commitment to the effective management of the national system of PAs. The project will assist in building a professional corps of well-trained, adequately resourced and properly equipped management, monitoring, enforcement, and community outreach personnel.

During implementation the project team will play close attention to the likely sustainability of project results, including developing the project exit strategy. With respect to institutional sustainability the team will ensure the key partner institutions have the individual and technical capacities to support the continuation of project results. To sustain the coordination of the integrated landscape management approach the project will establish a multi-sectoral technical working group involving relevant government institutions responsible for different aspects of land, water, and biodiversity management. Socio-economic sustainability will be enhanced in the project by improving livelihoods of local communities, through the restoration of land resources, improved pasture management, and securing ecosystem services. The project will work through (and assist in establishing, where these have not yet been constituted) local governance structures - including PA community advisory bodies and Water User Groups in order to improve communication, collaboration and cooperation between tenure holders, rights holders, natural resource users and the relevant state, regional and local administrations. Environmental sustainability will be enhanced by reducing degradation of land and forest resources in areas around KBAs, to further support the maintenance and conservation of biodiversity.

As indicated above, the project concept aligns with the STAP guidance (GEF/STAP/C.56/Inf.04) on achieving sustainable outcomes, including the following approaches:

- Designing multi-stakeholder processes to engage key stakeholders, build stakeholder trust and motivation, and incentivize core actors for sustainable land and water management in the Amu Darya basin;
- Outlining a theory of change that recognizes the need for adaptability and resilience, and emphasizes diversity and adaptive learning.

Achieving enduring impacts for SLM and biodiversity in Turkmenistan's Amu Darya basin depends not only on behavioral changes, institutional arrangements and financing; it also requires enduring in the face of long-term external changes related to climate change, demographics, and changes in the demand for agricultural products. In addition, the proposed project must avoid or manage unintended consequences. The STAP guidance on this issue will be further reviewed during the PPG phase, with additional specific aspects of the project designed to ensure sustainability.

Catalytic Role: Potential for Replication and Scaling-up

Various elements of the project will have value being replicated and scaled up more widely in Turkmenistan, and particularly in the Amu Darya basin. With the testing of new and innovative approaches to sustainable land management (e.g. salt-tolerant crops, etc.) in the priority target districts, the project will provide the basis for more widespread replication throughout all the districts within Dashoguz and Lebap provinces. A key element of the project's catalytic role will be the establishment of the national LDN target. The project will contribute to the achievement of the target, but the national LDN target will also provide the framework for scaling-up and addressing land degradation in a systematic and structured way throughout the country. In addition, the key government institutional partners have national-level mandates, and will be able to disseminate and replicate good practices more broadly throughout the country as relevant. For example, ecologically sensitive land use practices could be established in and around other KBAs in the country where there is currently no formal protection. Other activities potentially suitable for replication and/or scaling up include: (i) remote-sensing data based mapping of KBAs, degraded landscapes, and forests and pastures for sustainable use; (ii) implementation of the Protected Areas Management Effectiveness Tracking Tool to track PA performance and identify areas for strengthening; (iii) formalizing and implementing co-management agreements for PAs; (iv) advanced monitoring and enforcement methodologies using new technologies such as geo-referenced monitoring, camera traps and possibly aerial devices such as drones; and (vi) water efficient technologies for improved water management and reduced land degradation.

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

Please refer to Annex A.

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Indigenous Peoples and Local Communities Yes

Civil Society Organizations Yes

Private Sector Entities Yes

If none of the above, please explain why:

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement.

The PIF was developed based on consultations with national government stakeholders, local communities, NGOs managing projects that need coordination. The project is confirmed to be based on key national policies and strategies. The project will be developed in full consultation with a broad range of stakeholders in Turkmenistan through visits and consultation events. During the PPG process detailed stakeholder consultations will be organized at national, provincial and local levels. The PPG process will include local community meetings/visits, and extensive stocktaking and validation stakeholder consultations with relevant government counterparts, and representatives of the private sector and civil society. At the sub-national level, the project preparation team will conduct field missions for consultations with local government at the district and sub-district level in order to ensure the project is structured in a way that aligns with and supports local development priorities and addresses key barriers at the local level. The project will also consult with local resource users to collect detailed and specific data about local resource use, and critical local development issues. Local consultations will be conducted in each targeted KBA. At the start of the project preparation process the project development team will hold a series of introductory workshops to present the general concept to local stakeholders, and receive initial feedback. Additional inputs will be collected in a one-on-one basis throughout the preparation period. The project preparation team will then hold a project validation workshop toward the end of the preparation process to present the final draft project framework to all stakeholders, and receive any further final feedback, which will then be incorporated in the final project design. Civil society organizations will also be frequently consulted during the project preparation process, with consultations at the national and local level. During these consultations gender specific vulnerabilities and needs will be further identified and clarified. During these consultations the roles and responsibilities of key stakeholders and the specific mechanisms and strategies for their direct involvement in project activities will be identified. Considerations of participation and gender empowerment in the formulation of activities will be a key focus area, while gender mainstreaming tools will be applied in the development of technical guidelines for integration of sustainable land management into planning processes. The project will ensure that both men and women are able to participate meaningfully and equitably, have equitable access to project resources, and receive equal social and economic benefits.

Key institutions consulted in the development of the project include:

- a. Ministry of Agriculture and Environment Protection
- b. State Committee for Environment Protection and Land Resources
- c. Committee for Nature Protection of the Cabinet of Ministers of Turkmenistan
- d. Union of Entrepreneurs of Turkmenistan (National and regional affiliates)
- e. Ministry of Nature Protection of Turkmenistan
- f. National Institute of Deserts, Flora and Fauna
- g. National Committee for Hydrometeorology
- h. Institute of Agriculture under MAEP
- i. Dayhanbank
- j. Rysgal bank
- o. Aarhus Centre in Turkmenistan
- p. Representatives of private sector farmers and entrepreneurs in Dashoguz and Lebap Regions
- q. Representatives of Nature Protection Society (a civil society organization)

- r. Representatives of Youth Union (a civil society organization)
- s. Local communities in the target districts.

3. Gender Equality and Women's Empowerment

Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).

Gender considerations will be fully mainstreamed into project implementation. The programme will provide opportunities for women to learn about sustainable land management and integrate best practices into their operations, and ensure that women are also able to access the capacity building and training, required to practice sustainable agriculture, as well as to diversify their livelihoods in more resilient ways. The project will ensure that there is gender balance in project activities (e.g. seminars, community level events) including access to project financial assistance. Gender considerations will inform community level project activities linked to local infrastructure or demonstration plot development through consultation regarding needs and preferences on types of training and investment. The project will also gather gender-disaggregated data for evaluation purposes and use gender sensitive indicators (particularly around beneficiaries) to facilitate planning, implementation and monitoring.

As feasible the project will partner with local NGOs and women's cooperatives in order to integrate and support on-going local initiatives, and to make capacity-building and agricultural extension activities gender-sensitive (adjusting factors such as content and training times to ensure that the needs of female beneficiaries are equally accounted for). The following national and local NGOs could be engaged into gender mainstreaming, community engagement and capacity building work of the project: "Nature Conservation Society of Turkmenistan", "Bosphorus", "Keik okara", "Yenme", "Dap-dessur". These NGOs have been active in the areas of environmental information and awareness, environmental education, SME support, rural development, women empowerment and could be engaged in the community outreach and gender mainstreaming work of the project.

The project will be built upon the lessons and successful approaches to gender mainstreaming and women participation piloted by previous GEF projects, and a previous Adaptation Fund project, including promotion of women participation and leadership in the management of water users' groups and farming cooperatives. In these previous projects, water user's group (WUG) members went through numerous trainings on establishment and management of WUG, decision making and gender involvement in efficient use of water and land resources and their resilience to adverse effects of climate change.

In terms of ensuring gender mainstreaming, a number of practical steps will be undertaken. The project team and partners are committed to delivering following:

- a. Commitment to integrate gender sensitive considerations into the design of new laws, regulations and associated explanatory materials relating to agricultural sector strategy development.
- b. Targets for inclusion of women in training and capacity building initiatives among policy makers (minimum 30%)
- c. At least 30% of farmers and farming entrepreneurs receiving sustainable land management extension services being women
- d. Gender balanced approach to selection of participating private sector partnerships (female led enterprises) and community demonstration plots
- e. At least 30% of those receiving field training being women.

Implementation strategies to deliver these targets will be designed and delivered by the project team in conjunction with key project partners. This will be done through the clear setting of targets in project agreements, payment by results and regular monitoring of progress.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes

closing gender gaps in access to and control over natural resources;

improving women's participation and decision-making; and/or Yes

generating socio-economic benefits or services for women. Yes

Will the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Will there be private sector engagement in the project?

Yes

Please briefly explain the rationale behind your answer.

There were over 8,000 domestic nonstate enterprises active in Turkmenistan in 2016. They employed 124,000 persons and had revenues equivalent to 15.2 per cent of GDP. Most of them were active in agriculture, construction, and manufacturing. About 80% were microenterprises, and 11% small enterprises. Agriculture depends entirely on irrigation (94% of total withdrawn water), but irrigation facilities are often inefficient and outdated and there are no financial mechanisms or incentives to stimulate modern water-saving technologies and practices. This threatens to become a major impediment to private sector growth in agriculture and the agribusiness sector. This is compounded by rising demand as the government promotes certain water intensive crops such as cotton and wheat as part of its import substitution program, which is contributing to the salination of available water resources and to accelerated degradation of arable land.

There is an increasing number of private farmers ('entrepreneurs') engaging in more commercial farming on the basis of the Daikhan farm and leaseholder model. This number has been estimated by the Union of Entrepreneurs and Industrialists as being between 20,000-30,000 and they are currently engaged in surveying to assess the current market structure. These are farmers who are making capital investments in private sector agriculture at a small and medium scale (e.g. land improvement, irrigation, greenhouses), and employing others to develop commercially oriented businesses. Agricultural production is increasing steadily (5.1% in 2017), with private sector production (enterprises within the Union of Industrialists and Entrepreneurs increasing 31.9%). This includes both primary production (livestock and poultry farming, vegetable and fruit production, melon and watermelon growing) as well as downstream processing (milk products, meat processing, bakery, processed foods wine production etc.). There has been considerable investment in greenhouses for fruit and vegetable production by local entrepreneurs. As a response to structural challenges in agriculture sector, increasingly state lands are being reallocated to other vegetable and fruit crops to facilitate import substitution. The fruit and vegetable subsectors are the most independent of the agricultural sectors Turkmenistan with almost 100% of production generated privately both by independent farmers and leaseholders. More than 80% of all livestock products are also now produced by private farmers. Private sector farmers operate to market prices (both inputs and outputs), with limited state support. The private sector is also active in the food, meat processing, confectionery and other downstream processing industries. The economic importance of the private sector has been increasing steadily over recent years, and larger enterprises have good access to finance, apply advanced technology and practices, and can be highly profitable.

The project will work directly with small-scale agricultural producers, including those producing crops, and those in the livestock sector. The land and water resources of the target region cannot be sustainably managed without the full cooperation and support from the private sector. The project will directly engage and involve local small holders in the agricultural sector, which are by and large the main relevant private sector actors with respect to sustainable land use in the rural areas targeted by the project. (However, Turkmenistan's legislation does not provide for private ownership of land.) The project will focus on partnering with small holders and agricultural producers to reduce impacts to biodiversity and land degradation resulting from unsustainable agricultural production. The project will work with small holders to improve water management (through water user groups), identify and implement agricultural practices that have lower environmental impacts (e.g. drip irrigation), and introduce sustainable land management practices (e.g. rotational grazing). A key partner in private sector collaboration is the Union of Industrialists and Entrepreneurs.

5. Risks

Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)

Identified Risks and Category	Impact	Likelihood	Assessment	Mitigation Measures
The modification of resource management regimes (e.g. for forests, pastures, agricultural lands, biodiversity) toward long-term sustainability could affect short-term access and use of resources by local communities, including the rural poor and women.	Moderate	Not likely	Moderate	<p>The project will be working closely with all stakeholders to ensure that stakeholders are adequately consulted and their considerations integrated in the modification of resource-use regimes. In any cases where there may be adverse impacts, mitigation and compensation measures will be developed and implemented. The project development phase will include a comprehensive stakeholder engagement plan, which will outline how the project will interact with and involve local resource users, and how the project will respond to inputs from local resource users.</p> <p>The fact that there are many different types of sustainable resource management measures which convey different types of usufruct rights provides significant flexibility for the project and all stakeholders to ensure that environmental as well as social, economic, and human rights needs and priorities are met. This includes many different types of spatial and temporal zoning that allow different levels and types of land-use. Based on the remoteness of the areas targeted under the project, and the relatively low levels of population in the vicinity of those areas, any potential impact is considered minor, and the probability is considered not likely. With respect to gender, a gender analysis will be undertaken (as required), and a project action plan developed.</p>
Government resource management authorities may not have the capacity to fulfill all aspects of their mandate, and rural resource users may not have the capacity to claim their rights.	Minor	Not likely	Low	<p>The project will be working closely with all stakeholders to support government natural resource management authorities and institutions to meet their obligations, and with resource user rights holders to claim their rights. This will be accomplished through multiple stakeholder consultation sessions during all relevant aspects of the project to ensure that all parties are aware of and understand the relevant obligations and rights.</p>

city to claim their rights.				
The expected project impacts of the conservation of endangered and threatened species, restoration of degraded land, and sustainable management of forest and pasture resources could be sensitive to changing climatic conditions in the future.	Negligible	Moderately likely	Low	Attention to the current and potential impacts of climate change will be built-in to all aspects of the project. For example, the project's support for the sustainable management of KBAs and desert pastures will review climate data and climate change projections as part of the development and implementation of sustainable management measures. The project will also identify potential gaps in the existing system of PAs in order to effectively conserve biodiversity, considering the potential for ecosystem change and ecological shifts due to climate change impacts. The project's work to support sustainable land and water use will also be grounded in the best available and most recent climate science relevant for this region of Turkmenistan. As part of the project's work on strengthening the management effectiveness of PAs it will also strengthen environmental monitoring capacities in order to better track the future effects of climate change within PAs and the targeted KBAs more broadly.
National and local government institutions responsible for the management of protected areas, pastures and forests do not have adequate capacity to support, maintain and enforce working agreements with communities, living in and near KBAs	Moderate	Moderately likely	Moderate	<p>The project will strengthen and expand the current capabilities of the key institutions responsible for the planning and management of PAs, pastures and forests across the high value arid ecosystems of Turkmenistan's Aral Sea basin. The project will support the development of well-trained and properly equipped management, monitoring, enforcement, community liaison and pastoral and forest groups staff in the targeted PAs, forest management authorities, and district administrations of the target districts.</p> <p>The UNDP PMU will develop an institutional sustainability plan to ensure that the different project investments in building the capacity of the targeted institutions are maintained (and scaled-up, if feasible and affordable) beyond the project. The project will also support PA 'business planning' on revenue-generating opportunities (e.g. income from tourist fees, pasture tax, forest use and leasing fees, income from fines, etc.) to further augment the current budgets of the responsible institutions.</p>
Conflicting government priorities related to agricultural production	Moderate	Unlikely	Low	The project will be closely working with a range of government stakeholders, partners, and resource users and managers. The project will work to identify any critical conflicts in government policy

duction and sustainable land use lead to limited progress in the conservation and restoration of degraded lands, and the protection of critical habitats for the long-term maintenance of ecosystem services necessary to support sustainable livelihoods.			es and strategies relating to agricultural production that would potentially diminish the potential to achieve the project objective. The project will work with all stakeholders to ensure government policies and priorities are aligned in a strategic, coherent, and rational manner that supports long-term sustainable land and water management, sustainable livelihoods, and the conservation of critical ecosystem services and biodiversity.
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6. Coordination

Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.

This project will be implemented within the context of the UN programming frameworks driven by the Government, particularly the UN Partnership Framework for Development (UNPFD) for Turkmenistan, and the UNDP Country Programme Action Plan for 2016-2020 (CPAP). In turn, these frameworks are congruent with the Government priorities outlined in the National Programme “The Strategy of Economic, Political, and Cultural Development of Turkmenistan Until 2030” and recently adopted Programme of Social and Economic Development of Turkmenistan for 2019-2025, and Programme of Development of the Agricultural complex of Turkmenistan for 2019-2025.

As the GEF Agency for this project, the UNDP Country Office (CO) in Turkmenistan will provide quality assurance, in accordance with requirements of the GEF and UNDP Policies and Procedures. Most of UNDP’s work for the project will be based in its Country Office 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 GEF.

National Executing Partner: The Ministry of Agriculture and Environment Protection (MAEP) is the government institution responsible for the implementation of the project and will act as the Executing Agency, in accordance with the UNDP national implementation modality (NIM), implying full national ownership of the project by the MAEP Turkmenistan. This is in line with the Standard Basic Assistance Agreement (SBAA, 1993) and the UN Partnership Framework for Development (UNPFD) 2016-2020 between the UN and the Government of Turkmenistan.

MAEP, acting as the Executing Entity for this project, will be responsible for overall coordination of project implementation, efficient use of project resources and achievement of the planned project objectives. At the same time, MAEP is the focal agency of Turkmenistan for the GEF. The Head of Department within MAEP is the GEF Operational Focal Point (OFP).

Project Implementation: The project organization structure will consist of a Project Board, Project Assurance, Project Management Unit and Local Coordination Units (PMU and LCUs) and at the national level. Roles and responsibilities will be as described below.

Project Board: The Project Board (PB) will be responsible for making management decisions for the project, in particular when guidance is required by the Project Coordinator. It will play a critical role in project monitoring and evaluations by assuring the quality of these processes and associated products, and by using evaluations for improving performance, accountability and learning. The PB will ensure that required resources are committed. It will also arbitrate on any conflicts within the project and negotiate solutions to any problems with external bodies. Based on the approved Annual Work Plan (AWP), the PB can also consider and approve the quarterly plans and approve any essential deviations from the original plans. The project will be subject to PB meetings at least twice every year. The first such meeting will be held within the first six months of the start of full implementation. At the initial stage of project implementation, the PB may, if deemed advantageous, wish to meet more frequently to build common understanding and to ensure that the project is initiated properly.

To ensure UNDP’s ultimate accountability for project results, PB decisions will be made in accordance with standards that shall ensure management for development results, best value for money, fairness, integrity, transparency, and effective international competition.

Members of the PB will consist of key national government and non-government agencies, and appropriate local level representatives. UNDP will also be represented on the PB, which will have appropriate representation in terms of gender. Potential members of the PB will be reviewed and recommended for approval during the Local Project Appraisal Committee (LPAC) meeting. In addition, PB meetings will be open to observer organizations, which can comment and provide input on project activities, and potential decisions, although only PB members will have decision-making powers. The PB will contain three distinct roles:

Executive Role: This individual will represent the project “owners” and will chair the group. It is expected that the Ministry of Agriculture and Environmental Protection will appoint a senior official to this role who will ensure full government support of the project.

Senior Supplier Role: This requires the representation of the interests of the funding parties for specific cost sharing projects and/or technical expertise to the project. The Senior Supplier’s primary function within the PB will be to provide guidance regarding the technical feasibility of the project. This role will rest with UNDP Turkmenistan represented by the Resident Representative.

Senior Beneficiary Role: This role requires representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary’s primary function within the PB will be to ensure the realization of project results from the perspective of project beneficiaries. This role will rest with the other institutions (key national governmental and non-governmental agencies, and appropriate local level representatives) represented on the PB, who are stakeholders in the project.

Project Assurance: The Project Assurance role supports the PB Executive role by carrying out objective and independent project oversight and monitoring functions. The Project Assurance role will rest with the Programme and Policy Analyst in charge of Environment/Energy and Disaster Risk Management of UNDP Turkmenistan, and its Programme Oversight and Support Unit (POSU.)

National Project Management (PMU) Unit: The day-to-day administration will be carried out by a Project Manager (PM) and Project Technical Field Assistant (PTFA), who will be located within the MAEP offices. The PTFA will be supporting the PM in running activities in the project field areas and providing relevant logistical and clerical support. The Project Implementation Unit (PIU), located at UNDP premises, will provide financial and administrative support to the project implementation. As per Government requests, the staff will be recruited using standard UNDP recruitment procedures. The PM will, with the support of the PA and PIU, manage the implementation of all activities, including: preparation/updates of work and budget plans, record keeping, accounting and reporting; drafting of terms of reference, technical specifications and other documents as necessary; identification, proposal of consultants to be approved by the PB, coordination and supervision of consultants and suppliers; organization of duty travel, seminars, public outreach activities and other events; and maintaining working contacts with partners at the central and local levels. The Project Manager will liaise and work closely with all partner institutions to link the project with complementary national programs and initiatives. The PM is accountable to UNDP and to the MAEP and the PB for the quality, timeliness and effectiveness of the activities carried out, as well as for the use of funds. The PM will produce Annual Work and Budget Plans (AWP&ABP). The PM will further produce quarterly operational reports and annual Project Implementation Reports (PIR). These reports will summarize the progress made versus the expected results, explain any significant variances, detail the necessary adjustments and be the main reporting mechanism for monitoring activities. The PM will be technically supported by contracted national and international service providers, based on need as determined by the PM and approved by the PB. Recruitment of specialist services will be done by the PM, in consultation with the UNDP and MAEP and in accordance with UNDP’s rules and regulations.

Local Coordination Units (LCUs): LCUs will be established in the field closer to key project sites. The exact location and mechanisms will be determined during the PPG phase.

To mainstream UNDP Turkmenistan’s publicity at the local and national level, the project will provide information and communication support to all projects and initiatives implemented in Turkmenistan through its support staff, which will include Project Communication/PR Specialist and ICT specialists. The project, based upon the need, will also hire long and short-term local and international experts. In-depth ToRs for the project posts will be drafted by UNDP to outline duties and functions of project personnel in more detail, and hires for both the principal staff and project experts will be conducted in line with UNDP rules and procedures.

Coordination with other projects

Implementation of the proposed project will be fully coordinated with a number of on-going relevant multilateral and bilateral financed initiatives, in order to avoid duplication and increase synergies and effectiveness. At regional level, strong coordination will be sought with the International Fund for Saving the Aral Sea (IFAS).

The proposed project will build on successful practices and lessons learned from the ongoing UNDP-GEF project “Supporting climate resilient livelihoods in agricultural communities in drought-prone areas of Turkmenistan (2016-2021)”. This SCCF funded project is supporting livelihoods in rural areas in the 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 proposed programme has been developed to ensure that potential areas of potential overlap (e.g. legislative reform, piloting at a regional scale) are avoided and all activities are complementary. The project will focus on areas of land use planning and restoration that are not currently or expected to be addressed by the SCCF project. In relation to SLM activities, the project will explore potential cooperation with ongoing GEF International Waters focal area initiatives in the Aral Sea basin, CACILM and the GEF-7 Sustainable Drylands Impact Program, as appropriate; this cooperation will be reviewed and assessed during the PPG phase.

Also, the proposed project will use lessons from an earlier Adaptation Fund project that ran from 2012-2017 - "*Addressing climate change risks to farming systems in Turkmenistan at national and community level*". The project aimed to overcome the above barriers to addressing immediate and long-term adaptation needs in the water sector in Turkmenistan in order to achieve greater water efficiency and productivity under climate change induced aridification. The project strengthened water management practices at national and local levels in response to climate change induced water scarcity risks to local farming systems in Turkmenistan. It did this by working at national level water policy and local community level action to improve water efficiency and supply services. The currently proposed project will particularly build on the lessons and experiences of this project in the realm of functioning of water user groups and the introduction of innovative water management practices and technologies.

This project will contribute to the PA system with monitoring data compiled from research, biodiversity monitoring, as well as further monitoring updates from existing PAs and targeted communities, thus contributing for the regular country reporting to three Rio Conventions.

7. Consistency with National Priorities

Is the Project consistent with the National Strategies and plans or reports and assessments under relevant conventions

Yes

If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc

If yes, which ones and how:

- UNCCD Reporting
- National Bio Strategy Action Plan (NBSAP)
- CBD National Report

The project is highly relevant to and consistent with Turkmenistan's national priorities related to land degradation and biodiversity conservation, as outlined in key national policy documents.

The project is relevant to and supportive of Turkmenistan's National Action Plan under the UNCCD, although this document dates from 1997, and has not been recently updated; nonetheless, it remains relevant. In particular the project supports the following objectives from the NAP: 2. Conservation of water resources; 3. Melioration of lands affected by desertification; 4. Rational management and improvement of rangelands; 5. Conservation and restoration of forests; 7. Conservation of biodiversity; 9. Involvement of all people of Turkmenistan in anti-desertification activities through participation of women, students, young people and other groups; 11. International cooperation. The NAP also highlights the importance of the conservation of biodiversity as a key contributor of critical ecosystem services, such as the maintenance of high quality forage in rangelands. The project will also assist Turkmenistan in establishing a national Land Degradation Neutrality (LDN) target, and developing capacity to support achievement of the target, under the UNCCD's target setting program. The project will support the country to also seek support for LDN target setting under the UNCCD's Global Mechanism (potentially during the PPG phase).

Most significantly, the project is closely related to the National Biodiversity Strategy and Action Plan of Turkmenistan (2018-2023). The project supports improved policies for use of natural resources, improves the management of protected areas and raises the engagement of communities in their management, all of which are priorities within NBSAP. The improved management of the protected area system proposed under Component 2 of the project supports the NBSAP's "Task 10: By 2023, the effectiveness of the management of the protected area system will be significantly enhanced." The project addresses key ecological gaps identified under the CBD POWPA work plan, integrates PAs into the wider landscape and involves communities in conservation efforts. The need for conservation of rare species of the high value ecosystems of the Amu Darya basin is prominent in Turkmenistan's 5th National Report to CBD. It also demonstrates an integrated approach to the improved management of PAs for under-represented ecosystems (i.e. arid ecosystems), covering a number of topics, ranging from technical aspects (capacity building of existing and new protected areas, harmonization of PA management planning, development and implementation of a comprehensive monitoring system for biodiversity and ecosystems) to socio-economic dimensions (support for alternative income-generating activities for local communities such as ecotourism, and apiculture, to integration of PAs with biodiversity conservation and sustainable land use in adjacent areas. The project directly supports the achievement of Aichi Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained. Through the landscape approach it substantially contributes to the following Aichi Targets:

- Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.
- Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed.
- Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced.

8. Knowledge Management

Outline the Knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

The project has multiple elements that will contribute to the knowledge management approach. Each project output will include the documentation of lessons learned from implementation of activities under the output, and a collation of the tools and templates (and any other materials) developed during implementation. The Project Manager will ensure the collation of all the project experiences and information. This knowledge database will then be made accessible to different stakeholder groups in order to support better future decision-making processes in mainstreaming biodiversity and sustainable land management in Turkmenistan and more consistent adoption of best practices. The project will also disseminate information through relevant websites such as government ministry websites and the UNDP Country Office website, and produce and distribute quarterly updates to stakeholders, in order to further facilitate the dissemination of this information. The project will build on partnerships at provincial and national levels, and with national and regional structures within the Ministry of Agriculture and Environment Protection (MAEP). This may include various agriculture and water research institutes and universities (mostly operating under the auspices of MAEP), which have regional affiliates of varying capacity and quality. These institutions tend to have some level of technical knowledge with regards to agricultural planning and techniques. The project team will work with project partners (primarily the MAEP) in the development and dissemination of knowledge products, as well as through online systems. Developed learning materials will be transferred to the MAEP as well as other partner institutions for further dissemination and updating. Results from the project will be disseminated within and beyond the project 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. There will be a two-way flow of information between this project and other projects of a similar focus. For example, the project will explore collaborations with ongoing regional platforms, such as CACILM, WOCAT, CAREC, and others. The project will draw on and build from the existing body of knowledge from other previous efforts (especially in the central Asia region) relating to SLM and biodiversity conservation in arid landscapes. For example, the project will likely draw on Kazakhstan and Uzbekistan's experience planting saxaul in degraded desert landscapes. A comprehensive review of relevant good practices and lessons relevant for the project design will be undertaken during the PPG phase. The project will also generate new lessons and good practices, particularly in relation to SLM and land restoration, which will be shared broadly through regional communication channels and knowledge management platforms.

Part III: Approval/Endorsement By GEF Operational Focal Point(S) And Gef Agency(ies)

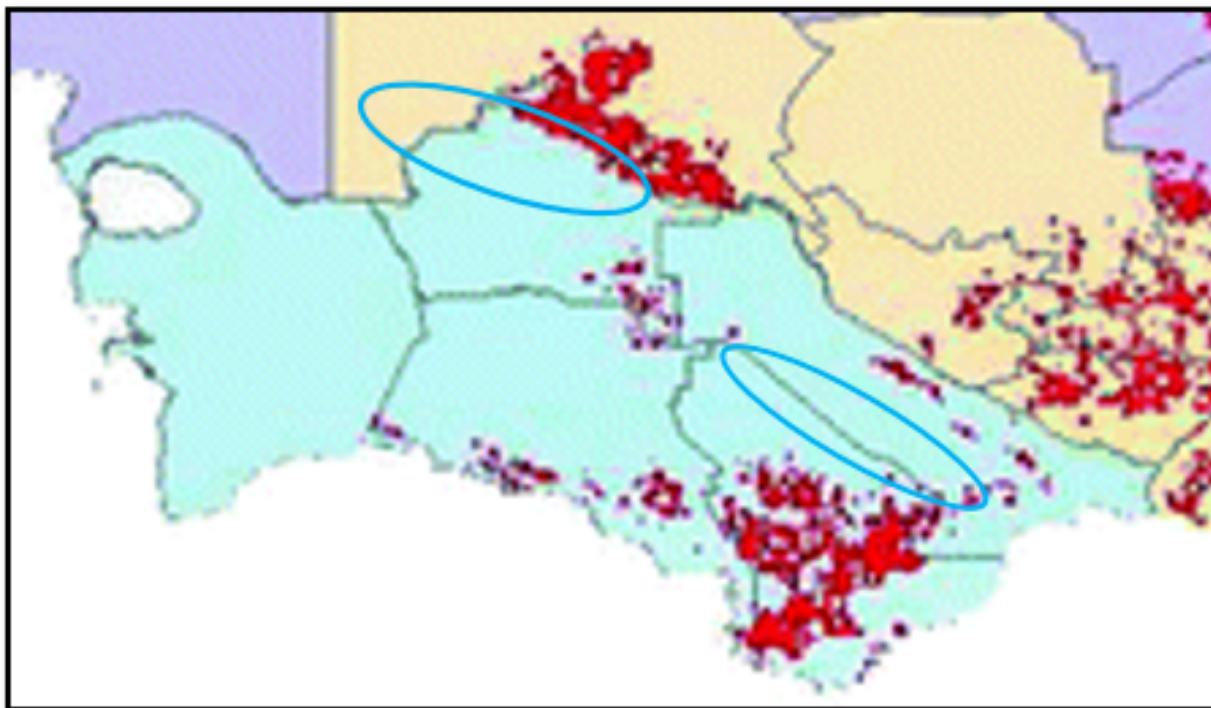
A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).

Name	Position	Ministry	Date
Mr. Berdi Berdiyev	GEF OFP, Head of Department	Ministry of Agriculture and Environment Protection of Turkmenistan	5/21/2019

ANNEX A: Project Map and Geographic Coordinates

Please provide geo-referenced information and map where the project intervention takes place

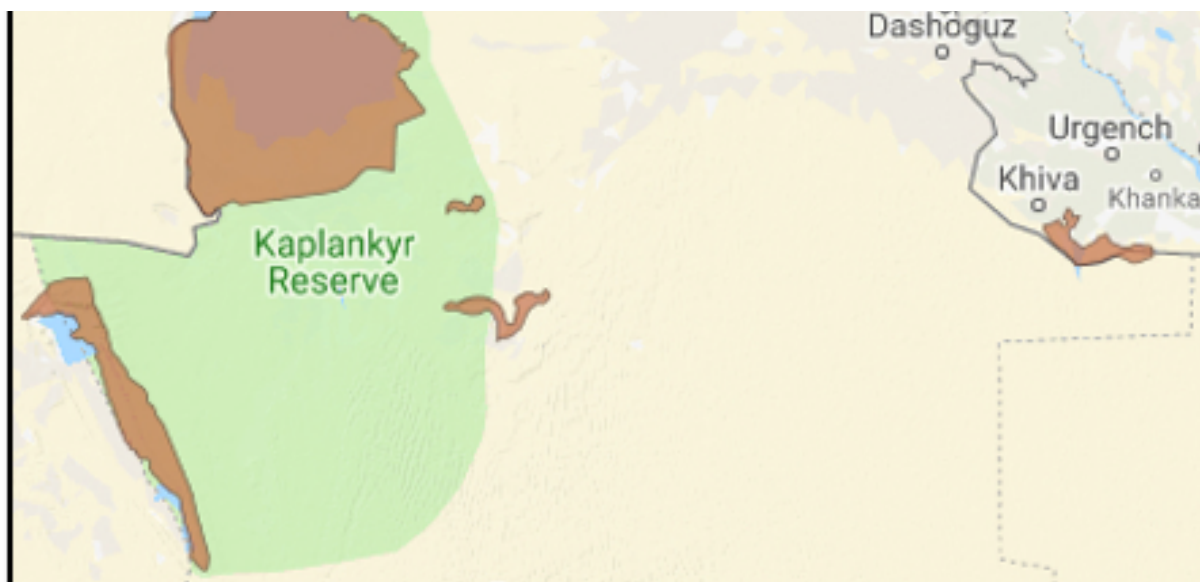
Figure 1 Areas of Land degradation in Turkmenistan; project intervention areas circled



(Source: Mirzabaev et al, 2015)

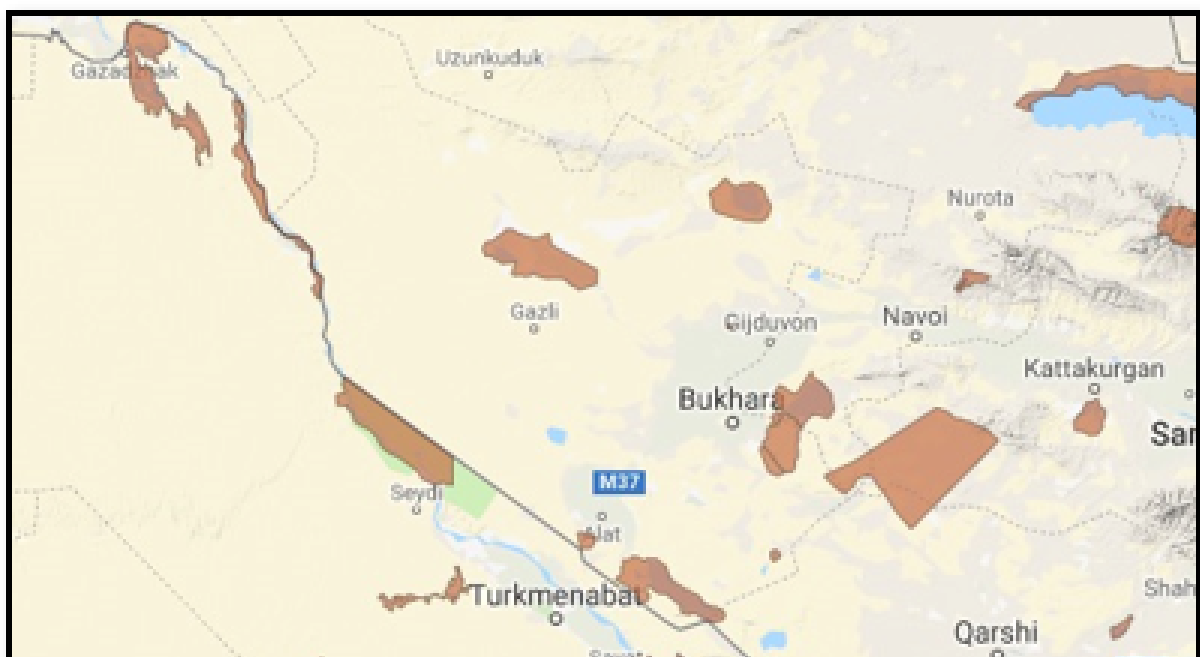
Figure 2 Dashoguz Province KBAs

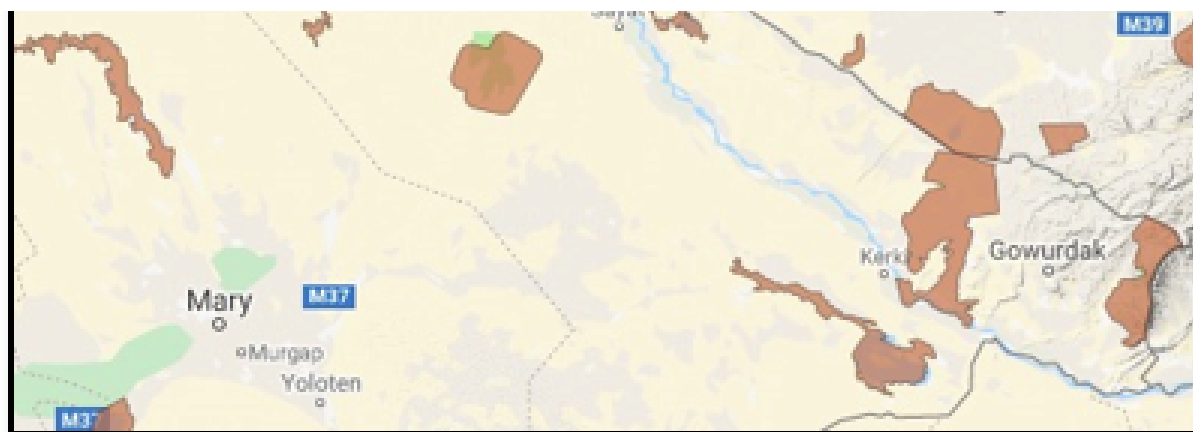




(Source: World Database of Key Biodiversity Areas; <http://www.keybiodiversityareas.org>)

Figure 3 Lebak Province KBAs





(Source: World Database of Key Biodiversity Areas; <http://www.keybiodiversityareas.org>)

Figure 4 Protected Areas of Turkmenistan, with targeted PAs Circled

