Food System, Land Use and Restoration Impact Program in Uzbekistan

Part I: Project Information

Name of Parent Program
Food Systems, Land Use and Restoration (FOLUR) Impact Program

GEF ID
10601

Project Type
FSP

Type of Trust Fund
GET

CBIT/NGI
CBIT **No**
NGI **No**

Project Title
Food System, Land Use and Restoration Impact Program in Uzbekistan

Countries
Uzbekistan

Agency(ies)
FAO

Other Executing Partner(s)
Ministry of Agriculture, State Committee on Ecology and Environmental Protection, FAO

Executing Partner Type
Government

GEF Focal Area
Multi Focal Area

Taxonomy

Focal Areas, Land Degradation, Sustainable Land Management, Ecosystem Approach, Drought Mitigation, Income Generating Activities, Sustainable Forest, Integrated and Cross-sectoral approach, Improved Soil and Water Management Techniques, Restoration and Rehabilitation of Degraded Lands, Sustainable Agriculture, Community-Based Natural Resource Management, Sustainable Livelihoods, Land Degradation Neutrality, Land Cover and Land cover change, Carbon stocks above or below ground, Land Productivity, Biodiversity, Protected Areas and Landscapes, Productive Landscapes, Community Based Natural Resource Mngt, Terrestrial Protected Areas, Financial and Accounting, Payment for Ecosystem Services, Mainstreaming, Agriculture and agrobiodiversity, Species, Plant Genetic Resources, Climate Change, Climate Change Adaptation, Ecosystem-based Adaptation, Climate resilience, Climate information, Community-based adaptation, Private sector, Innovation, Mainstreaming adaptation, Climate Change Mitigation, Agriculture, Forestry, and Other Land Use, Energy Efficiency, Renewable Energy, Influencing models, Transform policy and regulatory environments, Convene multi-stakeholder alliances, Demonstrate innovative approache, Strengthen institutional capacity and decision-making, Stakeholders, Communications, Awareness Raising, Behavior change, Public Campaigns, Strategic Communications, Education, Local Communities, Non-Governmental Organization, Civil Society, Community Based Organization, Beneficiaries, Private Sector, Financial intermediaries and market facilitators, Individuals/Entrepreneurs, SMEs, Large corporations, Type of Engagement, Participation, Partnership, Information Dissemination, Consultation, Gender Equality, Gender Mainstreaming, Women groups, Sex-disaggregated indicators, Gender-sensitive indicators, Gender results areas, Access to benefits and services, Knowledge Generation and Exchange, Participation and leadership, Access and control over natural resources, Capacity Development, Integrated Programs, Food Systems, Land Use and Restoration, Smallholder Farming, Landscape Restoration, Sustainable Commodity Production, Food Value Chains, Comprehensive Land Use Planning, Sustainable Food Systems, Integrated Landscapes, Capacity, Knowledge and Research, Enabling Activities, Learning, Adaptive management, Indicators to measure change, Knowledge Generation

Sector
AFOLU

Rio Markers
Climate Change Mitigation
Climate Change Mitigation 1

Climate Change Adaptation
Climate Change Adaptation 1

Submission Date
6/8/2020

Expected Implementation Start
6/1/2022

Expected Completion Date
5/31/2026

Duration

48In Months

Agency Fee($)

539,339.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount($)	Co-Fin Amount($)
IP FOLU	Promoting effective coordination and adaptive management for Food Systems, Land Use and Restoration	GET	5,992,661.00	72,754,400.00
		Total Project Cost($)	**5,992,661.00**	**72,754,400.00**

B. Project description summary

Project Objective

To scale up best practices and innovations for sustainable and inclusive wheat-based production landscapes and value chains

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
1. Integrated Landscape Management (ILM) system	Technical Assistance	1.1. National legal, regulatory, and institutional frameworks strengthened to support sustainable and inclusive wheat landscapes and value chains to enhance delivery of global environmental benefits and sustainable livelihoods Indicators: -Number of new legal/regulatory frameworks drafted under the framework of Land Code and other relevant policy processes to support project objectives -A functional platform to enable the Task Force at national and sub-national levels -Number of men and women with enhanced capacities to	1.1.1. Assessment of enabling conditions and regulatory framework for multi-agency and regional management of wheat landscapes and sustainable and inclusive food systems carried out 1.1.2. Inter-Ministerial Task Force chaired by the STEEP established to oversee development and adoption/ amendment of policies/regulations to enable implementation of ILM principles, including addressing perverse fiscal subsidies for wheat 1.1.3. Capacity development program initiated for stakeholders involved in wheat and wheat landscape value chains, including use and implementation of the toolbox for ILM 1.1.4 Policy briefs, advocacy and awareness-raising materials prepared and published to	GET	1,530,980.00	24,000,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
2. Promotion of sustainable food production practices & responsible commodity value chains	Investment	2.1: Sustainable food production demonstrated on an area of 300,000 ha on irrigated and rain-fed productive landscapes Indicators: -Number of households and communities adopting sustainable production practices at landscape level with significantly reduced environmental impacts (GHG emissions, water use efficiency, biodiversity conservation) based on the agreed Standard and validated by impact indicators, whilst ensuring sustainable production -Number of communities adopting	2.1.1: Formation of new and/or capacity building of existing producer organizations and Wheat Clusters to implement sustainable wheat production and diversification at farm and landscape levels (including Farmer Field Schools, FFS and Training of Trainers, ToT) to implement improved farming management practices and landscape management 2.1.2. Diversification of approaches to maintain diversity of production systems (e.g. diversification, crop rotation and inter-cropping, improved wheat germplasm) demonstrated 2.1.3. Improved management of productive croplands to increase crop production (conservation agriculture, integrated soil nutrient management,	GET	1,800,121.00	13,000,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
3. Conservation & restoration of natural habitats	Investment	3.1: Enhanced conservation and restoration of habitats/ ecosystems in production landscapes for GEB and enhanced ecosystem services to support agriculture in an equitable manner Indicators: -Ha of land under effective management and land degradation avoided/ reduced/restored in habitats such as riparian zones for enhanced biodiversity conservation, ecosystem connectivity and species conservation -Number of people trained	3.1.1. Capacity building and resource mobilization carried out for implementation of ILM plans through local producers, government and other stakeholders ? including the private sector for conservation of existing high biodiversity areas or restoration of degraded areas 3.1.2. Inclusive models of benefit sharing from ILM between communities and other stakeholders for conservation and restoration of habitats/ ecosystems in production landscapes developed 3.1.3. Alternative livelihoods demonstrated for community women and men involved in activities that threaten global environmental values for conservation and restoration of habitats/ ecosystems in production landscapes 3.1.4. Degraded	GET	1,980,160.00	29,954,400.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
4. Knowledge Management and M&E	Technical Assistance	4.1: Project implementation based on RBM and lessons learned/good practices documented and disseminated Indicators: MRV system for agriculture sector established National outreach campaign Increased national awareness on sustainable food systems and landscape restoration practices A gender-sensitive monitoring and evaluation systems	4.1.1: Standardized indicators introduced linking to the FOLUR IP (calculation, testing, integration SDG indicators, extrapolation from local to national scale) 4.1.2: A national experience exchange network on sustainable food production established at the Ministry of Agriculture and linked to the Kazakhstan FOLUR IP exchange network 4.1.3: RBM Gender-Sensitive system of the project promoted adaptive management through capturing key results of the project activities and peer-to-peer training 4.1.4: Communication Strategy and KM strategy are developed and implemented	GET	407,000.00	2,300,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
				Sub Total ($)	5,718,261.00	69,254,400.00

Project Management Cost (PMC)

GET	274,400.00	3,500,000.00
Sub Total($)	**274,400.00**	**3,500,000.00**
Total Project Cost($)	**5,992,661.00**	**72,754,400.00**

Please provide justification

C. 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($)
Recipient Country Government	Ministry of Agriculture	In-kind	Recurrent expenditures	29,985,000.00
Recipient Country Government	Ministry of Agriculture	Grant	Recurrent expenditures	24,500,000.00
Recipient Country Government	State Committee on Ecology and Environmental Protection	In-kind	Recurrent expenditures	18,000,000.00
GEF Agency	FAO	Grant	Investment mobilized	269,400.00
			Total Co-Financing($)	**72,754,400.00**

Describe how any "Investment Mobilized" was identified

The Ministry of Agriculture co-financing will be provided in the amount of 29,985,000 USD and is described as follows: ? 19,000,000 USD investments in sustainable agricultural production within Presidential Decree No. ??-4575 "On measures for implementation of the tasks defined in the Strategy of agricultural development of the Republic of Uzbekistan for the period of 2020-2030, 2020-01-28; ? 9,000,000 USD investments restore abandoned irrigated land to cultivate agricultural crops within Presidential Decree No. 5742 (dated 17 June, 20l9). ? 1,985,000 USD to organize national experience exchange network on sustainable food production. There are several projects financed by bilateral and multilateral donors, which will serve as technical references on the feasibility of private wheat clusters in the country. The Ministry of Agriculture ?nsur?s to support involving 24,500,000 USD grant money from private wheat clusters across Karakalpakstan, Khorezm and Kashkadarya provinces within Resolution #806 of the Cabinet of Ministers of September 26, 2019. The detailed grant breakdown is as follows: ? 13,000,000 USD t? support wheat clusters to implement sustainable wheat production and diversification at farm and landscape levels ? 7,500,000 USD t? support wheat value chain ? 2,000,000 USD t? organize cooperative platform for wheat v?lu? chain actors ? 2,000,000 USD in promotion of sustainable food production practices & responsible commodity v?lu? chains The State Committee for Ecology and Environmental Protection will provide in-kind cofinancing for the amount of 18,000,000 USD, from which: ? 10,000,000 USD in investments in effective management and restoration of habitats within approved Strategy for the conservation of biological diversity in the Republic of Uzbekistan for the period 2019-2028 ? 3,000,000 for the creation of protected areas in the target districts as per resolution in the field of ecology and environmental protection ? 2,500,000 USD in investments to address degraded ecosystems and habitats in target areas in production landscapes ? 1,500,000 USD in support for renewable energy sources in the country ? 1,000,000 USD in support for increased carbon sequestration FAO will provide co-financing, in the form of investment mobilized, for the amount of 269,400 USD through its activities in Uzbekistan in 2022/2026, including the following projects: ? TCP/UZB/3804 - Strengthening sustainable food systems through geographical indications (USD 100,000) ? GCP /SEC/016/TUR - Strengthening regional collaboration and national capacities for management of wheat rust diseases (USD 89,400) ? TCP/UZB/3801 - Support in implementation of inclusive agricultural policies (USD 80,000)

D. 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($)
FAO	GET	Uzbekistan	Climate Change	CC STAR Allocation	3,107,305	279,657	3,386,962.00
FAO	GET	Uzbekistan	Land Degradation	LD STAR Allocation	443,901	39,951	483,852.00
FAO	GET	Uzbekistan	Biodiversity	BD STAR Allocation	443,901	39,951	483,852.00
FAO	GET	Uzbekistan	Multi Focal Area	IP FOLU Set-Aside	1,997,554	179,780	2,177,334.00
				Total Grant Resources($)	**5,992,661.00**	**539,339.00**	**6,532,000.00**

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)

PPG Required **true**

PPG Amount ($)

200,000

PPG Agency Fee ($)

18,000

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
FAO	GET	Uzbekistan	Climate Change	CC STAR Allocation	103,704	9,334	**113,038.00**
FAO	GET	Uzbekistan	Land Degradation	LD STAR Allocation	14,815	1,333	**16,148.00**
FAO	GET	Uzbekistan	Biodiversity	BD STAR Allocation	14,815	1,333	**16,148.00**
FAO	GET	Uzbekistan	Multi Focal Area	IP FOLU Set-Aside	66,666	6,000	**72,666.00**
				Total Project Costs($)	**200,000.00**	**18,000.00**	**218,000.00**

Please provide justification

After consultation with Governmental counterparts, FAO is willing to request, on an exceptional basis, an increase of the PPG amount due to the following reasons: - The project financing amount is very close to the $6M mark to access $200K for the PPG (Only $7.5 k difference to reach the $6M threshold) - The review process has identified a number of baseline data and information gaps. The additional $50k will be instrumental for ensuring that the quality of analysis of key project information such as gender, biodiversity, social issues, water footprint, and others are appropriately taken into consideration. - Most of the baseline information and primary data for this project will have to be generated through PPG financing. - COVID is bringing an additional layer of uncertainty in project preparation and in the Agency's experience from the last 4 months, a small buffer for contingencies and for timely sensitive adaptive management in the field is being crucial for quality design in the current context.

Core Indicators

Indicator 3 Area of land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
0.00	50000.00	0.00	0.00

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)
	50,000.00		

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)

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)

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)

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)
0.00	350000.00	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)
	50,000.00		

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)

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)
	300,000.00		

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)

Documents (Please upload document(s) that justifies the HCVF)

Title	Submitted

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?e (direct)	0	1000000	0	0
Expected metric tons of CO?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?e (direct)		1,000,000		
Expected metric tons of CO?e (indirect)				
Anticipated start year of accounting		2022		
Duration of accounting		4		

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?e (direct)				
Expected metric tons of CO?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)

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		2,580		
Male		2,580		
Total	0	5160	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

Explanation of Targets ? Core Indicator 3: The figure of 50,000 hectares restored is based on the area of land that will receive inputs in the form of tools or adapted management activities described under Output 3.1.4, allowing the land to move towards its Land Potential. Plants, tools and human resources will be developed through other outputs, such as Output 3.1.1, and through contracts. ? Core Indicator 4.1: The figure of 50,000 ha of land under improved management to benefit biodiversity is to achieved through the ILM planning outlined under Outcome 1.3, and will include increased habitat opportunities and ecosystem services through land planning of agricultural lands and the creation/enhancement of buffer zone areas nearby or surrounding the district Protected Areas. ? Core Indicator 4: The figure of 300,000 hectares under improved practices is nearly 1/3 of cultivated wheat area for the 3 selected Oblast/Republic and will be achieved through the causal pathways of ILM, knowledge sharing, LDN conceptual framework, mapping and planning tools developed under project PPG, policy reform and incentive programmes carried out under Components 1 and 2. ? Core Indicator 6: The carbon-balance of the project amounts of 1 million tons of CO2-eq for a total period of 20 years (4 years of implementation and 16 years of capitalization) for a total direct project intervention

area of 400,000 ha (Indicator 3+Indicator 4.1+Indicator 4.3). Annex O provides the results of the calculations. ? Core Indicator 11: The figure of 5,160 beneficiaries, of which 50% are women, and 20,500 indirect beneficiaries is based on the estimated number of local inhabitants who will participate in / benefit from project activities, as described in the project document (pg 17): The PPG development team included a Project Design Expert, a National Project Coordinator (dual-role Conservation Agriculture Agronomist), an Institutional and Policy Specialist, Value chains Expert/Economist, a Social Inclusion and Gender Specialist, a Knowledge Management Specialist, Land Tenure Specialist, a Social Economist/Survey Specialist, a Climate Change Specialist, a Wheat/Diversification Specialist, a Salinity/Land Degradation Specialist, a Land Similarity/Suitability Specialist, a GIS Specialist, a Agro-Biodiversity Specialist and the services of a Renewable Energy Team, resulting in over 15 experts from a range of knowledge backgrounds coming together to provide inputs and direction on project design and needs. Technical and administrative support from the FAO Representation Office of Uzbekistan, FAO Regional Office in Ankara and representatives from FAO divisions in HQ was provided over the course of the Project Preparation Grant phase. Technical backstopping was provided on all issues relating to project design and activities by officials and technicians in key stakeholder agencies, as well as civil stakeholder groups, including the private sector. The PPG team used a variety of methodologies and approaches to develop the project document presented here, which include but are not limited to: ? GHG Mitigation calculations: These were realised using the EX ACT tool; this was supported by data from the ENZO2 calculator and the BioFuel GHG Calculator. The results of the 3 are provided as Annex P. ? Stakeholder engagements and consultations: These included FGDs, national and regional workshops and KII among Commercial farmers and along the selected value chains. Description is provided in the report available in Annex I2: Stakeholder Engagement Matrix Stakeholder Engagement. ? For issues relating to Land Suitability analysis, the results are provided in the Baseline selection, ? LDN baselines are available at a National scale through the Interactive App, and follow the UNCCD-endorsed Good Practice Guidance for remote sensing. All information is sourced and stakeholder inputs are incorporated throughout the document. Stakeholders have validated the process and results obtained through these approaches for the PPG and project design phase.

Part II. Project Justification

1a. Project Description

1. Project Description

1.1. National Context

Uzbekistan is located between longitude 640E and latitude 410N and bordered by Kazakhstan in the west and north, Afghanistan and Turkmenistan in the south, and Kyrgyzstan and Tajikistan in the east. Uzbekistan has a total area of 44.8 million ha. About 4.5 million ha represent arable land, which comprises 11 percent of the territory, of which approximately 4 million ha, or 88 percent, are irrigated.[1][1] Agriculture plays a major role in the economy, employing 44 percent of the total population of 29.87 million and contributing 23 percent to the GDP.[2][2] Industry is the second largest contributor at 18 percent, though this contribution is steadily increasing and agriculture is steadily declining, having seen its contribution decrease from 26 percent in 2017.

Uzbekistan has a pronounced continental climate, with hot, dry summers, unstable weather in winter, and a wide variation in seasonal and daily temperatures. The desert and steppes are characterized by short winters with thin and unstable snow cover, and hot dry dusty summers. As a result of these conditions, desert soils are characterised by low organic matter (<1 percent), high pH, high calcium levels often associated with gypsum and low agricultural potential. Agricultural soils are often alluvial, colluvial or aeolian loess deposits, are composed of diverse particle size, frequently have low to moderate natural salinity rates, poor structural characteristics and have a high potential for compaction.[3][3] The mountains (over 600 m) have relatively high rainfall (up to 700 mm per year). Soils in the piedmont areas are Sierozems characterised by carbonate hardpans and usually support shrubby vegetation, while the soils of the higher mountainous areas are chestnut to brown soil types, and have higher SOC rates due to the cooler, wetter conditions.

1.1.1. Agriculture in Uzbekistan

In addition to having unique biophysical and climatic characteristics, agriculture in Uzbekistan exhibits a number of distinct features when compared with its regional counterparts, starting with its dependence on irrigation. With the exception of the foothills and mountainous areas in the east, **agriculture is largely dependent on irrigation, the water is extracted from Uzbekistan?s**

principal rivers and to a lesser degree on aquifers and oasis. A mere 753,000 ha (18 percent) of available arable lands are rain-fed, and are restricted to the east of the country.[4][4]

In addition to a high dependence on irrigation, **the agricultural sector and national policy is largely centred around promoting and ensuring consistent production of two principal crops, cotton and wheat**, cotton as a raw material for the textile industry and an important export item, and wheat being the foundation of national food security. In total, more than 75 percent of all sown areas in Uzbekistan are under wheat and cotton. Other important cereals are rice, corn and barley. Sorghum, millet, rye, oat, and buckwheat are gradually gaining in importance in spite of policy barriers.

1.1.2. Land Tenure in Uzbekistan

Land tenure is also unique under the Uzbekistan legislation. **According to Uzbekistan?s legislation, there is no private ownership of land**, and definitions of public and State property rights are poorly defined.[5][5] The right of ownership is defined by Article 164 of the Civil Code as ?*the right to own, use and dispose of the property belonging to him at his own discretion and in his own interests, as well as to demand the elimination of any violations of his property rights, no matter who they come from. The ownership is infinite?*. It also outlines the two forms of ownership - private and public (which is equal to the state); **the right to dispose of land (republican and municipal) belongs to the Oliy Majlis , the President, state authorized bodies and state governing bodies,** locally known as ?Khokimiyat?.

While legal entities and individuals cannot be the owners of the land, they do have some degree of property rights, as provided for in Article 165 of the Civil Code. Under this code, ?the right of economic management and the right of operational management?, ?the right of inherited life-long ownership of a land plot?, ?the right of permanent possession and land use? and ?easements? are cited and act as a limited form of property rights. However, **only three land tenure forms exist for farming** and they must be used strictly for their intended purpose, cannot be privatized, nor be objects of purchase and sale, mortgage, donation or exchange.

These three farm types are summarised in the table below (Table 1):

Table 1: Farm properties and definitions as according to Uzbekistan legislation

Tenure forms	Definition	Land use obligations	Land dimensions	Production specialization	Competence requirements	Labour used

Farm (Commercial)	Commercial farms are legal entities that operate on leased land	The land plots provided to the farm are required by the lease agreement to be used strictly for their described purpose. They cannot be privatized, nor can they be objects of purchase and sale, mortgage, donation or, exchange. May be granted to businesses and individuals in the sublease (non-transferable) for a period of up to one year for the interim planting of crops[6][6]; The right to lease a land plot can be used by a farm as collateral for obtaining loans. The length of the lease depends on the achievement of the public procurement target, up to a maximum of 50 years, but not less than 30.	The size of the farms can vary depending on the specialization of production. Farmers can only cultivate and grow agricultural products specified in the land lease agreement. Not less than 30 ha for cotton. and grain crops; for Horticulture, no more than 5 ha are permitted under one lease.	Principally Cotton, wheat	Minimum 18 years of age, experience or agricultural training in agriculture can improve bid for contracting of land.	Family members, permanent workers and seasonal workers.

Dehkan farm	Small-scale family farm that produces and sells agricultural products based on the personal labour of family members on a land plot provided to the head of the family for life-long inherited possession	The land plots provided to the dehkan farm in the form of a viable inherited possession (individual or legal entity) cannot be privatized and be objects of purchase and sale, mortgage, donation or exchange. They can be transferred for temporary use to legal entities and individuals for the purpose of growing agricultural products.[7] [7] To obtain loans, the right to life-long inheritable ownership of a land plot can be pledged. they do not possess the right to have permanent buildings or living quarters.	In the amount of no more than 0.35 ha on irrigated and no more than 0.5 ha on non-irrigated (rainfed) lands, and in the steppe and desert zone - no more than 1 ha of rain-fed pastures.	Cereal, vegetable, fruit, livestock	Family member	Family members. The dehkan farm cannot hire people on a permanent basis though they can hire seasonal workers

Cooperative farms **(Shirkats)**	The economic entities with legal status, based on mutual basis and mostly family (collective) contract, a voluntary association of citizens for the production of marketable agricultural products. Along with the production of agricultural products, an agricultural cooperative or Shirkat has the right to value add, process, trade, repair and realise construction work, as well as the provide services to legal entities and individuals.	The land plots Shirkats use to conduct their activities cannot be privatized nor be objects of purchase, sale, mortgage, donation or exchange. Unused land can be provided for sublease or for temporary use to other legal entities and individuals for a period of up to three years with the right to extend land use for a new period.	In a Shirkat, by decision of the general meeting, land plots are transferred, as a rule, for temporary use for a period of at least five years to families (collectives) for the production of agricultural products on the basis of a family (collective) contract. After the expiration of the term for using the land plot, families (collectives) have the right to extend the family (collective) contract for a new period.	Land plots provided on the basis of a family (collective) contract are used strictly for their intended purpose, and no reduction in the size of ??arable land is permitted.	Minimum 16 years old	Cooperative members and employees

All these land tenure forms are united by the fact that they must be used strictly for their intended and described purpose, cannot be privatized, they cannot be objects of purchase and sale, mortgage, donation, or exchange.[8][8] According to the amendments and additions made to the Land Code, as well as to a number of other laws, including the Law on Farming and the Law on Dehkan Economy, Law on Forestry, Law on Pastures, etc. (Law of September 29, 2020, No.639), an agricultural land plot can be subleased by a farm for up to one year (or, in the case of investment projects or public-private partnerships, for a period of at least 3 years and no more than 49 years). In the case of a dehkan farm, a land plot (or a household plot) can be transferred for temporary use for a period by agreement of the parties. However, an agricultural land plot transferred for sublease cannot be an object of purchase and sale, mortgage, donation, exchange.

Dehkan farms therefore are land tenure entities in which family members of agricultural cooperatives, employees of other agricultural and forestry enterprises, as well as families of other specialists living in rural areas, in accordance with the procedure established by law[9][9], are provided with of a personal land plot for a life-long inherited ownership, including an area occupied by buildings and yards in the amount of up to 0.35 ha on irrigated and up to 0.5 ha on non-irrigated (rain-fed) lands, and in the steppe and desert zone - up to 1 ha on non-irrigated (rain-fed) lands.

In contrast, commercial ?Farms? are recognised under law as legal entities that operate on leased agricultural lands.[10][10] The land plots provided to the farm are required to strictly adhere to the land use stipulated under the lease agreement (Art.466 Civil Code). As with the other land tenure types, they cannot be privatized, nor can they be objects of purchase and sale, mortgage, donation or exchange. They may be granted to businesses and individuals in the sublease (non-transferable) for a period of up to one year for the interim planting of crops. The right to lease a land plot can be provided by a farm as collateral for obtaining loans. The length of the lease depends on the achievement of the public procurement target, up to a maximum of 50 years, but not less than 30. A minimum size is established for cotton (30 ha) and grain (10 ha), while horticulture and viticulture are limited to 5 ha.

As with the other policy measures, the three types of farms (farmer, Dehkans and shirkat) were established primarily to achieve public policy objectives to ensure the production of cotton and wheat remained as the main agricultural crops, and provide for the national income and food security in line with strategic targets. With this policy objective, the Presidential Decree "On measures to radically improve the system of protecting the rights and legitimate interests of farms, Dehkan farms and owners of household land, effective use of agricultural sown areas", No.5199 was passed on October 9, 2017. According to this Decree, all Dehkans and farms must become members of the *Council of Farmers, Dehkan Farms and Owners of Household Lands of Uzbekistan* (hereinafter referred to as the Council).

Mandatory membership in the Council is also enshrined in article 25 of the Law on Farming, and article 22 of the Law on Dehkan Farms.[11][11]

The following Presidential Decree "On additional measures to improve the activities of farms, Dehkan farms and owners of household plots", dated April 26, 2018. No . 3680, further increased the existing ambiguity in land tenure status by giving the Council unprecedented powers to finance and oversee land allocation and evictions, including:

? Capacity to carry out **regular monitoring** of the targeted and effective use of land plots of dehkan farms and household lands by visiting houses and soliciting information on the state of land cultivation, sources of seed, health of seedlings and trees, greenhouses development and maintenance and breeding of livestock;

? **Recommendations** to Council members **on optimal land use** for specified land management units;

? Submission of **proposals to modify lease agreements of farmers, Dehkan farms and owners of households** based on their recommendations, which **can include termination of lease agreement and eviction** from land.

Under Decree of No. 5199 the Presidium of the district **has the authority to have the Council seize the land, without the need to provide clear or transparent criteria for termination of the lease agreement**, though this is typically carried out using Article 5 of the Law "On Farms" as a justification. In particular, this article obliges leaseholders to ensure the yield of agricultural crops (in average annual yield for three years) is not lower than the normative yield established by law. This obligation, together with strict limitations on land use and crop type (priorities given to wheat and cotton), is stipulated in the land lease contract.

According the PPG report on land tenure (Annex M), cases of appropriation of farms and Dehkans by the decision of district, city and regional local powers (Khokimiyat) prior to the expiry of a lease term or the term of life-long use are frequent. Producers often have little access to information so they are often not sure about the reasons behind the lease termination. This especially impacts those who have used the land as loan collateral or have invested in farm infrastructure, laser levelling or soil amendments. It is difficult to challenge the discretionary powers of the Khokimiyat in court, since the judicial system usually rules in favour of the authorities and they have a clear mandate for their decisions. Stakeholder consultations during the PPG also indicated that land tenure insecurity is a barrier to investing in more sustainable farming techniques for the overwhelming majority of smallholders as well as some commercial farmers. As a 2019 report put it, ?Why to invest in assets, which could be expropriated by the state at any time without compensation??[12][12]

Several articles under the civil Code (Art.457-460) also **require producers of agricultural products to submit them for processing to government run ?processors?, at predetermined prices**. This is done through the State-owned enterprise JSC "Uzdonmahsulot", which moves an estimated average of 1.46 million tons of wheat annually.[13][13] Machinery, irrigation equipment, fertilisers, pesticides and other agricultural inputs as well as technical resources are also either sold and distributed by state-owned enterprises, or through subcontracting with specialist retailers. This **includes the production and sale of agricultural seed**, with the ?Uzdunmahsulot? company operating as a State-run enterprise that has held a monopoly on seed distribution and sales for many years.

For the most part, the policy reforms have historically achieved the productivity objectives outlined by the GoU, and the agricultural sector has grown at a relatively high rate following independence in 1991, driven largely by improving productivity gains per ha.[14][14] Between 1996 and 2016, the average agricultural labour productivity annually grew by 1.5 percent. However, the last few years have seen a stagnation in productivity, with experts citing a wide range of issues, from land tenure concerns, to Land Degradation (LD), lack of investment, changing social dynamics and rural demographics and Climate Change (CC).[15][15] Growth in agricultural labour productivity and efficiency was also a result of a sharp decline in the number of agricultural workers rather than a result of the large increase in agricultural value added; the share of agriculture in the total labour force declined from 43 percent in 1996 to 30 percent in 2016.[16][16]

One consequence of the changing land policies and sector restructuring is the unique role of the Dehkan farm in Uzbekistan?s agricultural sector. In spite of their size and legal limitations, **Dehkan farms are the backbone of Uzbekistan agriculture**, with most estimates showing Dehkans farms account for over 80-90% of beef/lamb/chicken, 90% of milk, 80% of wool and 60% of eggs produced annually in national territory.[17][17] Where private markets and logistics have allowed, Dehkans have also grown to occupy a significant portion of the vegetable, fruit and alternative crop sectors, and in rain-fed areas they continue to produce limited amounts of wheat and grain, principally for livestock feed and bedding and household fuel for heating and cooking.[18][18] Dehkan farm models are also the only tenure classes that maintain a certain degree of independence and security under the evolving legal frameworks.[19][19] The same study also found them to be more efficient than commercial farms in their use of land and labour, being more profitable and less water demanding over the long term.

However, from a policy standpoint, Dehkan farms struggle with a number of rigid policy barriers and challenges. Small economies of scale and State monopolies on agricultural inputs translate into higher production costs per unit for Dehkan farms, and most suffer from limited access to fertilizers, fuel, machinery, credit, value chains, and export channels. In Tashkent oblast alone, for example, in 2018 dehkan farmers paid an average of 125 percent more for nitrogen fertilizers, 17 percent more for fuel and 27 percent more for leased machinery than the national average for Commercial Farmers.[20][20] The majority of livestock products also come from these farms, yet most do not have sufficient land for forage production, with many Dehkan producers resorting to grazing their animals without permission on local pastures, or sending them in groups along the transhumance migration routes, with resulting loss in dairy income and household consumption opportunities. To add to the feed issue, total area under cultivated forage production has steadily decreased following independence. On average, 30 percent of forage input is purchased, and lack of quantity and quality feed is a significant barrier to dairy production and animal health.[21][21]

Those Dehkan farms that do excel financially are not legally sanctioned or allowed to organically grow in production capacity or land size within the Dehkan legal form. To do this, the producers must make a substantial transition to a much larger farm model where the crop type is specified under the lease agreement and the cost of not meeting production quotas can mean the lease is revoked and even eviction from the land.

With perhaps an understanding of the need for policy reforms, **in January 2019, Uzbekistan started a new phase of farm restructurin**g. The goal was once again to optimize the use of farmland by increasing the size of farms producing wheat and cotton, reallocating land to more efficient farmers, introducing a cluster-based value chain strategy and improving crop rotation options.[22][22]

To set the stage, the Presidential Decree ?On measures for large-scale introduction of market principles into production, purchase and sale of grain?, published in March 2020, outlined a strategy to restructure the sector in a continuing effort to increase production efficiency and output by introducing more liberal market conditions. According to the Decree and **starting with the harvest of 2021, the government has announced the discontinuation of the practice of setting grain prices and the obligation by producers to sell to State run enterprises under the leasing system.** However, in practice it appears the wheat production system will to a certain extent remain in State controlled hands and much of the current policy frameworks will continue to operate.

The **introduction of a ?Cluster? business model**[23][23] has become one of the priorities of the state policy in agriculture under this approach. The use of the Cluster approach is believed to increase resource efficiency, yield and added value of agricultural products by condensing production, transportation, product development and packaging into more concentrated administrative and geographic units.[24][24]. The expectation is that the cluster system will reduce the number of VC operators, increase efficiency and facilitate investment in agri-food processing enterprises that directly access producers through contracts or as members of the cluster.

The Resolution of the Cabinet of Ministers "On measures for the phased implementation of the cluster system in order to increase the yield of grain" dated September 24, 2019. No .806, provides for the legal basis for the creation of wheat clusters and a number of criteria for their creation. In particular, regional authorities and the Council of Ministers of Karakalpakstan are responsible for the selection of legal entities that meet the criteria regarding infrastructure, financial capacity and land to create a sustainable cluster model. Local authorities and the Council of Ministers of Karakalpakstan then allocate land plots to clusters under leasing agreements that range from 30 to 50 years.

According to the Resolution, if farms produce grain on the land plots leased by the cluster, they have no obligation to sell the crop to the state (exempt from government contracting) though are required to meet their contract with the Cluster. For those producers who sign production contracts with farmers, the cluster must provide the farm with agricultural inputs, in particular, mineral fertilizers, plant protection pesticides and other treatment substances, fuel and lubricants, mechanization services, etc. If the above inputs are not provided, the farm has the right to independently dispose of the crop. For those farmers who produce grain outside of the cluster contract system, these farms are obliged to once again enter into a contract with the government for the sale of the produce as determined under the state order program, limiting the options for farmers to two potential buyers for wheat and cotton.[25][25]

This decree provides measures to ensure that the previous decrees of the GoU and the President on the use of water and land resources (UP 5742 of July 17, 2019), on the use of energy-saving and renewable energies (UP 4422 of August 22, 2019) and measures for the supply of agricultural machinery for the agricultural sector (UP 4258 dated April 4, 2019) are met and promoted through the activities and operation of the wheat clusters. Under these decrees, the government contracting system for wheat is largely maintained, as well as the monopoly of the state (?Uzdunmahsulot?) on seed management which also limits the possibilities for the development of the private sector in the seed industry. Producers continue to be bound by contracts with State operators through the Uzdunmahsulot enterprise and at the same time will now depend on the provision of agricultural resources from the cluster, with currently unknown conditions and criteria on the transfer of materials and production equipment. Either through the cluster, or the state order, farms must also continue to meet minimum production quotas established by law for the area and receive and answer to inspections and leasing recommendations from the Council.

1.1.3. Environmental costs of agricultural policies and production methods

The biophysical characteristics, regulatory frameworks and land management strategies described above in the national context have led to socio-economic and environmental consequences and acted as a driver for land degradation (LD) and resource over-extraction and misuse, resulting in reductions in land productivity, lost income and livelihood opportunities and a reduction in ecosystem services.[26][26]

Exact figures on the LD extent and severity differ according to definition and approach, though the recognised types of LD processes active in Uzbekistan today are secondary soil salinity, erosion and desertification. Those areas recognised as having the largest and most severe LD hotspots are the foothill and mountainous areas to the east of Uzbekistan, including Bukhara, Navoi, Kashkadarya and Fergana provinces, and the lower drainage networks of the Amudarya River (Khorezm and Karakalpakstan).[27][27]

Soil salinity as a land management and economic issue is a growing concern for Uzbekistan (Figure 1). Areas affected by secondary soil salinity are steadily increasing each year and linked to reductions in crop yields.[28][28] Approximately half (about 2.1 million ha) of the irrigated area in Uzbekistan is affected by secondary salinization to some degree, with 31 percent classified as slightly saline, 18 percent moderately saline and 4.5 percent strongly saline.

Figure 1. Soil and wheat crop affected by high salinity in the Syrdarya Province of Uzbekistan (Photo credit: Aziz Nurbekov)

Land reclamation through flooding and irrigation malpractice, combined with the absence of well-operating collector-drainage systems, have been the cause of a significant portion this secondary salinity in those areas where irrigation is used, particularly in the western areas of the country where arid climates increase evaporation rates and dependence on irrigation is more widespread.[1] Cutting of deep-rooting woody shrubs and trees for fuel has also allowed saline watertables to rise, especially on non-irrigated lands and pastures.[2] Outdated hydraulic and reclamation constructions, and losses due to lack of upkeep and maintenance have also contributed to the issue as point source pollution.

Wind erosion is another serious issue and affects 56 percent of irrigated lands, with Karakalpakstan and Khoresm regions being particularly affected. The Aral Sea basin has also become a major source of wind eroded particles and pollutants, causing health and productivity issues for Khorezm and Karakalpakstan populations.[3] During the dust storms, a recorded rate of up to 1.5-6.5 tonnes/ha of dust containing 0.3-1.0 tonnes/ha toxic salts were uplifted and deposited on adjacent lands.[4]

Although exact figures are always difficult to establish for Soil Organic Carbon (SOC) and local parameters can be highly site specific, Uzbekistan overall has soils with naturally low SOC.[5] The low carbon reserves are for the most part linked to the area?s climatic features, as extreme seasonal temperatures (30-40?C in the summer and -20?C in winter) and scarce precipitation (100-150 mm/year) make SOC accumulation within soil profiles difficult. At the same time, SOC reserves in cultivated lands also show a steady decrease, as represented in the table below (Table 2), something which is more easily attributable to management practices.[6]

Table 2. SOC trends on cultivated soils

Provinces	**SOC, %**		**0-30 ??**	**0-30 ??**	**Difference**
	1980	**2014**	**1980**	**2014**	
	Average	**Average**	**T/ha**	**T/ha**	
Karakalpak Republic	0,89	0,86	34,52	33,35	-1,17
Kashkadarya	0,92	0,76	35,98	29,54	-6,44
Khorezm	0,73	0,72	28,47	28,08	-0,39
Average	**1,08**	**0,93**	**41,91**	**36,30**	**-5,62**

In addition to SOC loss, stakeholders consulted during the project development phase have commented on soil fertility loss as one of the key soil management issues alongside secondary soil salinity and erosion. Data from the field supports these claims (Table 3). Dependence on flooding to wash salts off the surface of the cropping areas also leaches soil nutrients that are typically not replaced by the standard NPK fertilisers that comprise most fertilisation approaches.[7] Constant flooding also erodes SOC and clay particles on which soil fertility depends. Before independence, rotational cropping with leguminous crops, especially alfalfa, improved soil properties and structure, with their heavy root mass and Nitrogen fixation contributing significantly to soil stability and fertility.[8] The current agricultural policy system aimed at prioritising wheat and cotton has largely led to rotation systems being abandoned and producers having limited cropping alternatives, limited access to seed or improved varieties and heavy penalties for noncompliance with the lease contract requirements and State production orders.

Table 3. Nitrogen trends on cultivated soils

Provinces	**Nitrogen, %**		**0-30 ??**	**0-30 ??**	**Difference**
	1980	**2014**	**1980**	**2014**	
	Average	**Average**	**T/ha**	**T/ha**	
Karakalpak Republic	0,055	0,052	2,145	2,028	-0,117
Kashkadarya	0,07	0,06	2,73	2,34	-0,39
Khorezm	0,05	0,049	1,95	1,911	-0,039

Average	**0,082**	**0,072**	**3,180**	**2,796**	**-0,384**

Soil structure has also been widely affected due to constant ploughing, flooding, excessive and improper machinery use and lack of soil improvement through crop rotations and green manures. The physical characteristics of Uzbekistan?s soils make them particularly susceptible to compaction and surface crusting. Massive, heavy soils reduce seed germination rates, water infiltration and soil aeration, and often require large quantities of chemical and mechanical inputs to remain productive.[9]

Soil fertility management is also closely linked to agricultural Green House Gas (GHG) emissions, according to a study realised during the project development phase. The highest contributor to GHG emissions from the cereal agricultural production cycle was found to originate from fertilizer manufacturing and resulting soil emissions following its application. In fact, **GHG emissions from Nitrogen (N) fertilisers, particularly Ammonium sulphate, accounted for approximately half of all emissions derived from grain production**. Mechanized operations in the field, from pre-sowing preparation to harvesting operations were responsible for the majority of remaining emissions. From international studies, wheat value chains showed emission rates per ton of wheat ranging between 390 kg CO2eq and 622 kg CO2eq, with variability attributable principally to N-fertilizer application. This was confirmed in the case for Uzbekistan, with the data clearly showing N-fertilizer application as the most relevant contributor to production-linked GHG emissions.[10] Nitrogen fertiliser use is also typically higher on irrigated lands than rainfed due to leaching effects that flood irrigation on N within sandy, low SOC soil profiles.[11]

Pesticides and fungicide use were another noteworthy contributor to the overall GHG emission within the wheat value chain.[12] Of special importance is fungicide use to control the various forms of rust, especially yellow rust (*Puccinia striiformis*) in wheat crops. Yellow rust (*P. striiformis* var. *tritici*) being the most important disease of wheat in Uzbekistan, causing an annual average yield reduction of about 30 percent and affecting 600,000 ha of irrigated wheat among the various provinces.[13] Under severe epidemics, the loss on highly susceptible varieties can be much higher. Wet spring outbreaks can also affect rain-fed lands. Farmers on average apply one to three sprays of fungicides to control the disease, or what would result in 15 to 45 USD per ha.[14] Specialists in the Uzbekistan wheat sector claim that much of the fungicide use is unnecessary if sufficient seed supplies of rust-resistant varieties could be produced and distributed. This would not only reduce the environmental footprint of wheat production, but save the sector millions of USD annually that could be employed in infrastructure/machinery upgrades or other livelihood needs.

Little data exists that establishes estimates on the economic costs of LD in Uzbekistan, though some relevant indicators are available. The GEF and World Bank Aral Sea Basin Program put the costs due to soil salinisation at 250 USD per ha in 2003 and Nkonya et al (2011)[15] placed losses in wheat and cotton at 13.29 million USD annually due to salinity effects for Uzbekistan. Likewise, Aw-Hassan et al. (2016)[16] used the Total Economic Value (TEV) framework to estimate the costs of LD in Uzbekistan if consequences are left unattended. TEV estimation included direct and indirect ecosystem services such as provisional, supporting, regulating and cultural services. Their estimates showed that 0.85 billion USD were lost annually in the period of 2001 and 2009 due to LD, which was equivalent to approximately 4 percent of the Gross Domestic Product (GDP) in Uzbekistan in 2007. In particular, the decline in land productivity in terms of reduced meat and milk production was estimated to be approximately 6 million USD per year.

Another alarming trend has been the reduction in the area of cultivated land, which has fallen from 3.7 million ha to 3.3 million ha over the period 2010 to 2019; this amounts to a reduction in size of 11 percent in 10 years.[17] Ground water extraction has also played a role in land abandonment. In Karakalpakstan alone, the area of land with severe groundwater problems is now over 90 percent of the total territory.[18] These figures on lost cultivated lands provide evidence of exhaustion and degradation of soil resources, the role of soil salinity and climate change and the unsustainable production practices has had on Uzbekistan?s agricultural landscapes.

LD also impacts different social classes differently, with more vulnerable social groups more likely to suffer socially and economically than those in higher income brackets.[19] In the selected FOLUR IP countries, both women and men make crucial contributions in commodity value chains, agricultural landscapes and forest sectors as farmers, workers, processors and entrepreneurs, and yet women are seldom recognized for doing so, much less empowered to shift toward more sustainable practices.[20] They generally possess fewer assets (land, livestock, and human capital), have less access to productive inputs (seed, fertilizer, labour, and finance), and have less access to rural advisory services (extension, technical trainings) than men. Forests and agroforestry are important for supporting food security and ?safety nets? in times of hardship, and there are major differences in how, why, and where men and women access, use, manage and benefit from landscapes. These issues are also relevant in the Uzbekistan context.[21] Women also tend to have limited access to more productive lands, have limited financial capacity and less participation in capacity development and decision-making regarding community lands and resources. Women also are major actors in LD restoration works, but too often their roles in restoring and creating added value are not acknowledged formally to enable equitable access rights and benefits from the restored resources, especially under de facto communal land management..

From a biodiversity perspective, Uzbekistan hosts unique natural habitats, including water-rich wetlands and numerous threatened species. The proposed project area alone hosts three PAs and one Ramsar site. There are 15 Key Biodiversity Areas (KBA) located in direct proximity to the cropping systems of Karakalpakstan, Khorezm[22] and Kashkadarya[23]. The country?s unique riparian ecosystems of tugai forests are mostly located in the Khorezm and Karakalpakstan regions alongside the Amudarya delta. The country also has a rich agro-biodiversity, with Uzbekistan having been the birthplace of multiple landraces of wheat and alfalfa, which are known and distinguished for their tolerance to drought, heat, soil salinity and frost damage.

The main threats to these areas and resources are pressures due to agricultural expansion and intensification and climate change. In addition, Sarykamysh Lake and surrounding Ustyurt Plateau, Saiga Nature Sanctuary and Northern part of the Assake-Audan depression may be indirectly affected by unsustainable irrigation practices and reduced water inflows.

1.1.4. Energy sector status and challenges

While Uzbekistan has vast resources of fossil fuels and an extensive energy distribution network, lack of investment and maintenance is creating challenges for the ageing and inefficient energy production and distribution infrastructure. Namely, a substantial part of the power sector assets has been in use for over 30 years, with no major upgrades implemented since commissioning. The thermal power plants operate at relatively low conversion efficiency, while technical losses in transmission and distribution networks are estimated at 2.7 and 12.5 percent, respectively. The natural gas distribution network also suffers from operating issues due to low pressure, resulting in losses. Moreover, power assets in the country are not strategically situated, with approximately 70 percent of electricity production occurring in the north and 90 percent of gas production in the south.[24] Power outages are common in rural areas, especially during the cold season.[25]

Within the agriculture sector, the irrigation systems rely on ageing and inefficient irrigation pumps that consume 20 percent of the country?s electricity. Moreover, while almost the entire country is technically connected to the water lines and electricity grids, the outdated distribution network is the cause for unreliable electricity and water connection in the rural areas.

One of the reasons for inadequate investments in maintaining and renewing energy infrastructure may be the limited returns from electricity sale due to low electricity tariffs. In September 2020, the electricity for households were 0.028 USD/kWh and for businesses 0.043 USD/kWh, which is substantially lower than the respective global averages of 0.139 USD/kWh and 0.126 USD/kWh.[26] Although socially and financially vulnerable groups are eligible for discounts, which are balanced by the compensation payments from other consumers, they are effected by the increases in electricity prices which have been frequent over the recent years.

In response to these challenges, the Government of Uzbekistan adopted the Concept Note for Ensuring Electricity Supply in Uzbekistan in 2020-2030 in May 2020.[27] The objectives are to ensure sustainable electricity supply to all consumers and to diversify the electricity production sources with a special emphasis on the utilisation of renewable energy sources (RES) and establishment of RES markets.

1.1.5. Importance of wheat and wheat-based landscapes for FOLUR objectives

Uzbekistan is one of the top 20 countries in terms of global production, consumption and import of wheat (Table 4). Uzbekistan?s share in global wheat production is less than 1 percent, providing the country 15th place, as projected for 2020/21. Uzbekistan is the world?s 14th largest consumer of wheat for food requirements, with a share of 1.2 percent. Provided that the food consumption of wheat in Uzbekistan exceeds its production, the country is also a major importer of wheat. In the world ranking of wheat importers (including flour in grain equivalent), Uzbekistan ranks 19th, with a share of 1.6 percent of total world imports.

Table 4. Main indictors of wheat distribution in Uzbekistan and in the world

** Food, seeds, industrial / Source: USDA (Jan. 2020)**[28]***

According to FAO estimates (Figure 2), in the average daily calorie intake by residents of Uzbekistan the share of wheat and wheat products accounts for approximately 45 percent. This indicator, with a comparable daily calorie intake, is the highest, both among net importers (i.e., Egypt) and among exporters (Russia, Ukraine, Kazakhstan). Within the region, Pakistan takes second place in terms of percentage of wheat in the average daily calorie intake with 36 percent, though some experts consider this inflated.[29][29] Therefore, wheat and wheat-based products are crucial components of Uzbekistan?s diet and food security.

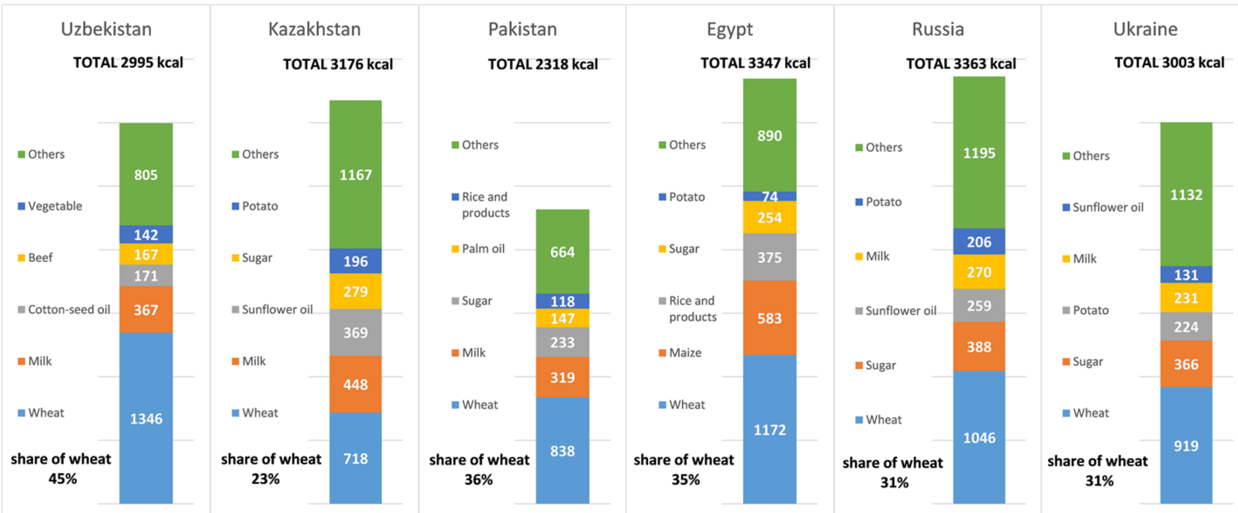

Figure 2. Calorie intake by staple products in some countries (average for 2014-2017), kcal (*Source: FAO)****[1]***

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[1] PPG report, Rybchynskyi R 2021, Wheat Value Chain Analysis in Uzbekistan, GCP/UZB/011/GFF

This is supported by available data on production and foreign trade, where Uzbekistan has the highest per capita consumption of flour products, being slightly below 500g per person per day. For Kazakhstan, the world?s second largest exporter of flour, and the main supplier of wheat and wheat flour to Uzbekistan, this figure is estimated at only 259g per person per day. Per capita consumption of grain products in flour equivalent in Uzbekistan annually ranges from 170 to 173 kg per person[1], which is one of the highest rates among the Central Asian countries, though there is evidence that these high figures given for Uzbekistan may be distorted.[2] As for future outlook on the sector, given the above figures on per capita consumption and the projected population growth in Uzbekistan by 2030, the country?s food consumption of wheat is expected to rise to 5.1 million tons, which requires an increase of 13 percent in the country?s total grain supply over the next decade, both through increased domestic production and increased imports.

Over the past five years, the annual volume of wheat imports to Uzbekistan has fluctuated between 2.6 and 3.1 million tons, which is between 23 percent and 28 percent of the total grain supply.[3] Imports as a share of domestic consumption ranged from 30 percent to 37 percent over five seasons. It should be noted that grain imports also include flour in grain equivalent, which is estimated to be between 500,000 tons and 850,000 tons per year.

Despite the large volume of wheat imports, **Uzbekistan is also investing to develop its grain export capacity**. Based on the PPG Wheat Value Chain Report estimates and International Trade Centre data (Annex M), it was revealed that at the end of the 2019/20 market year, wheat exports reached a record high of 600,000 tons (including flour in grain equivalent). The main buyers are Afghanistan and Tajikistan, with Afghanistan being the world?s largest importer of flour. The export capacity of flour is mainly produced in the northern parts of Uzbekistan, where a large number of mills are concentrated. The close proximity to the border with Kazakhstan also facilitates the processing of cheaper imported wheat.

Uzbekistan brings wheat and flour mainly from Kazakhstan (Figure 3). This relationship has become complex over the last few seasons with the development of the ?tolling scheme?, whereby wheat delivered from Kazakhstan is processed on the territory of Uzbekistan at enterprises often managed by Kazakh businessmen, and the finished products are exported to neighbouring countries. The introduction of such a scheme is primarily due to the substantial difference in tariffs for the transportation of Kazakh and Uzbek products through the territory of Uzbekistan. As a result, imports of Kazakh wheat to Uzbekistan increased 2.1 times in just five years, while imports of flour declined by 57 percent. The arrangement which continues to attract investment has been targeted by the GoU and disruptions in the current status quo could trigger wider food security and trade conflicts.[4]

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[1] FAO statistical data, 2019

[2] PPG report, Rybchynskyi R 2021, Wheat Value Chain Analysis in Uzbekistan, GCP/UZB/011/GFF

[3] FAO, International Trade Center, in addition to addition estimates and calculations by PPG report author

[4] PPG report, Rybchynskyi R 2021, Wheat Value Chain Analysis in Uzbekistan, GCP/UZB/011/GFF GCP

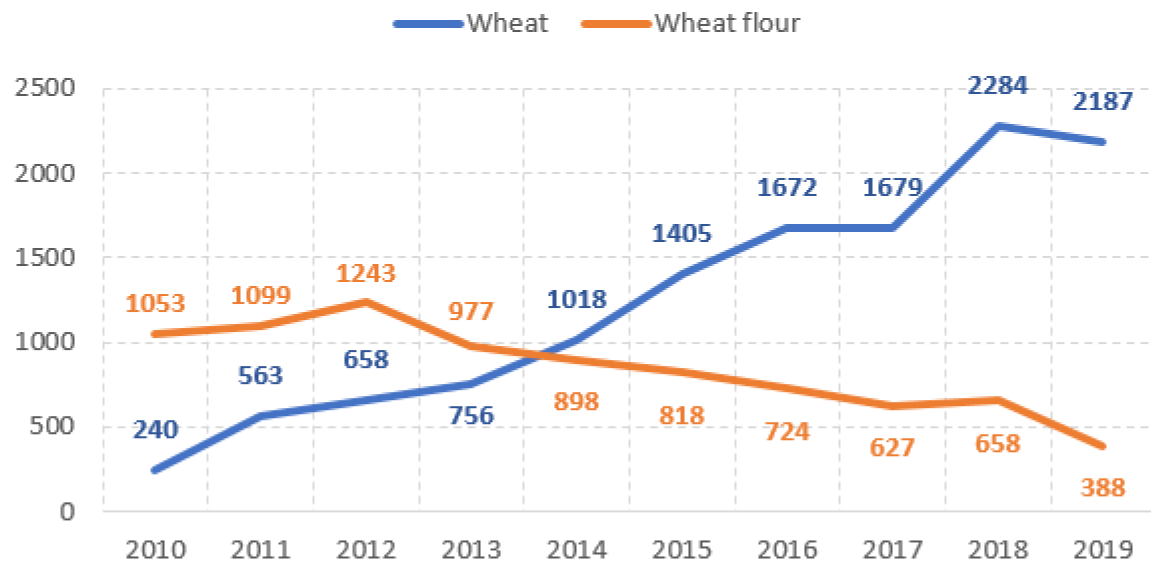

Figure 3. Supply of wheat and wheat flour from Kazakhstan to Uzbekistan, '000 tons. (*Source: Union of Grain Processors of Kazakhstan)*

Figure 4 presents the dynamics of wheat area and production following independence. The area under irrigated winter wheat has been steadily increased under the aforementioned policy strategies and sector reorganisations to ensure national food security. As a consequence, the long-cycle cropping system cotton-alfalfa formerly used was gradually replaced by a shorter crop rotation of spring cotton and winter wheat. As a result, wheat production has increased by more than 600 percent reaching around 8.1 metric tons (MT). On the other hand, cotton production went down to about 21 percent due to the reduction in planting area.

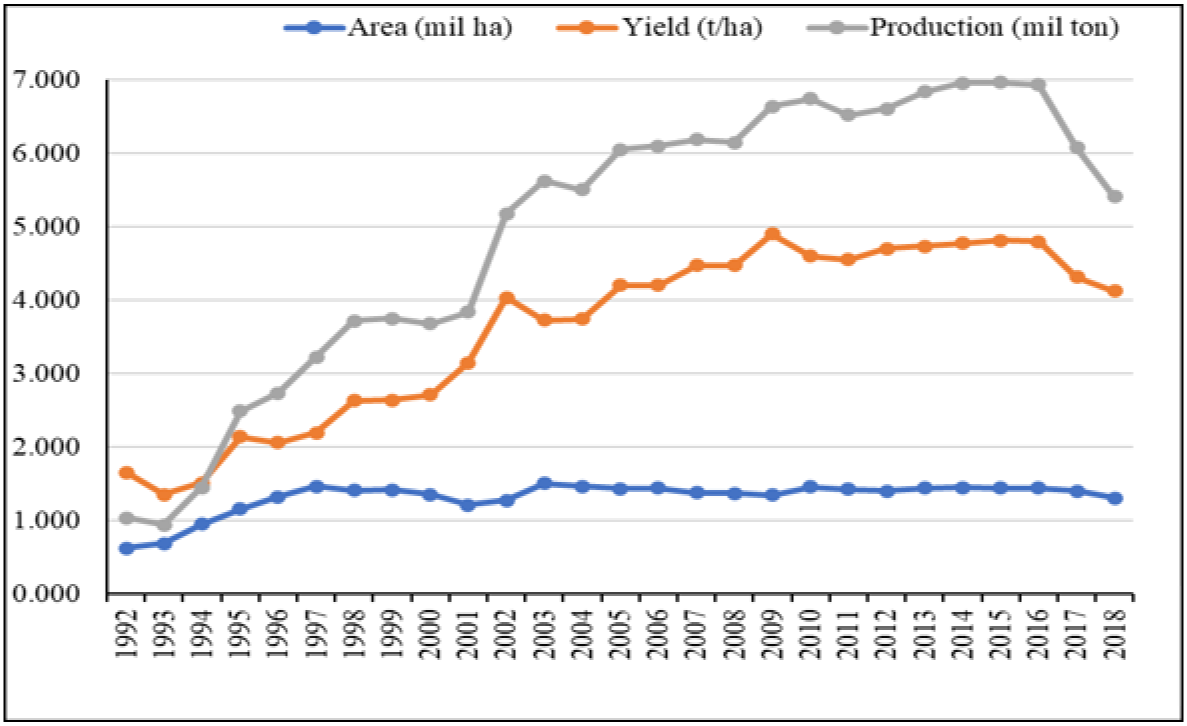

Figure 4. Dynamics of wheat area, production and yield in Uzbekistan from 1992 till 2018 (*Source: FAOSTAT, 2020*)

It is also noteworthy that average wheat yields in Uzbekistan are the highest among Central Asian countries. In particular, wheat yield in Uzbekistan is on average 4.4 times higher than the average grain yield in Kazakhstan, a key supplier of wheat and wheat flour to Uzbekistan. However, when comparing wheat yields in Uzbekistan and other countries where grain is cultivated on irrigated land, the performance of Uzbekistan is lower than wheat yields in Egypt, but higher than in Pakistan. This is contributed to the high proportion of irrigated lands in Uzbekistan, which produces higher yields of wheat. On average, wheat yields under irrigation are 4.8 times higher than those on rainfed fields. Today, irrigated land accounts for about 97 percent of the gross wheat crop in the country.

The wheat varieties cultivated in Uzbekistan have multiple sources of origin, which include both national and international institutions. The leading sources of wheat varieties are given in Table 5. Most of the national institutions lack capability of undertaking an entire cycle of wheat varietal development from crossing through testing and finally the release of a variety. This has resulted in introduction of advanced breeding lines from sources outside Uzbekistan. These include International Centre for Agricultural Research in the Dry Areas (ICARDA), International Maize and Wheat Improvement Centre (CIMMYT), International Winter Wheat Improvement Program (IWWIP), Krasnodar Breeding Station in Russia, and a few other research institutions in Europe.

Table 5. Name of the institutions and varieties released which are currently under cultivation in Uzbekistan.

	Source institutions releasing wheat varieties in Uzbekistan	Varieties release
1	Andijan Research Institute of Cereal and Grain Legume Crops in Irrigated Lands	Andijan-1, Asr, Bobur, Durdona, Zvezda, Mars, Matonat, Omad, Davr, Yogdu
2	Kashkadarya Branch of Andijan Research Institute of Cereal and Grain Legume Crops in Irrigated Lands	Turkistan, Yaksart, Gozgon, Garesizlik, Buniyodkor, Gallakor, Hishorak
3	Galloral Branch of Andijan Research Institute of Cereal and Grain Legume Crops in Irrigated Lands	Jaykhun, Sugdiyona, Istiklol-6, Istiklol-20, Bakhmal-97
4	Surkhandarya Branch of Andijan Research Institute of Cereal and Grain Legume Crops in Irrigated Lands	Denov 1, Termiz-5
5	Tashkent Branch of Andijan Research Institute of Cereal and Grain Legume Crops in Irrigated Lands	Saidaziz
6	Karkalpak Branch of Andijan Research Institute of Cereal and Grain Legume Crops in Irrigated Lands	Utkir
7	Institute of Genetics and Plant Experimental Biology	Bardosh
8	Samarkand Agricultural Institute	Jasmina, Farbona
9	Krasnodar Agricultural research institute, Russia	Vassa, Vostorg, Grassiya, Grom, Esaul, Zimnisa, Krasnodar-99, Kuma, Moskvich, Nota, Pamyat, Tanya, Sila, Pervisa, Tabor, Brigada, Lebed, Yuka, Kalim, Druzba, Alekseevich, Antonina, Bezostaya-100, Gurt,
10	Serbia Horticultural Institute	Raposodiya

There are at least 8 institutions in Uzbekistan that have contributed to either original development or identifying wheat varieties in Uzbekistan. However, there are only three national institutions and one foreign institution that have major share of varietal release in the country. At the time of independence of Uzbekistan from the Soviet Union, wheat was a minor crop in Uzbekistan due to predominance of cotton cultivation. Even though there has been progress in national wheat research program in the country in the recent years, Uzbekistan still is dependent on foreign sources for improved germplasm of wheat.

Dependence of Uzbekistan on imported wheat varieties is due to multiple factors. Inadequate number of competent wheat breeders, limited screening facilities for key traits needed in the wheat varieties, and a lack of coordinated national wheat team are among the root causes.[1]

Uzbekistan is currently growing 46 wheat varieties that are commercially released or in final stage of release (Table 6). This vast number of varieties pose a huge challenge to maintaining genetic purity of the varieties (maintenance breeding) and quality seed production. Among the three target regions of the ?FOLUR? project, only Kashkadarya is self-sufficient in wheat seed production. High quality seed costs much higher than the grain, therefore, the wheat farmers in one province have to pay a high cost for seed purchased from other regions.

Table 6. Wheat varieties recommended for the three target regions.

Region	Recommended varieties
All regions (28)	Andijan-1, Asr, Bobur, Vassa, Vostorg, Grassiya, Grom, Esaul, Zvezda, Krasnodar-99, Kuma, Moskvich, Nota, Pamyat, Tanya, Sila, Pervisa, Tabor, Brigada, Lebed, Yuka, Davr, Yogdu, Kalim, Alekseevich, Antonina, Bezostaya-100, Gurt
Additional in Karakalpakstan (3)	Garesizlik, **Utkir?**, **Turkiston**
Additional in Kashkadarya (16)	Jaykhun, Jasmina, **Zimnisa**, Mars, Matonat, Saidaziz, **Turkiston**, **Yaksart**, **Gozgon**, Istiklol-6, Istiklol-20, Termiz-5, Buniyodkor, Bakhmal-97, Sugdiyona, Gallakor
Additional in Khorezm (5)	**Zimnisa**, **Turkiston**, **Yaksart**, **Utkir**, **Gozgon**,

?Varieties in bold letters are repeated in more than one of the three target provinces.

In spite of this, the low quality of wheat produced in the country means less than half is milled and consumed as food.[2] Comparing the volume of wheat production in Uzbekistan with the volume of food consumption and the volume of imports of wheat and flour, it can be concluded that the domestic production of wheat of milling standards is insufficient to meet the milling industry demand, and it is therefore necessary to import higher-quality grain. **Thus, only about 40 percent of the wheat**

produced in Uzbekistan can be considered suitable for food processing.[3] The carry-over stock for seed supply is defined as 25 percent of wheat production.

The wheat not suitable for food consumption is used or transformed for feed. Consumption of wheat for feed is relatively stable and averages 2.9 million tonnes per year.[4] In addition, after harvesting, rather large volumes of straw are generated, which is a valuable feed resource for smallholders. Estimates put the volume of straw formed at the rate of 2.0 t/h on irrigated lands and 1.5 t/ha on rainfed lands. The typology of the key actors and functions of the wheat Value Chain (VC) is provided in the figure below (Figure 5).

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[1] PPG draft report, Sharma, R, Akramkhanov, A & Amanov, A, 2021 ?Draft report on issues related to wheat landscapes, crop diversification, and improving production and productivity?, GCP/UZB/011/GFFDiversification

[2] PPG report, Rybchynskyi R 2021, Wheat Value Chain Analysis in Uzbekistan, GCP/UZB/011/GFF GCP

[3] idem

[4] idem

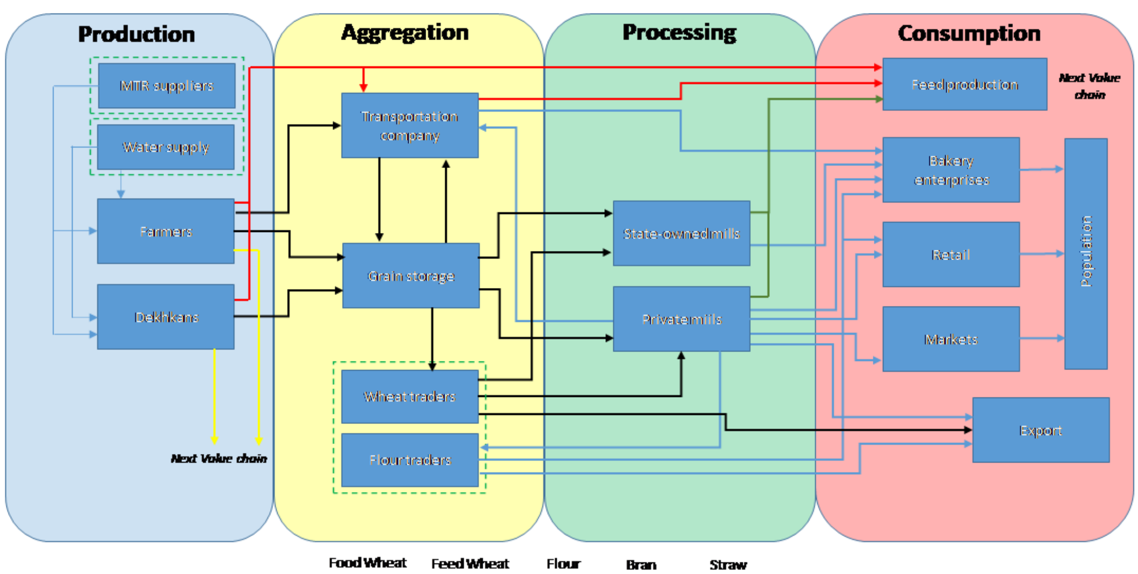

Figure 5. Typology of key actors and functions in Wheat Value Chain in Uzbekistan.

Wheat cropping systems are largely homogeneous and characterized by a wheat-cotton rotations. The high productivity rates of these crops have been largely due to high input use, including water, seed, fertilizers, pesticides, etc. which for the most part continue today. Uzbekistan has a policy of growing multiple varieties in each region to ensure protection against failure of wheat crop due to a biotic and abiotic stresses that can suddenly appear and might do substantial damage to wheat production.

The wheat varieties cultivated in Uzbekistan have multiple sources of origin and include seed stock from both national and international institutions.[1] At the time of independence from the Soviet Union, wheat was a minor crop in Uzbekistan due to the predominance of cotton cultivation. Even though there has been progress in national wheat research programs in the country, Uzbekistan is still largely dependent on foreign sources for improved germplasm of wheat. This is due to multiple factors, including an inadequate number of competent wheat breeders, limited screening facilities for key traits, and a lack of coordinated national programme focused exclusively on wheat.[2] Most of the national R&D institutions specialising in agriculture lack capability to oversee an entire cycle of wheat varietal development. This has resulted in the continued dependence on outside sources of advanced seed stock. Local landrace wheat and alfalfa seed can still be located in rainfed landscapes, though rarely in sufficient quantities to be cultivated at farm (>50 ha) scales and no programmes currently exist to preserve or mass produce these varieties.

With few incentives for investment, the country?s machinery park is also outdated or required to perform tasks that it was not specifically designed for.[3] More advanced technologies that allow for the deep sowing of wheat, broadcasting for intercropping of diverse species or direct drilling or no-till technologies have been demonstrated to improve germination rates and yields under similar soil and irrigation management practices, yet the market and import sector is not developed in specialized equipment, nor is there currently investment or demand in these technologies among producers.

As mentioned, the last eight years have seen a stagnation in wheat yields, despite attempts to maintain positive growth trends (Figures X-X). At this stage, it is difficult to isolate direct causes for this trend, yet combined with the alarming amount of land being left fallow, it could signal an increase of risk to food security and income for the country. This plateau in productivity is in line with the similar phenomenon reported in Europe[4][5]and China[6], raising the question of the role of CC in these events, which is the subject of the following section.

1.1.6. Climate Change and its impact on wheat-based landscapes and rural livelihoods

The upward trends in temperature in Uzbekistan are expected to continue and further accelerate in the near future according to the most recent climate predictions and IPCC scenarios.[7] Although the exact degree of warming that will occur is uncertain, the overall warming trend is clear with similar temperature increases foreseen under the medium and high impact scenarios, and a somewhat lower increase projected under the low-impact scenario. It is evident that average warming over the next 50 years for the medium scenario will be about 2?3?C, which is significantly higher than the increase of the >1.5?C observed over the last 50 years. What is important to emphasize is that the impacts of increasing temperature are likely to be more severe than what the yearly averages suggest. A case of this is found in the piedmont zone, where seasonal temperature increases can be as much as 4?5?C above long term averages in the period from June through August.

Changes in precipitation are more difficult to model than changes in temperature. The medium-impact scenario indicates an increase in precipitation of about 48 mm per year in the desert and steppe zones, an increase of 42 mm per year in the piedmont zone, and a decrease of about 10 mm in the highlands zone.17 As with the note of caution when applying temperature scenarios, it is important to emphasize that although an increase in precipitation at the national level is expected, the seasonal variation in precipitation can lead to disruptions in natural and cultural processes. For instance, the decrease in precipitation could occur in the period from June through August in the desert and steppe zones, when precipitation is already at its lowest level. Such an estimate implies that these seasonal changes are likely to have more negative impacts on a number of sectors (most notably on crop production and rangeland pastures) than what national-level projections suggest.

Despite an overall increase in precipitation, aridity is also expected to increase across the entire country, most notably in the western parts of Uzbekistan. Over the last two decades, Uzbekistan has faced several occurrences of extreme droughts, with crop yield losses of 50-75 percent in the worst-affected areas. During the drought in 2000?01, it was reported that cereal production declined by 10 percent, cotton production by 17 percent, and rice production by 60 percent, resulting in about US$130 million of losses.[8] The biggest losses occurred in the downstream areas in Uzbekistan, where about 600,000 people were in need of food aid to the value of US$19 million.[9]

The Government of Uzbekistan is undertaking several initiatives to mitigate climate change risks at policy, technology/science, and field level. Nonetheless, according to estimates by Uzhydromet and the World Bank, depending on the scenario of further climate change and droughts, the average wheat yields in Uzbekistan will decline from 9 to 36 percent.

In addition, the situation with water scarcity in Uzbekistan shows indications of worsening due to the projected reduction in existing water resources, with projections suggesting that the water flow will potentially decrease by 2?5 percent in the Syrdarya River Basin and by 10?15 percent in the Amudarya River Basin by 2050. In addition, climate change will mostly worsen current competition over water resources because the demand for irrigation water will increase due to increasing temperatures. Under this scenario, projections are for the majority of crops to see reductions of 10?25 percent in yields through 2050. Higher temperatures and aridity will also contribute to increased evaporation, and therefore, higher secondary salinity potential, which may further reduce crop production.[10]

Glaciers are also the principal sources of water for the two Uzbek rivers, the Amudarya and the Syrdarya, from which canals withdraw the water used for irrigating wheat fields. Between 1957 and 2000, water stocks in these glaciers reduced by more than 25 percent and it is projected that most of the small glaciers may disappear by 2025 effectively reducing the total stock by 26-27 percent.[11]

1.1.7. Barriers to Sustainable Food Systems, Livelihoods and Ecosystem Restoration

The principal barriers to change have been identified and validated through stakeholder consultations and literary sources as the following:

POLICY BARRIERS

There are inadequate policy mechanisms to provide incentives for agricultural inputs, financial services, and incentives for integrated, sustainable approaches to wheat production and management of its landscapes. Producers are restricted in access to land, lease agreements limit crop diversification and rotations, and machinery and agricultural inputs are largely controlled by the State and rarely available at crucial moments in the agricultural calendar. Seed supply is under a State Monopoly that is not meeting the required quality standards demanded by the food processing sector.

Farm models and sizes are fixed (three land tenure formats allowed under recent restructuring) regardless of local biophysical context and the imposed quota system that is applied at district scales does not take into land suitability or potential profitability of alternative crops. In fact, the system encourages over extraction and short term gains in productivity, i.e. when a wheat farmer produces above the fixed quota amount, s/he is able to keep or sell that amount on the open market, which creates an economic incentive to maximise production. This can act as a disincentive to more sustainable, less extractive approaches to soil and water resources. At the same time, land seizures following recommendations by the Council are not conducive to the development of an agri-food culture or investments by producers in sustainable practices.

The policy environment has also limited capacity development among producers, especially among smallholder producers, and their ability to analyse changing economic circumstances and environmental needs and respond in a productive and innovative manner. The private sector as well has little access to the sector and is largely restricted to value chain development or the marketing of agricultural goods; there is also little capacity to intervene or invest in agricultural production, machinery or associated inputs. Promotion of renewable energy production or innovative machinery development within agricultural production and value chains remains limited or non-existent. Failure to address these barriers often adds to production costs, making the agricultural sector less competitive on international markets.[12]

While recently announcements by the GoU have claimed to be addressing these issues, the recent decrees largely maintain status quo of State control over key production issues. For instance, the state order system is still responsible for dictating sale prices and trade within the sector, albeit with the addition of the clusters as new players within a controlled environment.

LACK OF REAL TIME, TRANSPARENT DATA ON STATUS OF SECTOR:

Official statistics on wheat production in Uzbekistan have the potential to be distorted. The main reasons for the possible distortion may include government purchases of grains and the practice of seizure of agricultural land from farmers if they do not produce the required quantities of the crop stipulated in their lease agreement. State orders for wheat are made on the basis of the estimated needs of the population. Accordingly, the planned gross collection is based on the proportion of mandatory sale by state order. Thus, a reduction in the mandatory sale by state order from 50 percent to 40 percent does not lead to a decrease in the planned gross output, but to its growth by 25 percent. In addition, the risk of seizure of land from farmers for failure to meet the yield plan tend to stimulate an overestimation of this indicator. When compiling analysis for this project design, the authors often would come across contradictory statistical data. Accordingly, the formation of reliable and transparent information is a principal barrier to sector development and investment.

LACK OF INTERSECTORAL COORDINATION TO CONDUCT SPATIAL PLANNING USING A ILM MODEL:

There are currently limited inter-sectoral efforts to undertake spatial planning for mitigation of threats from unsustainable agricultural practices impacting the resilience of natural systems (and GEBs) on farm and in the wider landscape. The wheat production targets are set by the Ministry of Agriculture and the grain is processed by the Uzbek Grain Association in accordance with the resolution on land use plan for agricultural crops[13] on an annual basis. The resolution was adopted on the basis of proposals from the Ministry of Agriculture, Ministry of Economy and Industry, Ministry of Water Resources, Ministry of Investment and Foreign Trade, State Committee for Land Resources, Geodesy, Cartography and State Cadastre, Council of Farmers, Dehkan Farms and Landowners, Ministers of the Republic of Karakalpakstan, and the decentralized departments of the provinces. However, there is limited coordination or integration between these involved stakeholders.

As a subcomponent of this barrier, key performance indicator data collection is not used, or is limited in its scope, to inform planning and monitoring from an integral, intersectoral landscape perspective.

LACK OF KNOWLEDGE AND AWARENESS OF SLM PRACTICES, RENEWABLE ENERGY OPTIONS AND ECOSYSTEM SERVICES:

According to stakeholder consultation (?) results , the majority of project beneficiaries and stakeholders have completed University or at least secondary schooling, yet 80% of respondents have not been trained in agricultural production or business management. Those that did (19%) received such training 5-10 years ago. Membership by locals in farmer associations or outreach groups is limited. 72% of the respondents had no access to any source of information on agricultural methods and practice and those that did generally obtained information from media or internet sources. At the same time, internationally recognized research institutions have operated within the country, providing key information and knowledge on issues of land productivity and breeding.

However, from the different sources accessed during project design, extension work and translation of this knowledge and experience to the Dehkan and other small-scale farms and producers is a significant gap. Deficiencies also imply a lack of human and physical resources needed for capacity building at the scales needed to transition rural communities to more sustainable, value-added agricultural production systems and value-chains.

The stakeholder process carried out under this project development phase confirmed these trends for project areas, and lack of knowledge was a contributing factor to the lack of adoption of CA, agroecology and Nature-based Solutions (NbS), as was economic barriers, risk-aversion under current land tenure legislation and lack of quality goods, services and inputs to support improvements in quality and sustainability of production methods.

The legislation on renewable energy sources (RES) adopted in 2019 and 2020 set the necessary foundation for deployment of both on-grid and off-grid renewable energy technologies and establishment of the renewables market. The favourable regulatory environment (tax exemptions and possibilities for public-private partnerships), along with large wind and solar resource potentials, raised interest from international investors, who have already initiated a number of large-scale projects[14]. It can be expected that the investors with international experience in developing RES projects will foster integration of large-scale RES into the on-grid electricity production and diversification of the country?s electricity mix.

However, there are still a number of barriers for the deployment of small-scale RES applications, which can provide direct benefits for the smallholders. The key barriers can be classified into three interlinked groups: Information related, market related and public policy related barriers. The information about possible RES applications in the agriculture sector is still limited. Consequently farmers are often not aware of the potential benefits RES use can bring to their farming practices, income generation and life quality.

The RES powered appliances are not available on the Uzbek market, since there is no domestic production and there is no demand which would drive imports and marketing of such products.

Finally, there is no programmes and/or initiatives that promote and financially support acquisition and use of RES powered appliances in agriculture production. The Law on the Use of RES[15] mandates the regional governments to develop and implement RES promotion programmes for their regions, but the development of such programmes requires knowledge capacity of public authorities. The RES interventions foreseen in this proposal will address the described barriers and encourage their replication and/or further advancement through regional RES promotion programmes.

Lastly, lack of knowledge or awareness of ecosystem services and their benefits to communities is demonstratable low in Central Asian countries, in particular regarding economic returns for agriculture and livelihoods in wheat-dominant landscapes.[16] For the Uzbekistan case, currently there are no significant or systematic efforts made to value ecosystem services but such valuation is planned both in the new National Biodiversity Strategy and Action Plan II (NBSAP) and in various donor supported projects (i.e. GIZ and UNDP / GEF initiatives). The NBSAP includes actions to develop capacity to undertake valuation of ecosystems services and to develop methodologies for actually incorporating these into national economic planning, however, specific valuation methodologies are not defined at this point. For ecosystem service awareness and augmentation, project stakeholders and communities need to understand both role and functions of landscapes and ecosystem services and the significance for their livelihoods before it can be appropriated and induce behavioural change.

1.2. Project Baseline for implementation

1.2.1. Legal Baselines and Context

The unique context of Uzbekistan agriculture and the associated social, environmental and economic ramifications described above are recorded within the following legislative acts of the Republic of Uzbekistan:

- ? Constitution of Uzbekistan (Article 55)
- ? Civil Code (CC) (Part 1, Section II , Part 2, 457 -460)
- ? Land Code
- ? Law of the Republic of Uzbekistan "On Farming"
- ? Law of the Republic of Uzbekistan "On agricultural cooperative (shirkat)
- ? Law of the Republic of Uzbekistan "On Dehkan Farms"
- ? Law of the Republic of Uzbekistan "On water and water use"
- ? Law of the Republic of Uzbekistan "On protection of atmospheric air"
- ? Law of the Republic of Uzbekistan "On Forest"
- ? Law of the Republic of Uzbekistan "On the protection and use of wildlife"
- ? Law of the Republic of Uzbekistan "On protection and use of flora"
- ? Law of the Republic of Uzbekistan "On Subsoil"
- ? Law of the Republic of Uzbekistan "On the production sharing"
- ? The Law of the Republic of Uzbekistan "On Concessions"
- ? Law of the Republic of Uzbekistan "On local government power" (Article 7)
- ? Regulations on the procedure for the provision of land plots for long-term lease to farms, approved by the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated October 30, 2003 No. 476
- ? Resolution of the Cabinet of Ministers of Uzbekistan "On approval of the Statute of the Agency for Cadastre and State Chamber of inventories Agency for Cadastre of the State Tax Committee of Uzbekistan " of February 12, 2021, No. 66 and other regulatory legal acts of the Republic of Uzbekistan.
- ? For legislation affecting Renewable Energies, please see the PPG Renewable Energy Report (Annex O).

According to Article 55 of the Constitution of Uzbekistan, land is a national wealth, subject to rational use and protected by the state. Such a doctrine implies that the state "protects" this property and "administers" it, but does not ?own? it. The concept of " *public* " was supplemented in many normative acts by the concept of " *state* " as identical, although this has led to subsequent conflicts between the terms and remains unresolved. In addition, the relevant documents indicate that land can be taken for state and public needs . The current legislation does not provide a definition of "state" and "public needs" in relation to land plots. From a legal point of view, a contradiction arises, since the state cannot have other interests other than public ones , if, according to the Constitution, the state serves the people, and land and other national natural resources are entrusted with the state , this does not imply automatic ownership, except in cases where when it acquires land as a result of a transaction (Article 182 of the Civil Code).

The Land Code (Article 16), adds a provision, which is not in the Constitution: " *The land is a state property ... [..] and not subject to purchase and sale, exchange, donation, mortgage except in cases established by the legislative acts of the Republic of Uzbekistan. ?* The definition of ?state property ?is not provided for by law either. At the same time, the Civil Code provides for two forms of ownership (Article 167) - *private and public* . The subjects of private property rights, according to the Civil Code (Article 208), " *are citizens, business partnerships and societies, cooperatives, public associations, public funds and other non-state legal entities?. However, the subjects of private property rights, according to the Land Code (Article 16), do not include land (the right to own, use and dispose of at the same time).*

According to the definition of the Civil Code, *"public property is the same as state property "* (Article 213 of the Civil Code) and the *objects of public property are the republican and municipal property* (admin-territorial units). Republican and municipal property (Article 214) includes , among other things, land, subsoil water, etc. *Republican and municipal property is created at the expense of taxes and other mandatory payments to the republican budget* (Articles 214, 215). *The Ozhliy Majlis , the President of the Republic of Uzbekistan, the Government of the Republic of Uzbekistan or authorized bodies are authorized to use and dispose of the republican property (including land, mineral resources, water, etc.) . Using and disposal of municipal property are authorized local state bodies . or authorized bodies.*

At the same time, legal entities authorized by the state can carry out economic activities on agricultural land by fulfilling a state order (Articles 465, 466 of the Civil Code), under a contracting agreement . Under the contracting agreement, the producer of agricultural products undertakes to transfer agricultural products to the procurer within the specified time frame, and the rules on the supply agreement are applied to the contracting agreement, and in appropriate cases, on the state contract for the supply of goods for state needs. No entitlements, obligations or incentives exist under these contracts that promote or encourage SLM.[17]

According to Article 457 of the Civil Code, "the *state needs are defined in the manner prescribed by law, the needs of the Republic of Uzbekistan, provided at the expense of the state budget* ." It should be noted that from the agricultural products purchased from farms and dehkan households under contracting agreements are then used by the state for commercial purposes - i.e. cotton and wheat are resold at market prices, and fruit is processed or exported or sold on the domestic market at market (commercial) prices.

As a result, there was a legal confusion of concepts. According to the Constitution, the state must ?protect? land (as a nationwide wealth belonging to the people) in the form of trust management, but in reality, it turns out that the state owns, uses and disposes of national property, being in fact and legally the owner of the land, even in cases when the state did not acquire the land as a result of the transaction according to the Civil Code. Thus, the State has reserved the right to engage in agricultural trade for commercial purposes, while excluding all other private operators to be involved in trade in agricultural products for commercial purposes.

The concept of "public" ownership of land in the legal sense in those countries with open market economies does not imply an exclusive right of state bodies to be involved in commercial activity related to land. Public lands term "public ownership of land are spaces of national forests and wildlife, national parks and monuments, wildlife reserves, pasture land of the state fund, state parks and recreational facilities, as well as city and county parks?.[18] While they may collect funds to preserve park infrastructure and operating costs, there is not a commercial component that provides economic inputs to the Central Government.

As described in the introduction, state control over the use and protection of land is carried out by local government bodies, as well as by specially authorized government bodies. As described in the introduction, in accordance with Articles 214 and 215 of the Civil Code, the Ozhliy Majlis, the President of the Republic of Uzbekistan, the Government of the Republic of Uzbekistan or authorized bodies are authorized to administer the republican property (including land, mineral resources, water, etc.). Through Art. 7 of the Law of the Republic of Uzbekistan "On state power in the localities", "the *economic basis of the activities of the regional, district, city Kengash of people's deputies and the khokim is the* ***state property of*** *administrative-territorial entities (communal property) and other property available in the region, district, city and serving economic and social development ?,* the Khokims (local authorities) retain considerable power over the administration of lands, including the authorization to dispose of municipal property. Pursuant to the Land Code, as well as the laws governing farm, dehkan and cooperative (Shirkats) farms, regional, city and district khokims are authorized to distribute agricultural land[19], which is a contradiction of the existing legislation, since decisions on the disposal of land (the right to redistribute, change the categories of land, etc.) should be made with the participation of the representative bodies, such as parliament or territorial councils (Kengash).

The Presidential Decree "On measures to radically improve the system of protecting the rights and legitimate interests of farms, Dehkan farms and owners of household land, effective use of agricultural sown areas", No.5199 dated October 9, 2017, that effectively created the Council of Farmers, Dehkan Farms and Owners of Household Lands of Uzbekistan. Mandatory membership in the Council is enshrined in Article 25 of the Law on Farming, and Article 22 of the Law on Dehkan Farms. The powers of the Council in terms of land leasing and land use (enshrined in the Presidential Decree ?On additional measures to improve the activities of farms, Dehkan farms and owners of household plots" dated April 26, 2018. No . 3680) have been provided in the introduction but can be summarised monitoring and inspection of the 3 stipulated agricultural land tenure forms (household, Dehkan and Commercial), determine optimal land use and make recommendations on termination of lease agreements.

Under Resolution No. 433 of June 07, 2018 ... "On the organization of the activities of the Fund for Support of Farms and Dehkan Farms and Owners of Household Plots under the Council?, the Council was provided the capacity to collect and manage funds for its operation, and to provide economic support to the activities of farms and Dehkans , as well as owners of household plots. According to Chapter 4 of Resolution 433, the Fund's resources are generated from the following sources:

? Membership fees mandatory for Commercial farms of 0.8 or 0.5 percent of agricultural proceeds. Dehkan, Household plots are not allowed bank accounts and thus do not pay.

? One-time gratuitous financial assistance allocated from the Fund of public works under the Ministry of Employment and Labor Relations of the Republic of Uzbekistan and the State Fund for the Promotion of Employment of the Republic of Uzbekistan in the amount of 350 billion soums (approximately 33 million USD as of July 13, 2021);

? 10 precent of proceeds from the auction of land plots;

? Credit (loans) and grants from international financial institutions, foreign government organizations and other donors attracted to implement the tasks assigned to the Fund;

? Fund's income, including those received from placing funds on deposit accounts;

? Other sources not prohibited by law.

According to paragraph 16 of the Resolution, the Fund's financial resources are accumulated in an account using commercial banks,[20] and are intended to provide loans to farms, Dehkan farms and owners of household land for periods up to 3 years [21]; or in cash up to two million soums (>200 USD in 2021) for low-income owners of household plots for a period of one year. The funds have the objective of increasing investment in value-adding enterprises, most commonly including the processing (drying) of vegetables and fruits, cold storage equipment , improved livestock genetics, greenhouse, etc. Funds are also allocated to the operation of the Tomorka Khismat LLC, which is a State-supported trading enterprise that sells agricultural equipment and resources to producers through loans allocated by the Fund.

The allocation of loans, as well as the description for the construction, purchase and sale of equipment/infrastructure (greenhouses, drying plants, cold storage devices, livestock genetics, intensive orchard and vineyard machinery, the import of specialized equipment, including compound feed, milk processing, the production of tomato paste, mineral fertilizers, packaging and sorting equipment, etc) is approved by the Board of Trustees of the Fund, which consists of high-ranking officials (Deputy Prime Minister for Agriculture, Ministers and Deputy Ministers).

According to Decree No .3680, (paragraph 15), the enterprise Tomorka Khismat LLC, as well as all members of the Council, shall be exempt from customs duties on the import of essential agricultural equipment and machinery, as well as be eligible for subsidies to promote investments in modern greenhouses, irrigation equipment and improved seeds and seedlings varieties. Unemployed citizens, members of low-income families and persons who have returned from external labour migration are also eligible for financial subsidies under this programme, as well as agricultural cooperatives. Tax breaks and subsidies are also allocated in the form of grants for vocational training of farmers[22]

Land Tenure rights of the State extend into land use decisions and sale of production. In particular, Article 5 of the Law "On Farms" obliges farms to *ensure the yield of agricultural crops (in average annual yield for three years) not lower than the normative yield established by law.* This obligation is outlined further in the land lease agreement, and in the case of commercial farms includes conditions regarding the means of production (production plan described in leasing contract) and the minimum normative yield established by law. In theory, the excess crop that is produced above the normative yield is allowed to be sold through independent sale at market prices, but in practice, most is often sold through the State system at preestablished prices. Non-compliance in meeting the normative yield over a three-year period can be cause for eviction from the land by the Council.

In 2003 by the decision of the Cabinet of Ministers special Law on ?About improvements of organization and management of water resources? was adopted. By this Law, Water User Associations (WUA) are recognized as legally defined entities, whose rights, responsibilities and capacities are protected under said Law. Additionally and in accordance with the Law, every WUA has developed its own operational statutes and objectives based on the physical, climatic, social, and demographic peculiarities of the area. Today, 295 WUA located throughout the country and are considered to represent farmers on issues relating to water use for crop and livestock production.

Project opportunities within this legal baseline exist in the form of recent Presidential Decrees and legislation. Presidential Decree No. 5853, on October 23, 2019, adopted the Uzbekistan?s Agriculture Development Strategy for 2020-2030. The strategy has defined the priority areas for implementation, in particular, the development and implementation of the national policies on food security, including ensuring food safety and improving diets, producing food items in the required quantity. To create a favourable agribusiness climate and value chain, the Strategy envisage the introduction of market principles for purchase and sale of agricultural products, development of a quality control infrastructure, export promotion, and the production of competitive agricultural products with high added value. According to the Strategy, the role of the state will gradually decrease in the agricultural sector. At the same time, it is planned to increase the investment attractiveness of the industry with an increase the flow of private capital to modernize, diversify and support the stable growth of the agri-food sector. The Strategy also mentions the adoption of a national action plan to prevent the effects of climate change on productivity of agricultural crops in the country and allocate 1 percent (as a percentage of total funds allocated for agricultural sector) for disaster risk management, with share gradually increasing periodically.[23]

The system of rational use of natural resources and environmental protection is also to be improved on through the Strategy, in addition to increased rural development programs and funding. The document outlines objectives on research and development, education, information and advisory services for agriculture over the current decade. The Strategy also support increased efficiency and phased redistribution of government spending, with sectoral programs to be developed aimed at increasing labor productivity in farms, improving product quality and creating high added value. It is planned to create a transparent system of sector statistics, supporting the implementation of reliable methods for collecting, analyzing and disseminating statistical data using digital technologies. The decree approved the composition of the coordination council for the implementation of the strategy, the Ministry of Agriculture assigned as the working body, and the Prime Minister in charge.

The Presidential Decree, No. 2841 of March 2017 ?on promoting livestock production on household plots and small Dehkan farms? recognizes the lack of affordable and quality forages for livestock producers and provides preventive measures on animal diseases and pests, and on fight against land degradation process and on growing drought tolerant crops to promote agriculture sustainability and climate change resilience.

Presidential Decree No. 3281 of 15 September 2017 "On measures for rational allocation of agricultural crops and forecasted volumes of agricultural production in 2018" aims to increase the planting area and productivity of vegetables, melon, oilseed, fodder, legume crops, potato and intensive orchards and vineyards. The resolution notes that dominant position of wheat and cotton in agricultural production does not meet the goal of conducting the crop diversification with balanced and right crop pattern in the country.

According to the presidential decree of Uzbekistan No. 5330 dated February 12, 2018 ?On measures to radically improve the system of agriculture and water sector governance?, the Ministry of Agriculture and Water Resources was split into the Ministry of Agriculture and Ministry of Water Resources. The Ministry of Agriculture now deals with unified policy on agriculture and food security aimed at comprehensive modernization of the sector, implementation of scientific and technical achievements, modern resource-saving technologies and intensive agro-technologies and best agronomic practices including coordination of state bodies on research in different aspect such as drought, disease, pest tolerance. The Ministry of Water Resources is implementing a unified policy on water resource management and is developing state policy on water use and protection of water resources, prevention and elimination of harmful impacts of water.

In 2002, the State Scientific Committee was re-established and named as the Centre for Science and Technology under the Cabinet of Ministry, Republic of Uzbekistan. The State programs for basic research, science and technology development and innovation are being financed by the Centre. The Government of Uzbekistan has allocated funds for conservation agriculture projects through the Science and Technology Centre, that could provide a scaling opportunity for project recommendations and proposals.

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1.2.2. Institutional Baselines

The Government of Uzbekistan has made significant progress towards sound environmental protection and natural resources management by improving the legislative and regulatory frameworks, creating relevant institutions and implementing strategic initiatives, programs and projects aimed primarily at preserving and protecting natural resources, improving livelihoods, and ensuring food security.

The country has a fairly stable and robust institutional structure with relevant state institutions having the mandates on the environmental protection, management and use of land and natural resources, monitoring and impact assessment. The implementation of environmental protection measures are entrusted to a number of Ministries and entities, whose functions and actions are clearly defined. The responsibilities of these structures include the development and implementation of specialized programs, strategies and action plans in the field of environmental protection and nature management.

Uzbekistan has an effective system of the State Monitoring of the Environment (SME). State Committee for Environmental Protection (Goskomekologiya) is responsible for SME implementation, including improving the accuracy, timeliness, usefulness and reliability of information. Responsibility for environmental monitoring is distributed among several national State institutions under the overall coordination of Goskomekologiya as the following:

? Goskomekologiya conducts monitoring of pollution sources and monitoring of terrestrial ecosystems; coordination of collection, management and dissemination of environmental information; conducts environmental impact assessments and state ecological expertise;

? Center for Hydrometeorological Service conducts hydrometeorological monitoring, monitoring of air pollution, surface water and soil, background monitoring;

? Ministry of Water Resources conducts monitoring of agricultural flows - irrigation and drainage waters; monitoring of soil salinity, mineralization and groundwater level on irrigated lands,

? Ministry of Agriculture conducts monitoring of soil condition and quality of land resources, monitoring of agricultural lands and crops, soil grading and soil quality control;

? State Committee for Geology and Mineral Resources conducts monitoring the condition of groundwater and hazardous geological processes;

? Ministry of Health conducts sanitary and hygienic monitoring of the natural environment.

The State Committee of the RoU on Ecology and Environmental Protection (Goskomekologiya) is the main executive body in the field of environmental protection. It is an authorized and coordinating body of the State control and cross-sectoral coordination in the field of ecology, environmental protection, rational use and reproduction of natural resources and ensuring inter-agency interaction.

The Ministry of Agriculture (MoA) is the main governing body that implements the national agriculture and food security policy aimed at the comprehensive the sector modernization, research and development, innovation and introduction of intensive agricultural technologies, and increasing export potential. Key functions of the Ministry are (i) implementation of a unified state agriculture and food security policy; (ii) stimulating the development of value chains for agricultural and food products; (iii) implementation of measures for the widespread introduction of the cluster model of agribusiness; (iv) coordination of measures of state support for agriculture.

The State Committee on Forestry (SCF) was established in 2017. It is responsible for the assessment and inventory of forests. SCF, controls all forestland and all forestry activities (including most protected areas) through the Forestry Cadastral Department and Urmonloyiha (Forestry design). In the recent years, the Government has paid a particular attention to forest management. Since 2017, the forest area has increased by 2.3 million hectares, 12 new forestry enterprises under the SCF have been created. In particular, SCF targeted afforestation of the dried up bottom of the Aral Sea, expanding the areas of protective afforestation, increasing the wind-shelter green belts on agricultural lands, updating the monitoring systems, and improving the environmental education programs. The SCF serves as the UNCCD National Focal Point. It is currently developing a gender strategy for the sector and a system of gender focal points.

The Ministry of Economic Development and Poverty Reduction was established in 2020. It acts as a main body behind the SDG Coordination Council and coordinates the activities of the line ministries, institutions and agencies involved in the implementation of the SDG goals. The Ministry has a mandate in various sectors of the economy and carries out the analysis and forecasting of macroeconomic indicators, development of proposals for the introduction of market mechanisms for economic management, stimulation of the development of private entrepreneurship, and the development of strategic directions for the development of foreign economic activity in order to increase the export potential of the economy, etc.

The Ministry of Innovative Development was established in 2017. It coordinates the activities of government bodies, research, information and analytical institutions and other organizations on the implementation of innovative ideas, developments and technologies.

The Ministry of Investment and Foreign Trade was established in 2019. It is an authorized state body responsible for the implementation of a unified state investment policy, coordination of attracting foreign investment, development and implementation of state development programs and investment programs, etc. The Ministry is the legal successor of the Ministry of Foreign Trade and the State Committee of the RoU on Investments on their rights, obligations and agreements, including international ones.

Center for Hydro-meteorological Service (Uzhydromet) serves as the UNFCCC National Focal Point. The main tasks of Uzhydromet are 1) development and improvement of the state system of hydro-meteorological observations; 2) hydro-meteorological support of the economy, population and armed forces of the RoU; 3) formation and maintenance of the state hydro-meteorological data fund, the state data fund on environmental pollution, state registration of surface waters; 4) coordination of activities on the creation and maintenance of the state water cadastre; 5) systematic monitoring of air pollution, soil, surface water, as well as the emergence and development of natural hydro-meteorological phenomena; 6) research on improving the short- and long-term weather forecast, watershed management, climate change; coordination of activities on climate change issues.

The scientific research complex of the republic includes more than 360 institutions of an academic, university and industry profile, as well as subordinate scientific and design organizations, a significant part of which directly and/or indirectly participate in environmental protection activities and fulfilment of obligations under the UNCCD. The core of the scientific potential lies with the Academy of Sciences of the RoU.

Several scientific and non-governmental organizations that take part in improving environmental legislation. **The National Association of Non-governmental Organizations of Uzbekistan** was established in 2005 and unites over 300 NGOs. The international non-governmental charitable foundation **Soglom Avlod Uchun** (For a Healthy Generation), the **Health and Charity Fund, the Mahalla Fund,** and others make a special contribution to the implementation of national priorities. In addition to women's public committees, various NGOs are involved in solving women's problems, such as **the Association of Business Women of Uzbekistan.**

The Senate Commission on Gender Equality is the main institution that coordinates women?s affairs nationally. In addition, the resolution ?On measures to further strengthen guarantees of labour rights and support for women?s entrepreneurship? envisages the creation of ?Women?s Entrepreneurship Centres? with the status of a non-governmental non-profit organization.[24] In 2020 a new Ministry for Mahalla and Family Affairs was created and its deputy Minister will manage the Public Foundation for the Support of Women and the Family The governing bodies of the Women?s Committee of Uzbekistan and the Republican Council for the Coordination of Activities of Citizens? Self-Government Bodies made decisions on the abolition of these organizations.[25]

The Ministry for Support of the Mahalla and the Family[26] is responsible for comprehensive assistance in the full and effective implementation of the principle of ?Comfortable and Safe Mahalla? in society, establishing close cooperation with citizens? self-government bodies to improve the social and spiritual atmosphere in families and mahallas. The governing bodies of the Women?s Committee of Uzbekistan and the Republican Council for the Coordination of Activities of Citizens? Self-Government Bodies made decisions on the abolition of these organizations.

The main stakeholders at the sub-national (provincial/district) levels are (i) regional and district khokimiyats, (ii) research institutes, non-governmental organizations (NGOs), etc.

The main local groups include (i) agricultural producers and the associations; (ii) councils of farmers and citizens' self-government bodies; (iii) non-governmental organizations; and (iv) rural community. Local level beneficiaries conduct independent activities dependent on public policy.

1.2.3. Stakeholder Mandates and roles/responsibilities in project implementation

The project will work with a wide range of stakeholders, from international, central government, to sub-national and local levels, and across sectors. Key stakeholders, organisation mandates and project roles and responsibilities during project implementation phase are outlined in the provided table (Table 7).

Table 7. Stakeholder roles within project implementation phase

Organization	Organization Mandate	Role and responsibilities within project implementation
Cabinet of Ministries (CM)	? Provides management of the economy, implementation of laws and decisions of the Oliy Majlis (Supreme Council), Decrees and orders of the President of the RoU, pursues a unified policy to maintain the proper state of the environment and regulates the use of natural resources.	? General coordination and overseeing compliance with Decisions and Resolutions of the Government in the field of environmental and agricultural policy and innovative practice.
Ministry of Agriculture (MoA)	? Implement a unified policy on agriculture and food security aimed at comprehensive modernization of the sector, implement scientific and technical innovations, modern resource-saving technologies and intensive technologies and best agronomic practices; ? Coordinate state bodies, agricultural enterprises, and other organizations dealing with food security in the Republic; ? Ensure extended processing of agricultural products, improved mechanisms of the public-private partnership, as well as enhanced participation of business entities in socio-economic development of the territories;	? Responsible for project execution. ? Chair of Project Steering Committee ? Participation in activities and outcomes relating to land use planning processes, including the promotion of ILM and LDN, and removal of policy disincentives to sustainable agricultural production and crop diversification. ? Beneficiary of project DSS (Output 1.3.1), and other land planning, governance and land monitoring tools. ? Responsible for upscaling of activities and lessons learnt at national level and through policy ? Co-financier ? Beneficiary of capacity development and training activities.

State Committee on Ecology and Environmental Protection (SCEEP)	? Ensure realization of state policy in the field of environmental safety, environmental protection, use and reproduction of natural resources; ? Ensure government oversight of the implementation of the Ministerial mandates in relation to environmental sustainability, state committees, departments, enterprises, institutions and organizations, as well as individual legal entities in the field of use and protection of land, mineral resources, waters, forests, flora and fauna, air; ? Ensure implementation of cross-sectoral integrated environmental management; ? Ensure organization and coordination of activities to ensure a favourable state of the environment and improvement of ecological situation.	? Responsible for project execution. ? Project Steering Committee ? Consulting on landscape management and planning issues and ensure coordination with agricultural private sector lending initiatives, technical assistance and activities. ? Beneficiary of project DSS (Output 1.3.1), and other land planning, governance and land monitoring tools. ? Co-financier. ? Beneficiary of capacity development and training activities
Councils of farms, dehkan farms and owners of garden plots and pasture user associations of Uzbekistan (Farmer?s Council)	? Develop proposals on improving legislation in farming, strengthening material and financial base of farmers, ensuring reliable protection of their property. ? Protect rights and interests of farmers, including in their relations with state bodies, vendors and services organizations, as well as courts. ? Conduct public control over reorganization and creation of farms, and allocation of lands to them. ? Assist in creating and expanding consulting centres, which will render legal, economic, financial and other assistance to farmers. ? Monitoring and public control over the fulfilment of contractual obligations in agriculture.	? Project Steering Committee ? Consulting on application of current legislation and impacts of potential policy changes ? Coordination with agricultural private sector lending initiatives, technical assistance and activities through the Council Fund. ? Consulting on land tenure, policy barriers and agri-environmental incentive options. ? Participation in activities and outcomes relating to land use planning processes, including the promotion of ILM and LDN. ? Responsible for scaling of lessons learnt within sphere of influence. ? Beneficiary of capacity development and training activities.

Regional Government authorities of the Autonomic Republic of Karakalpakstan, Khoresm and Kashkadarya Regions	? Responsible for meeting the direct needs of communities, and providing the regulatory guidance on resource management with the aim to maximize social and economic benefit of communities through the wheat growing in the target regions.	? Project Steering Committee ? Consulting on the broader environmental and landscape issues, SLM/SFM practices and decision support for scaling out. ? Participation in a activities and outcomes relating to land use planning processes, including the promotion of ILM and LDN ? Responsible for scaling of lessons learnt within sphere of influence. ? Beneficiary of capacity development and training activities. ? Beneficiary of project DSS (Output 1.3.1), and other land planning, governance and land monitoring tools.
Local government bodies (khokimiyats) at the regional and district level	? The body of executive and representative power, ensures the implementation of laws and decisions of the Government and the President, has the highest influence on the target groups at the local level.	? Key stakeholder for ILM activities and action plans, as well as advisory and decision-makers on the landscape or district level environmental and landscape issues. ? Responsible for scaling of lessons learnt within sphere of influence. ? Beneficiary of capacity development and training activities. ? Beneficiary of project DSS (Output 1.3.1), and other land planning, governance and land monitoring tools..

ICARDA	? To promote agricultural development in the dry areas of the developing countries. In cooperation with the Ministry of Agriculture and the NARS, it is implementing a number of projects on the improvement of farming systems in rain-fed lands by testing new varieties of wheat.	? Project Steering Committee ? Execution of Output 1.2.4: Economic case for scaling-up at national and regional levels for integrated management of sustainable wheat production landscapes and ILM developed, tested, and adopted by the Task Force ? Consulting on the broader environmental and landscape issues, SLM/SFM practices and decision support for scaling out. ? Participation in a activities and outcomes relating to land use planning processes, including the promotion of ILM and LDN ? Participation in activities and outcomes related to crop diversification, improved varieties, salinity SLM options and soil related issues, such as SOC monitoring. ? Responsible for scaling of lessons learnt within sphere of influence. ? Beneficiary of capacity development and training activities.
National Agricultural Research Institutes	? Agricultural research institutions, their branches, and experimental stations in all regions of the country. Research and Production Centre for Agriculture and Food Supply. ? The Centre is responsible for agricultural research and food systems including wheat production	? Consulting on the broader environmental and landscape issues, SLM/SFM practices and decision support for scaling out. ? Participation in a activities and outcomes relating to land use planning processes, including the promotion of ILM and LDN ? Participation in activities and outcomes related to crop diversification, improved varieties, salinity SLM options and soil related issues, such as SOC monitoring. ? Responsible for scaling of lessons learnt within sphere of influence. ? Beneficiary of capacity development and training activities.

Private Wheat Clusters in the Karakalpakstan, Khoresm and Kashkadarya	? The main investors and extension advice providers for wheat growing and processing under the new Agriculture Policy (2019)	? Participation in project-supported incentive programmes. ? Participation in a activities and outcomes relating to land use planning processes, including the promotion of ILM and LDN. ? Participation in activities and outcomes related to crop diversification, improved varieties, salinity SLM options and soil related issues, such as SOC monitoring. ? Consulting on the land management issues, SLM/SFM practices and scaling, market options and opportunities and policy constraints and recommendations. ? Responsible for scaling of lessons learnt within sphere of influence. ? Beneficiary of capacity development and training activities.
Regional Milling plants in the Autonomic Republic of Karakalpakstan, Khoresm and Kashkadarya regions (Koson & Tortkol Flour Milling Plants)	? To lobby for demand of Uzbek millers in domestic and foreign markets.	? Participation in project-supported incentive programmes. ? Participation in a activities and outcomes relating to land use planning processes, including the promotion of sustainable food systems through ILM and LDN. ? Consulting on the wheat markets, industry needs and demands and policy constraints and recommendations. ? Responsible for scaling of lessons learnt within sphere of influence. ? Beneficiary of capacity development and training activities.
Small-holder farmers in the Autonomic Republic of Karakalpakstan, Khoresm and Kashkadarya regions	? To maximize social and economic benefit of agricultural production through optimum land use options	? Participation in project-supported activities, including land planning, incentive programmes, PPPPs, demonstration sites, SLM and improved farm design options. ? Consulting on the land management issues, SLM/SFM practices and scaling, market options and opportunities and policy constraints and recommendations. ? Beneficiary of capacity development and training activities

Mahallas	? Mahalla communities are homogenizing agents intended to ensure social solidarity by placing demands on members to conform with the communal norms.[27] In addition, the institution upholds community standards by providing an authoritative basis to motivate residents to assist one another and improve and maintain the neighbourhood as a whole (ibid., 102-103).	? Provide support for training events, identification and organization of potential project beneficiaries and demonstration sites ? Participant in awareness campaigns on FOLUR issues
IUCN	? To work with national and local partners on the identification of nature-based solutions and landscape restoration. IUCN works in close partnership with international organizations, national and local authorities, research organizations, and civil society.	? Project Steering Committee ? Co-financier ? Technical support and provision of tools for FOLUR objectives within Uzbekistan, especially for land planning and ecosystem restoration options within PAs. ? Support for project activities with economic data, modelling and potential returns on investment for ecosystem service improvement works. ? Participation in activities and outcomes relating to land use planning processes, including the promotion of ILM and LDN. ? Responsible for scaling of lessons learnt within sphere of influence.
FAO	As per FAO Representation in Uzbekistan Mandate	? Project Steering Committee ? Co-financier ? Implementing Agency under GEF ? Responsible for scaling of lessons learnt within sphere of influence

1.2.4. GEF Funded projects and initiatives for baseline and collaboration

A number of GEF funded projects are active in the country, and include the following:

? FAO-GEF ?Sustainable Forest and Rangelands Management in the Dryland Ecosystems of Uzbekistan?. This project has the objective to ?Promote SLM/SFM and landscapes restoration for achieving LDN commitments of Uzbekistan? and has great potential for synergies with the Uzbekistan FOLUR IP. Both are based on ILM and planning and incorporate LDN principles and conceptual frameworks to increase informed decision making. The project is focused on the Bukhara-Navoi Oblast lying between Karakalpakstan, Khorezm, and Kashkadarya, addressing dryland productivity and management, while the FOLUR IP supports SLM and ILM within wheat-dominant landscapes and agricultural production within protected areas.

? FAO-GEF project ?Integrated natural resources management in drought-prone and salt-affected agricultural production landscapes in Central Asia and Turkey (CACILM-2)?. Building on the experience of CACILM-1, CACILM-2 set its objective as ?to scale up integrated natural resources management (INRM) in drought prone and salt-affected agricultural production landscapes in Central Asian countries and Turkey?. SLM within salt affected areas and other conservation agriculture measures and demonstration site results are well documented for this project and can provide economic indicators on SLM investments.

? UNDP-GEF project ?Reducing pressure on natural resources from competing land use in non-irrigated arid mountain, semi-desert and desert landscapes of Uzbekistan?. Project objective was to promote integrated management of rangeland and forests at the landscape level (focus on non-irrigated, arid mountain, semi-desert, and desert landscapes) to reduce pressures on natural resources from competing land uses and improve the socio-economic stability of communities?. Lessons learnt can be taken from project results.

? UNDP-GEF project ?Conservation and sustainable management of lakes, wetlands, and riparian corridors as pillars of a resilient and land degradation neutral Aral basin landscapes supporting sustainable livelihoods?. Project is aiming to enhance the resilience and sustainability of landscapes and livelihoods in the Aral basin, and progress toward Land Degradation Neutrality (LDN), through integrated management of land, lake, wetland, and riparian ecosystems, with engagement of private sector and local communities. This project is targeting all of the regions for the FOLUR IP and is very much linked to the ILM and LDN. Clear areas for collaboration and cooperation exist to bring in all components and land covers types within the landscape approach.

? FAO-GEF project ?Sustainable management of forests in mountain and valley areas in Uzbekistan?. Project objective is to introduce Sustainable Forest Management (SFM) in Uzbekistan, thereby sequestrating carbon and improving the quality of forests and tree resources. While the project is closing, there are lessons learnt and other information and data that can inform this project?s implementation.

Synergies with ongoing or active GEF funded projects will include:

? Access to the interactive online mapping app that lets a wide range of users and stakeholders have public access to vital LD and other planning and spatial information.

? Sharing of materials, information and data, especially on issues of ILM planning processes, policy entry points, awareness campaigns, results from project pilot programmes and those related to LDN conceptual framework application.

? Joint policy proposals and workshops on key policy issues and recommendations

? Joint participation in project trainings, capacity building and other events.

? Access to platforms, websites and other online media.

? Exchange visits to demonstration sites, FFS facilities and other project related experiences.

?

Lessons learnt will be taken from those GEF-funded projects that have finalised.

The project will also establish technical linkages and coordination with the following projects:

? WB loan ?Agriculture Modernization Project? in Uzbekistan;

? WB loan ?Horticulture Development Project? in Uzbekistan;

? WB-GCF project ?Climate adaptation and mitigation program for the Aral Sea Basin (CAMP4ASB)?;

? GIZ project on Ecosystem Based Land Use and Ecosystems Conservation along the Lower reaches of Amu Darya (IKI Amu Darya) in the framework of the International Climate Initiative;

? EBRD public and private investments in Uzbekistan: DFF - Kokand Fertilisers GET Capex; FIF - CA WiB Programme-DAVR Bank;

? IFAD Agriculture Diversification and Modernization Project;

? UNDP-GEF project ?Sustainable natural resource use and forest management in key mountainous areas important for globally significant biodiversity?;

? UNDP-Adaptation Fund project ?Developing climate resilience of farming communities in the drought prone parts of Uzbekistan;

Other relevant projects for baselines, lessons learnt and collaboration include:

? FAO project ?Central Asian Desert Initiative? in the framework of the International Climate Initiative.

? IUCN: regional project ?Building capacity to implement IPBES Global Assessment in Asia?. Uzbekistan is one of the outreach countries with the budget allocation of US$1 million over five years (2021-2024)

Other international commitments under the current Conventions addressed by project activities include:

- ? Bonn Challenge: Restoration of 0.5 million ha of deforested and degraded land by 2030.
- ? UNCCD: A national LDN strategy is being prepared within the scope of GEF-7 LDN project GCP/UZB/003/GFF (FAO).
- ? UNFCCC: Adaptation of agriculture and water management sector (Climate resilience of agriculture through diversification of food crop production patterns; Improvement of irrigated lands affected by desertification, soil degradation and drought, increase in soil fertility of irrigated and rain-fed lands; Improvement of water management). Mitigation of the Aral Sea disaster impacts (Conservation of the ecological balance in Priaralie, combating desertification, improvement of management system, efficient and rational water resources use). Adaptation of ecosystems (Restoration of forests in mountain and piedmont areas, conservation of indigenous plant species in semi-deserts and deserts; Improvement of sustainability in management of fragile desert ecosystems).
- ? CBD: Uzbekistan?s NBSAP emphasizes the control of negative externalities in unsustainable agricultural production. National Targets to 2025: (5) a set of measures to reduce the rate of degradation and fragmentation of the most vulnerable natural ecosystems; (8) the state programme for conservation and sustainable use of agricultural biodiversity; (10) the activities on conservation and sustainable use of biodiversity and maintenance ecosystem services are financed from state, private and international financial resources.
- ? Ramsar: Uzbekistan currently has two Ramsar Sites, one of which is located in the project target region.

1.3. Land Management Baselines and LDN Context

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1.3.1. Crop Diversification & Conservation Agriculture in Uzbekistan

The legal baseline established above outline a diverse array of legal challenges and potential opportunities for crop diversification and SLM investments.

Uzbekistan is an agrarian country with diverse and relatively favourable soil and climatic conditions for producing 2 to 3 crops per year. However, the tight control over resources and the subsidization and requirements under leasing agreements have set back notions or knowledge of alternative crops or rotations. For more innovative farmers, they often have no technical support or knowledge of production options, marketing support, lack of machinery and no access to inputs, improved varieties, or specialised equipment. At the same time, the minimal size of the area to be covered by cotton and wheat has been identified. For those producers located in selected areas for wheat and/or cotton, they are required to fulfil the Government contracts, meet normative yields and closely follow the production plans outlined in their leasing contracts.[1] As demand for wheat area and production increases, likewise does pressure on administrators to increase wheat cropping area, further limiting diversification options and current crop baselines (Table 8).

Table 8. Comparative percent of the agricultural area under different groups of crops cultivated in different provinces of Uzbekistan in 2015 and 2018. (*Source: Zorya et al, 2019*)

Provinces	Grain		Potato		Vegetables		Fruits		Grapes	
	2015	2018	2015	2018	2015	2018	2015	2018	2015	2018
Karakalpakstan	**16.2**	**3.3**	**1.9**	**1.8**	**2.1**	**2.4**	**1.9**	**1.5**	**0.1**	**0.4**
Khorezm	**6.2**	**5.6**	**4.3**	**4.3**	**4.4**	**5.4**	**4.5**	**6.3**	**1.5**	**2.5**
Kashkadarya	**11.6**	**13.0**	**3.7**	**6.5**	**6.2**	**5.0**	**7.1**	**4.7**	**8.6**	**6.1**
Andijan	8.1	8.3	5.1	10.9	9.5	13.9	15.0	20.9	4.2	4.3
Bukhara	2.4	8.3	1.8	6.8	7.1	5.6	6.3	8.7	8.3	11.1
Jizzakh	8.8	6.7	3.7	2.3	4.4	3.7	4.6	3.3	7.3	1.9
Navoi	1.2	3.3	0.9	2.5	2.1	2.3	0.8	3.8	0.8	4.8
Namangan	6.1	6.9	14.3	8.9	6.6	6.5	13.1	9.2	7.3	7.3
Samarkand	10.7	10.4	22.7	21.2	19.8	15.6	14.0	13.7	28.2	35.3
Surkhandarya	8.0	8.1	11.3	8.1	5.6	8.9	5.6	5.0	12.8	7.5
Syrdarya	6.2	7.2	2.0	1.8	3.7	2.8	1.2	1.3	1.9	0.9
Tashkent	8.5	9.2	18.1	14.8	20.7	20.1	15.2	7.5	16.2	10.6
Ferghana	6.1	9.7	11.3	10.3	10.1	7.7	11.6	15.1	3.6	7.2
Uzbekistan	100	100	100	100	100	100	100	100	100	100

Considering the strategic importance of wheat and cotton, any crop rotation or diversification plan needs to take them into account. Both wheat and cotton are exhaustive crops considering depletion of soil fertility and overall soil health. Perhaps, the greatest impact of back-to-back years of cotton has been the accelerated spread of cotton boll weevils and increased soil erosion. Therefore, inclusion of food and forage legumes should occupy some component of the rotation schedule, given their soil improvement properties and the increasing cost of nitrogen. Food-grade grain legumes are the most profitable among the different options, with mung-bean being high in demand and providing yields of

1.5 to 2 t/ha. Among those grain legumes grown successfully in Uzbekistan are mung bean, soybean, common bean, field pea, chickpea and lentil. Double cropping with legumes has been adopted on rather small scale, covering about 3% of wheat harvested area.

Cereal crops have largely replaced cotton, although potatoes, fruits and vegetables are important in some areas as private markets have expanded. Rice and wheat rotations are a good option for producers in Aral Sea Basin. Rice is a salt tolerant crop, and therefore, growing rice can reduce the amount of water for leaching of salts when compared to wheat production. Carrots have been found very economical in Fergana valley due to high productivity and good market prices, though labour costs can be restrictive. In addition, Melon, Potato and other vegetable crops are commonplace in smallholder and household plots. Maize is the most widespread double crop sown by the farmers and smallholders, the reason being its role in livestock production, providing grain for storage and crop residues that can be eaten by livestock.

An increasing range of drought and salt-tolerant forage species and varieties are being produced by numerous dryland agriculture and pasture research stations in Central Asia, and Uzbekistan has successfully cultivated both exotic and native species in experimentation testing. After the harvest of winter wheat generally the fields remain vacant, which could be used for growing short duration grain legumes such as mung bean, soybean, common bean, which could be harvested in time for wheat planting in October. Growing two crops (winter wheat and grain legumes) in a year instead of one crop provides more income to the farmers, besides enriching soil with 30-40 kg N/ha.

At the same time, the long tradition of cultivation, soil biophysical benefits and unique nutritional properties of Alfalfa make this forage species a highly credible candidate for most crop rotations plans, and one of the project selected value chains. Before independence, cotton was grown in rotation with alfalfa; three years of alfalfa followed by six years of cotton; even under this system, soil fertility management was a concern. Today, studies carried out recently at Gulistan in Sirdarya Province have shown that alfalfa could successfully be grown in standing winter wheat as a short-term rotation. According to this technology, winter wheat is sown in October-November as per the traditional practice and alfalfa is sown in standing wheat in February manually using 20 kg seed rate/ha. After harvesting wheat, alfalfa is irrigated as per the requirement of the crop. Alfalfa thus provides two good cuttings before planting cotton during the next spring. At the same time, it also enriches soil with about 50 kg N/ha and according to stakeholder consultations, provides a net profit of around 115 USD per ha. A theoretical plan for improved wheat and cotton rotation under irrigation is provided based on the information provided (Table 9).

Table 9. Theoretical scheme of improving wheat-cotton rotation under irrigated system by including either a legume crop or a green manuring crop or both

Crop rotation	1st year (Nov-Jun)	1st year (July-Sep)	2nd Year (Oct-Feb)	2nd year (Mar-Oct)	Cropping intensity (%)
Wheat-Cotton	Wheat	Fallow	Fallow	Cotton	100%, 0 legume
Wheat-Legume-Cotton	Wheat	Legume/GM	Fallow	Cotton	150%, 1 Legume
Wheat-Legume-Green Manure-Cotton	Wheat	Legume/GM	GM	Cotton	200%, 1 Legume, 1 Green Manure
Wheat-Legume-Wheat-Legume	Wheat	Legume/GM	Wheat (Oct-June)	Legume/GM (July-Sep)	

On rainfed land farmers primarily grow cereals such as wheat and barley for food security considerations, even though yields of the cereal crops are typically low on rain-fed lands. On a limited scale, crops such as legumes and oilseeds can be found. Summer fallow under rain-fed systems is still considered a best practice, though it is rarely put into practice. Barriers to this SLM practice include a lack of knowledge on the benefits of fallowing and the cost of tillage operations to control weeds during the fallow year, especially under scenarios of increasing fuel cost.

Cereals and non-leguminous oilseed cropping on a continuous cycle exhausts soil nutrients and negatively affects soil properties. Under such conditions, drought tolerant leguminous crops can play important role by not only ensuring economic returns during rotation period but also by improving soil health. There are opportunities to increase fodder and alternative crops instead of fallowing fields according to stakeholders, with sesame, liquorice, quinoa, sainfoin[2], amaranth and black sunflower all listed as potential cash crops for rain-fed rotations.

Salinity is a reality for most Uzbekistan producers and crops differ in their response to salt concentrations in soil. Wheat and cotton are considered to possess tolerance to salinity but varieties range in their soil salinity tolerance. A few of the more salinity tolerant crops such as millets and grasses are already being grown on limited areas, and their expansion on a large scale needs analysis of their value chain. A list of crops with potential of introduction in Uzbekistan for diversification in particular on saline lands is given below (Table 10).

Table 10. Levels of salinity tolerance of crops.

Level of salinity tolerance	Crops
Tolerant	Barley, canola, oats, rye, millets, asparagus, sugar beet, guar, kenaf, bermudagrass, wheatgrass, triticale

Moderately tolerant	Safflower, sorghum, soybean, sunflower, clover, dhaincha, tall fescue, rape, ryegrass, Sudan grass, artichoke, lima bean, red beet, cowpea, squash, turnip, winged bean, trefoil
Moderately susceptible	Chickpea, corn, flax, peanut, alfalfa, broad bean, forage cowpea, lalab bean, orchard grass, cabbage, broccoli, casava, brussels sprouts, celery, cucumber, eggplant, kale, lettuce, muskmelon, okra

Besides the field grain, vegetable, oilseed and fodder crops listed above, there are a number of fruits trees, and multipurpose tree species suitable for saline lands.

Derived benefits from rotation and diversification of the growing space are not under discussion here but have been shown to increase land and water productivity, increases incomes and resilience of smallholdings; reduce economic risk, provide food, increase production and marketing opportunities, conserve natural resources, minimise land degradation and provide for increased employment opportunities.[3]

Closely linked to crop diversification and rotations is the concept of Conservation Agriculture (CA). Conservation Agriculture is an approach to managing agro-ecosystems for improved and sustained productivity, increased profits and food security while preserving and enhancing the resource base and the environment. The three fundamental principles of CA are:

1. Minimal soil disturbance,

2. Permanent soil cover,

3. Crop diversity.

CA is of interest in that it entails a variety of techniques and approaches that conserve soil resources and fertility that are applicable to the Uzbekistan context and policy frameworks, and while rotations and diversification is one of the principle pillars of CA, it also includes many options for monocultures and contract cropping. Its capacity to be implemented under the current policy context makes it an important starting point to achieve FOLUR IP objectives.

The reduced use of machinery is the first expected benefit of CA in terms of GHG emissions and soil erosion. This is indeed true but the reduced mineralization of N compounds and increased soil functions due to maintained moisture and, expectably, to enhanced soil biodiversity, have a larger impact on system?s efficiency and overall GHG emissions, and consistent cover cropping and low to no tillage drastically reduces wind and water erosion.[4]

Figures 6 & 7. Direct seeding germination (Nukus) (Photo credit: Aziz Nurbekov 2006) and ground cover under zero tillage (Nukus, Qarshi) (Photo credit: Aziz Nurbekov 2013)

In Uzbekistan and other countries of Central Asia, CA has been already addressed and several good quality publications are available on its deliverables.[1] The characteristics of locally adapted CA production systems together with the rational and responsible use of external inputs have been shown to increase crop yields, water efficiency, soil fertility, farm income, competitiveness and biodiversity, as well as mitigating negative ecological impacts associated with conventional farming methods. No-till cultivation has been showcased in case of wheat, sunflower, mung bean, sesame, and sorghum. The lodging of sunflower was reduced under zero-tillage sowing as compared to the conventional soil preparation and sowing, increasing effective yield.[2] Tursunov et al. (2008) showed that yield of cotton with residue cover was significantly higher under conventional tillage (3422 vs. 1790 kg/ha, 2004), similar under other treatments (on average 3288 kg/ha, 2006). The cotton yield in the third year after winter wheat on the plots was significantly higher where wheat residues were retained (3525 vs. 2844 kg/ha).[3]

Similarly, raised bed planting of winter wheat provides higher yields than conventional planting and also reduces seeding rates (by approximately 50%) and water (by approximately 30%). Planting of sorghum on beds also increases productivity up to 32 percent under optimal conditions. Raised bed planting technology has been shown to increase yields of winter wheat, maize, sorghum and other annual crops like sunflower, soybean etc., with winter wheat yield under raised beds (6053 kg/ha, 2005) significantly higher than conventional treatments (4278 kg/ha).

Due to the diversity of techniques and management approaches that fall under the CA classification, placing precise figures on area or percentage of producers who practice CA is complex. The area under conservation tillage increased up to 50 thousand hectare in the irrigated lands. According to information from the MoA, 600,000 ha was sown into standing cotton crop as a means to increase productivity and improve soil cover. However, adoption of CA has been slow and residual and most of the methods and options have been realised on small areas under experimental conditions. Barriers to SLM are outlined earlier in the document and further explored below in the stakeholder and beneficiary description.

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1.3.2. Protected Areas in Uzbekistan

Currently, the Republic of Uzbekistan has 7 state strict nature reserves (zapovedniks) (IUCN category Ia), 1 complex landscape nature reserve (zakaznik) (IUCN category Ib), 5 national nature parks (IUCN category II), 1 national park, 12 nature reserves (zakazniks) (IUCN category IV), the Bukhara captive breeding centre ? ?Jeyran?, 2 biosphere reserves (rezertvats) (no IUCN category), as well as forest and hunting management areas (state forestry units, or ?leskhozes?, and hunting farms) (IUCN category VI) (Figure 8).

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The current legislative framework for nature conservation in Uzbekistan covers various aspects of environmental protection, sustainable use of natural resources, public involvement into the implementation of conservation programs and exercising public control over the use of fauna and flora are fairly well considered. In recent years the main achievements in strengthening of the framework include the adoption of several long-term strategic documents in 2019: The Concept on Environmental Protection until 2030, the Strategy for the Transition to Green Economy for the period 2019?2030, the Strategy for the Conservation of Biodiversity for the period 2019?2028. Uzbekistan takes active part in regional and international conservation processes and initiatives. Cooperation is exercised through the implementation of multilateral environmental treaties ? global environmental conventions, bilateral and multilateral agreements and memorandums. However, both in the past and at present, there has been a large gap between law-making and executive activities. Low efficiency in the implementation of one or another law is associated with insufficient financial and technical support, lack of qualification or low qualifications of executors, and weak interdepartmental coordination.

The core laws in the sphere of nature conservation include: Law on Nature Protection (1992), Law on Water and Water Use (1993), Law on the Land Code (1998), Law on Ecological Expertise (2000), Law on Environmental Control (2013), Law on Protection and Use of Fauna (amended in 2016), Law on Protection and Use of Flora (amended in 2016), Law on Hunting and Hunting Management (2020), the Rules of hunting and fishing in the Republic of Uzbekistan (2006), the Resolution of the Cabinet of Ministers No. 290 ?On the regulation of the use of biological resources and on the procedure for issuance of permits in the field of nature use? (Appendices 1, 2 to the Resolution of the Cabinet of Ministers No. 290), Law on Protected Natural Territories (mended in 2014), the Resolution of the President of the Republic of Uzbekistan No. 4247 ?On measures to improve state management in the field of protected natural territories? (2019), among some others.

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[1] idem

[2] idem

[3] Tursunov et al. 2008

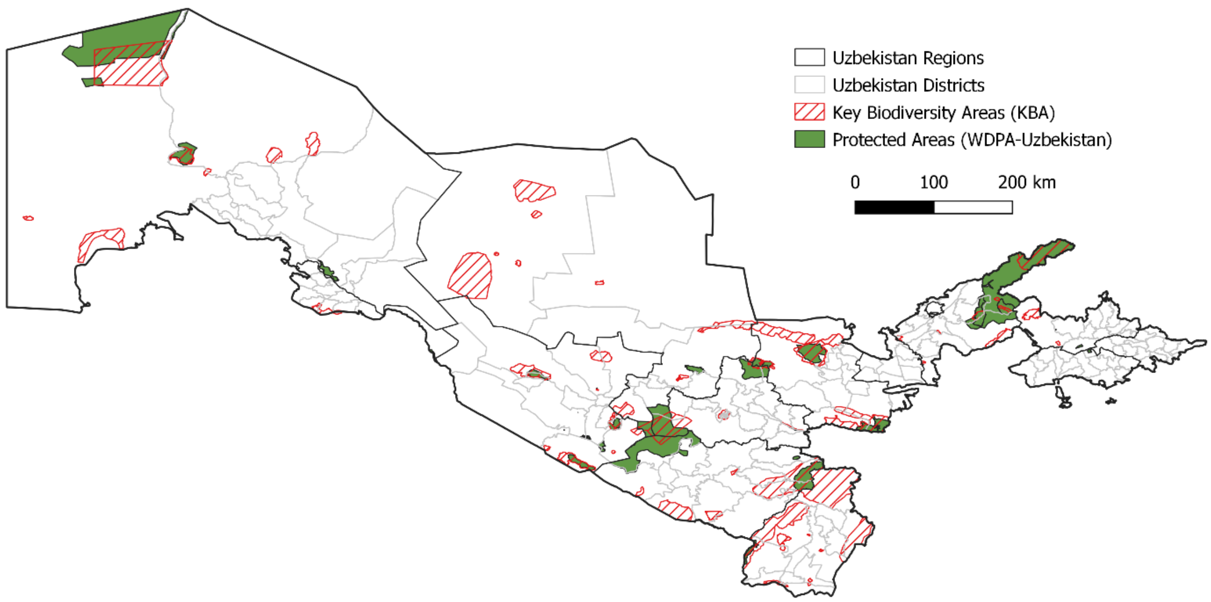

Figure 8. Protected areas of Uzbekistan according to United Nations Environment Programme's World Conservation Monitoring Centre (UNEP-WCMC) Source: World Database on Protected Areas (WDPA - https://www.protectedplanet.net/en). Key Biodiversity areas of Uzbekistan (KBA - http://www.keybiodiversityareas.org/)

1.3.3. Land Degradation Neutrality Baselines

The LDN approach, which in itself is a new concept to Uzbekistan yet the past 2 to 3 years have seen substantial advances in the appropriation and incorporation of the concept within national dialogues since the publication of the LDN-Target Setting Report in 2019. Within the context of Land Degradation Neutrality (LDN), Uzbekistan aims to maintain and increase the amount of healthy and productive land resources in line with the national Sustainable Development Goals and national LDN agenda.

The objectives of the report were (i) verification of the suitability of using the three global indicators, namely Land cover (land cover change), Land productivity (net primary productivity, NPP) and Carbon stocks (soil organic carbon, SOC).) for assessing the baseline and monitoring land degradation within the specific conditions of the country; (ii) an overview of the priority land improvement measures; and (iii) analysis of the existing national indicators. The results of the analysis confirmed the acceptability of using the three global indicators for assessing the land degradation trends, in addition to supporting national indicators.

Therefore, Uzbekistan has adopted as its Voluntary SDG Target 15.3 on Land Degradation Neutrality (LDN) the target of ?By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and flooding, and achieve degradation neutrality of land?. The adopted national indicator was formulated as ?The proportion of land that is degraded (irrigated and not irrigated) over the total land area?.

Along these lines, the project ?Sustainable Forest and Rangelands Management in the Dryland Ecosystems of Uzbekistan (GCP/UZB/003/GFF)? has recently been developed and aims at completing the following objective developing a national LDN strategy as one of its outcomes.

To establish project baselines regarding LDN and the status of natural resources, **the project designers have developed an interactive app that was developed using funds from PPG phase and will be available for use and further development during project implementation.** This allows for context specific baseline establishment at the required scales, providing data at Landscape, District, Regional and National scales and for individual land cover classes and cross-analysis of data.

To access the project specific LDN app, please follow the provided link:

https://projectgeffao.users.earthengine.app/view/uzbekistan-folur

This application allows users to set baselines and collect/validate data for a wide range of scenarios and scales, and therefore set context specific baselines on a range of factors for diverse land units types. The App allows to perform multi-criteria analysis to select hotspot and areas of interest and thus serving as a basis for a future DSS development. The possibility to explore the dataset in a dynamic way without any GIS requirement and in an intuitive environment also facilitates that more stakeholders can evaluate the quality and usefulness of the data, which contributes to understand how to improve the LDN indicators in the future. It also can provide a range of information on project areas and demonstration sites.

The application also presents the project districts, protected areas, land suitability analysis and all other mapping information developed during the PPG phase (2020-2021) of project development. It will be continually updated and improved on during project implementation by the international and national GIS experts (See Annex A2. Project Budget)

Additionally, the maps developed under the GCP/UZB/003/GFF PPG phase are also provided in Annex E. They include a summary of the main points and conclusions are provided for the national context, and present the following national contexts:

? Land Cover
? Land Cover Change
? Land productivity dynamics
? Vegetation productivity
? Soil Organic Carbon
? Mountain Cover

National LDN indicators

While assessing the feasibility of setting the LDN targets based on the above mentioned three global indicators, the GoU tested and adapted these indicators to the conditions of Uzbekistan, and identified the main measures used in Uzbekistan to control and improve land conditions. Further field research and grid mapping are needed to validate and test the global indicators included in the future work program at the national level. In particular, the GoU evaluated the following indices to determine the baseline for ?Land productivity? indicator: (1) *soil bonitet rating* - the soil quality index, expressed in classes relative to the soil with the highest potential fertility, the score of which is usually taken as 100%, and (2) *humus content in soil.*

In order to identify additional nationally-appropriate indicators, the team under the project GCP/UZB/003/GFF PPG phase reviewed and analyzed the data from the available soil surveys, hydro-meteorological observational network, national statistical information and analytical reviews and reports of the responsible institutions and monitoring services, as well as the review of the government programs, long-term strategies and relevant projects on agriculture, and water management and environmental protection. They developed a list of eight national indicators, including four indicators that were presented in Uzbekistan's LDN TSP Report, while the remaining four were identified in the course of PPG studies and adopted by the Government of Uzbekistan as key indicators of the *?Agricultural Development Strategy for 2020-2030?* in the context of food security and rational use of natural resources.

Therefore, the results of this process concluded with the following indicators that will be incorporated into project data collection processes for project monitoring:

1. Normalized Difference Vegetation Index (NDVI)

2. Soil bonitet, an indicator of soil quality assessed in relation to the soil with the highest fertility potential (expressed in classes relative to the soil with the highest potential fertility, the score of which is usually taken as 100 %)

3. Total area of ??agricultural land under SLM, including water saving technologies and approaches (ha, expansion)

4. The share of forage crops in the total structure of the sown area (%)

5. Area under the vegetation and forest cover (ha, expansion)

6. Share of land with moderate and high salinity (%, reduction)

7. Area under tree-nut plantations (pistachio, walnut, almond) (ha, expansion)

8. A number of farmers with access to advisory or extension services (total # per administrative district per region)

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1.4. Project Intervention Area

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To facilitate and guide discussions on potential project areas. the project development team presented the following criteria for target districts/landscapes selection during the PPG Inception Workshop and to the different stakeholder fora to facilitate information exchange and transparency. The process had technical backstopping support from the experts from the FAO Uzbekistan Country Office and from the Subregional Office for Central Asia to ensure adequate areas were selected for project activities.

The criteria presented were:

? Existence of the multiple typical problems regarding natural resource management, such as land degradation due to natural conditions (wind or water erosion) and unsustainable use, complexity of terrain and geographic features, soil conditions, patterns of the local agricultural activities and lack of regulatory mechanisms leading to land degradation;

? The importance of the agricultural sector to the region (GDP share and share of the population employed);

? Land degradation severity and hot spots from the UNCCD indicator assessments;

? Complementarities with other relevant on-going projects;

? Contribution to the National LDN targets;

? Existence of SLM practices (bright spots);

? Diversity of land tenure governance;

? Established linkages to the SDGs;

? Degree of potential impacts, in particular on vulnerable groups;

? Opportunity for multiple benefits or emergence events;

? Landscape and social resilience;

? Demonstrated community capacity for adaptive learning;

? Diversity among beneficiary groups;

? Potential for replication and scaling;

? Linkages and capacity to meet project core indicators;

? Climate Risk Analysis and vulnerability mapping.

The final landscapes selection was a largely stakeholder driven process in close collaboration with representatives from the MoA, in particular the State Committee on Ecology and Environmental Protection and provincial (Karakalpakstan, Khorezm and Kashkadarya provinces) stakeholders through consultation with FAO technical staff. The selection criteria for provinces were developed in each province taking into account local conditions for agriculture, LD, CC impacts and the presence of protected areas. The project will be implemented mainly in six demonstration pilot district across selected three provinces where three districts have protected areas while other three districts have challenges with salinity and drought. The districts were selected based on following criteria: surface area of cultivated wheat, wheat production (tonnes), cropping systems, reliability of irrigation and availability of well soil conditions and issues for crop production, and finally presence of poverty, transient poverty and socially vulnerable populations.

1.4.1. Description of Project Regions

The Regions or Oblast selected for project development under the process described in the previous section are the Kashkadarya, Khorezm and Republic of Karakalpakstan (Figure 9). Their location within the national territory and a description of their socio-economic and environmental context are presented below. The information has been sourced primarily from the National Consultant PPG reports and stakeholder interventions.

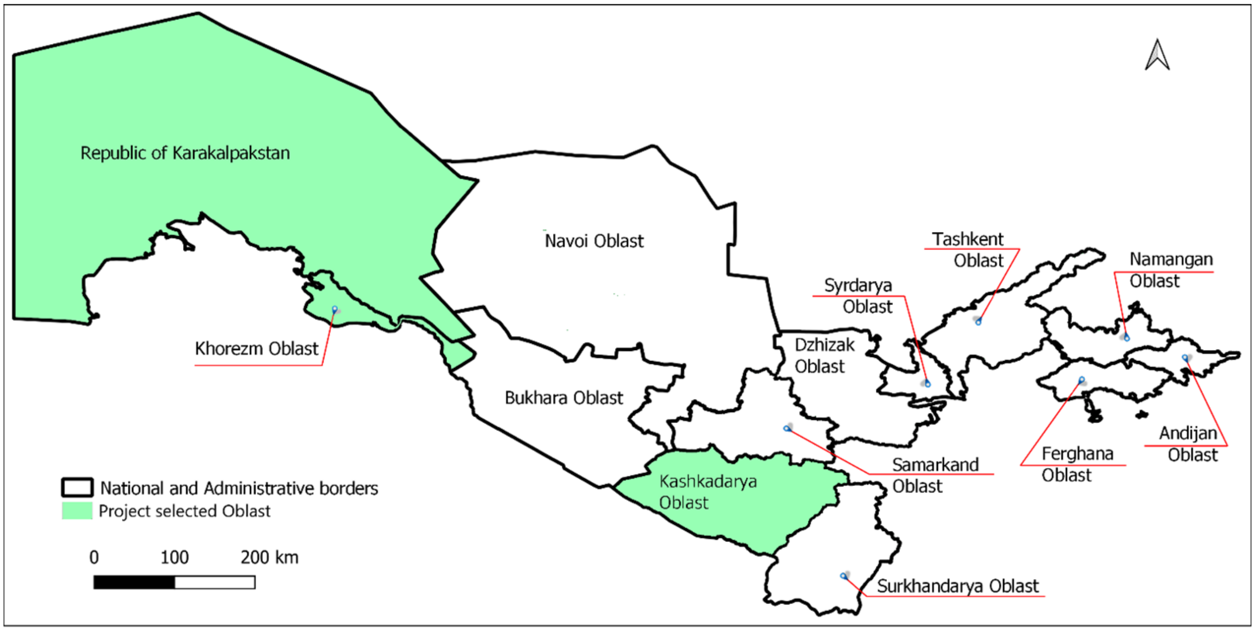

Figure 9. 1st Administrative level of Uzbekistan and Project Selected Regions.

KASHKADARYA OBLAST

The Kashkadarya Oblast is located in the south-eastern part of the country in the basin of the Kashkadrya river, and on the western slopes of the Palmir-Alay mountains. It covers an area of 28,568 km^2 and borders with Turkmenistan and Tajikistan.[1] The population according to the State Committee on Statistics[2] for 2021 is estimated to be around 3,335,400, with approximately 57 percent living in rural areas at that time. This province plays an important role in the economy of Uzbekistan through the production of natural gas, agricultural products (cotton, wheat, fodder crops, and fruits and vegetables) and raw materials for construction. The prioritized project districts and the land cover distribution and the can be seen in the Figure 10, which indicates Grasslands and Croplands as the main covers (Figure 11) that determine the land use.

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[1] PPG draft report, Sharma, R, Akramkhanov, A & Amanov, A, 2021 ?Draft report on issues related to wheat landscapes, crop diversification, and improving production and productivity?, GCP/UZB/011/GFF

[2] https://stat.uz/en/

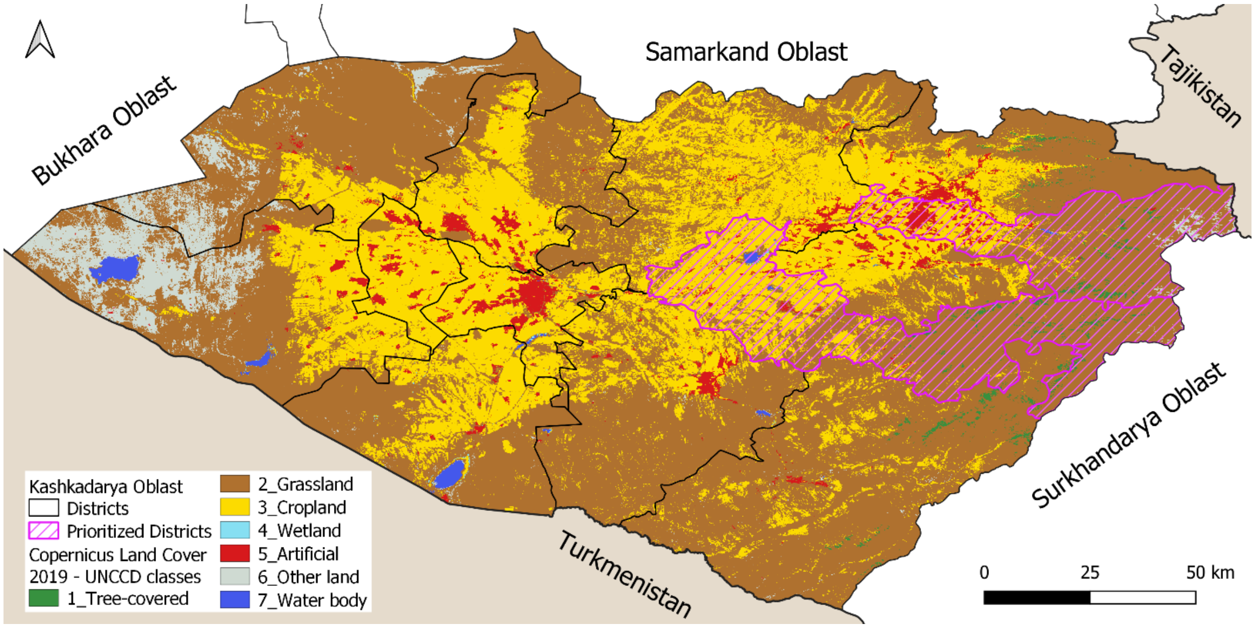


Figure 10. Kashkadarya Oblast land cover and district distribution

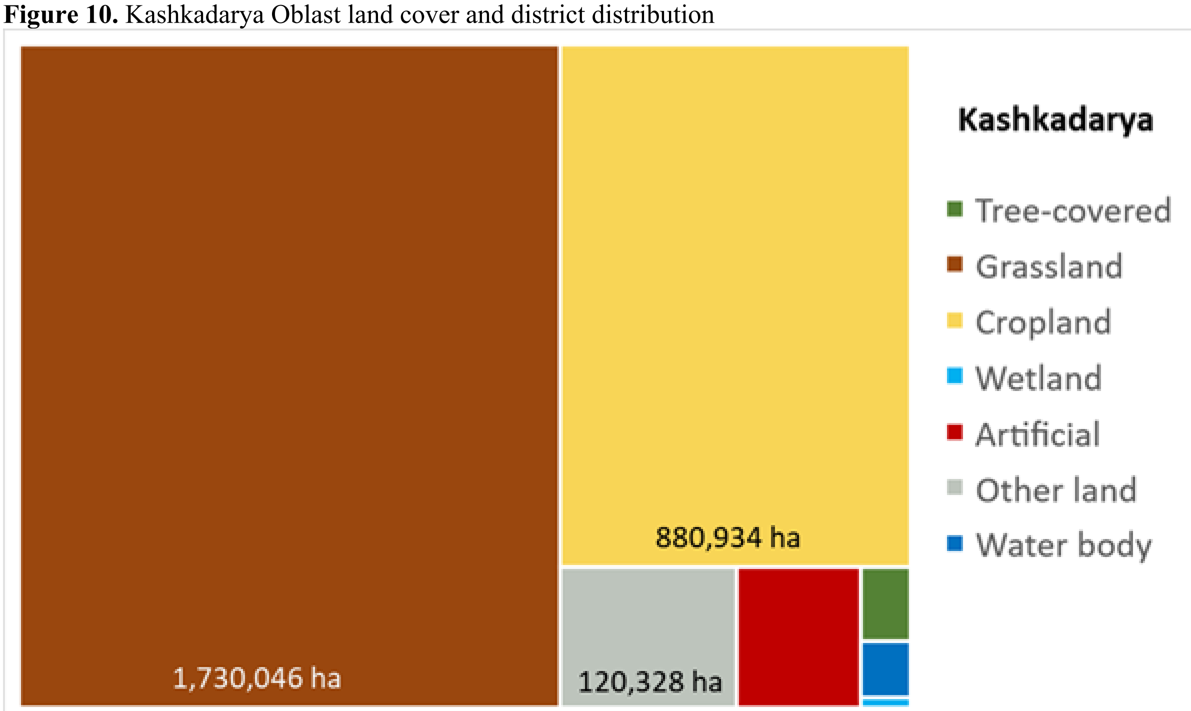


Figure 11. Land cover proportion according to Copernicus Global Land Cover 2019 and UNCCD classes.

The climate is characterized by harsh climatic conditions, with cold winter and hot summer. Karshi, the capital city of Kashkadarya, is located at latitude 38? 51' 48N; longitude 65? 47' 52E at an altitude of 374 meters. The average temperature in Karshi is 15.7?C, however the highest lowest temperatures can be above 40?C and below -15?C, respectively. The average annual rainfall here is 212 mm.

Cotton, wheat, corn, and alfalfa are the main agricultural crops, with Kashkadarya leading in national production of cereals.[1] Recent data shows that agricultural land in Kashkadarya is allocated to various crops, with 28 percent under wheat, 31 percent under cotton, 6 percent under fodder (barley, alfalfa, maize) crops, 3 percent under vegetables, 8 percent under orchards (various fruit trees, grapes, and mulberry), 10 percent under household backyards, and 14 percent under other crops.[2] In 2017 the total wheat production in the target area was 1.6 million ha with an average yield of 3.6 t/ha.

Kashkadarya hosts the most area of rainfed land in Uzbekistan. In 2019, 60 percent of crops in the province were produced on irrigated conditions of private farms, and 27 percent were cultivated by farmers on rainfed areas. About 10 percent of the crops were cultivated by dehkans on irrigated conditions, and another 3 percent on rainfed areas.

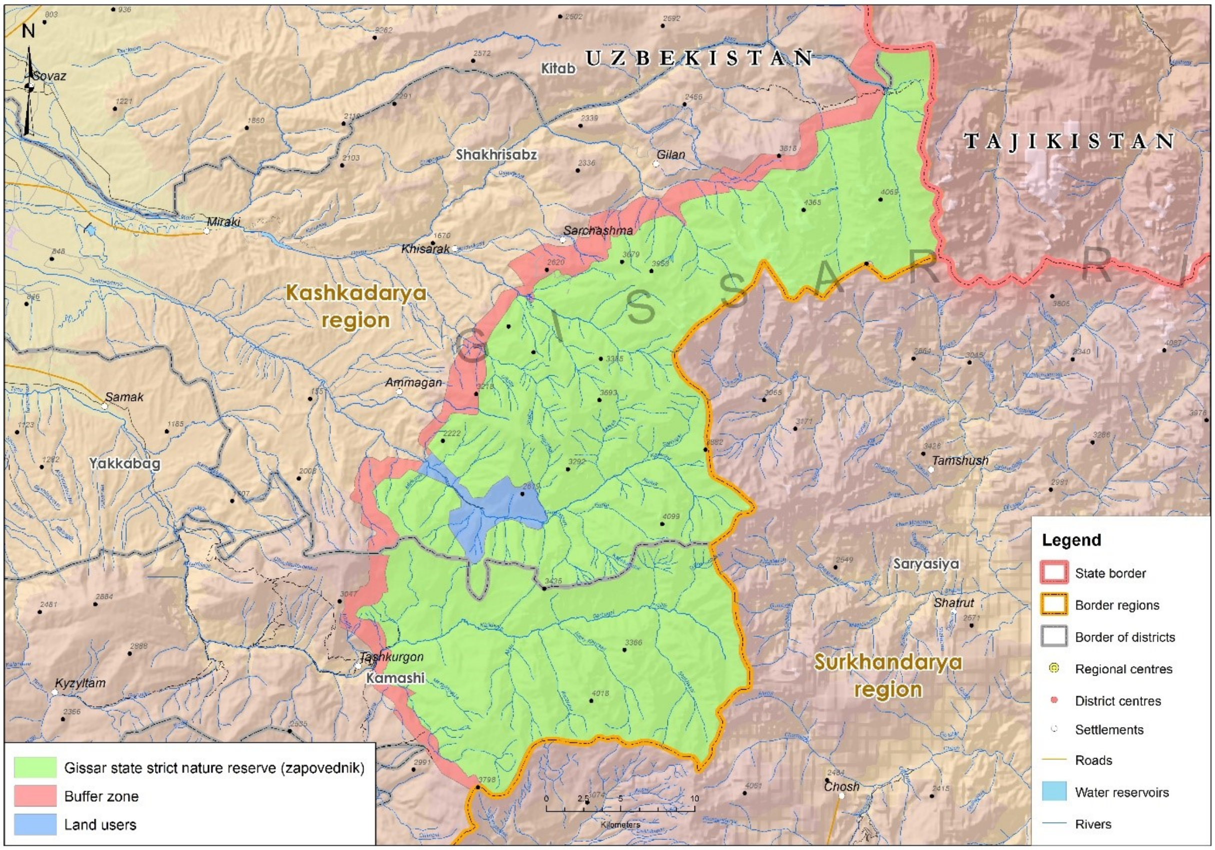
Wheat production constraints in Kashkadarya region include yellow rust, leaf rust, sunn pest, aphids, terminal heat stress, and freezing temperatures in some years. On rainfed land, an additional trait of drought tolerance is needed in Kashkadarya given the rainfed conditions. The Oblast also does not suffer from secondary salinity as in other areas.

There is a great opportunity of crop diversification in Kashkadarya region by expanding varieties of cereals, food legumes, oilseeds, vegetables, and potato. There is also scope for introducing additional vegetable crops either as monocultures or mixed planting. The rainfed lands and the mountainous region of Kashkadarya are suitable for a range of both food and fodder legumes. Similarly, the irrigated land has potential of introducing additional leguminous crops, with increasing land and water productivity as additional benefits. ICARDA and FAO has been working for the past several years on introducing and popularizing resource conservation tillage and conservation agriculture practices in the Uzbekistan with a site in Karshi. [3]Kashkadarya region is also well served with a research institute capable of completing the wheat variety development cycle to serve the region.

Protected Areas in Kashkadarya

Protected areas and biodiversity for Kashkadarya include the Hissar State Strict Nature Reserve (zapovednik) located in Yakkabog, Shahrisabz and Kamashi districts of the Kashkadarya region (Figure 12). The total area is 80,986 ha, including 50,892 ha in the Shahrisabz district, 16,002 ha in the Yakkabog district, and 14,092 ha in the Kamashi district of the Kashkadarya region. The reserve is the largest State Strict Nature Reserve (zapovednik) in Central Asia. It was established in 1983 by the

Resolution of the Council of Ministers of Uzbekistan of September 9, 1983 No. 521, by merging two independent state strict nature reserves: the Kyzylsuisky and the Mirakinsky reserves.



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[1] PPG draft report, Sharma, R, Akramkhanov, A & Amanov, A, 2021 ?Draft report on issues related to wheat landscapes, crop diversification, and improving production and productivity?, GCP/UZB/011/GFFDiversificaiton

[2] Djumaboev, K.; Hamidov, A.; Anarbekov, O.; Gafurov, Z. 2017. Collective action in the irrigation sector of Uzbekistan: a case study of water consumers? associations (WCAs) in the Karshi Steppe. Colombo, Sri Lanka: International Water Management Institute (IWMI). 39p. https://doi.org/10.5337/2018.200

[3] ICARDA 2011; Nurbekov et al 2016

Figure 12. Map of Hissar State Strict Nature Reserve borders and zones ?Elena Bykova & Rustam Ibragimov

Main protected ecosystems: mountain steppe, coniferous forest and woodland, riparian forests: deciduous forest, walnut-fruit forest, shrub lands, subalpine and alpine meadows, mountain rocks and glaciers. In total, tree and shrub vegetation covers an area of 12,202 hectares. The area covered with forest is 14.2% of the total area of the reserve. The main forest-forming species in the reserve are the Zeravshan juniper (Juniperus seravschanica) and Hemispherical juniper (Juniperus semiglobosa).

Protected plants: Vegetation in the protected area is quite typical for the mountains of Central Asia, a significant part of it are endemic plants. The total number of vascular plant species is at least 900 species. The species of Compositae, Legumes, Crucifers are richly represented, there are many species of Cereals, Umbellates, and Labiates. 34 species are endangered plant species, listed in the Red Book of Uzbekistan

Protected animals: The reserve harbours 2 species of fish, 19 species of amphibians and reptiles, 215 species of birds and 32 species of mammals as well as 3,000 species of invertebrates. The key species are Snow Leopard (Panthera uncia), Tien-Shan Brown Bear (Ursus arctos isabellinus), Turkestan Lynx (Lynx lynx isabellinus), Central Asian Otter (Lutra lutra seistanica), Long-tailed Marmot (Marmota caudata), Siberian Ibex (Capra sibirica), Griffon Vulture (Gyps fulvus), Cinereous Vulture (Aegypius monachus), Himalayan Snowcock (Tetraogallus himalayensis).

Inside Hissar Strict Nature Reserve illegal livestock grazing is also an important threat. It impacts the natural vegetation and by the related disturbance negatively affects wildlife. With reduced availability of wild prey, conflict between livestock herders and carnivores (mainly wolf and snow leopard) increases, inside the protected area as well as adjacent to it. Other human wildlife is related to brown bear, which in search of food may destroy beehives and fruit and nut trees.

KHOREZM OBLAST

Khorezm is located in the northwest of Uzbekistan in the lower reaches of the Amu Darya River?the largest former tributary of the Aral Sea. It covers an area of 6,464 km^2 with a population around 1,893,300, with around 67% living in rural areas. The climate is arid continental, with cold winters and extremely hot, dry summers. It belongs to the zones of deserts and steppes. On average, approximately 100 mm of annual precipitation falls, predominantly during winter with high spatial and temporal variability. Urgench, the capital city of Khorezm, is located on the Amu Darya River and the Shavat canal. The city is situated 450 km west of Bukhara across the Kyzyl-Kum Desert. The prioritized project districts and the land cover distribution and the can be seen in the Figure 13, which indicates the dominance of Croplands over the rest of the covers (Figure 14).

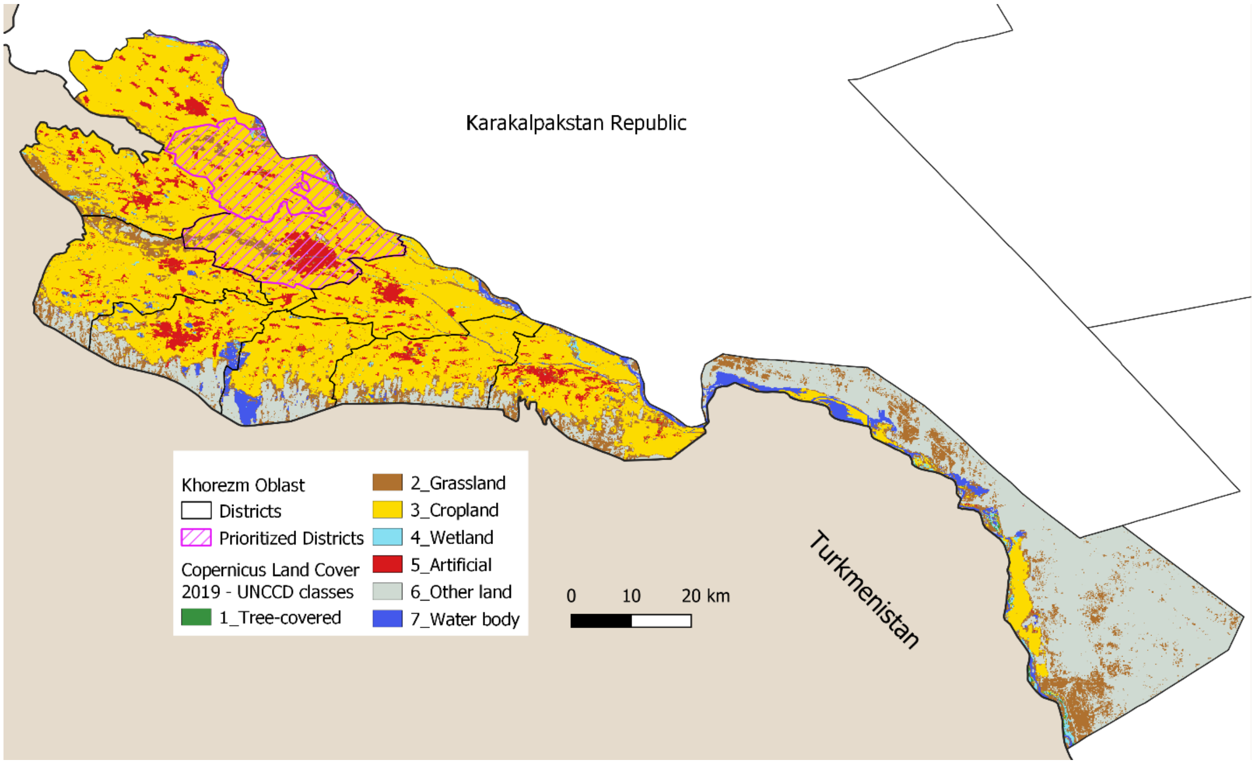

Figure 13.: Khorezm Oblast land cover and district distribution

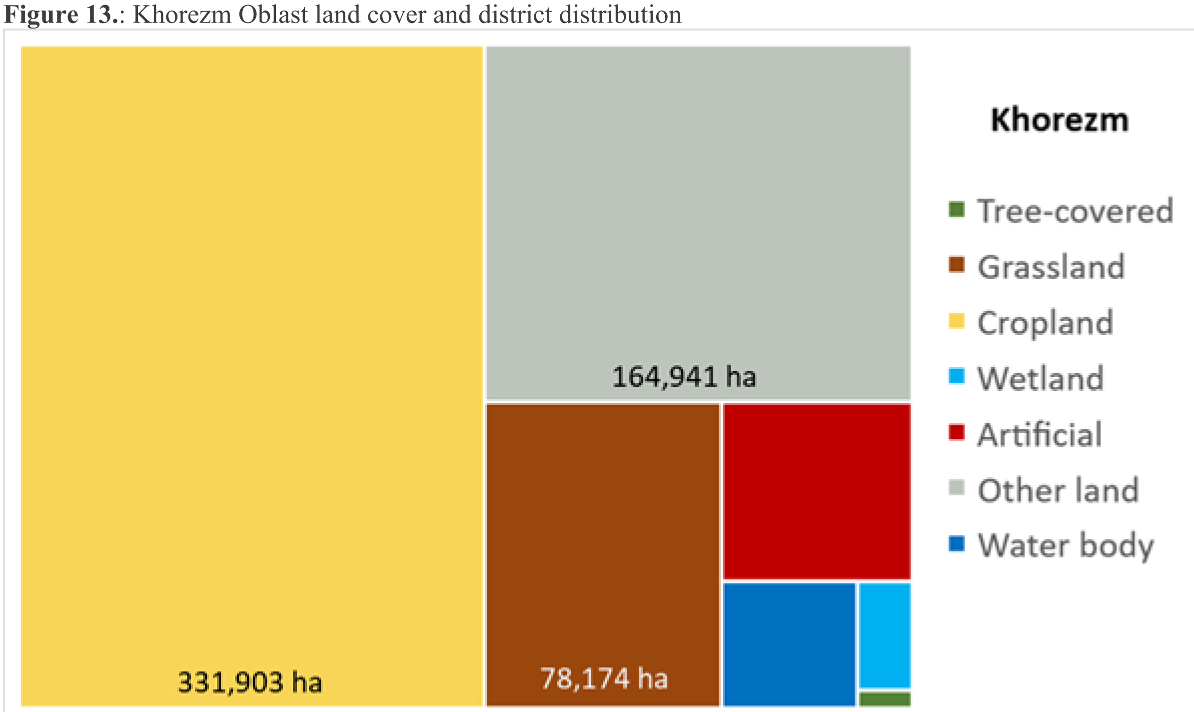

Figure 14. Land cover proportion according to Copernicus Global Land Cover 2019 and UNCCD classes.

Dominant crop types are cotton, winter wheat and rice, occupying around 70?80% of the arable lands. Wherever possible, another crop is grown on the winter-wheat fields after harvest, mostly rice. Fodder maize, alfalfa, sunflower as well as fruits and vegetables are also cultivated, but they occupy comparatively low extensions of land. Irrigated conditions of private farms accounted for 66 percent in Khorezm province.

Being neighbouring regions, Khorezm and Karakalpakstan (see below) have a lot in common in the elements of production systems and climate. These include wide distribution of soil salinity, cold winter and hot summer, and scarcity of water. However, winter months are somewhat cooler and summer months are somewhat warmer in Karakalpakstan than in Khorezm. Given the similarities, both currently grow the same crops. Studies conducted by ICARDA between 2012 and 2016 suggest that wheat, chickpea and mungbean varieties had similar performance in the two regions.

Protected Areas in Khorezm

Khorezm National Nature Park is located in Urganch, Khonqa, Khiva, Yangibozor, and Hazorasp districts of the Khorezm region (Figure 15). It was established in 2019 with the main purpose of conserving and restoring tugai forests and wildlife, as well as recreational, scientific and cultural purposes. The total area of the Nature Park is 21,688 ha including tugai forest in Yangibozor (743.2 ha) and Urganch (197 ha) districts. Other sites occupy desert areas.

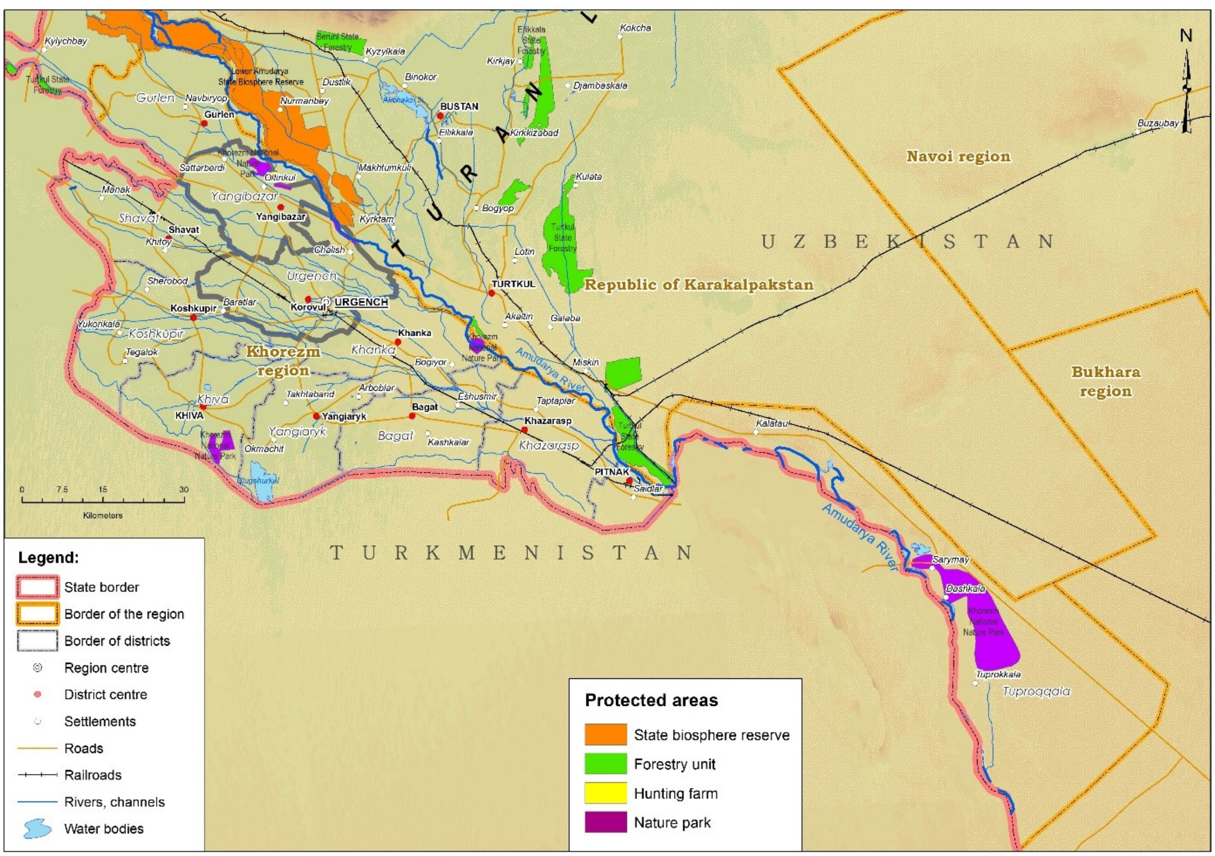

Figure 15. Map of the Khorezm National Nature Park including four clusters and surrounding areas. ?Elena Bykova & Rustam Ibragimov

Main protected ecosystems: Tugai forest (Populus sp., Salix sp., Elaeagnus sp.), scrublands (Tamarix sp.), reeds (Phragmites sp., Erianthus sp., T?pha sp.), desert.

Animals: 36 mammal species, >200 bird species, 18 species of amphibians and reptiles, and 43 species of fish incl. 38 species listed in the Red Book of Uzbekistan, 18 species listed in the IUCN Red List. The key species are Bukhara deer (Cervus hanglu bactrianus), Jungle cat (Felis chaus), Khiva pheasant (Phasianus colchicus chrysomelas), Aral barbel (Lucioarbus brachycephalus).

Plants: 419 plant species incl. two rare and endemic species Smirnowia turkestana (endemic to Kyzylkum and Karakum deserts), Ferula foetida.

In Khorezm and Karakalpakstan, the human-wildlife conflict was detected for Bukhara deer due to unsustainable growth of population that damages both ecosystems of PAs, as well as surrounding agricultural lands. The low genetic diversity of Bukhara deer due to the small founder population may increase the risk of population collapse due to disease and environmental factors and potential transmission of disease to the cattle population nearby and vice versa.

REPUBLIC OF KARAKALPAKSTAN

The Autonomous Republic of Karakalpakstan, bordering Kazakhstan to the north and Turkmenistan to the south, is located in the north-western part of Uzbekistan with an area of 166,600 km^2, and a population of 1,923,700 of which approximately 51 percent are rural inhabitants. Karakalpakstan forms part of the vast Kyzyl Kum desert in the lowest reaches of the Amudarya Basin and Aral Sea. Most of the Karakalpak territory consists of low land (from 50 to 200 m above sea level) with a small percentage of hills. The flatness is its most prominent physical feature. Most of the settlements as well as the prevailing activities, including agricultural production, are concentrated in the irrigated river plain on the delta of the Amudarya river. In contrast to its climate and aridity, around 1 million ha of forests (30% of total forest area in Uzbekistan) are located in this Oblast. The prioritized project districts and the land cover distribution and the can be seen in the Figure 16, which indicates the dominance of Other Lands with very low vegetation (Figure 17), even so the amount of grasslands and croplands in ha is higher than in the other cases.

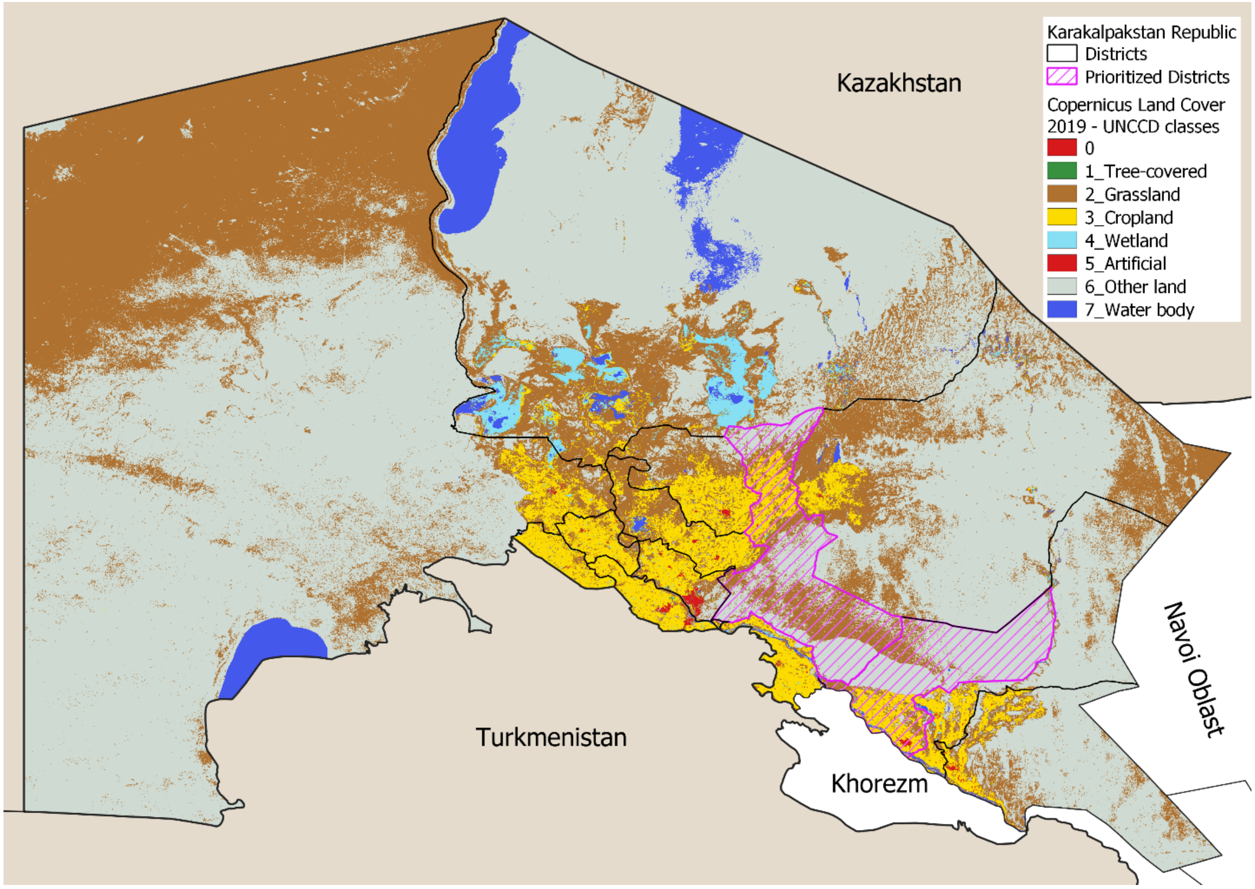

Figure 16. Karakalpakstan land cover and district distribution

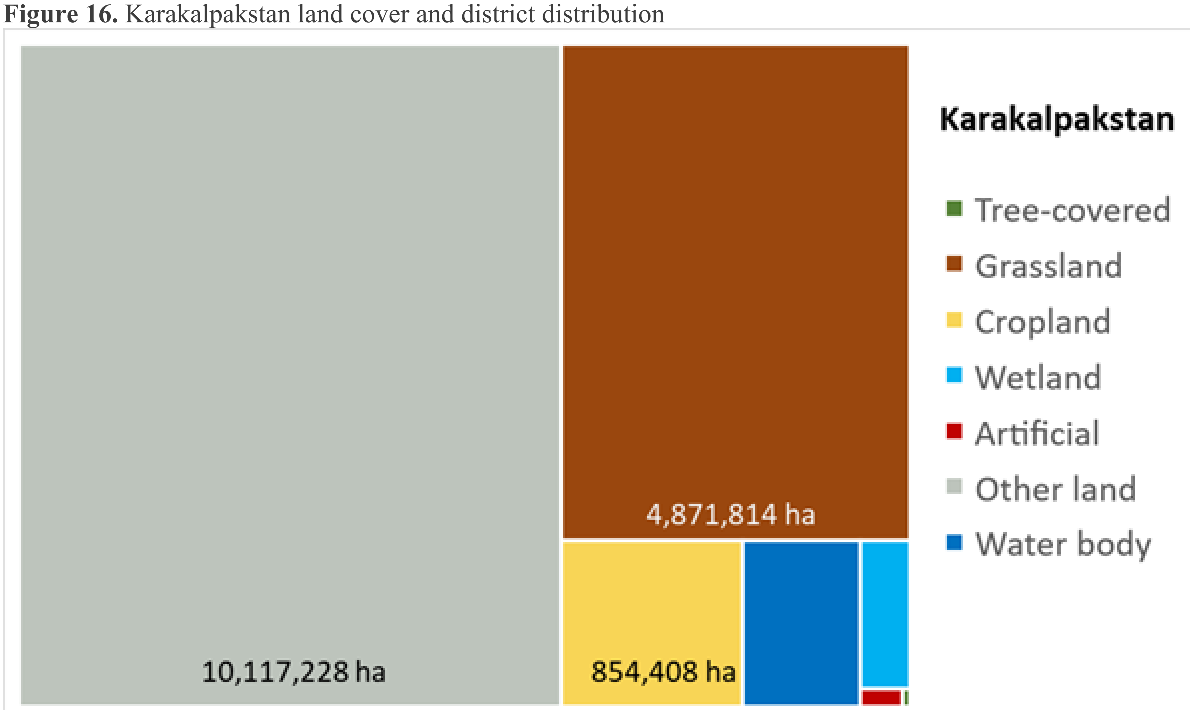

Figure 17. Land cover proportion according to Copernicus Global Land Cover 2019 and UNCCD classes.

Agriculture is the second largest sector of the economy, contributing one fifth (20%) to Karakalpak gross revenue.[1] The main agricultural products in Karakalpakstan are wheat, cotton, vegetables, forage crops and livestock products. The main contributors to the agriculture sector are cooperatives (*Shirkats*, 1.7%), private farms (35.1%), and rural households (Dehkans ? 63.2%). Irrigated conditions of private farms accounted for 99 percent in Karakalpakstan. Livestock production is an important contributor to the agricultural sector.

Under the severe climate of cold winter and hot summer, crop, livestock, and fishery productivity in Karakalpakstan is relatively low, which translates to a lower level of living compared to the rest of the country. The climate is classified as a cold winter desert. Nukus, the capital city of Karakalpakstan lies on 77 m above sea level. The average annual temperature in Nukus is 11.9 ?C and mean annual rainfall is 109 mm.

Salinity and drought encompass the entire region?s agricultural landscape. There are limited studies conducted in the region on potential options on diversifying the production system in the region. In a report from ICARDA, (Nurbekov et al.,2015) proposed short-term cereal-legume crop rotation and fodder crops for irrigated production system in the region. The report listed a number of cereals (winter wheat, winter barley, winter rye, maize, sorghum, and pearl millet), food legumes (soybean, kidney bean and mung bean), oilseeds (rape and sunflower) and fodder crops (alfalfa, forage pea, fodder bean, and triticale) for crop diversification. A number of options for annual and perennial crop rotations have been outlined.[2]

Winter wheat is the most important food crop in Karakalpakstan region. However, in certain years such as 2013, extremely cold conditions over a period during winter can cause wide scale damage of winter wheat. In such cases, spring wheat provides an option to ensure against winter wheat crop failure. Evaluation of heat tolerant winter wheat varieties in Chimbay district of Karakalpakstan in 2015 showed that short duration (85-90 days) spring wheat varieties can yield up to 5 t/ha (unpublished data).

Drought tolerant chickpea varieties also offer promise as a spring crop on the land where winter wheat cannot be cultivated. A study conducted by ICARDA in Chimbay district in 2015 showed that short duration (74 days) chickpea varieties produced 1.75 t/ha yield (unpublished data). Hence, chickpea can also be considered a crop which can be included in the crop rotation. Spring planted chickpea in the region matures in June, which can allow planting of a second legume crop such as mungbean or a fodder crop. This will increase land and water productivity.

Winter frost is a serious problem in Karakalpakstan region where wheat crop is exposed to freezing temperature frequently without protective snow cover. For such a condition, frost problem to wheat cultivation can be managed either by resistant winter wheat varieties or by crop management.

Protected Areas in Karakalpakstan

For the protection of the tugai ecosystems of lower reaches of Amu Darya, the Baday-Tugay Nature Reserve was established in 1971 with an area of 6,462 ha. In 2011, it was reorganized as one of the core zones of the newly established Lower Amu Darya Biosphere Reserve with a total area of 68,717 ha (including 11,568 ha of core zone, 6,731 ha buffer zone, and 50,418 ha transition zone). The protected area has a management plan, elaborated in 2019 for the period 2021-2025.

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[1] PPG draft report, Sharma, R, Akramkhanov, A & Amanov, A, 2021 ?Draft report on issues related to wheat landscapes, crop diversification, and improving production and productivity?, GCP/UZB/011/GFFDiversification

[2] Aziz Nurbekov, Asad Musaev, Dossymbek Sydyk, Zokhid Ziyadullaev, Jozef Turok. Conservation Agriculture in Irrigated Areas of Azerbaijan, Kazakhstan and Uzbekistan. 2015. https://repo.mel.cgiar.org/handle/20.500.11766/4702.

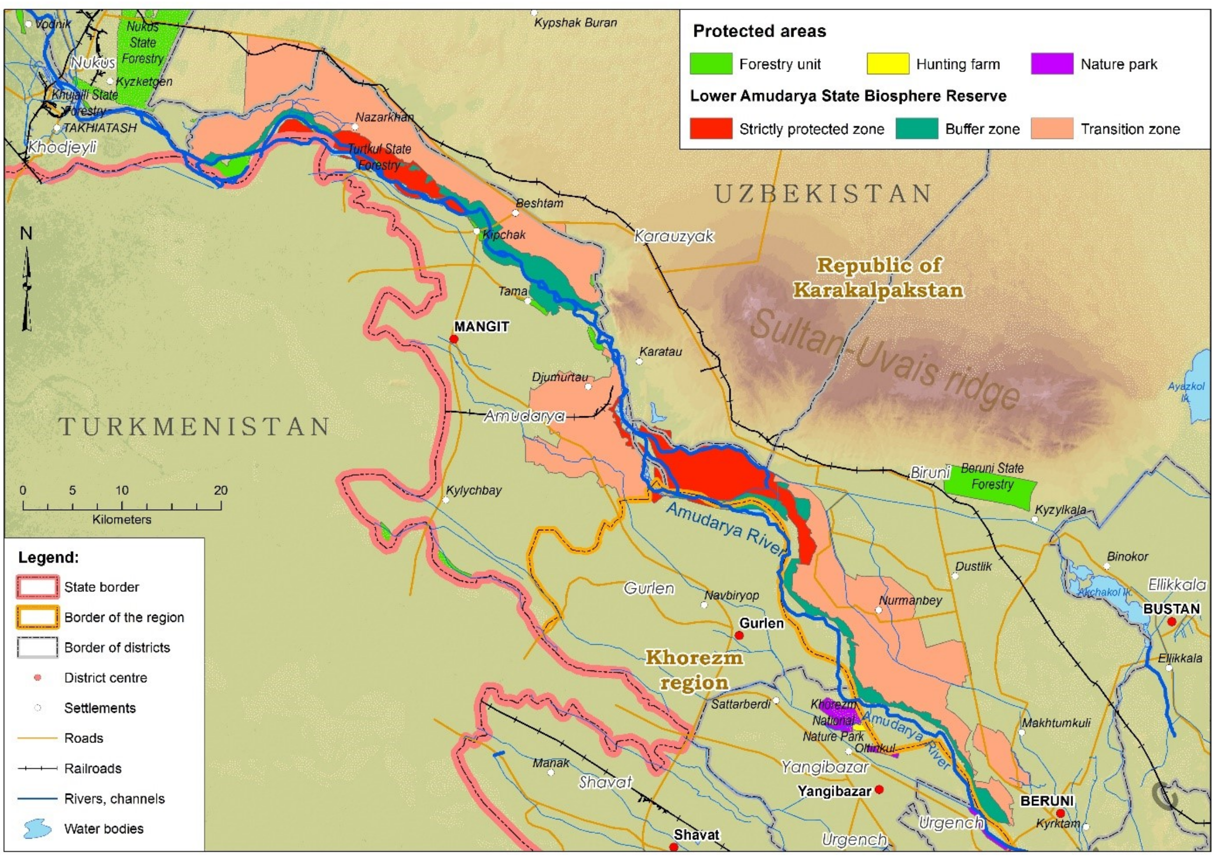

Figure 18. The Lower Amudarya State Biosphere Reserve borders and zones, 2021 ?Elena Bykova & Rustam Ibragimov, source: Michael Succow Foundation/GIZ/SCF

Main protected ecosystems: Tugai forest (Populus sp., Salix sp., Elaeagnus sp.), scrublands (Tamarix sp.) and reeds (Phragmites sp., Erianthus sp., T?pha sp.).

Protected endangered animals: Bukhara deer Cervus hanglu bactrianus, Khiva pheasant Phasianus colchicus chrysomelas, Large Amudarya Shovelnose Sturgeon Pseudoscaphirhynchus kaufmanni, Aral barchybel Lucioarbus brachycephalus.

Protected endangered and endemic plants: Smirnowia turkestana (endemic to Kyzylkum and Karakum deserts), Ferula foetida.

In Khorezm and Karakalpakstan, the low level of water in Amu Darya prevents natural regeneration of tugai forest as the riparian ecosystems and in particular the tugai forests depend on the dynamics of the river with floods and permanent geomorphological changes. Due to the water extraction for agriculture, the overall conditions of the tugai forests became much drier and all types of tugai ecosystems degraded and decreased in area size; the delta of the Amu Darya and the entire Southern Aral Sea region underwent desertification. In the mid-1980s, the plant species diversity in the delta decreased by 40% compared to the 1950s.

The modification of the river flow dynamics, the generally reduced flow, lack of high water periods and the interruption of the river continuity by weirs massively impacts the native fish fauna. Further impacts are related to water pollution, mainly from agricultural sources, as well as from urban areas and industries.

All the described issues not only affect globally important biodiversity present in the region, but also affect ecosystem services provision to the larger project area, including the productive landscapes.

LAND PRODUCTIVITY DYNAMICS

Land degradation estimates were generated by applying the Good Practice Guidance (GAP) [1]. Maps and statistics presented in this section can also be viewed in the Project Design Support System and consulted for any Oblast or District of Uzbekistan[2].

The Land Productivity Dynamics (LPD) 2001-2020 was a key indicator for the UNCCD report (PRAIS 3) and in the framework of the LDN. The method used here is based on Nonlinear Phenology Methods developed by Ivits and Cherlet (2013)[3] and Ivits et al. (2013)[4], which were later incorporated by the JRC (Joint Research Centre) in the World Atlas of Desertification (Cherlet et al. 2018)[5]. The method combines calculations of linear trends of time series of annual NDVI by non-parametric methods and changes in performance with respect to the current state, taking into account the initial biomass value. Areas with incipient decline and deterioration are often considered areas with degradation processes. At national level the scenario can be observe in Figure 19, bellow.

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[1] https://www.sciencedirect.com/science/article/abs/pii/S1462901118305768

[2] https://projectgeffao.users.earthengine.app/view/uzbekistan-folur

[3] 1Ivits Eva, Michael Cherlet. 2013. Land-Productivity Dynamics Towards integrated assessment of land degradation at global scales title. Joint Research Centre. doi:http://dx.doi.org/10.2788/59315.

[4] Ivits E., M. Cherlet, S. Sommer, and W. Mehl, 2013. Addressing the complexity in non-linear evolution of vegetation phenological change with time-series of remote sensing images. Ecological Indicators, Volume 26:49-60. URL:https://doi.org/10.1016/j.ecolind.2012.10.012.

[5] Cherlet, M., Hutchinson, C., Reynolds, J., Hill, J., Sommer, S., von Maltitz, G. (Eds.). 2018. World Atlas of Desertification, Publication Office of the European Union, Luxembourg. URL:http://wad.jrc.ec.europa.eu/

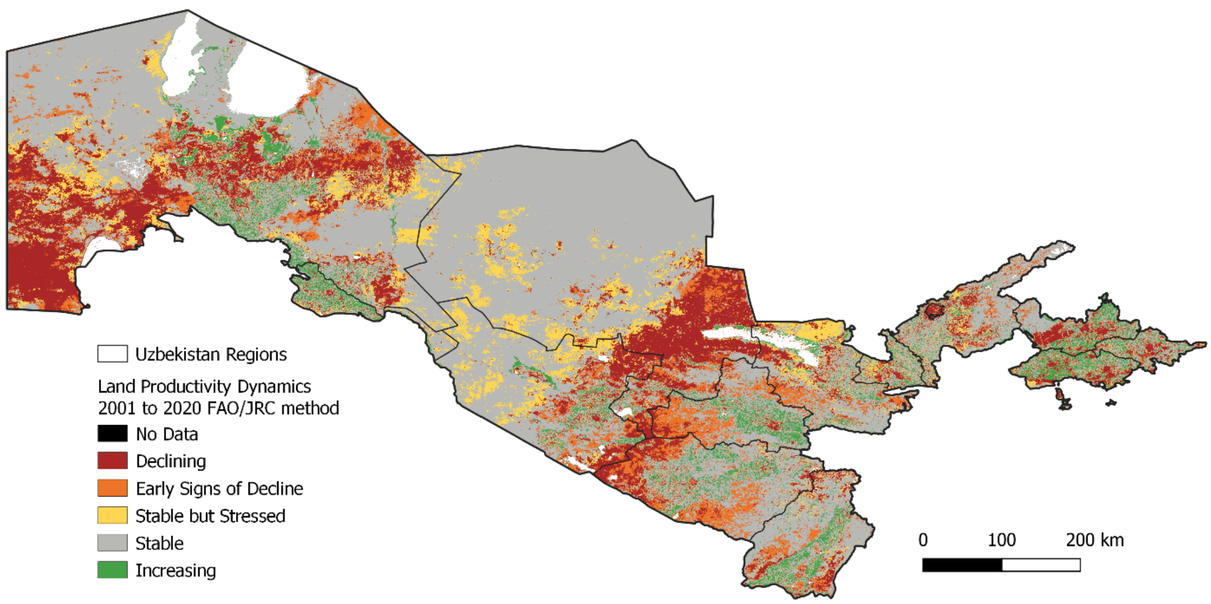


Figure 19. Land Productivity Dynamics for the period 2001-2020.

LDN mechanics proposes the need to achieve a balance for each land type. In this sense it is very useful to cross information of land cover with LPD to identify areas that have a negative behaviour and guide decision making and restoration efforts. At Oblast level a diversity of situations can be observed (Figure 20), where 15% to 20% of croplands show some kind of productivity reduction in the period of 2001-2020. Grasslands and Other Lands are generally the areas that are undergoing a more intense reduction in productivity, but associating this percentages to monetary valuation of the per hectare productivity in each case can indicate course of actions to avoid natural and capital loss.

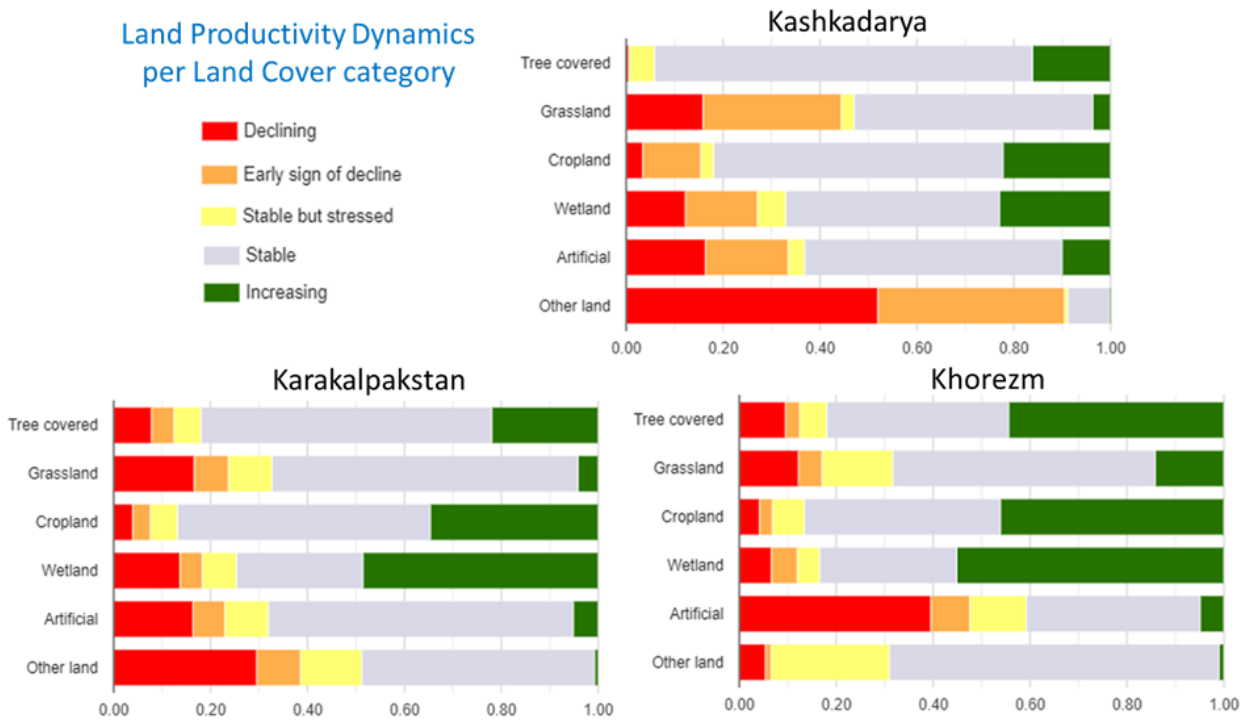


Figure 20. LPD per Land cover classes at Oblast level.

This cross information between the LPD and the LC can also be done cartographically by overlaying the maps. The Project Design Support System App has a Multicriteria Analysis toolbox that allows choosing any combination of these 2 variables and shows their location in the map, so decision can be translated to specific implementation sites.

WATER SAVING AND RESOURCE USE EFFICIENCY BASELINES

There have been past gains and advancements in resource use efficiency across multiple sectors. Since independence, Uzbekistan has made significant efforts including institutional reforms to implement integrated water resources management (IWRM) to maintain and improve irrigation capacity. As a result, total water use for agriculture has decreased by 20% to 51 billion m3 since the 1980s and irrigation water use has reduced by 40 percent since the 1990s to 10,500 m3/ha.

Data in Figure 21 indicates that large proportion of irrigated area in Kashkadarya, Karakalpakstan and Khorezm are fed by water through pumps.

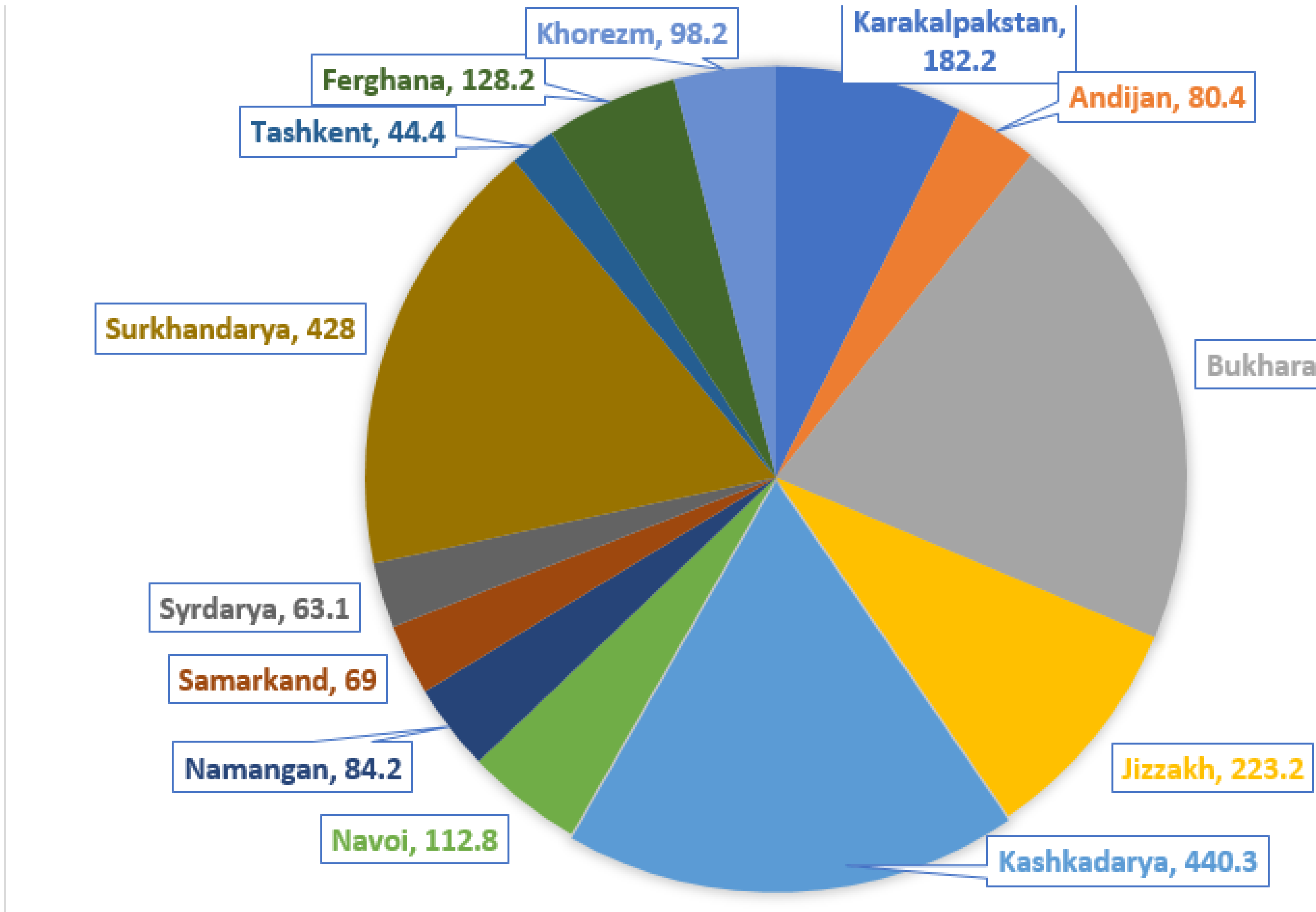


Figure 21. Area per region irrigated by water through pumping stations (MoWR 2020c)

The Cool Farm Tool[1] model was used to estimate water use efficiency for the winter wheat cropping system in Uzbekistan based on the most conservative of the aforementioned available statistics. The results of this analysis (presented in figures 22, 23 and 24, below) show water productivity of wheat for each of the regions of the study and total water footprint disaggregated by water source (green, blue and total water). The furrow irrigation system has a water footprint of 802.37 liters per kg of wheat produced in Karakalpak, 547.11 l/kg in Kashkadarya, and 629.59 l/kg in Khorezm. Blue water makes clearly the vast majority of the water needs in all three regions, with up to 90% in Kashkadarya.

[1] Cool Farm Alliance. Cool Farm Tool for GHG Assessment at Farm Level. Available at https://app.coolfarmtool.org/

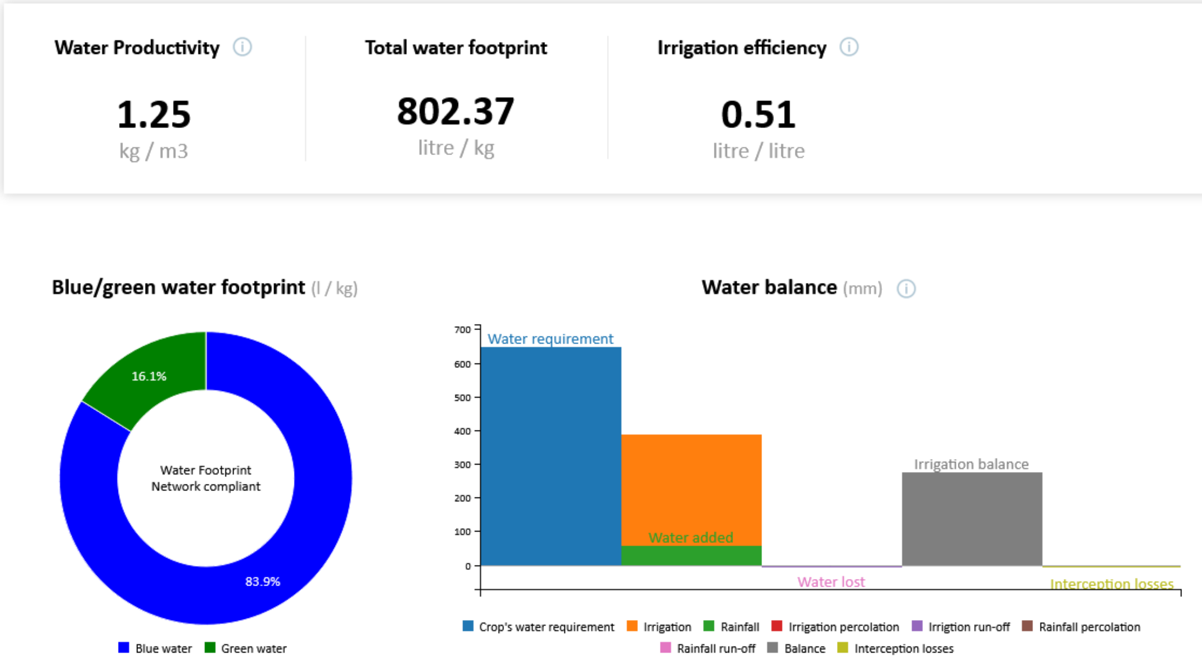


Figure 22. Water requirements for the wheat production in Karakalpak.

Kashkadarya Wheat BAU

Other Crops · Winter Wheat · Finished product: 920,730 tonnes · Yield: 6.53 tonne / ha

GHGs | Water | Compare | Performance | Costs | Data

Water parameters

Irrigation

Item	Data entered
Irrigation start date	2018-04-05
Irrigation end date	2018-06-25
Irrigation method(s)	flooding

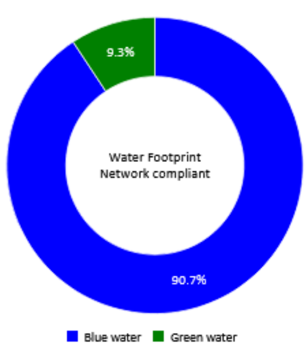
Water

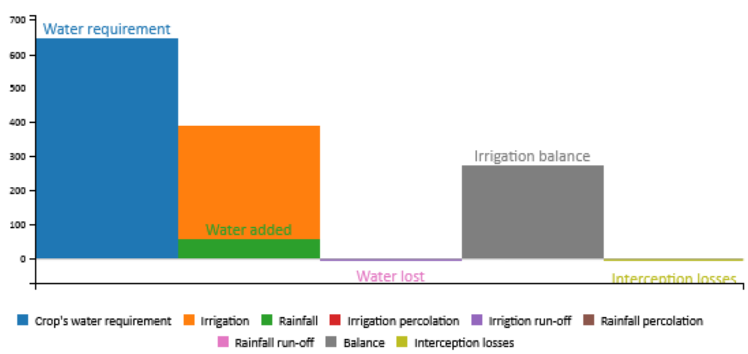
Item	Data entered
Total rainfall	57.15 mm
Water added	330.00 mm
Green water	50.93 litre / kg
Blue water	496.18 litre / kg
Total water	547.11 litre / kg

Water Productivity	Total water footprint	Irrigation efficiency
1.83 kg / m3	**547.11** litre / kg	**0.51** litre / litre

Crop | Soil | Inputs | Fuel & Energy | Irrigation | Carbon | Transport

Results | **100%** Complete





Total Irrigation

Irrigation events (as entered on the Irrigation tab)

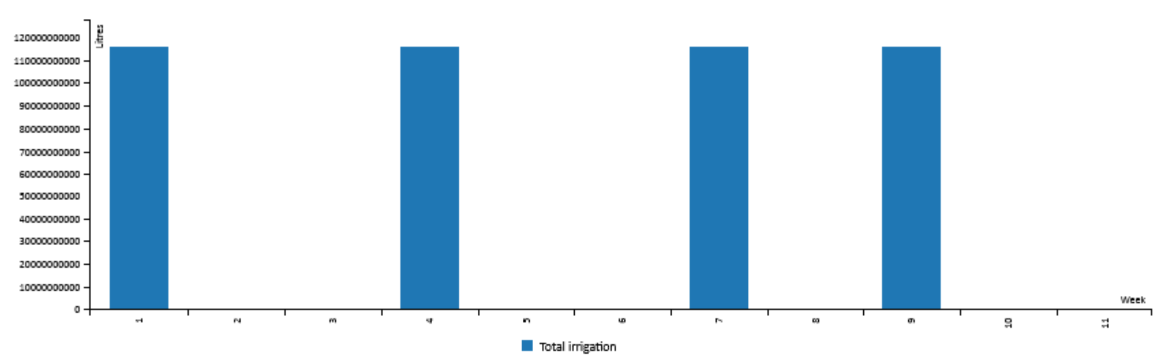
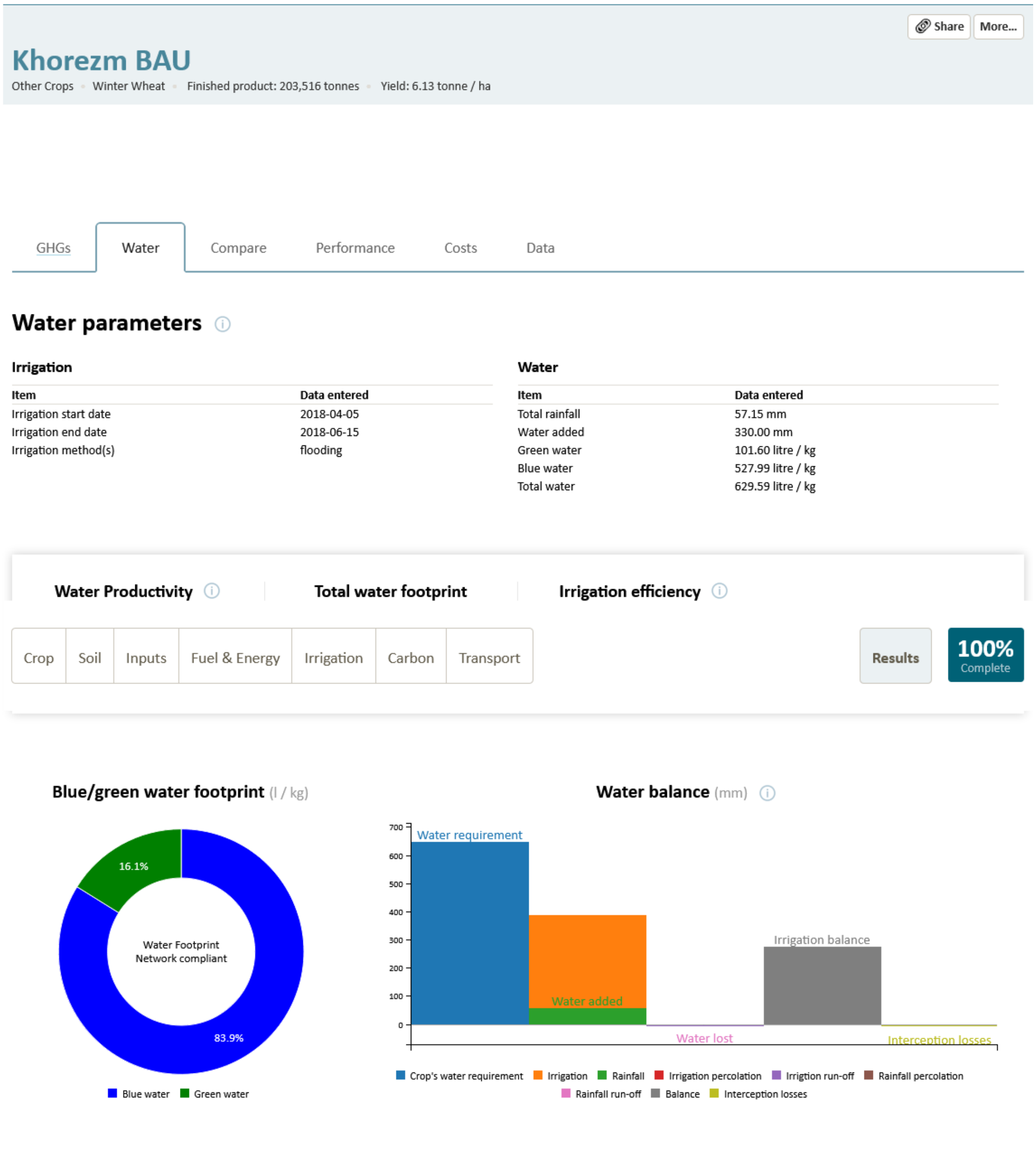


Figure 22. Water and irrigation use efficiency of irrigated wheat in Kashkadarya



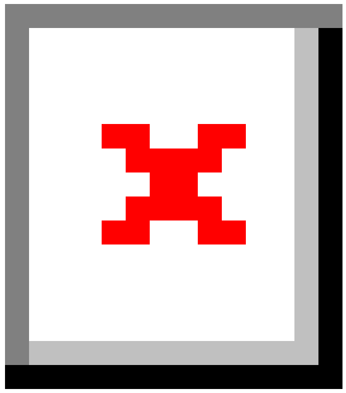


Figure 23. Water and irrigation use efficiency of irrigated wheat in Khorezm

Any savings in water losses and improving water use efficiency at the field level will contribute not only in salinity pressure reduction, but also in energy savings as majority of pumps utilize enormous amount of electricity and energy.

SALINITY BASELINES FOR PROJECT ACTIVITIES

According to historic data of soil salinity levels compiled by Aw-Hassan et al. (2016) and current state reported by MoWR (2020a), the extent of salinized irrigated areas in the entire Uzbekistan in 1990, 2000 and 2020 is presented in Table 11. Salinity seems increased in early 2000s and is now have tendency to stabilize at around 2 mln ha, slightly higher level compared to early 1990s. Country map of soil salinity available from Goskomgeodezkadastr compiled and published in 2012 is presented in Figure 24. Figure 25 presents proportion of salinity levels in each province of Uzbekistan. Several provinces stand out where the proportion of slight and moderate salinity areas dominate. These provinces (i.e. Karakalpakstan, Khorezm, Syrdarya, Jizzakh, Kashkadarya, Navoi and Bukhara) are well known for persistent soil salinity issues. The distribution of the agricultural fields in the target regions Karakalpakstan, Kashkadarya and Khorezm according to the salinity levels during 2015-2020 and in 2004 for comparison is shown in the following figures (Figures 24, 25 and 26).

Table 11. Land salinization in Uzbekistan in 1990, 2000-2001 and in 2020 (million ha) (source: Aw-Hassan et al. 2016 and MoWR 2020a)

Salinity category	1990	2000	2001	2020	in 2020 as % of 1990
Low saline	1.029	1.317	1.258	1,342	130.4
Moderately saline	0.602	0.665	0.720	0.515	85.5
Highly saline	0.206	0.416	0.467	0.087	42.2
Total	1.837	2.398	2.445	1.945	105.9

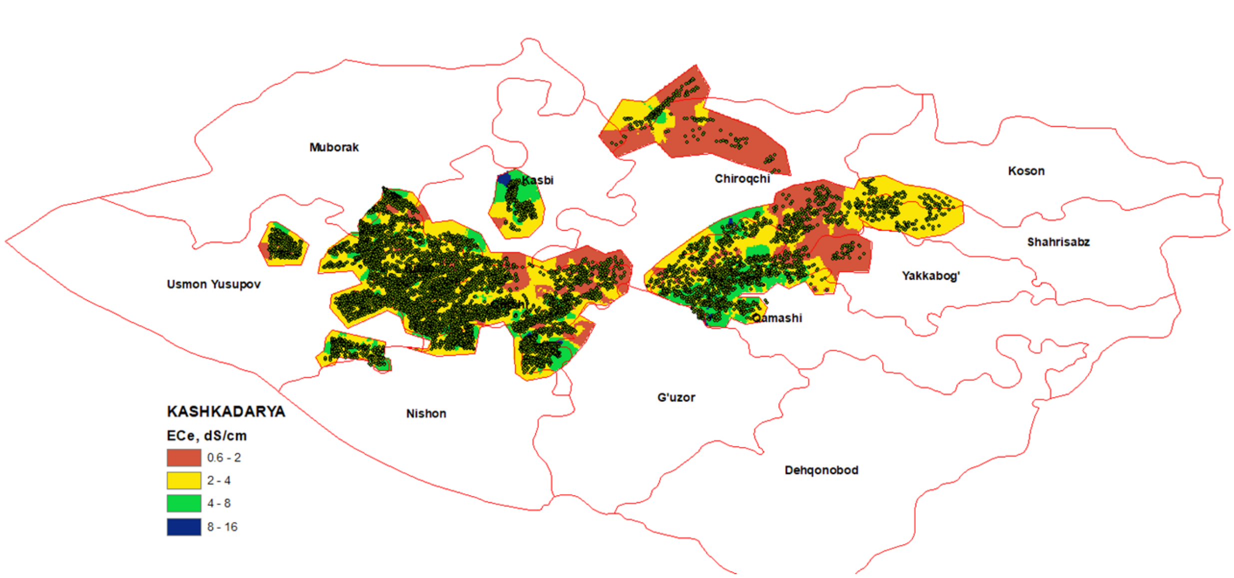


Figure 24. Soil salinity map of Kashkadarya in 2020 (source: interpolated map based on point data from OGME)

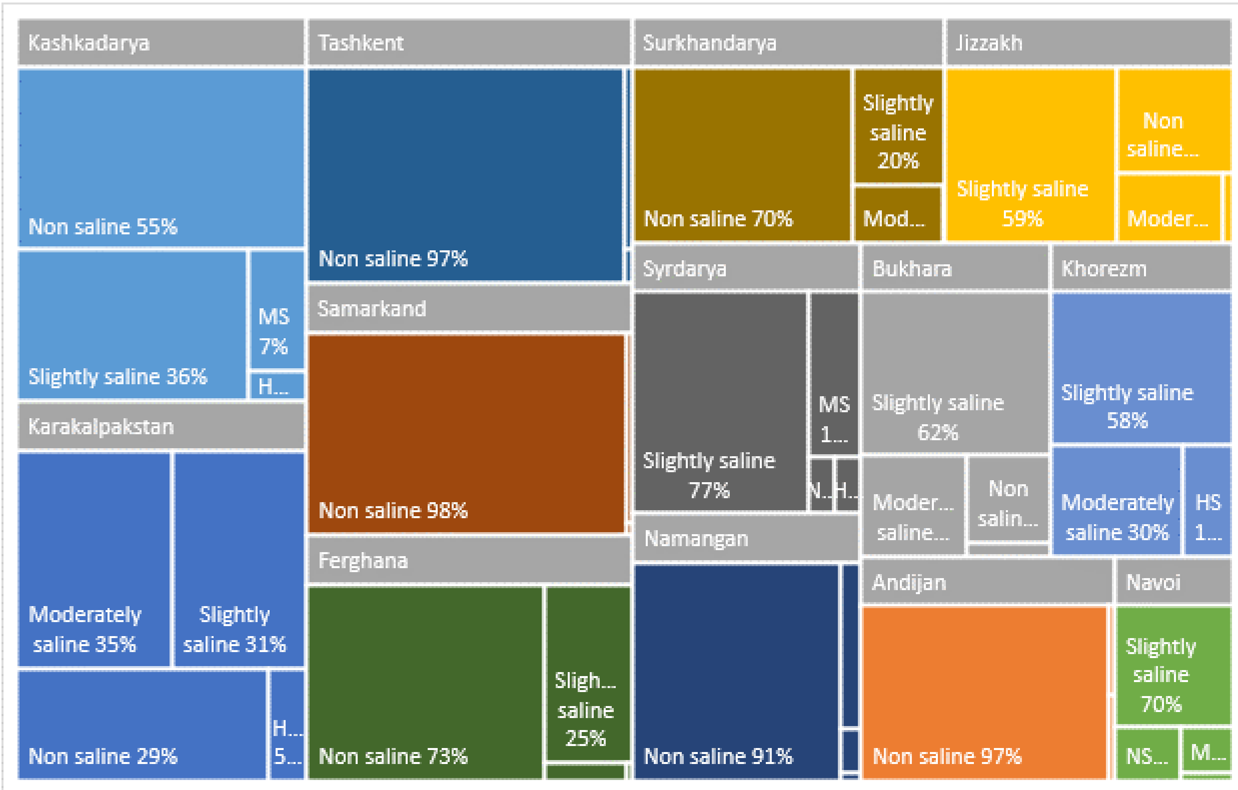


Figure 25. Proportion of areas with different soil salinity levels in regions (Source: MoWR 2020a)

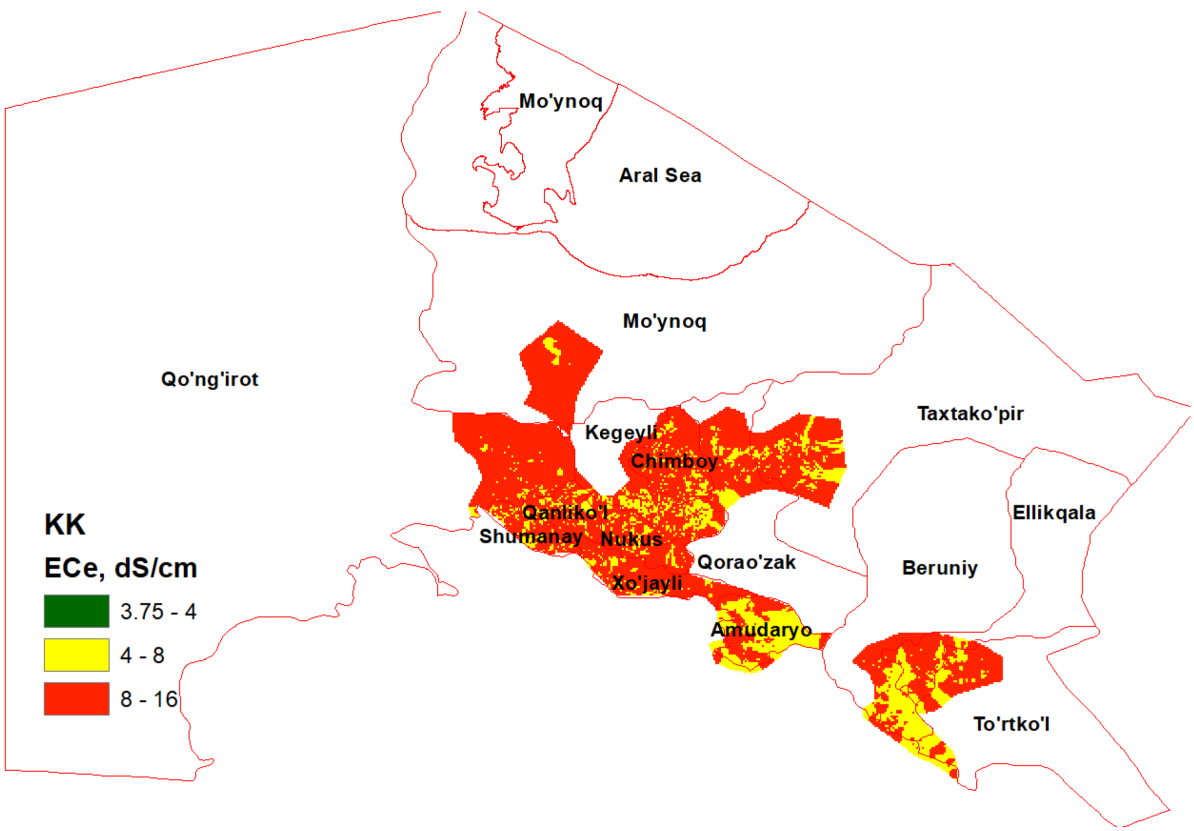


Figure **26.** Soil salinity map of Karakalpakstan in 2020 (source: interpolated map based on point data from OGME)

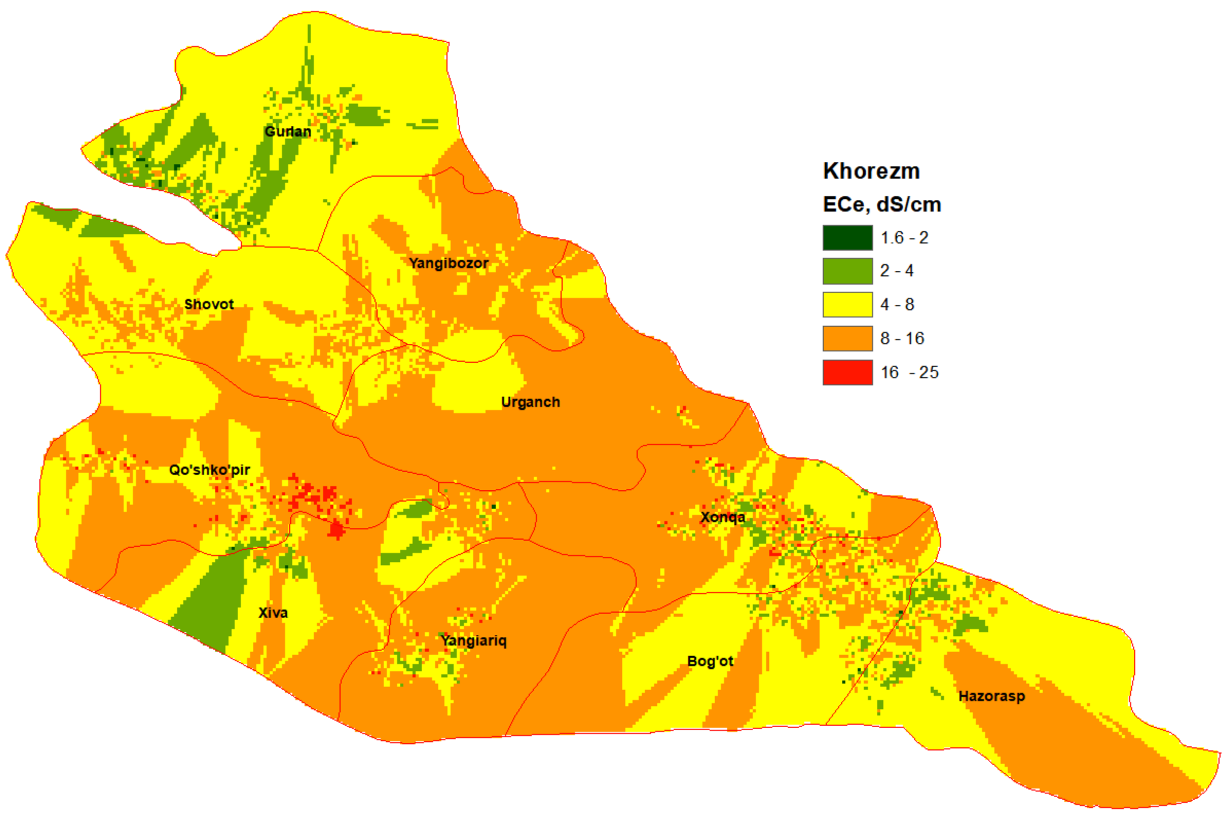


Figure 27. Soil salinity map of Uzbekistan (Goskomgeodezkadastr 2012)

Land abandonment caused by salinization and land degradation is possible to revert. In Khorezm and Karakalpakstan environment, the possibility for rehabilitation of the degraded saline areas using multipurpose trees has been successfully tested to bring these areas back to agricultural production.[1] Afforestation has a potential for production of biomass and renewable energy to be used in remote areas. Several such experiences with plantations for renewable energy production on salt-affected environments in the Amu-Darya River Basin have been established on degraded land. Lamers et al. (2008)[2] estimated that the density of 2300 established trees per ha produced the energy equivalent of 6-10 tons of oil and 12-20 tons of coal per ha in the period of five years after planting. The plantations provided wood, high quality leaf fodder and fruits.

From environmental and financial perspective, afforestation also brings other benefits. Financial attractiveness of afforestation and reforestation using the Clean Development Mechanism (CDM A/R) method was analysed in the Khorezm region of Uzbekistan, where a mixed-species tree plantation was established on heavily salinized, abandoned cropland. The dual purpose of carbon sequestration and production of fruits, leaves as fodder, and fuelwood were studied over a seven-year rotation period. Moreover, opportunity costs of land in marginal agricultural areas between this short-rotation plantation forestry and the annual cultivation of the major crops in the region, i.e., cotton, winter wheat, rice, and maize were compared.

To reflect the reality of a high variability of water supply in the region Djanibekov et al. (2012) analysed different levels of irrigation water availability, from none to 30,000 m^3/ha,. The result showed that Net Present Value (NPV) ranged between 724 and 5794 USD/ha over seven years, depending on the tree species. In particular, *Elaeagnus angustifolia L.* had the highest profits due to the annually recurring cash flows generated from fruit production. Temporary Certified Emission Reductions (tCER) ranged within 399-702 USD/ha after the assumed 7-year crediting period and would not suffice to cover initial investments and management costs of tree plantations. Internal rate of return (IRR) peaked at 65% with *E. angustifolia* under the conventional afforestation and measured 10% and 61% when considering only the tCER and the CDM A/R, respectively.

Analyses showed that total profits from tree plantations exceeded those of both cotton and winter wheat, even with the assumption that there was an optimal irrigation supply for these crops. Rice production was generally the most profitable land use option, but required water input of 26,500 m^3/ha/year, which is not consistently available for marginal croplands.

Although Djanibekov et al. (2012) conclude that with global average price of 4.76 USD, tCER is insufficient to initiate forestry based CDM projects, but this option is still better than business as usual scenario, as forestation of degraded croplands for land rehabilitation can provide non-timber products. Considering low water demand of trees, which ranges around 3-30% of the crop water demand, a conversion of degraded cropland to forested areas could save up to 15,300 m^3/ha/year at the current tCER prices. The combination of water and carbon emission values will lead to enlarging the scope for CDM A/R in the dryland areas under irrigation, thus enhancing the investments in marginal land rehabilitation and strengthening the resilience of rural populations to the repercussions of climate change (Djanibekov et al. 2012).

The following information with details of cost benefit analysis of afforestation in Khorezm region are provided based on the study published by Djanibekov et al. (2012). Benefits of afforestation depend on the output of the tested tree species. Output from *Elaeagnus angustifolia* include fruits and fuelwood starting from the 4th year after plantation establishment, whereas output from *Populus spp.* include fuelwood starting from the 4th year after plantation establishment, and construction wood after 7 years of tree growing. Benefits of afforestation have been calculated separately for the following tree products:

1. Fuelwood: The study describes both tree species rural households can harvest twigs and stems that can be used as an equivalent of fuelwood to heat the house or for cooking purposes. It is assumed that harvesting begins on the 4th year of tree growth and reaches its maximum fuelwood output when the whole tree is cut down. The price of fuelwood is taken as UZS/kg, according to current equivalent fuelwood prices at local wood markets. It is assumed that rural households could save some amount of cash spent on fuelwood by using harvested tree twigs and stems.

2. Fruits: Elaeagnus angustifolia can produce fruits. There are two scenarios that depend on whether the potential benefits from fruits could be monetized or not. Under optimistic scenario it is assumed that 50% of harvested fruits could be sold at the local markets at market prices. If this is feasible then it can yield significant benefits for rural households. Under conservative or pessimistic scenario no fruits are harvested or at least sold and there are no monetized benefits for a rural household.

The costs for establishment of tree plantations included purchasing/transport of saplings, soil processing, labour costs. The costs for establishing plantations of Elaeagnus angustifolia and Populus spp. in the first year reached 8,964,000 UZS or USD 3,508 per ha. Establishment costs incurred in the second year covered replanting 10% of the trees and reached for both species 726,000 UZS or USD 258 per ha. Total establishment costs would thus amount to 9,690,000 UZS or USD 3,766.

Tree plantations have to be maintained the whole period, i.e. irrigated, weeded (during trees lifespan), pruned and harvested (starting from the 4th year of establishment). In addition, land tax was included in the maintenance costs every year, whereas equipment and material costs were considered during the first year only. Elaeagnus angustifolia without fruit harvesting (wild, small size fruits) and Populus spp. required lower maintenance costs of 27,627,905 UZS or approx. USD 2,249. Elaeagnus angustifolia with fruit harvesting was more than twice expensive in terms of maintenance costs which amounted to 62,225,004 UZS or USD 16,201.

The largest share of all revenues for Elaeagnus angustifolia with fruit harvesting came from an annual harvest of fruits starting from 4th year after establishment (over 100.8 mln. UZS) and fuelwood (over 20.8 mln. UZS). Thus, Elaeagnus angustifolia with fruit harvesting is most promising and profit generating tree, total benefit from this tree reached 121,688,805 UZS or USD 30,599, whereas net benefit in 7 years was in the range of 49,773,800 UZS or USD 10,632. Elaeagnus angustifolia without fruit harvesting yields only fuelwood, which, if sold to local rural households, would bring total benefit of 22,405,522 UZS or USD 5,165. The accrued benefit was not enough to cover all the costs and the net benefit in this scenario turned to be negative. The farmer would lose 14,912,383 UZS or USD 6,199.

Populus spp. at the end of the plantation period provided both fuelwood (over 5.5 mln. UZS) and valuable construction wood (over 42.5 mln. UZS). Total benefit from this tree reached 48,064,753 UZS or USD 10,784. However, at the end of the period due to inflation rates and growing exchange rates, the accrued net benefit was positive in UZS, but negative if calculated in USD a loss of USD 580).

The most common subsurface drainage systems in the region consists of a combination of horizontal buried pipes and deep open drains. These systems are constructed to address waterlogging and salinity issues, however, they have negative implications that they need proper reuse or disposal of saline drainage discharge, and high maintenance costs. With open drains, a portion of field area is lost where otherwise crop could be grown. Alternative to this system, a bio-drainage forestry approach, that utilizes trees to consume and transpire water, hence, lowering groundwater table depth that leads to reduction of the waterlogging problem, could be proposed as this has been successfully tested in diverse geographic areas and landscape context. It provides more affordable option compared to cost-intensive horizontal or open drainage system.

Khamzina et al. (2006) assessed nine multipurpose tree species for their potential for afforestation and specifically for biodrainage capacity in the degraded areas of Khorezm. Selected tree species differ in their transpirative capacity, evaluation of their water use (WU) and water use efficiency (WUE) were monitored during the two consecutive years. Their findings indicated the water uptake was dominated by the physiological features of roots, higher transpiration rates were depending on the length of fine roots and lower rates based on leaf area. Salinity did not affect the relationship between salt content in trees and water uptake under conditions of slight and moderate soil salinity in the root zone.

In addition to WU characteristics, salinity tolerance, growth rate and the ability to produce fodder and fuelwood must be considered during species selection (Vlek et al. 2017). The results showed that E. angustifolia species combines high WU, fast growth and production of nutritious feed, and ranks highest at fixing nitrogen (Khamzina et al, 2006). The species *Populus spp*. and *Ulmus pumila L*. showed lower results in terms of biodrainage, but have a good potential. The biodrainage potential of the fruit species that are typical in the region (P. Armeniaca and Morus alba), is low.

Taking into account the above-mentioned aspects, ?bio-drainage? technology has the potential to improve the productivity of 56% of irrigated lands in Uzbekistan, that are subjected to wind erosion, and are imposing risks for land degradation (Lamers et al., 2008).

In addition to the use of trees, wild halophytes are also of particular importance in bio-amelioration potential. Their capacity to reduce the level of degradation, increase the productivity of marginal lands and produce highly nutritious and energy-rich fodder on saline areas have been tested in the arid zones of Uzbekistan. Halophytes are plants that are grown on, and reduce the amount of, salts without damaging soil.

Toderich et al. (2016) report phytomeliorative potential of *sorghum*, Indigofera, *African millet, artichoke* and *liquorice* in strip crops, together with other traditional crops. Various experiments and studies indicate increase of farmers' profits on demonstration farms by 2.5 times. Assessing nutritional value of the aboveground biomass of more than 60 halophyte species has shown that 20 species were rich in protein, lipids and hydrocarbon content ? fodder potential for feeding livestock. Quinoa is recommended for improving and / or creating long-term autumn-winter pastures, as this plant improves and restores the salinity of sandy loam and alkaline soils.

The following information with details of piloting halophytes in Uzbekistan conditions are provided based on the study published by Toderich et al. (2016). These crops are capable of accumulating salts in the aboveground biomass, pulling them out of soil. The period of desalinization is about 3-5 years in the moderately saline, and 6-7 years in the very high saline soils. The reports show that the phytomass of 18?20 t/ha accumulates and hence, removes approx. 8?10 t/ha of salts per year from the soil root zone. By shading the soil, halophytes prevent evaporation and the associated upward movement of salts into the upper soil layers. The green mulch effect of halophytes is 2.5 t/ha of salts. Potentially, the process of salt removal in the halophyte occupied plantations, reaches 10 - 12.5 t/year.

The technology of introduction of halophytes into the crop rotation in conditions of the Kyzyl Kum desert was tested on 25,000 ha and allowed receiving 3-5 tons of straw and 1.5-2.0 t/ha of winter wheat, 48-78 t/ha of silage biomass of corn, sorghum and millet, 14.4 -15.0 t/ha of alfalfa hay, 23 t/ha of aboveground phytomass of liquorice. Net income in the Kyzyl Kum desert with utilization of on mineralized artesian water is 1.5 million soums/ha per year in 2015-2016.

Local species and improved genetic lines of sorghum appeared to be the most promising multipurpose fodder, grain and energy crops, which develop 70.3-97.8 t/ha of green fodder biomass during a growing season with a yield of juice of 71.1-78.0% and sugar content of 5.7-13%. The yield of sugar reaches 1.7-5.7 t/ha.

Sorghum (a plant with C4 type of photosynthesis), is a highly salt-tolerant crop, successfully grows on saline soils with scarce marginal resources, both as a main crop and a secondary crop after winter wheat, barley or in rice crop rotations. Sugary succulent-stemmed sorghum can be a source of renewable energy from plant biomass and can be grown on saline areas, whereas such traditional crops as corn, can grow only on fertile soils and under freshwater irrigation. Chenopodium quinoa is another crop, which has valuable quality characteristics as a food and highly nutritious animal feed.

In addition to the wild halophyte species, growth and development of salt-tolerant crops and forage species in saline environment such as four varieties of oil crops, eight varieties of fodder crops, ten varieties of safflower, salt-tolerant alfalfa, maize (fast-ripening), sunflower (fast-ripening) and mung bean under saline conditions were tested in Uzbekistan.

Among oil-bearing crops, two varieties of safflower (*Cartharnus tinctorius, obtained from ICBA germplasm*) showed high seed germination, growth rate, yield capacity (both fresh and dry biomass) and the weight of seeds (Toderich et al. 2016). Newly introduced cultivars were also superior for early flowering and seed maturity. Small tall sorghum varieties were characterized by higher productivities (both fresh and dry biomass) at the stage of full maturity and had a short-term and uniform flowering. Relative growth rate, biomass and grain production of highly productive pearl millet lines of ICBA germplasm introduced as dual-purpose crop gave yields 2.0-2.5 times higher than that of local variety.

Under this baseline, experts have proposed the following activities and techniques for the project to address salinity issues:

- ? Systematic soil salinity mapping and monitoring
- ? Laser land levelling
- ? Agroforestry
- ? Water harvesting
- ? Conservation agriculture
- ? Water saving technologies (Drip irrigation, sprinkler irrigation, mulching)
- ? ET based irrigation scheduling and salt management
- ? Piloting/outscaling salinity and cold tolerant winter wheat varieties
- ? Piloting/outscaling salinity and heat tolerant spring wheat varieties
- ? Piloting/outscaling salinity tolerant alternative crops (barley, food legumes, oilseed)
- ? Piloting/outscaling salinity tolerant fodder crops (perennial wheat, barley, triticale)

LAND SUITABILITY ANALYSIS FOR PROJECT OBLASTS

The land suitability methodology was developed and applied to the Khorezm Oblast during project development to pilot the approach.[3] Weighting was provided for key indicators through stakeholder consultations and expert opinions. A map was then generated using ArcGIS integrated with R environment by combining (n) criteria maps and overlaying weights of individual criteria, which was reclassified into ?Good, moderate, low, not suitable?. In this assessment of land suitability or potential of land, productivity was estimated using the following site-specific parameters and criteria (Table 12) including assimilation of RS approaches, an average of annual maximum crop biomass for the last five years, 2016-2020. The results are presented below as Figure 28.

Table 12. Influencing factors of site-specific parameters for land productivity

Name of parameter/indicator	Meaning	Units	Weight
Canal density	Indicates the status of canal spacing in between canal networks	Meter per kV.sq	10
Groundwater level	Indicates contribution of soil/crop ET	Meter	15
Groundwater salinity	Indicates ameliorative condition of soil	DesiSiemens per meter (dS/m)	5
Soil characteristics	Soil physical clay content	Percentage	5
Drainage network density	Indicates potentials of groundwater management	Meter per kV.sq	10
Quality of land (soil bonitation)	Indicates potential land productivity	Points	25
Vegetation indexes (NDVI)	Indicates vegetation growing conditions (remote sensing)	Dimensionless (-1:1)	20

[1] Khamzina et al. 2006, Djanibekov et al., 2012

[2] Lamers et al. (2008)

[3] PPG Report, Sultanov M 2021, Methodological approaches and materials, GCP/UZB/011/GFF

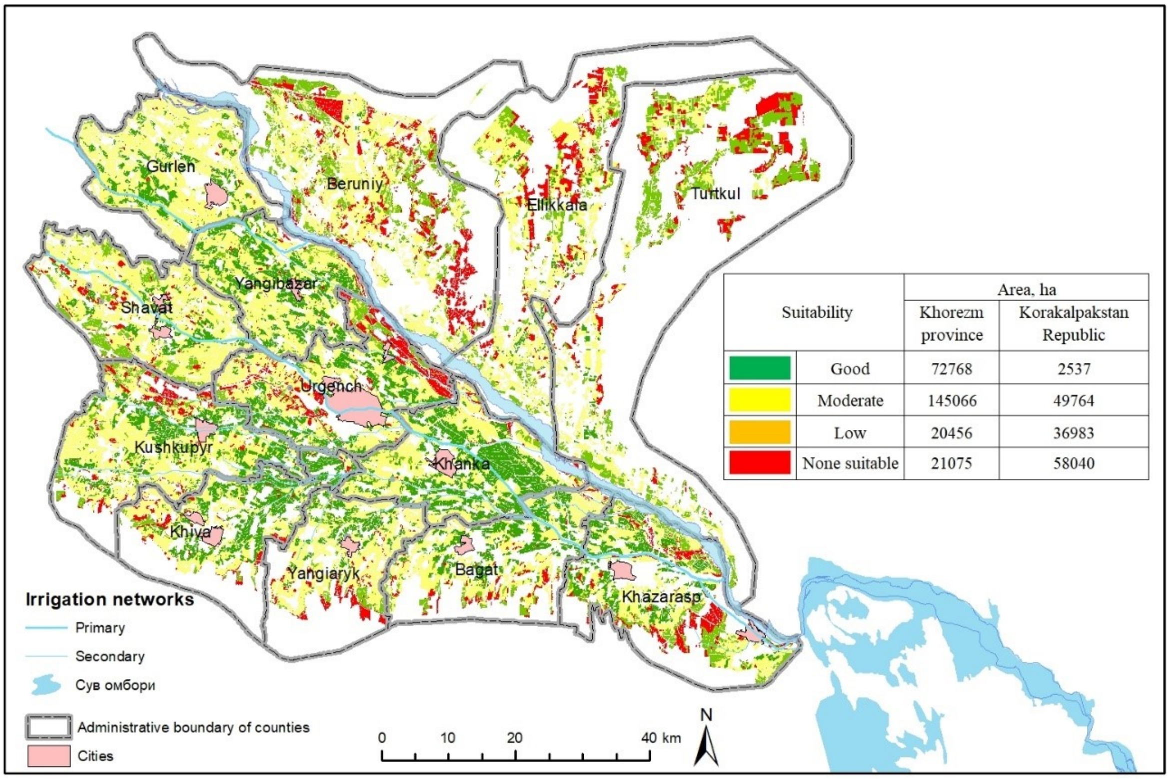


Figure 28. Land suitability in terms of potential of land productivity

Similar methods are to be applied to the remaining project Oblast and specifically to project districts during project implementation.

MITIGATION OPPORTUNITIES AND BASELINES

In the case of Karakalpakstan, for instance, the contribution of CA to the GHG emission intensity was measured at 296.6 kgCO2eq/tonne of what, down from the 459 kgCO2eq/tonne in the BAU scenario, a GHG emission intensity reduction of 35%. Such reduction is attributable to the incorporation of crop residues (straw) into soils, which generate a relevant stock of carbon 50 thousand tonnes of CO2eq (about 15,000 t of C) per year for the province of Karakalpakstan. The management of the residues however leads to the emission of some 9,000 t of CO2eq and while the impact of reduced tillage on direct diesel emissions is about 1,000 tons of CO2eq for the entire surface of wheat considered in this study, the net change in GHG emission intensity between the BAU and the improved CA scenario is 42,000 tons of CO2eq in Karakalpakstan (Figure 29).

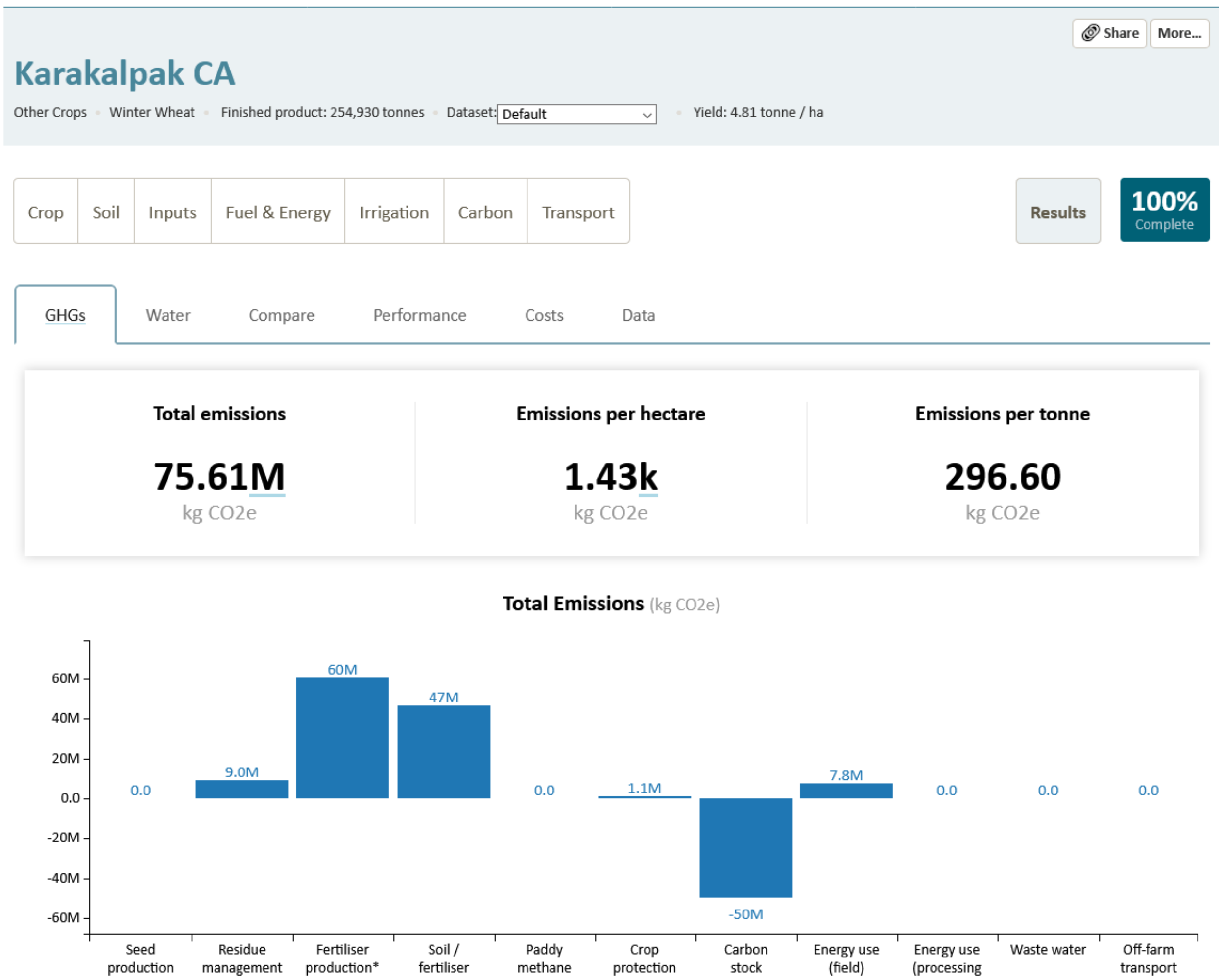


Figure 29. Overview of the GHG results of the baseline assessment of wheat value chains in Karakalpakstan (kgCO2eq per ha and per tonne of wheat grain) in the improved CA scenario.

Efficiency gains in terms of GHG emissions and therefore mitigation potential of adopting CA practices in Karakalpakstan clearly must address N use to be effective (Figure 30). In terms of costs, since the literature reports comparable medium term yields and higher long term yields under CA[1], farmers might need support in terms of micro-financing options in order to afford modern direct seeding drills. To this cost however, reduced fuels and tractor maintenance costs could contribute to shortening the breakeven point between investment and capitalization of results. Another aspect that was not possible to factor in this assessment (but that should be monitored during the FOLUR project) is the lack of revenues from the sale of straw used as soil enhancer in this scenario. Furthermore, the incorporation of straw into the soils is expected to have impacts on soil productivity and fertilizer-use efficiency thus potentially reducing the need for fertilizer purchases. However, no anecdotal evidence of a system like the aforementioned one has been found in Uzbekistan and no credible estimate could be made ex-ante on the potential reduced use of fertilizer or increased yield attainable.

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[1] FAO, 2007. NO-TILLAGE SEEDING IN CONSERVATION AGRICULTURE. Available at http://www.fao.org/3/al298e/al298e00.htm

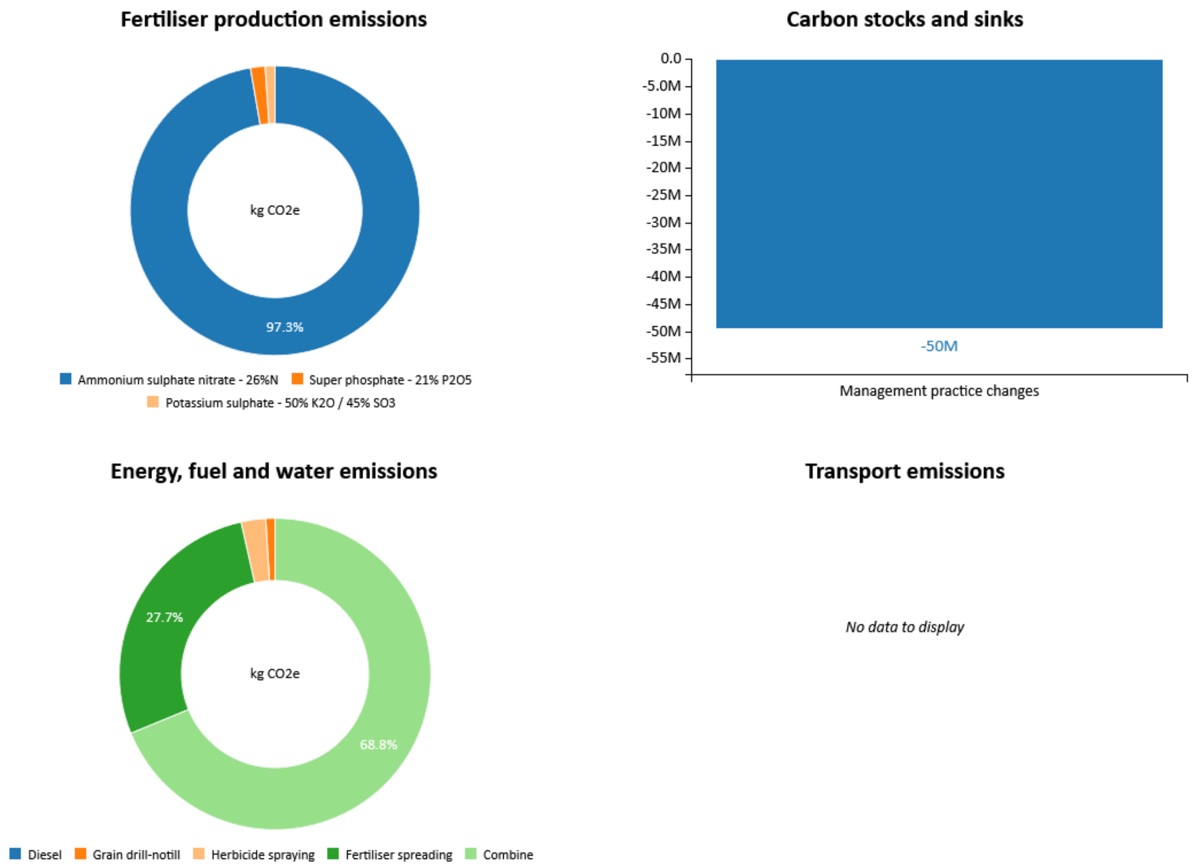

Figure 30. Disaggregated GHG emission intensity due to fertilizer production and energy use in enhanced CA scenario wheat value chains in Karakalpakstan. In the CA management scenario, energy use is attributable predominantly to harvesting operations (combine) and the fertilizer spreading. Tillage operations are responsible for less than 5% of total GHG from energy use (10% improvement when considered against BAU). The accumulation of about 50,000 tons (50M kg) of carbon dioxide equivalent into the soils is due to incorporation of residues, otherwise sold in the BAU scenario.

As in the case of Karakalpakstan, no-tillage return useful impacts in terms of GHG emission profile, given constant any other variable, particularly fertilizer use.

The contribution of CA to the GHG emission intensity in the case of Kashkadarya, a province where 141,000 ha of irrigated farms have been considered for this analysis, was measured at 300.6 kgCO2eq/tonne of wheat, down from the 417.66 kgCO2eq/tonne in the BAU scenario, a GHG emission intensity reduction of 28%. Such reduction is principally attributable to the incorporation of crop residues (straw) into soils, which generate a relevant stock of carbon 130 thousand tonnes of CO2eq (about 40,000 t of C) per year for the province of Kashkadarya and to a lesser extent to reduced diesel use. The management of the residues however leads to the emission of some 27,000 t of CO2eq and while the impact of reduced tillage on direct diesel emissions is about 2,000 tons of CO2eq for the entire harvested area considered in this study, the net change in GHG emission intensity between the BAU and the improved CA scenario is 107,780 tons of (Figure 31).

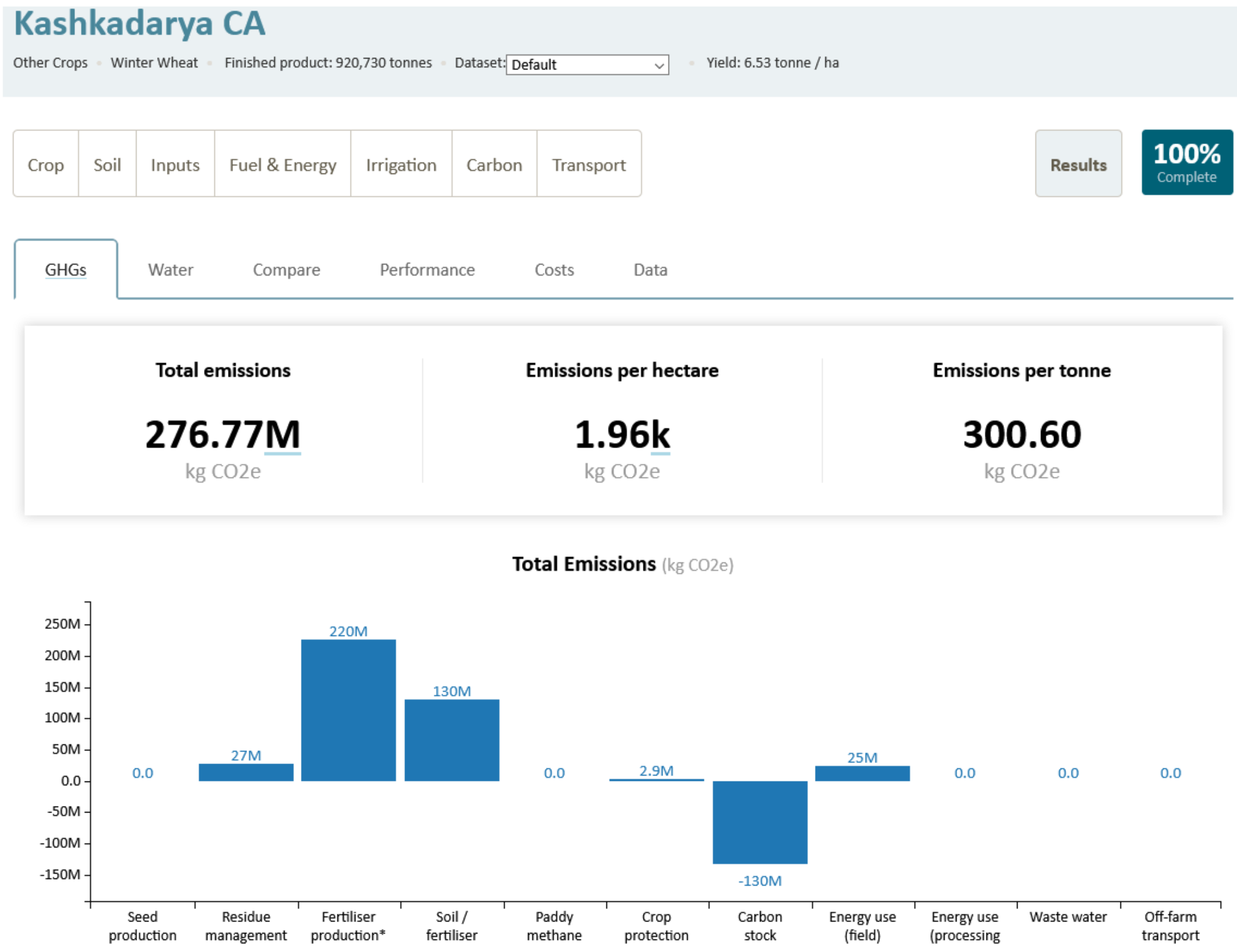

Figure 31. Overview of the GHG results of the baseline assessment of wheat value chains in Kashkadarya (kgCO2eq per ha and per tonne of wheat grain) in the improved CA scenario.

The statements related to the potential economic tradeoffs of switching to CA made for the province of Karakalpakstan are valid also for the case of Kashkadarya (Figure 32).

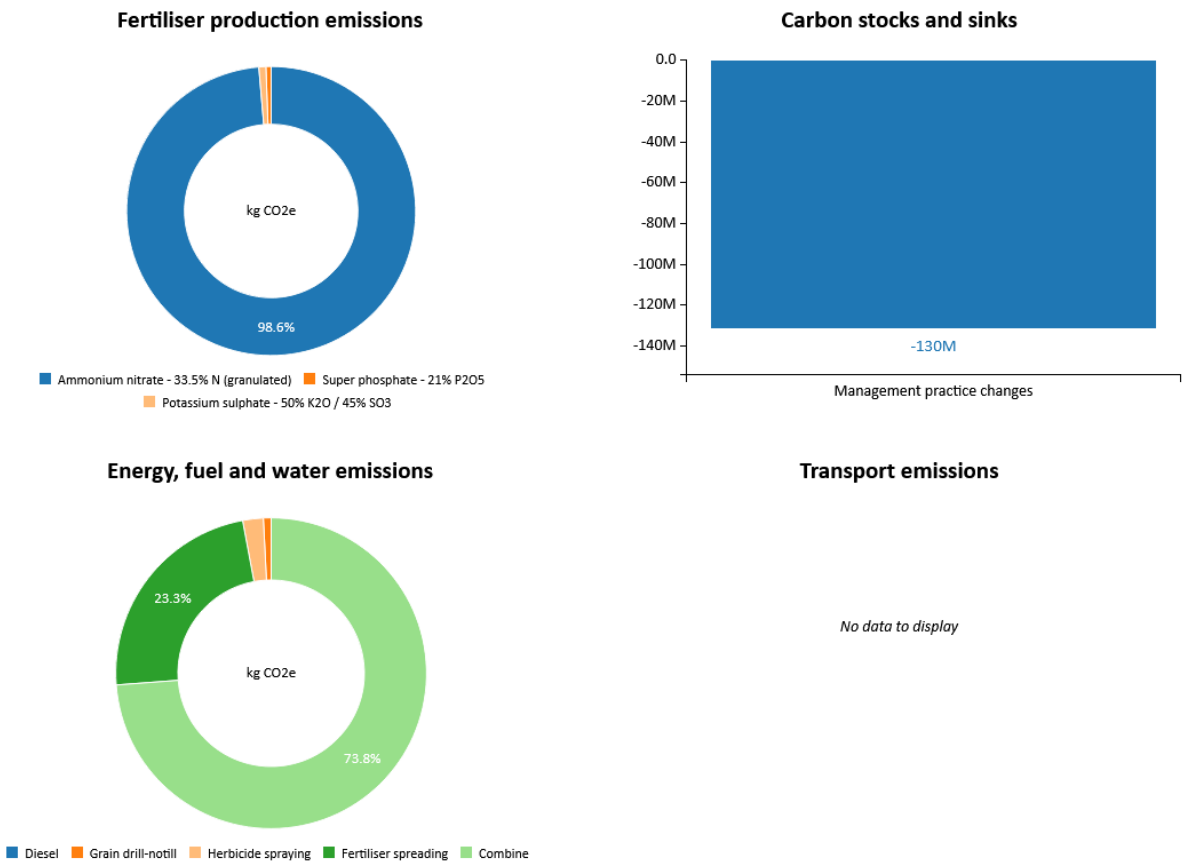

Figure 32. Disaggregated GHG emission intensity due to fertilizer production and energy use in enhanced CA scenario wheat value chains in Kashkadarya. In the CA management scenario, energy use is attributable predominantly to harvesting operations (combine) and the fertilizer spreading. Tillage operations are responsible for less than 5% of total GHG from energy use (10% improvement when considered against BAU). The accumulation of about 130,000 tons (50M kg) of carbon dioxide equivalent into the soils is due to incorporation of residues, otherwise sold in the BAU scenario**.**

As in the case of Karakalpakstan and Kashkadarya, no-tillage return useful impacts in terms of GHG emission profile, given constant any other variable, particularly fertilizer use.

The contribution of CA to the GHG emission intensity in the case of Khorezm, a province where 33,200 ha of irrigated farms have been considered for this analysis, was measured at 315.28 kgCO2eq/tonne of wheat, down from the 354.88 kgCO2eq/tonne in the BAU scenario, a GHG emission intensity reduction of 11%. Such reduction is principally attributable to the incorporation of crop residues (straw) into soils, which generate a relevant stock of carbon 9,300 tonnes of CO2eq (about 3,000 t of C) per year and to a lesser extent to reduced diesel use. The management of the residues in this case leads to a negligible emission while the impact of reduced tillage on direct diesel emissions is about 600 tons of CO2eq for the entire harvested area considered in this study, the net change in GHG emission intensity between the BAU and the improved CA scenario is 8,000 tons of (Figure 33).

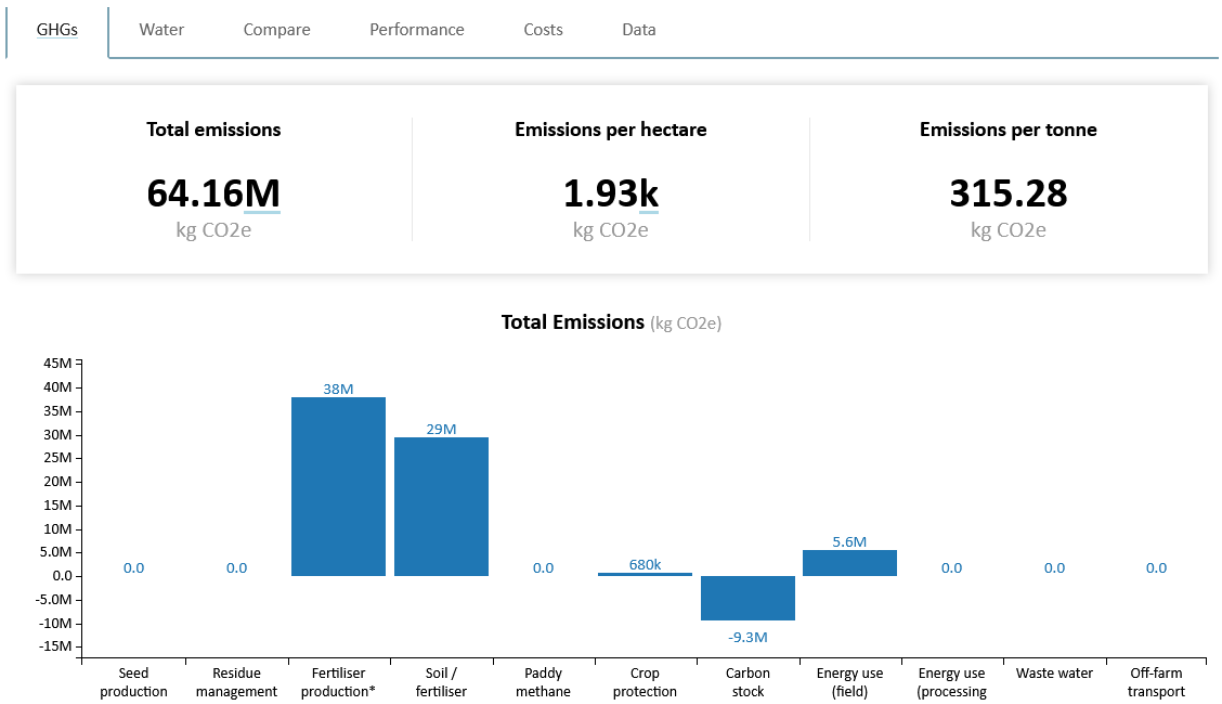

Figure 33. Overview of the GHG results of the baseline assessment of wheat value chains in Khorezm (kgCO2eq per ha and per tonne of wheat grain) in the improved CA scenario.

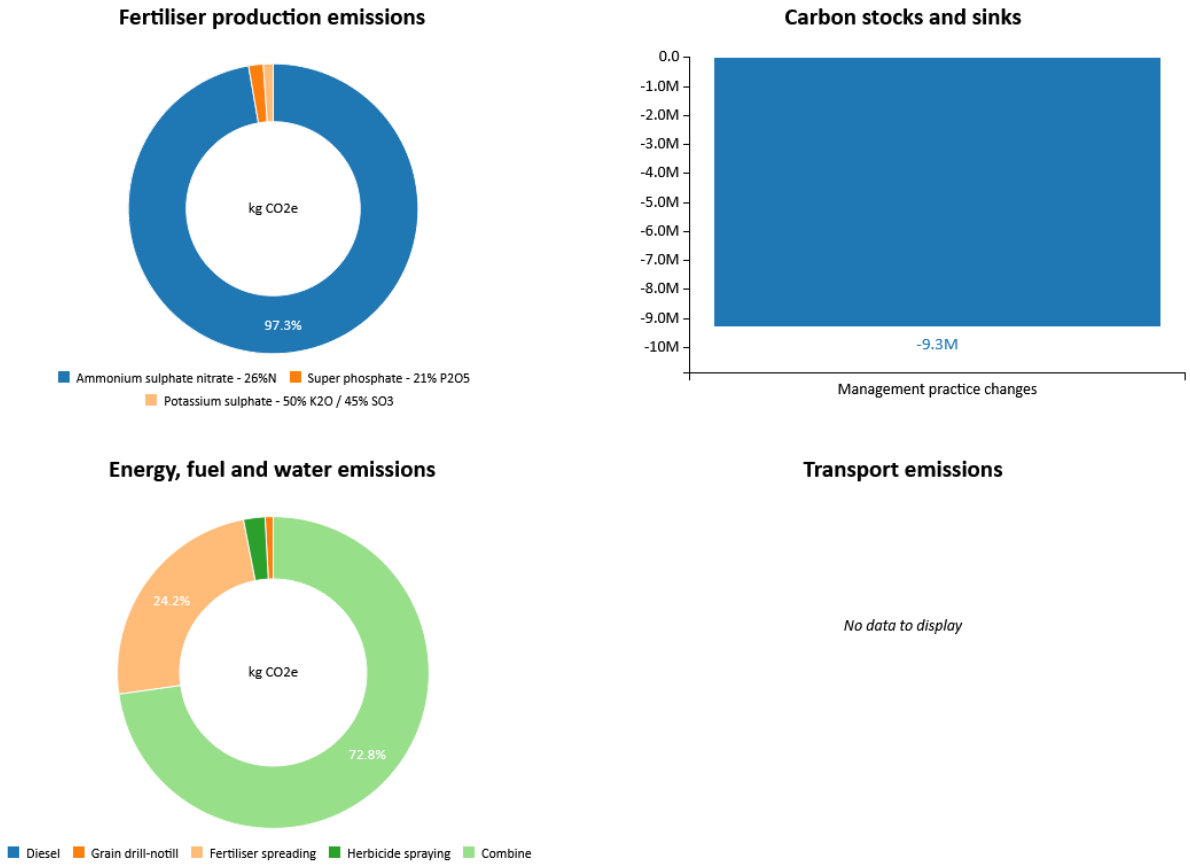

Figure 34. Disaggregated GHG emission intensity due to fertilizer production and energy use in enhanced CA scenario wheat value chains in Khorezm. In the CA management scenario, energy use is attributable predominantly to harvesting operations (combine) and the fertilizer spreading. Tillage operations are responsible for less than 5% of total GHG from energy use (10% improvement when considered against BAU). The accumulation of about 9,300 tons (9.3M kg) of carbon dioxide equivalent into the soils is due to incorporation of residues, otherwise sold in the BAU scenario.

Summarizing the assessment of GHG profile changes attributable to CA applied to irrigated farms managed by farmers (excluding Dehkan farms) it is interesting to notice how Karakalpakstan has the largest potential for emission reduction per unit of product or surface, whereas in Khorezm the magnitude of such changes is lower. Table 13 reports the summary

Table 13. Baseline GHG emission profile of wheat sector in the three reference regions of Uzbekistan. Values from various literature, elaborated with CFT Carbon Calculation Tool.

Province	Study Area (ha)	GHG emission intensity (tCO2eq/ha)	tons of CO2eq/year	Mitigation potential from BAU (in tCO2eq/year)
Karakalpakstan	53,000	1.43	**75,790**	**-41,340**
Kashkadarya	141,000	1.96	**276,360**	**-108,570**
Khorezm	33,200	1.93	**64,076**	**-8,660**
Total	227,200	1.83 (average)	**416,226**	**-158,210**

Further GHG emission reductions can be achieved thanks to additional innovations to be added to those from CA practices. Predominantly, the use of pest-resistant varieties could reduce the need for pesticides, though not a remarkable impact in terms of GHG emissions is expected as a result, but rather biodiversity and water quality favorable impacts would be realized instead.

1.4.2. Socio-economic profile of target beneficiaries

Sustainable Forest and Rangelands Management in the Dryland Ecosystems of Uzbekistan? project, GCP/UZB/003/GFF (GEF ID 10367)?.

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[1] The project will work in the districts of Qamashi and Shakhrisabz in Kashkadarya, Yangibazar and Urganch in Khorezm and Beruniy and Qorao?zak districts in Karakalpakstan.

[2] The project will work in the districts of Qamashi and Shakhrisabz in Kashkadarya, Yangibazar and Urganch in Khorezm and Beruniy and Qorao?zak districts in Karakalpakstan.

SMALLHOLDERS

Smallholders in project areas include both Dehkan farmers as well as farmers working on household plots (*tomorkas*). About 14 - 15 people participated in each FGD in each district, with similar numbers for men and women. Most participants were Dehkan farmers (88%; 79% women and 96% men). The others are assumed to be household plot farmers as per the brief. Furthermore, 37 percent of respondents were aged 18 ? 35 years.

Overall findings include the following:

? Confirmed interest in wheat, alfalfa and dairy value chains and, with some variations, from both women and men across project districts

? Confirmed scope to support enhanced value addition towards better quality/greater quantities, thereby avoiding food loss and waste and contributing to GHG mitigation/ stress on land and water resources

? ?Bright spots? or good practices in SLM exist, practised by both women and men, yet there is clear scope to enhance and upscale

? Key barriers to more sustainable food production credit, lack of land tenure insecurity, lack of access to affordable credit and lack of technical support.

Economic status

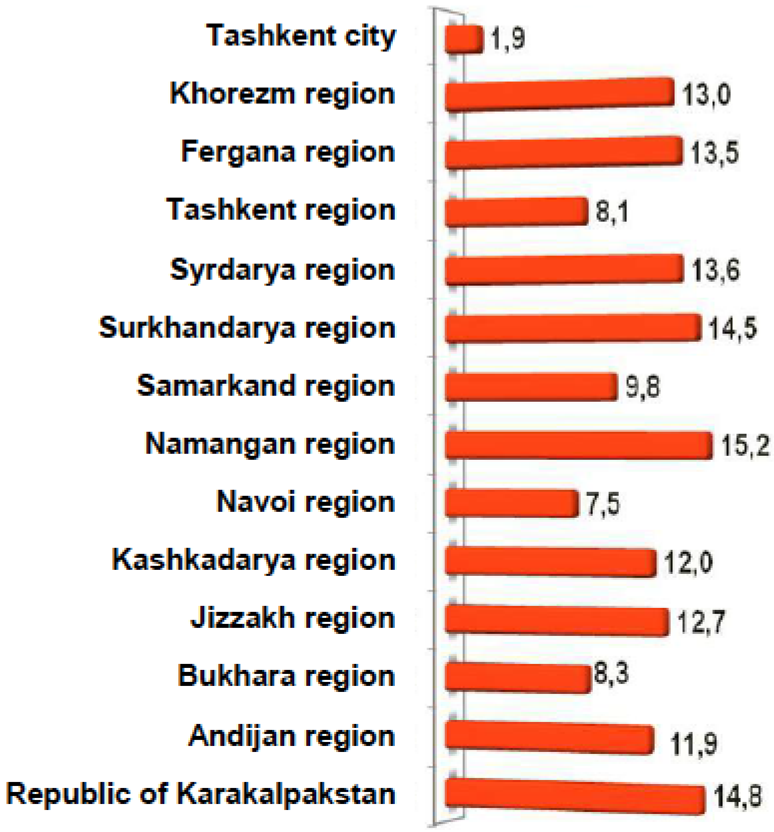

Figure 35. Poverty rates by oblast, 2019[1]

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[1] Source: Statistical Indicators of Achievement of National SDGs in the Republic of Uzbekistan.

According to the State Statistics Committee, the average total per capita income for the 3 months of January to March 2020 translates into a monthly average income of under a million soum per month.[1] This is consistent with the results of the socio-economic baseline report for the ?Sustainable Forest and Rangelands Management in the Dryland Ecosystems of Uzbekistan? project, in which **small-scale farmers are characterized by low incomes**, with 40% of respondents reporting a monthly income for the entire household of less than 1 million soum (approximately 95 US dollars). If this is divided by average household members, it translates into less than the poverty line of $3.20 a day per person applied to Lower Middle Income Countries. Indeed, the project oblasts have relatively higher poverty rates, with Karakalpakstan having one of the highest in Uzbekistan. Small scale farmers also suffer from high unemployment (around 10%-11% in project oblasts[2]); the socio-economic baseline report for the ?Sustainable Forest and Rangelands Management in the Dryland Ecosystems of Uzbekistan? project also found that 15 percent of respondents were unemployed, suggesting that the unemployment rate is particularly high in rural areas among target beneficiaries. The lack of opportunities is leading to out-migration, with each oblast losing between 300 and 1,700 people in 2020 ? Kashkadarya had the highest out-migration rate in the country. This is placing significant burdens on those left behind, often women.

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[1] Source : Income Of The Population report. State Statistics Committee. 2020.

[2] State Statistics Committee. 2021. The number of economically active population, employed and unemployed by the regions of Republic of Uzbekistan. https://stat.uz./en/official-statistics/labor-market

The FGDs highlighted that smallholders face high operating costs, and their biggest expenses are:

•**Miscellaneous inputs** (including wages, storage, and fertilizers): 30% of total expenses, similar across all districts and men and women
? **Animal Feed**: 24%, evenly distributed among men and women ? men from Qorao?zak (Karakalpakstan) reported growing a large proportion of their feed, and and therefore spend much less (10% of their expenses)

? **Machinery,** 15%, fewer women reporting this ? it is likely they have less access than men

•**Veterinary Supplies**: on average 12% of total expenses, similar across all districts and men and women
? **Transport of goods**: on average 10% of total expenses, similar across all districts and men and women[1].

•**Energy**: on average 9% of total expenses. Similar across all districts and men and women.

Exacerbating the economic challenges faced by smallholders, they also have difficulty in accessing finance; 69% said they would change their production system if they could access affordable credit. As highlighted above, household plot owners and Dehkans are not eligible for bank loans, only modest microcredit. Membership of agriculture-related groups or associations is characterized by gender differences; 90 percent of men belong to the Farmer?s Council but no women. This is likely linked to the fact that land is rarely in the woman?s or joint name, and the man is the official farmer. This situation means that women cannot contribute to more sustainable food production; they do not receive the training/ social capital to improve such practices, which can result in unsustainable practices in the event of male out-migration.

Agricultural value chains The all the chosen participants worked on wheat and / or dairy value chains; these value chains were pre-selected based on a number of factors, including viable options for women. Presently, agricultural production is used mainly for home consumption, and the surplus is sold, mainly to the government, to processors or at markets. The FGDs confirmed significant interest in the proposed value chains. 68% of respondents are very interested in support to engage in the **wheat** value chain. Interestingly, a good proportion of women from various districts were either very interested and quite interested, despite perceptions that their participation in this value chain is not significant, for example, women mentioned interest in establishing bakeries. Slightly more (73%) participants are very interested in income generation opportunities along the **alfalfa** value chain.

There was even greater interest in the **dairy** value chain, with 85% of respondents very interested. Interestingly although this value chain is associated with women, this interest was evenly distributed across both men and women in all districts. Participants also expressed concerns due to the lack of financing opportunities for adding value to dairy production and the need for milk collection centres.

As also found in a recent PPG report prepared for GEF supported project, many smallholders in this project area take no action to process, add value or maintain quality in their agricultural production ? around 40%, with variations between districts and a greater proportion of women taking no action in Beruniy, Karakalpakstan (80%) and Urganch, Khorezm (53%). Value adding actions include cleaning (84%), sorting (74%), packaging (70%) and refrigerating (38%). Quick cooling, which is key to the dairy value chain, comprised around 24% of responses. Most smallholders reported not receiving any incentives from commercial farms or other actors ? however, the incentives that are present could be explored. Most smallholders have had no training/ experience in business development. reported the need for more loans and financing opportunities in the three regions.

SLM Almost all (96%) participants recognized that their production is very dependent on healthy nature and functioning ecosystems. Smallholders were asked about the actions they take to improve land quality, and the answers show some evidence of ?bright spots? that could be scaled up. The most popular action is manuring and composting practices (85%), followed by crop rotation (73%), integrated livestock and cropping systems (70%) and planting nitrogen-fixing plants (53%). On the other hand, many practices were not named by any farmers, such as agroforestry, zero/ minimum tillage, mulching, gully control/rehabilitation, building earth or soil bunds, and terracing or boundary planting. Over 80% of men 83% of men said they used synthetic and other types of fertilizers (e.g. mixed, nitrogen-based, potassium-based, phosphorus-based) but no women did. Smallholders tackle salinity through leaching and saline tolerant crops ? although some reported that they cannot use the saline part of their lands. The main barriers to smallholders investing in improvements to the quality of their land and soils were: insecure land tenure (85%), lack of money or affordable credit (80%), and lack of technical support (70%) ? very similar findings to those of the socio-economic baseline for the GEF supported LDN project recently approved. These findings also validate the proposed strategies of the project.

COMMERCIAL FARMERS

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[1] Another study finds that a greater share of women-led businesses name labour and transport as a key production cost driver compared to men-led businesses. Source: A2F Consulting. 2020. Gender in Agribusiness Supply Chains in Uzbekistan and Turkey. A Study commissioned by the European Development Bank for Development and Reconstruction, financed by the Taiwan Business ?EBRD Technical Cooperation Fund.

Value chain development Wheat and perennials are crops grown in the greatest quantities, with **wheat by far the most profitable for most large farms**. Along with wheat, dairy cows are the most popular and most profitable options. Interestingly, a number of farms produce both wheat and livestock (in some case together with perennials), which together constitute the most profitable farming activities. These good practices of integrated systems in commercial farms could be scaled up; given their much larger farm size compared to smallholders, they are important actors in achieving ILM on scale. In general, smaller commercial farms appear to be more diversified.

The biggest costs incurred by key respondents are animal feed (37%), labour, unforeseen expenses, fertilizers and fuel. The main value addition carried out by dairy farmers is quick cooling and transportation, and for wheat farmers, sorting, cleaning and good transportation are the most popular actions. There is minimal value addition for alfalfa. Wheat farmers sell mainly to Uzdonmahsulot (except farms in Beruniy and Kamashi), whereas dairy farms sell predominantly to the private sector and at markets.

Almost all farms confirmed that they are either already offering/ would be interested in offering incentives to small farms as suppliers, mainly for improved quality of both dairy products and wheat. Encouragingly, two farms would be willing to offer incentives to small farmers to increase soil fertility and higher prices for environmentally friendly wheat products, as well as a greater gluten content. All but one dairy farm are interested in and would contribute the cost of solar photovoltaic energy systems for milk chilling to address power irregularities. Wheat farms, with the exception of farms in Khorezm, were not interested, indicating energy issues that should be taken into account. Most of the surveyed commercial farms also receive incentives from wheat clusters, the private sector, and the government in both the wheat and dairy value chains, with the exception is the dairy value chain in Karakalpakstan. These incentives could be reviewed in order to identify any that are not in line with sustainable food production good practice.

Both wheat and dairy farms in Kashkadarya are also employers of 30 ? 80 employees, especially part time, including women. Farms in Karakalpakstan are the smallest employers.

All wheat and dairy farms confirm that they are members of the Farmers? Council and declare that it protects their interests and develop their farms. The main benefits they receive include access to storage/ processing equipment, training/ know-how, and marketing support. The Farmer?s Council, television and internet are the main sources of information for decision making.

SLM Commercial farms have mixed perceptions about the extent to which their land is degraded. Salinity noted in Karakalpakstan and Khorezm, with leaching the main coping mechanism, along with growing saline-tolerant crops. Out of the 13 farms, 4 did not feel their land was degraded, 6 felt it was somewhat degraded and two that it was very degraded. Wheat and dairy farms produce plant residues and manure respectively, which are used as fuel and animal feed (wheat) and fertilizer (manure). Some also practise integrated systems (wheat/ dairy and perennials) for both profit and land management. All farms take some measures to maintain the quality of soils, with all carrying out manuring/composting and almost all practising crop rotation. Windbreaks and integrated cropping/ livestock systems were other popular strategies.

On the other hand, all used synthetic fertilizers, likely linked to government subsidies. Improved tillage practices, mulching, gully control, soil bunds, boundary planting and agroforestry were not reported, indicating scope to introduce these measures. Almost all farms cited lack of affordable credit as the main barrier to improving SLM practices. Other barriers include lack of technologies, insecure land tenure and technical support. Two farms are already investing in laser land levelling. Interestingly, **6 out of the 13 farms report assessing the impact of their production systems on the environment** ? this should be explored by the project.

Access to credit, efficient irrigation and access to improved animal breeds and wheat varieties were cited as the strongest incentives for commercial farms to change their production system to a more sustainable one.

1.4.3. Private sector

Private sector interviewed and considered as stakeholders includes wheat clusters, processing plants and supermarkets involved in both the wheat and dairy value chains.

Value chain development Most agricultural produce in the wheat value chain is sourced from large farms (62%) but some is also sourced from small farms (around 20%). In the dairy value chain, in contrast, the private sector sourced broadly evenly from both small and large farms. Sourcing for alfalfa products is much less common, with only companies in Kashkadarya reporting a considerable amount.

In general, more people are employed by the private sector in the wheat value chain compared to dairy, including women and young people, in full-time, part-time and seasonal jobs. All private sector actors would consider paying incentives to small farmers as well as commercial farmers, mainly for quality and quantity of reliable supply. Some are prepared to pay for milking machines and transport (both wheat and dairy). Encouragingly, all private sector actors confirmed that they are interested in investing in women's empowerment (including training, childcare for employees) as well as environmentally friendly and safe production. Interestingly, while commercial farms confirm receiving incentives (see above), smallholders do not. This needs to be explored ? it could be because they cannot meet the quality and/or quantity required, because these incentives are not yet in place, or other reasons.

SLM All private sector actors confirmed interest and acknowledge the importance of their investing in improved management of natural resources. Some are already active (?In order to increase productivity, I invest in increasing the fertility of lands and improving their reclamation status?, dairy value chain private sector actor, Kashkadarya). There appeared to be particular interest in laser levelling. The main barriers to improved SLM cited were lack of access to water and land, lack of proper storage infrastructure along value chains, lack of improved varieties and breeds, and a lack of technical know-how.

To summarize, private sector actors are interested in offering incentives to both smallholders and commercial farms, as well as investing in women and the environment.

-

1.4.4. Project Value Chains and links to sustainable Food Systems & Livelihoods

WHEAT

The three target regions selected for project activities account for 43 percent of the total area of the country, and account for an average of 22 percent of total wheat production in Uzbekistan.. Wheat production covers around 350 thousand ha of irrigated land and the total production in 2020 was over 2 million tonnes (around 1.5 million in Kashkadarya). The production is dominated by commercial and large-scale farmers, while dehkan farmers mostly produce wheat for their own consumption and for feed in the target districts.

The largest volume of production is generated in Kashkadarya province, where in 2019, gross output is estimated at 1,114,200 tons. The volumes of wheat production in Khorezm province and Karakalpakstan are significantly lower and, in 2019, are estimated at 257,600 tons and 279,200 tons respectively.

Although the area is considered a priority for environmental conservation, irrigated wheat production in Karakalpakstan and Khoresm regions has increased by around 38 times since 1991. The Kashkadarya region has been historically the main producer of wheat, both rain-fed and irrigated, being home to landrace Alfalfa and Wheat varieties.

The largest contribution of dehkan farms to total wheat production is attributed to Khorezm province, and amounts to 32 percent average over the past three years. In Kashkadarya province, this figure is 13 percent, while in Karakalpakstan it is only 5 percent, and in 2018 and 2019 - less than 1 percent. In the target provinces, the irrigated areas of private farms dominate the structure of the sown area under wheat (Table 14).

Table 14. Sown area under wheat in Uzbekistan by target provinces, ?000 ha

Province	Producer category	Type of land	2017	2018	2019
Karakalpakstan	Farmers	***Total Area***	***53,0***	***53,0***	***53,0***
		irrigated	53	53	53
		rainfed			
	Dekhkans	***Total Area***	***10,1***	***0,4***	***0,3***
		irrigated	10,1	0,4	0,3
		rainfed			
	TOTAL		**63,1**	**53,4**	**53,3**
Kashkadarya	Farmers	***Total Area***	***207,2***	***206,0***	***204,8***
		irrigated	144,2	143	141,8
		rainfed	63,0	63,0	63,0
	Dekhkans	***Total Area***	***33,8***	***31,9***	***32,1***
		irrigated	24,8	23,5	23,7
		rainfed	9	8,4	8,4
	TOTAL		**241,0**	**237,9**	**236,9**
Khorezm	Farmers	***Total Area***	***33,2***	***33,2***	***33,2***
		irrigated	33,2	33,2	33,2
		rainfed			
	Dekhkans	***Total Area***	***16,9***	***16,2***	***16,6***
		irrigated	16,9	16,2	16,6
		rainfed			
	Agricultural enterprises	***Total Area***	***0,3***	***0,3***	***0,3***
		irrigated	0,3	0,3	0,3
		rainfed			
	TOTAL		**50,4**	**49,7**	**50,1**

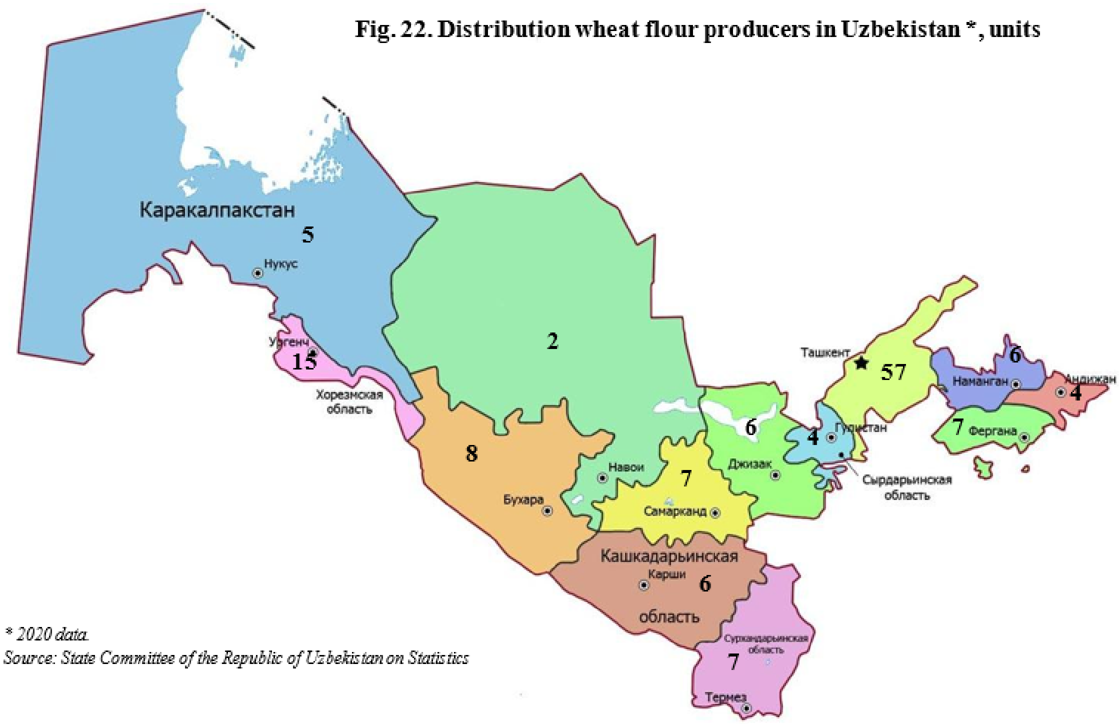
Winter, facultative and spring wheats occupy approximately 75, 15 and 5 percent respectively of the area under wheat cultivation in Uzbekistan. Karakalpakstan and Khorezm regions require winter wheat varieties with high level of winter hardiness. In some years, as in 2013, under exceptionally cold conditions below -30?C most of the present commercial varieties of wheat show excessive winterkill. Under such conditions, spring wheat provides an alternative. Kashkadarya region also requires winter hardy wheat varieties but with a lesser level compared to Karakalpakstan and Khorezm. Southern part of Kashkadarya region is suitable for facultative wheat as well.

Durum wheat occupies about 5% wheat area in Uzbekistan. There is an emphasis on increasing area under durum wheat. There is a potential of increasing area under durum wheat in the foothills of Kashkadarya region. Fast acceleration of terminal heat during wheat ripening in Karakalpakstan and Khorezm regions make them less suitable for durum wheat cultivation.

Perennial wheat is currently undergoing initial research work in Uzbekistan. Results show that there is potential of introducing perennial wheat under agropastoral production system in Khorezm and Karakalpakstan.

According to the State Statistics Committee of the Republic of Uzbekistan, in the first half of 2020, wheat flour was produced at 134 enterprises (Figure 35). At the same time, there is a high concentration of enterprises in Tashkent province, where operate 57 mills, including 42 enterprises directly in Tashkent city. The main supplies of Kazakh wheat are carried out to this region, which is processed and further supplied to the market of Afghanistan.

Fig. 22. Distribution wheat flour producers in Uzbekistan *, units



** 2020 data.*
Source: State Committee of the Republic of Uzbekistan on Statistics

Figure 35. Distribution of wheat mills enterprises per region.

In the target provinces, the largest concentration of enterprises is in Khorezm province (15 mills). There are 6 flour milling enterprises in Kashkadarya province and 5 in Karakalpakstan. As for the state operator JSC "Uzdonmahsulot", it has 58 mills, 114 bakeries, 46 pasta-making shops, 45 grain production shops, and 2 crushed grain production shops.

The analysis conducted on the wheat value chain identified two key points where the integration of renewable energy sources could result in a more sustainable performance, and provide other benefits for small-scale producers. These interventions include the use of irrigation pumps powered by photovoltaic solar systems and the deployment of small-scale solar mills in remote rural communities.

The use of PV irrigation pumps in the currently small rainfed production field would result in higher wheat yields, while the replacement of diesel-generator irrigation pumps would substantially reduce the GHG emissions at this stage of the value chain. Namely, if 5 percent of the energy currently used for irrigation in the target regions is replaced by PV irrigation systems, an annual GHG emissions savings of more than 37 thousand tonnes CO_{2eq} could be achieved.[1] The potential savings are probably even higher if the currently used diesel-generators operate at low efficiency are taken into consideration.

The reasons for proposing the deployment of small-scale solar mills are twofold. Firstly, the value chain analysis showed that currently around 40 percent of wheat grain produced in the target regions is not processed, and secondly, that farmers from remote villages often travel long distances to the large mills located in urban areas or mill their grains in traditional water mills. Easy access to milling facilities would bring multiple benefits to remote communities, such as an increased level of processed grain and therefore added value to the farmers? products. In addition, less time and money would be spent on traveling to the milling facilities, moreover, farmers would gain the personal satisfaction of obtaining flour from their own grain (which is not the case when using the services of large mills). Furthermore, if only 15 percent of the currently non-milled grain is milled by small-scale solar mills as an alternative to large-scale mills, which are powered by grid electricity, the annual savings of more than 730 tonnes of CO_{2eq} could be achieved (without taking into account the GHG emissions arising due to transportation to and from the large-scale mills). For detailed information see Annex Q. Details of the analysis used to develop this project regarding wheat value chains are available as Annex N, Annex S and Annex V.

DAIRY (GENDER-SENSITIVE)

The livestock sector contributes to 40 percent to the country?s agricultural GDP and the major part of the production comes from 4.7 million Dehkan farms, where 95 percent of all cattle is reared. Dehkan farmers typically own between 3 and 10 heads of cattle, and the average milk yield per cow rarely exceeds 6 kg per day, with a lactation period of 7 months.

The value chain analysis described in the Renewable Energies Report (Annex O) showed that there are two routes for milk processing and retail ? modern and traditional. The traditional chain is managed by Dehkan famers who sell their milk through petty traders and/or directly to local markets. Overall, 85 percent of the milk sold on the market originates from dehkan farmers. The processing of milk produced by small-scale farmers into higher value products is rather limited. The reasons for this are estimated to be linked to the lack of cold storage facilities, which is crucial to ensuring the milk quality required by the processing industries, as well as the limited processing capacities in the rural and remote areas. The expected increase in ambient temperatures caused by climate change can also increase the spoiling and loss of dairy products without storage or refrigeration facilities.

The use of solar powered storage at the community or/farm level could overcome these challenges and provide an opportunity for the farmers to add value to their products. Apart from the economic benefits for the small-scale farmers, the integration of solar powered cold storage into the milk value chain can support development of this value chain in a climate-smart way. Namely, if 500 storage units (each with a capacity of 5 tonnes/year) were deployed, around 53 tonnes of CO_2eq per year of GHG emissions would be avoided as compared to the equivalent appliances using diesel as the main power source. For detailed information see Annex O.

In terms of mitigation, livestock breeding results in methane (CH4) emissions from enteric fermentation of animals, as well as nitrous oxide (N2O) and CH4 emissions from manure collection, storage and management systems. In the project areas, large and small cattle make a significant contribution to GHG emissions due to the large number of livestock. Adaptation and mitigation strategies at each level of the value chain include extended value chain (access to insurance for climate risk reduction, data sharing between extension services on best agricultural practices, less carbon-intensive farming inputs with lower GHG emissions, etc.), societal elements (research investment from public and private sector, more energy efficient and resource cooking methods, etc.) and natural elements (practices aiming at increasing soil and organic matter, carbon sequestration and discouraging of slash and burn practices) .

Climate change will also contribute to a decrease in the productivity of pastures and an increase in heat loads on animals. Adaptation options for livestock sector include communally controlled rotation management and pasture rehabilitation and fodder production to mitigate the effects of drought related shocks. In this way, two key objectives are achieved: i) milk and meat production is maintained or even increased and ii) the pastoral ecosystem is protected from overgrazing and is made more resilient to the impacts of climate variability and change.

ALFALFA

Alfalfa is a high-valued fodder for livestock and in Uzbekistan it is commonly used as hay or silage. So important is it in the dairy industry that no competitive substitute has been found in dairy feed rations. It also plays a key role in CA crop rotations, SOC rates and provides for high-quality forage in a country that has limited pasture and rangeland options and where most livestock are stabled for much of their lives.

In 2019, the aggregate production of alfalfa across the three target regions was 736 056 tonnes, which is second only to wheat. However, over the past several decades the cotton-alfalfa cropping system has been replaced by a shorter crop rotation of the cotton-wheat system, and alfalfa is currently produced on 57.5 hectares in the three regions. The reduction in alfalfa cultivation in Uzbekistan has negatively impacted the health of the soil, and it has also affected the Dehkan farmers involved in livestock production who are facing challenges obtaining sufficient fodder amounts on the local market. This problem may be further amplified by the effects of climate change. According to the projections, it expected that pasture productivity will decrease, as well as water availability, spatial distribution and quality. This challenge can be addressed by increasing the alfalfa production, as well as enhancing the value chain by dehydrating and pelletizing alfalfa through mechanical processing. This process stabilises and conserves the nutritive value, while reducing the storage and transport costs of alfalfa fodder. In addition, the market price of alfalfa pellets is more than double the price of fresh alfalfa. Thus, enhancement of the existing alfalfa value chain can potentially bring benefits in terms of both increased access to higher quality fodder for Dehkan farmers, and the potential for job creation and income for rural communities. Considering the energy supply options for a unitary operation of dehydration, pelletisation and storage, the use of PV systems would be the most sustainable option. For example, if four pelletizing plants (each with a typical capacity of 5,764 tonnes/year), were deployed in the three target regions, annual GHG emissions would avoid a total of 805 tonnes of CO_{2eq} as compared to diesel-based systems, and 469 tonnes of CO_{2eq} q per year compared to a system using grid electricity. For more information, please consult Annex O.

Alfalfa is not subject to the same external and internal influences and risk that wheat and other commodities experience, and it is assumed that the majority of Alfalfa produced will be locally harvested and consumed, with vital links toward animal health and the dairy VC component described above. Local consumption and its role in carbon sequestration in cropping rotations also means it is expected to have a low carbon and GHG footprint and play a role in improving VC opportunities.

HORTICULTURE (GENDER-SENSITIVE)

Over the past 5-10 years horticulture production has seen a continuous upward trend in Uzbekistan and plays an important role in the diversification of agriculture and job creation. The all-season jobs in horticulture are especially important for women living in rural areas. Both horticulture enterprises and dehkan farmers are involved in the production of vegetables and fruits. Dehkan farmers are primarily selling their products on dehkan markets either directly or via informal intermediaries, while a smaller share is exported or sold to supermarkets, hotels and formal buyers through informal and formal intermediaries.

Although horticulture crops generate higher revenues for farmers compared to wheat and cotton, there are still barriers for exploitation of the potential benefits this sub-sector could generate for small scale farmers. It is important to note that only a little over 15 percent of all horticulture products in the country are processed. Overall, there are 149 large firms and a number of small-scale enterprises that run processing facilities in the country. The lack of cold storage and unreliable electricity supply in rural areas are a constraint for higher processing levels and prolonging the shelf-life of fresh products, which as a result attain higher prices on the market.

The deployment of solar cold-storage facilities in the rural areas could serve as a milestone for the enhancement of the existing production and further expansion of the sustainable horticulture production by Dehkan farmers. By deploying solar-powered cold storage as an alternative to diesel generated versions, considerable GHG emissions could be avoided. The analysis showed that if 40 storage units ? each with a capacity of 164 tonnes/year ? were deployed, the savings would be around 11 tonnes of CO2eq per year compared to the diesel powered alternative, and around 6 tonnes of CO2eq per year if the equivalent units were powered by grid-electricity. The capacity of 500 cold storage units is sufficient for storing approximately 10 percent of total tomato and melon production in the target regions. For detailed information see Annex O.

1.4.5. Proposed SLM Practices and their associated beneficiaries, climate risk and other considerations

Project development allowed for an in-depth study on potential SLM options and approaches, with international and local practices being considered on a wide range of technical and socio-economic issues. The PPG reports produced have identified, described and outlined potential costs, benefits and project stakeholders necessary to implement each SLM option. They are presented as Annexes L to X at the end of the document.

Given the array of options available and presented in the PPG reports, the complexity of challenges facing FOLUR objectives and the continuing evolution of the policy landscape, general recommendations and strategies for project SLM are to:

? Prioritise practices that are being utilised under current socio-economic and legal frameworks, which include manuring and composting practices (85%), followed by crop rotation (73%), integrated livestock and cropping systems (70%) and planting nitrogen-fixing plants (53%) among smallholder producers and integrated farm design (cropping, livestock, windbreaks/buffer zones), soil fertility management (manure/compost), rotational and mixed cropping were those mentioned among the commercial producers.[2] Options are by no means restricted to these practices but the ambitious targets of the project require early attempts to scale best practices.

?	Have clear economic impact and returns for project value chains. Investment and farmers are risk-adverse, so having concise economic returns provides capacity for up scaling and mainstreaming of agricultural practices. By concentrating on project value chains, resources are efficiently utilised.

?	Continually link back to landscape, ecosystem services and benefits for agriculture. As one of the key drivers of LD, Uzbekistan?s agricultural sector needs to understand its role and capacity for sustainable food and livelihood production. The offer of a number of large farmers to measuring the impact of their management practices on local ecosystems is a positive sign that the links are being made and by measuring them, they can be improved.

?	Take the view that SLM practices need to be realised as a wider, holistic approach, which may involve many SLM practices being realised within the same land management unit. This is important for a number of reasons: i) natural systems, including agro-ecosystems, are complex environments and do not respond to linear, reductionist approaches to soil issues or pests.ii) isolated SLM practices often are used to address symptoms of deeper management issues. Holistic approaches allow to identify root causes of LD and approach it from a range of socio-economic and technical means. iii) holistic approaches rely heavily on decision making frameworks that integrate financial, ecological and social context to guide improved and informed decision making.

?

?	Within this component, links to the LDN and national indicators need to be considered. Especially in the capacity of selected SLM practices to contribute to stable land cover, increased SOC and increased land productivity (leaf surface area), while at the same time meeting value chain and market demands.

SLM practices and activities are described in the Workplan (Annex H) though most of those recommended by experts, local stakeholders and project staff fall under the wider grouping listed in the table below (Table 15). This is followed by Table 16 which gives specific recommendations for wheat-related SLM approaches.

Table 15. Description of the SLM technologies identified by stakeholders during project development:

NAME OF SLM	DEFINITION (FAO)	TARGETED BENEFICIARIES	BARRIERS
Water Harvesting	?collection of runoff for its productive use".[3] Runoff may be harvested from roofs and ground surfaces as well as from intermittent or ephemeral watercourses.	Rural and urban communities, land users, especially those dependent on natural resources for livelihoods and drainage-basin communities	Cost of construction and upkeep, debatable returns on investment (lack of data), lack of economic incentives, knowledge gaps

Water-saving and recovery technologies	Technologies or approaches that increase production efficiency or water recovery rates for secondary uses	Smallholders and commercial farms, rural households and communities, value chain operators	Initial investment costs and high amortization, maintenance, lack of economic incentives, knowledge gaps
Soil fertility practices & technologies	Soil fertility is the ability of a soil to sustain plant growth by providing essential plant nutrients and favourable chemical, physical, and biological characteristics as a habitat for plant growth.[4]	Smallholders and commercial farms, rural households and communities, value chain operators	Lack of economic incentives, lack of credit, knowledge gaps
Soil conservation practices & technologies	Reversing the degradation of soil, water and biological resources and enhancing crop and livestock production through appropriate land use and management practices are essential components in achieving food and livelihood security[5]	Smallholders and commercial farms, rural households and communities, drainage-basin communities	Lack of economic incentives, lack of credit, knowledge gaps
Forest Regeneration	Forest regeneration is the application of technology to allow forest to return to their ecological climax after trees have been harvested or have died from fire, insects, or disease.	Rural and urban communities, land users, especially those dependent on natural resources for livelihoods and drainage-basin communities, value chain and tourism operators	Land tenure issues, Initial investment costs, lack of economic incentives, knowledge gaps
Rangeland rehabilitation	Process by which rangeland species return to a contextually appropriate species composition and land productivity as stipulated by the Land Potential[6] and land management objectives	Pastoralists, rural households, rural communities and drainage-basin communities	Land Tenure issues, initial investment costs, lack of economic incentives, knowledge gaps

Buffer zone development	. May need periodic grazing and animal impact and manure to retain biodiversity and soil fertility in dryland areas.	Pastoralists, rural households, rural communities and drainage-basin communities	Land tenure issues, initial investment costs, lack of economic incentives, knowledge gaps
Climate Smart Agriculture and integrated farm design	Climate-smart agriculture (CSA) is an approach that helps to guide actions needed to transform and reorient agricultural systems to effectively support development and ensure food security in a changing climate.[7] Integral, holistic design of the production space is a key element to the approach.	Smallholders and commercial farms, rural households and communities, drainage-basin communities	Initial investment costs, lack of economic incentives, knowledge gaps
Wetlands and Riparian zone rehabilitation	Process by which riparian forest and wetland species return to their historic species composition and density	Rural and urban communities, land users, especially those dependent on natural resources for livelihoods and drainage-basin communities, value chain and tourism operators	Initial investment costs, lack of economic incentives, knowledge gaps

Table 16. List of recommended technologies for considerations in the FOLUR project

		System	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Who can help with technology/germplasm	Target Regions	Partners to help implement			
										National	International	Beneficiary	Outcome
1.	Wheat varieties												
1.1.	Identification and outscaling of yellow rust resistant winter wheat varieties available in Uzbekistan	IRR	P/S	P/S	S	S	S	KRI, GRI, ARI, ICARDA, IWWIP	Kashkadarya, Bukhara, Samarkand Surkhandarya, Jizzakh, Syrdarya, Tashkent, Fergana, Andijan	KRI, UzRIPI	ICARDA	Wheat farmers Seed producers	0.6 million ha planted with yellow rust resistant varieties. Saving of USD 15 to 45 per hectare to the farmers At least 5 new yellow rust resistant varieties identified

1.2.	Identification and outscaling of salinity tolerant winter wheat varieties available locally	IRR	P	P/S	S	S	S	ICARDA, IWWIP	Karakalpakstan, Khorezm, Western Kashkadarya, Bukhara, Navoi, Syrdarya	KRICH, KRASS, KRI	ICARDA	Wheat farmers Seed producers	100,00 ha planted with salinity tolerant varieties. At least 4 salinity tolerant wheat varieties in farmers field
1.3.	Identification and outscaling of cold tolerant winter wheat varieties for normal and saline soils	IRR	C	C/P	P	S	S	ICARDA, IWWIP	Karakalpakstan, Khorezm, Kashkadarya, Bukhara, Navoi	KRICH, KRASS, KRI	ICARDA	Wheat farmers Seed producers	At least four cold tolerant varieties identified and planted on 0.05 mil ha
1.4.	Short duration, heat tolerant spring wheat varieties for normal and saline soils	IRR	C/P/S	P/S	S	S	S	ICARDA, CIMMYT	Karakalpakstan, Khorezm, Kashkadarya, Bukhara, Navoi	KRICH, KRASS, KRI	ICARDA, CIMMYT	Wheat farmers Seed producers	At least four heat tolerant, short duration varieties identified and planted on 0.02 mil ha

1.5.	Drought and heat tolerant winter wheat varieties	RF	C/P/S	P/S	S	S	S	ICARDA, IWWIP	Kashkadarya, Bukhara, Navoi, Jizzakh, Namangan	KRI, GRI	ICARDA, CIMMYT	Wheat farmers Seed producers	At least four heat and drought tolerant winter wheat varieties identified and planted on 0.02 mil ha
1.6.	Evaluation and outscaling of improved varieties of durum wheat	IRR RF	P/S	P/S	S	S	S	ICARDA, CIMMYT	Kashkadarya, Jizzakh, Samarkand	KRI, GRI	ICARDA, CIMMYT	Wheat farmers Seed producers	At least four improved durum wheat varieties identified and planted on 0.02 mil ha
2.	**Crop management**												
2.1.	Expansion of conservation agriculture practices	IRR	P/S	P/S	S	S	S	FAO, ICARDA, CIMMYT	All provinces	KRI, KRASS, KRICH	ICARDA, FAO	Wheat farmers Machine industry	At least 50, 000 ha wheat area under conservation agriculture
2.2.	Identify wheat varieties suitable for early, timely, and late planting	RF IRR	P	P	S	S	S	GRI, KRI, ICARDA, CIMMYT	All provinces	KRI, KRASS, KRICH	ICARDA	Wheat farmers	At least 2 varieties identified for late planting

2.3.	Determine optimum seeding rate for timely and late planted winter wheat, and spring planted spring wheat	IRR RF	P	P	S	S	S	ICARDA	All provinces	KRI, KRASS, KRICH	ICARDA	Wheat farmers	At least 20 percent wheat seed saving
2.4.	Identify wheat varieties suitable for conservation agriculture (bed planting, minimum tillage) practices	IRR	P	P	S	S	S	ICARDA, FAO	All provinces	KRI, KRASS, KRICH	ICARDA	Wheat farmers	At least 5 varieties identified for conservation agriculture practices
2.5.	Determine optimum seeding depth for timely and late planted wheat	IRR RF	P	P	S	S	S	ICARDA	Karakalpakstan, Khorezm, Bukhara	KRI, KRASS, KRICH,	ICARDA	Wheat farmers	Optimum seeding depth determined, which will help protect wheat crop from winter frost on at least 0.2 million ha

2.6.	Comparative analysis of different methods of seeding (Conventional, No-till, broadcast)	IRR RF	P	P	S	S	S	ICADA, FAO	All provinces	KRI, KRASS, KRICH	ICARDA	Wheat farmers	Information on comparative benefits of different methods of seeding
2.7.	Optimum fertilization with major nutrients (N, P,K) to attain a target yield goal (based on soil test)	IRR RF	P	P	S	S	S	ICARDA	All provinces	KRI, KRASS, KRICH	ICARDA	Wheat farmers	Optimum level of nutrients used for wheat production, resulting in saving from excessive dose
2.8.	Effect of micro-nutrient on wheat performance	IRR RF	C	C	P	P	S	ICARDA	All provinces	KRI, KRASS, KRICH	ICARDA	Wheat farmers	Application of micronutrient resulting in higher wheat production by 10%

2.9.	Determine critical growth stages of wheat for partial and fully irrigated management	IRR	P	P	S	S	S	ICARDA	All provinces	KRI, KRASS, KRICH	ICARDA	Wheat farmers	Judicious use of on-farm limited irrigation water on critical growth stages will result in higher water productivity
2.10.	Comparative analysis of different water saving technologies (drip irrigation, sprinkler irrigation, laser levelling, and others	IRR	P	P	S	S	S	ICARDA	All provinces	KRI, KRASS, KRICH	ICARDA	Wheat farmers	Water saving up to 20%
3.	**Cropping system diversity**												

3.1.	Wheat-mungbean annual rotation	IRR	P/S	P/S	S	S	S	ICARDA	All provinces	KRI, KRICH, KRASS	ICARDA	Wheat farmers Mung bean farmers Seed producers	Higher land and water productivity, higher income by at least USD 500/ha, and soil health improvement resulting in lower nitrogen application to the following crop
3.2.	Wheat-soybean annual rotation	IRR	P/S	P/S/	S	S	S	ICARDA	All provinces	KRI, KRICH, KRASS	ICARDA	Wheat farmers Soybean farmers Seed producers	Higher land and water productivity, higher income by at least USD 500/ha, and soil health improvement resulting in lower nitrogen application to the following crop

3.3.	Wheat-mungbean-green manure annual rotation	IRR	P	P	S	S	S	ICARDA	All provinces	KRI, UzRIPI, KRICH, KRASS	ICARDA	Wheat farmers Mung bean farmers Seed producers	Higher land and water productivity, higher income by at least USD 500/ha, and soil health improvement resulting in lower nitrogen application to the following crop
3.4.	Wheat-soybean-green manure annual rotation	IRR	P	P	S	S	S	ICARDA	All provinces	KRI, KRICH, KRASS	ICARDA	Wheat farmers Soybean farmers Seed producers	Higher land and water productivity, higher income by at least USD 500/ha, and soil health improvement resulting in lower nitrogen application to the following crop

3.5.	Identify wheat varieties suitable for wheat growing in garden	IRR RF	P	P	S	S	S	ICARDA, IWWIP	All provinces	KRI, GRI,	ICARDA	Wheat farmers	At least 2 wheat varieties with relatively higher production in orchard identified
3.6.	Evaluation and outscaling of wheat landraces	RF	C	C	P	P	S	ICARDA, Uzbek Genebank	Kashkadarya, Galloral	KRI, GeRI	ICARDA	Wheat breeders	Landraces identified with superior characters to be incorporated into modern varieties
3.7.	Comparative analysis of wheat, barley, food legumes, oilseed on normal and saline soils	RF	P	P	S	S	S	ICARDA, FAO	Karakalpakstan Khorezm	KRI, GRI	ICARDA	Farmers	More profitable crop identified for rainfed lands

3.8.	Introduction and evaluation of improved germplasm of rye for identifying improved varieties for harsh soil and climatic conditions in cold desert zone	RF	C	C	P	S	S	ICARDA	Karakalpakstan, Khorezm, Bukhara, Navoi	KRI, GRI	ICARDA	Rye farmers	High yielding rye varieties identified for rainfed and cold desert lands
3.9.	Strip cropping of wheat with legumes	IRR RF	C	C	P/S	S	S	ICARDA, ICRISAT,	All provinces	,KRI, GRI	ICARDA	Farmers Soil health	More assured crop production with higher income
3.10.	Introduction and adoption of salinity tolerant crops	RF	D/C	D/C	P/S	P/S	S	ICARDA, ICRISAT, World-Veg	Karakalpakstan, Khorezm, Kashkadarya, Bukhara, Syrdarya	KRICH, KRASS, KRI,	ICARDA	Farmers in target regions	Increased productivity of saline lands, Increased crop diversification
4.	**Fodder production**												

4.1.	Identify high grain and high straw yielding winter and spring wheat varieties among commercial wheat varieties and advanced breeding lines	IRR RF	P	P	S	S	S	ICARDA, IWWIP	All provinces	KRI, KRICH, KRASS	ICARDA	Wheat farmers Livestock producers	At least 4 wheat varieties with relatively high grain and straw yield identified
4.2.	Determine nutritional quality of wheat straw for animal feed	IRR RF	P	P	S	S	S	ICARDA	All provinces	KRI, KRICH, KRASS	ICARDA	Wheat farmers Livestock producers	Information on straw quality of wheat varieties determined
4.3.	Identify dual purpose (grazing and grain) winter wheat varieties	IRR	C	C	P	S	S	ICARDA	All provinces	KRI, KRICH, KRASS	ICARDA	Wheat farmers Livestock producers	At least 2 dual purpose wheat varieties identified

4.4.	Comparative analysis of bread wheat, perennial wheat, barley and triticale as animal fodder and feed on saline and normal field	IRR RF	C	C	P	S	S	ICARDA	All provinces	KRI, KRICH, KRASS	ICARDA	Wheat farmers Livestock producers	More productive cereal for fodder purpose identified
5.	**Plant Protection**												
5.1.	Wheat rust surveillance	IRR RF	D/C	D/C	D/C	D/C	D/C	ICARDA, FAO	Kashkadarya, Surkhandarya, Samarkand, Jizzakh, Syrdarya, Tashkent, Fergana, Andijan	GenRI, KRI	ICARDA, FAO	Wheat breeders and pathologists to produce new varieties	Yellow rust resistant varieties outscaled on 0.6 million ha At least 4 new wheat varieties, resistant to yellow rust identified

5.2.	Determining genetic tolerance in wheat varieties and breeding lines against yellow rust	IRR	C	C	C	S	S	ICRDA	Kashkadarya Tashkent	GenRI, KRI	ICARDA	Wheat breeders and pathologists to produce new varieties	Information on genetic tolerance against yellow rust determined in wheat varieties
5.3.	Determining resistance gene present in yellow rust resistant varieties and advanced breeding lines	IRR	D	C	P	P	S	ICARDA	Kashkadarya Tashkent	GenRI,	ICARDA	Wheat breeders and pathologists to produce new varieties	Information on resistance gene in yellow rust resistant varieties determined
5.4.	Determining efficacy of fungicides in controlling yellow rust disease of wheat	IRR	C	C	P	P/S	S	ICARDA	Kashkadarya Tashkent	GenRI, KRI	ICARDA	Wheat farmers Fungicide dealers	Low cost, effective fungicides identified
5.5.	Identifying wheat varieties tolerant to sunn pest	IRR RF	C	C	P	P	S	ICARDA, IWWIP	Kashkadarya Tashkent	KRI, GRI, TSAU	ICARDA	Wheat breeders to produce resistant varieties	At least 2 sunn pest resistant varieties identified

5.6.	Determining efficacy of pesticides in controlling sunn pest	IRR RF	C	C	P	P/S	S	ICARDA	Kashkadarya Tashkent	KRI, GRI, TSAU	ICARDA	Wheat farmers Pesticide dealers	Low cost, effective pesticide identified
5.7.	Determining economic damage to wheat crop caused by weeds	IRR RF	C	C	C			ICARDA	Kashkadarya t	KRI, KRICH, KRASS	ICARDA	Wheat farmers will utilize the information to control weeds	Extent of economic damage caused by different level of weed infestation determined
5.8.	Determining efficacy of different herbicides in controlling weeds in wheat field	IRR RF	C	C	P	P/S	P/S	ICARDA	Kashkadarya	KRI, KRICH, KRASS	ICARDA	Wheat farmers Herbicide dealers	Low cost, effective herbicide identified

GenRI = Genetic Research Institute; GRI = Galloral Research Institute; IWWIP = International Winter Wheat Improvement Program (Turkey); KRASS = Khorezm Rural Advisory Support Services; KRI = Kashkadarya Research Institute; KRICH = Karakalpakstan Research Institute of Crop Husbandry (KRICH); TSAU = Tashkent State Agrarian University; UzRIPI = Uzbek Research Institute of Plant Industry

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[1] PPG report, Renewable Energies

[2] PPG report, Socio-economic report

[3] Critchley, W & Siegert, K 1991, A Manual for the Design and Construction of Water Harvesting Schemes for Plant Production, Water harvesting (AGL/MISC/17/91), FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS - Rome, 1991

[4] http://www.fao.org/global-soil-partnership/areas-of-work/soil-fertility/en/

[5] http://www.fao.org/soils-portal/soil-management/soil-conservation/en/

[6] Land potential is defined as the inherent potential of the land to sustainably generate ecosystem services required to meet today?s needs without compromising our ability to meet the needs of the future. https://landpotential.org/knowledge/what-is-land-potential/

[7] http://www.fao.org/climate-smart-agriculture/en/

1.5. Project Theory of Change

The Project Development Objective (PDO) of the Food Systems, Livelihoods and Ecosystem Restoration (FOLUR) Global Platform is to ?*Support transformational shifts in the use of environmentally sustainable practices and policies for priority global value chains*?. The FOLUR Global Platform seeks to directly address problems of insufficient resources, engagement, coordination, knowledge and capacity that is urgently needed to address the global sustainable land-use and food system crisis.

The Global Platform outcomes are listed as:

? Reduced conversion and degradation of forests and natural habitats

? Commodity value chains pursuing responsible & deforestation free sourcing/Supply chains

? Increased public & private investments in sustainable ILM practices & commodity VCs

? Increase in numbers of FOLUR commodity producers investing in sustainable, responsible practices

Therefore, the FOLUR project in Uzbekistan seeks to address key drivers of unsustainable management of wheat-dominated landscapes in Uzbekistan by promoting an integral landscape approach inclusive, sustainable agricultural value chains that address underlying drivers of landscape degradation and enhance Global Environmental Benefits. The project will address weak and fragmented planning processes, conflicting land-use policies and poor participation/inclusion of stakeholders and land-users along the value chain for sustainable food systems and landscape-scale restoration by improving inter-sectoral collaboration through enhanced policy/regulatory frameworks and land-use/hydrology planning that facilitates integrated multi-agency and regional management. The project will apply an Integrated Landscape Management approach, supported by Land Degradation Neutrality principles, Agroecology and Nature-based Solutions, with decisions and planning being informed by the LDN conceptual framework and project developed tools, such as a Decision-Support System and Land Suitability Analysis.[1].

Project components, outcomes and actions are aligned with the FOLUR Theory of Change and address the proximate and underlying causes of key food and land-use challenges identified by the project development team in close collaboration with key GoU stakeholders, technical experts, smallholders, commercial farmers, value chain operators and representatives of civil society.

1.5.1. Project Objective, Outcomes and proposed Causal Pathways (CP)

The FOLUR IP project objective in Uzbekistan is to ?*Scale up best practices and innovations for sustainable and inclusive wheat-based production landscapes and value chains*?. The project will work within the Oblast of Kashkadarya, Khoresm and Karakalpakstan, most specifically the districts of Qamashi and Shakhrisabz in Kashkadarya, Yangibazar and Urganch in Khoresm and Beruniy and Qorao?zak districts in Karakalpakstan to deliver the GEB (global environmental benefits) and achieve the project objective and outcomes.

Project Outcomes are specific to the Uzbekistan context and are described as follows:

1.1: National legal, regulatory, and institutional frameworks strengthened to support sustainable and inclusive wheat landscapes and value chains to enhance delivery of global environmental benefits and sustainable livelihoods

1.2: National incentives adopted to promote ILM in line with LDN principles and climate-smart, environmentally sound wheat and wheat landscape production

1.3: Land use planning approaches in the target regions of Kashkadarya, Khoresm and Karakalpakstan transformed to ensure development of inclusive, sustainable, and multifunctional landscapes with agreed partnership and sustainable financing and methodology to enable vital ecosystem services, biodiversity conservation and multi-functional wheat production landscapes

2.1: Sustainable food production demonstrated on an area of 350,000 ha on irrigated and rain-fed productive landscapes

2.2: Incentives for innovative, inclusive and sustainable value chains under implementation

3.1: Enhanced conservation and restoration of habitats/ ecosystems in production landscapes for GEB and enhanced ecosystem services to support agriculture in an equitable manner

4.1: Project implementation based on RBM and lessons learned/good practices documented and disseminated

To achieve these Outcomes, the causal pathways[2] prescribed to effectively address the barriers describe in the earlier sections are as follows:

CP1: Policy reform

CP2: Participatory Integrated Land Management

CP3: Training/ capacity building

CP4: R&D of SLM technologies

CP5: Sustainable Value Chain enhancement

CP6: Investments in energy and resource efficiency

CP7: Data collection on key performance indicators

CP8: Use of decision-making frameworks

CP9: Knowledge sharing and networking

Through supporting activities that provide for the causal pathways, it is assumed that the identified beneficiaries would benefit from capacity changes in knowledge, attitudes, aspirations, skills, & opportunities, leading to behavioural changes and therefore improved land use selection and natural resource management. It is therefore through improved landscape scale planning and livelihoods and equality measures that promote SLM that the project envisions achieving the objective. The role of each causal pathway are briefly described below:

CP1: Policy reform

As typically the most difficult causal pathway to influence and change, it is often where the most significant barriers, logjams and barriers to SLM and SFM are found. Policy reform is also vital to scaling of SLM and SFM practices, especially under the requirements and ambition of the core indicators and FOLUR outcomes. Lastly, policy reform plays a key role in developing incentives for increased uptake and adoption of SLM and LDN principles within a wider ILM environment.

The Strategy for the Development of Agriculture of the RoU for 2020-2030 serves as the main programmatic document of state policy on the agro-food sector. The main reform implementation mechanism is focused on nine strategic priorities, including (i) ensuring food security of the population; (ii) creating a favourable agribusiness climate and value chains; (iii) reducing the role of the state in managing the agricultural sector and increasing investment attractiveness; (iv) ensuring the rational use of natural resources and environmental protection, etc. These priority areas provide the baseline for the implementation of the LDN goals and the achievement of the SDGs of the RoU, including the SDG-2 ?Zero hunger, ensure food security, improve nutrition and promote sustainable agriculture?.

Study of national context and baselines presented above have shown that there are significant concerns by commercial farmers regarding land tenure, land use requirements, value chain options and opportunities, while smallholders face restrictions on resources, land size and access to financial services. At a sectoral level, few incentive programs aimed at increasing SLM, product quality, food hygiene and safety and resource use efficiency exist, especially for small to medium scale farms. Increasing income and education gaps threaten to increase market restrictions and further limit economic opportunities and growth, consolidating social classes and restricting movement between them. LD, especially present in the form of secondary salinity, erosion and overgrazing is active and management tools and diversification of production landscapes is hindered under current policy environments. Contract farming options and decisions on land use also need to be expanded for SLM and market opportunities to grow. If no premiums exist for quality and sustainability, then under the financial limitations that exist investment in these opportunities will be residual.

Most importantly, success in through this causal pathway will depend on disincentives or perverse wheat subsidies and other elements that are distorting the sector and driving LD. In the same way, restrictions on land use and capacity to make decisions on land use and cropping practices need to be addressed in a wider discussion with the sector.

Policy reform will also take into account barriers to financial services, as financial barriers were said to be the most formidable to SLM or increased land productivity according to stakeholders. Commercial and Dehkan farms are allowed under current legislation to open bank accounts and access financial services; however, households are not. Commercial farmers who take out loans using the land as collateral, yet later lose access or rights to this land are left facing complex financial obligations and loss of income. At the same time, the investment fund operated by the Council of Farmers rarely receives request from smallholder and Dehkan farmers to access the loans, according to a wide array of stakeholders consulted. Those that did, or were asked what they would invest in, typically said improved livestock genetics for their milking animals.

From a CC perspective, the key adaptation measure to climate change is setting and implementing a sustainable agriculture and land use policy. Adaptation measures vary horizontally according to the agricultural subsectors and their vulnerability to climate change. However, the transition to more resilient landscapes under CC requires a consolidated policy approach that engages all sectors active in Uzbekistan?s landscapes.

The project?s policy focused activities will therefore include policy reviews and assessments and publication of policy papers with clear, achievable recommendations for cross-sectoral coordination and collaboration within a revised national framework, as well as providing support to the GoU and sub-national partners in piloting of potential incentive programs. It will also aim to provide support and information on options for removing or reducing policy barriers SLM within the 3 Land Tenure types described in the National Context section above and the oversee the creation of an Inter-ministerial Task Force chaired by the STEEP with the role of overseeing development and adoption/amendment of policies/regulations to enable implementation of ILM principles within the existing Uzbek Land Code and other legal documents. These measures will not only work to create an enabling environment for achieving FOLUR outcomes, but will ultimately lead to improve existing and potential incentive mechanisms for SLM practices and ILM approaches that are linked to results-based indicators.

CP2: Participatory Integrated Land Management

Achieving FOLUR Outcomes for Uzbekistan requires land managers to monitor land use decisions that may impact the natural resources and ecosystem services, and estimate their likely cumulative impacts. Resource management models are not new to the country and the reliance on irrigation has meant that the capture, storage, distribution and processing of data for such resources as water have been used extensively. What ILM brings to the process is the holistic approach that considers the landscape as more than the sum of its parts, but a self-organising system capable of restoring land productivity and ecological resilience once management cycles are correct and drivers of LD are addressed.

Increased coordination at wider landscape levels have been shown to improve resource use efficiency and reduce costs. Examples include coordination of pesticide applications among commercial farmers to improve efficiency and reduce volumes applied, organised grazing to improve recovery times between grazing periods, construction of landscape-scale water retention infrastructures to increase infiltration and storage, planting of shelterbelts and other marginal lands to increase economic opportunities and ecosystem services, etc. To ensure that such measures do not diminish the well-being of the community or particular land users, site selection and activities require a participatory and inclusive approach that adheres to GEF guidelines and the GoU protocols and standards.

The need for an approach that goes beyond simple agricultural production and best-practices is therefore a principle component of ILM, and this project not only includes multi-sector and participatory ILM planning, but provides tools, human resources, materials and funding to realise action plan activities developed under the ILM plans. ILM is recommended as a causal pathway, therefore, due to its logical links to project and global FOLUR objectives and to inform and influence decisions.

CP3: Training/ capacity building

The household surveys conducted under the GCP/UZB/003/GFF project development phase in 2020 phase found that most household heads (80%) had not had any agricultural/ farming education or training, and those that have mostly received this training more than 5 years ago. Similarly, family farms have limited access to information on sustainable natural resource management: 72 percent of respondents said they had no access to such information, and 14 percent said they accessed this information from media, which is a fairly general resource. Only 10 percent of respondents access information from local institutions. The situation is very similar with regard to access to information about weather and climate in general and for livestock, as well as information on improved cropping/livestock climate change adaptation practices. For example, many small farmers do not feel it is possible to replace animals or crops with more adapted breeds/species.

This information provided above was confirmed by the FGDs and KIIs realized under the current project development phase. Therefore, to achieve project objective and outcomes, capacity will need to be built among key actors within private and public institutions, and training will play a principle role among the causal pathways. Project developers will also need to look outside traditional groups for capacity building and knowledge transfer by including a wider range of sectors and representatives under the ILM approach.

CP4: R&D of SLM technologies and improved crop varieties

Wheat yield improvement realized between 2010 and 2019 was primarily due to improvement in management conditions. This suggests that a new set of genetic materials with higher yield potentials are needed to achieve new yield levels in wheat to ensure additional wheat production for the increasing population of the country.[3]

There are several institutions responsible for wheat improvement for different agro-ecological zones of the country. High and stable productivity, superior quality of the end-user products, and resistance to prevalent biotic and abiotic stresses are the primary objectives of the wheat improvement research. However, most of the national institutions lack capability of undertaking an entire cycle of wheat varietal development from crossing through testing and finally the release of a variety. This has resulted in introduction of advanced breeding lines from sources outside Uzbekistan.

To complicate matters, like other regional neighbours, the Uzbek agricultural sector has steadily lost importance in relation to GDP and the price of imported machinery, seed and other inputs is often not feasible for commercial or Dehkan producers. In the case that importation of advanced machinery were possible, knowledge on it use and maintenance, in addition to spare parts and inputs, would need to be solved to maintain a fleet large enough to increase crop productivity at necessary scales for project core indicators.

However, the project also needs to carefully consider its potential sphere of influence and include options that involve more rudimentary means to improve seed quality and selection, especially in rain-fed areas where landrace wheat and alfalfa seed are still present. This could include simple materials for the safe guarding of sufficient quantities of seed or accommodation of community seedbanks and nurseries. The highly diversified model of farming practiced by smallholders work well with community nursery situations in that a wide range of crop and forage plants can be produced in small quantities, increasing options for smallholders and planting of marginal lands and boundaries. Most of the seed and genetic materials are also sourced locally and increase diversity and CC resilience.

Within this approach, the type of technology and machinery showcased and promoted by the project needs to keep in mind the current financial and knowledge capacity of producers in the project districts and look for SLM approaches that are based on Agroecology and Nature-based Solutions and focus more on management and design options than physical investments in machinery and synthetic inputs.

Therefore, R&D under this causal pathway needs to be contextually relevant and fit within the needs and capacities of the 3 land tenure types to meet project objectives and outcomes.

CP5: Sustainable Value Chain enhancement

For the VC actors consulted through the project KII, food safety and hygiene issues were paramount when considering working with producers, those consulted did source goods and materials from local Dehkan and commercial farms. Trade from farm to farm also took many forms, with Commercial farmers sourcing goods from smallholders and vice versa. The vast majority of those consulted, including Commercial farmers, stated a strong interest in offering incentives to smallholders for improved quality of produce, especially regarding fodder for commercial dairies. There is also a strong interest among VC actors and the private sector for increasing investments in women and youth empowerment and contributing to more sustainable agricultural production. Improved natural resource management is another area of interest for the private sector and the impacts of agriculture on the wider landscape are understood by this group.

Few incentive programmes currently exist within project districts, with some minor exceptions within the dairy industry. At the same time, limited options exist for the sale of cotton and wheat outside of the State quota system. For smallholder systems, land use is diversified and often is focused on household consumption and needs. However, where opportunity exist the private sector has responded, especially in the horticultural sector where high-value cash-crops can be produced on smaller plots. Social media has also allowed for organizing sales of organic Lamb and Mutton, especially around feast days.

For VC enhancement to scale and mainstream, a higher premium must exist for quality and sustainability of practices, and the entire chain needs to benefit in some form from gains and improvements in quality or sustainability of production for it to be sustainable over the long term. Therefore, VC enhancement is the causal pathway that is most vital for the sustainability of project objectives and the motor of innovation and development. Project activities should ultimately be linked to supporting VCs where possible.

CP6: Investments in renewable energy and resource efficiency

Resource use efficiency and planning is a necessary element of FOLUR, and this concept will be applied through a number of activities and channels. From improved water harvesting techniques, land leveling, promotion of drip and sprinkler irrigation, green infrastructure and filters for agricultural runoff and waste, water use and recovery options will be demonstrated within landscape and farm scales.

Improved soil fertility management to increase SOC, reduce leaching, maintain soil cover, replace micronutrients and restore soil biological communities is assumed to lead to a reduction in fertilizer use and increase crop health and resilience.

Resource efficiency is also sought through the Wheat Cluster model, in that prime materials are grown and processed within the same geographic vicinity, and the project will build on innovative benefit sharing models for transport and storage of goods. At a wider community scale, options for benefit sharing of returns on ecosystem services are to be piloted, especially in protected areas outlined in the baseline section above.

From the assessment realized during the project development stage[4] on the baseline emission intensity of the wheat sector in the provinces of Karakalpakstan, Kashkadarya, and Khorezm, a total of 574,436 tons of CO_2eq are emitted on an annual basis by irrigated farms. GHG emissions from soil were about half of all emissions from grain production, and the production of N-fertilizers was responsible for another large share of overall emissions. Mechanized operations in the field, from pre-sowing preparation to harvesting operations were responsible for the majority of remaining emissions. Pesticides use was another noteworthy contributor to the overall GHG emission intensity of the wheat value chain..

GHG emissions reductions and CO_2 sequestration targets of 1 million tCO_2eq will be primarily conducted through three targeted approaches:

? Improving N fertiliser use and retention through improved soil management programmes, that include crop rotations with legumes and improved water management to reduce leaching.

? Soil management practices that increase SOC. Climate Change will increase the difficulty in soil capacity to retain SOC, however, the data provided in this report and the PPG reports indicate adequate room to increase SOC through improved crop rotations, green manures and cover crops, mulching

? Renewable Energy options and cost estimates within project selected value chains (described below)

The analysis of renewable energy potential across the country with a specific focus on the three target regions, showed that there is substantial potential for the deployment of solar energy powered applications, which can provide a sustainable energy supply to rural areas and thus provide a basis for improved agricultural practices and its related benefits to the small-scale farmers.

Although a legal framework for the use of renewable energy sources in agriculture has been established, the use of renewable energy is still limited. This project will facilitate the implementation of renewable energy policy by promoting new investments and showcasing the potential benefits. This can be achieved through activities that will address several key elements necessary for enabling small-scale renewable energy deployment: policy and regulatory framework, financing models, piloting and awareness raising. Within the policy and regulatory framework, the project will provide recommendations on policy measures for the promotion of renewable energy use in the agriculture sector and the alignment of electricity supply regulation, which will allow for farmers to use both, on-grid and off-grid electricity systems and act as renewable energy producers, to the extent possible. Another set of project activities will focus on developing specialised financing models for renewable energy investments, targeting farmers and entrepreneurs in the agri-food sectors. The aim is to rely on the existing funding systems as well as to encourage public and commercial financial institutions (banks) to develop specialised loan portfolios. Finally, in order to showcase the potential benefits of the renewable energy use in the selected value chains, the project will support implementation of pilot projects. The pilots will be implemented in close collaboration with local partners and contribute to the promotion and awareness-raising among farmers within the target regions and beyond.

CP7: Data collection on key Performance Indicators

Measurement of specific metrics or indicators is vital to understanding the impacts of activities and management within complex systems. Key Performance Indicators have long been used as instruments to measure how funds were being spent and what was being achieved in real terms with these funds.[5] In this case, the focus is on measurement of production and environmental indicators not only as a state, but of trends over time, and their spatial significance and relation to the wider landscape.

Given the role and importance of agriculture to the national economy and food security, especially among more vulnerable populations, many of the data collection systems and figures are already available to track development of the industry. Stress indicators could be introduced to improve this system, as well as a means of coordinating, centralising and analysing data. The LDN indicators (land cover change, Net primary productivity trend , and Soil Organic Carbon trend), supported by the recently developed LDN Interpretation Matrix.[6], plus the additional national impact, process, and stress-reduction indicators outlined by the project GCP/UZB/003/GFF offer a good starting point to determine status and trends and support land users to transition to more sustainable land uses and management systems in terms of LDN. The objectives of FOLUR require a wider look however, and the ?The Road to Restoration: A Guide to Identifying Priorities and Indicators for Monitoring Forest and Landscape Restoration? provides other potential indicators for assessment under this causal pathway.[7]

Essential to this process is LDN Principle 19. ?Monitoring should be viewed as **a vehicle for learning**. Monitoring provides: opportunities for capacity building; the basis for testing hypotheses that underpin the counterbalancing decisions and the interventions implemented, the LDN concept, and this conceptual framework; and knowledge to inform adaptive management?.

CP8: Use of decision-making frameworks

The data collected through project activities then needs criteria and parameters on which its analysis is to be based, though often final judgements are more value driven than logically informed. Decision frameworks facilitate and enhance decision making by providing conceptual structures and principles for consequences and potential impact of decisions in complex environments.[8] They generally share common elements such as: problem identification and formulation, support in identification of goals, provision of data in structured, logical formats, capacity to integrate knowledge and tools and often a clear list of alternatives presented to those responsible for decision-making. They are also promoted as participatory, transparent processes that adapt under changing circumstances or new knowledge.

Using a holistic, contextual framework on which decisions can be tested and actions prioritized, the LDN approach hierarchy of ?avoid, reduce and reverse? allows for perspective and attention of key stakeholders and sectors on land degradation issues. It is also scalable, allowing for data and information to be captured and relevant to scales from individual farms to watersheds to larger administrative units. It provides cost effective, immediate, and long-term benefits to communities, taking into account available resources and potential options and returns on investments. It is also clearly linked to several SDGs, with co-benefits for adaptation to and mitigation of climate change. The project will therefore promote SLM/SFM and landscapes restoration for achieving LDN commitments, through the application of the framework and supporting decision-making tools and using the landscape approach to integration across sectors and scales increases the chance of maximizing co-benefits and minimizing trade-offs.

It is important to mention that while LDN is bound to SDG target 15.3 and its indicator SDG 15.3.1 which was presented adobe (and is normally reported by countries to UNCCD), there is a holistic approach of considering the whole LDN impact Pathway. This mean not only focus on SDG 15.3.1 Change of State indicator, but also on Response Indicators (linked to capacity building, mainstreaming legislation, etc.) and Stress Reduction Indicators (linked to SLM, good practices, etc). Besides the obvious benefits from this holistic approach in achieving LDN the projects normally invest most resources in Components dedicated to enabling environment and SLM. This effort can be better capitalized in the monitoring and reporting if the whole LDN impact pathway is considered as the goal instead of just the SDG 15.3.1.

Development of a DSS are integral components of conceptual decision-making frameworks, and are intended to address data inquiries on multiple issues. They also serve to understand at a spatial scale where limited resources are best employed within complex environments. DSS are often rely on digital formats, are data driven and dependent and work with spatially linked datasets, meaning the higher the quality and amount of information they contain, the better the suggested courses of action are at potentially meeting objectives. They can also be used for M&E analysis, though often the spatial scales and information is not practical for daily decision-making and monitoring. However, DSS cannot provide definitive answers, nor ramifications of potential consequences of actions. Hence the continuing need for well capacitated experts who can use the data and observations to provide analysis and recommendations, and the reliance and importance of capacity building and training for the success of this output. Resources are limited and the idea is to cover large land areas.

The interactive app developed under the project development phase in coordination with project design team is intended to be a starting point for the DSS development. It goes beyond LDN sub-indicator analysis and includes other data layers, One such data layer is the result of analysing a range biophysical and socio-economic spatial data and assigning values to produce a map layer that is being referred to as ?land suitability analysis?. The idea of the use this as a component of the DSS to compare to current land use with land potential. This is especially important to identify marginal lands that are at risk of degradation and provide higher ecological productivity and economic returns under alternative land uses.

CP9: Knowledge sharing and networking

Most likely one of the most effective and efficient causal pathways to implement behavioural change and development is knowledge sharing and networking. In fact, Uzbekistan has a long history of research, strategic planning and SLM technology development has prepared the ground for a potential shift in agricultural practices, as described in the baseline section above.
For the most part, the project will rely on multiple training and capacity building approaches, from Farmer Field Schools (FFS, or Agro-Pastoral Field Schools (APFS), as well as training and capacity building provided to other organisations or entities, value chain interventions, field days and special events, in addition to awards ceremonies and exchange visits (farmer to farmer), to increase social interactions and sharing of ideas and business models. Proximity, economic ties and a shared wheat focus is also a driver for information sharing and exchange with the Kazakhstan FOLUR project, and the Indian FOLUR project that is working with wheat and rice. The project will also benefit from the global FOLUR IP platforms, guidelines, publications and processes that come out of the global network.

Outside the FOLUR IP, there are other essential international information networks of interest for the project, which include the WOCAT database and the FAO Land Resources Planning Toolbox. National stakeholders and counterparts are described in other sections of the document, with special attention to other GEF-funded projects, such as GCP/UZB/003/GFF.

Having described briefly the project context, objectives, stakeholders, barriers to change and proposed Causal Pathways, a graphic representation of the Uzbekistan FOLUR project theory of change is provided in the attached document, as well presented below as Figure 36. It is closely linked to the Global FOLUR project Theory of Change (Annex M).

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[1] http://www.fao.org/3/i8324en/i8324en.pdf

[2] Causal pathway: ?a backwards mapping from an intervention goal through all the long and short-term outcomes to the outputs needed to achieve it, identifying a logic arrangement of causal links between these (also called an impact pathway, outcomes chain or solution tree)?, Theory of Change Primer, A STAP document, December 2019

[3] PPG draft report, Sharma, R, Akramkhanov, A & Amanov, A, 2021 ?Draft report on issues related to wheat landscapes, crop diversification, and improving production and productivity?, GCP/UZB/011/GFFDiversity

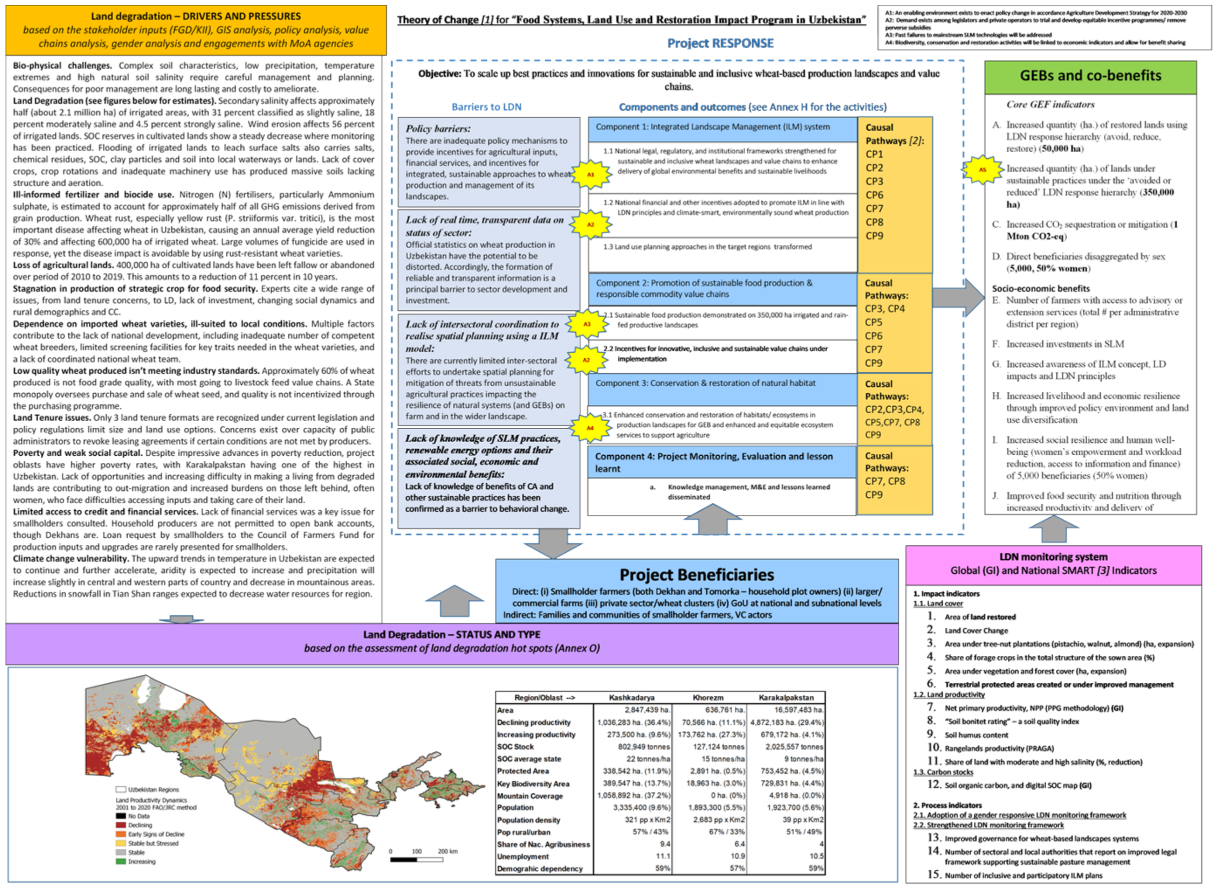
[4] PPG report, Pulatov B 2021, A Review of Existing Climate Impact Assessments and Geospatial Datasets, GCP/UZB/011/GFF

[5] Rozner,Steve. December 2013. Developing and Using Key Performance Indicators A Toolkit for Health Sector Managers. Bethesda, MD: Health Finance & Governance Project, Abt Associates Inc.

[6] UNCCD 2020, Aland degradation interpretation matrix for reporting on UN SDG indicator 15.3.1 and land degradation neutrality, in UNCCD Knowledge Hub, consulted 28 June 2021.

[7] FAO and WRI. 2019. The Road to Restoration: A Guide to Identifying Priorities and Indicators for Monitoring Forest and Landscape Restoration. Rome, Washington, DC

[8]0 https://www.nap.edu/read/13471/chapter/6



.5.2. Project Components, Outcomes and Outputs

Activities for the outputs typically follow a step-wise approach and are detailed for this output, and for all following outputs, in the project Workplan (Annex H), as well as being closely linked to the indicators outlined in the LogFrame (Annex A).

Component 1. Integrated Landscape Management (ILM) system

Component 1 builds on the baseline in the area of land use planning relying on the partnership with the MoA and the State Environmental Committee. GEF financing will go towards strengthening national legal, regulatory, and institutional frameworks, incentives, and improved land use practices for ILM in line with LDN principles and climate-smart, environmentally-sound wheat production and sustainable food systems that bring together multiple government, private sector and local stakeholders at landscape level to support planning for more balanced sustainable landscapes and value chains to enhance delivery of global environmental benefits and sustainable livelihoods.

Outcome 1.1: National legal, regulatory, and institutional frameworks strengthened to support sustainable wheat landscapes and value chains to enhance delivery of global environmental benefits and sustainable livelihoods

Output 1.1.1: Assessment of enabling conditions and regulatory framework for multi-agency and regional management of wheat landscapes and sustainable food systems carried out

Before a participatory, multi-agency approach to ILM can be conducted, the project coordination and advisory team need clear deginitions of policy boundaries, legal frameworks, mapping of local to national actors and . This is considered an essential part of the process and if done properly, it will allow project managers to understand the ?whole? the project is attempting to influence. To a significant extent, this work has been conducted under the project design phase, with supporting documents and reports are provided as Annexes (Annexes X-X).

The vision of future landscape, quality of life and resource base for the short to mid-term future is well defined in Agriculture Development Strategy for 2020-2030. Further analysis is also needed on how pending or recent decrees will influence agricultural production and trade, as well as outline opportunities for achieving inter-agency planning and coordination under potential ILM plans. The landscape approach requires cooperation and common goal setting between agencies that typically do not share information or joint planning procedures. Therefore, before strengthening of frameworks can be undertaken, further mapping that builds on PPG reports is needed. Similar work will be ongoing in the GCP/UZB/003/GFF project regarding assessment of enabling conditions and improved multi-agency coordination for ILM under the LDN conceptual framework and opportunities for collaboration and co-learning are recommended.

In addition to assessing capacities and areas for collaboration under ILM plans, this output will also build on the legal framework analysis that was conducted under the project development phase to develop policy assessments on the barriers to SLM experienced by the 3 land tenure formats described in the earlier sections of this document. Of particular importance for the project would be policy measures that resulted in the increase in number of large commercial farm land and Wheat Clusters that transition to Climate Smart Agricultural (CSA) and Conservation Agriculture (CA) practices. Lastly, incentive programmes aimed at not only addressing barriers to SLM but also removing disincentives and providing premiums for quality will be considered under this output.

Therefore, the output is focused on producing 3 gender-responsive Policy Papers that address the described issues and creating the conditions necessary to dialogue on the results. This may include a range of stakeholder engagement formats, including workshops, dissemination meetings, participation in conferences, etc. To the question of scale of the assessment, the national policy environment is a necessity and recommendations are to take it down to the scale of at least the Oblast level, and if possible include essential components from the project districts to account for local context where feasible.

Output 1.1.2 Inter-ministerial Task Force chaired by the SCEEP established to oversee development and adoption/amendment of policies/regulations to enable implementation of ILM principles, including addressing perverse fiscal subsidies for wheat

Closely linked to the previous output (Output 1.1.1) is the development of the Inter-ministerial Task Force. As the main governing body that implements the national agriculture and food security policy aimed at the comprehensive the sector modernization, research and development, innovation and introduction of intensive agricultural technologies, and increasing export potential of the sector, the SCEEP is considered as the stakeholder with the mandate and capacity to implement policy changes in line with FOLUR goals and objectives. Thus they are recommended as the chairing body.

The role of this output is therefore to provide for a organisational body with the responsibility to receive and act on the various lines of study and activity under the project components 1-4 within the policy and legal institutional frameworks and agencies. Supporting activities for the formation of this task force include development of the ToR for the task force, typology of members, statutes and objectives, plus guidelines on resulting programmes, action plans, legal papers or related products.

While this group may primarily be constituted of upper-level policy makers and advisors, participatory representation from stakeholder groups and civil society, such as the Association of Women Farmers and representatives of Wheat Clusters, Large Commercial Farms, dairy associations and Dehkan farmer groups is recommended, as well as other principal sectors at work within Uzbekistan?s landscapes.

Output 1.1.3 Capacity development program initiated based on needs assessment of stakeholders involved in wheat value chain, including use and implementation of the toolbox for ILM

Although a significant degree of knowledge on natural resource management and CA exists within the country, further training and capacity building to support FOLUR objectives. Burbidge, T., K. Civic, B. Delbaere and A. Schrauwen (2015) found gaps in knowledge among key decision makers and technical staff in Central Asia[1]. In particular, they found the need to increase capacity in the following areas:

? Basic concepts and applicability of ecosystem services and integration to economic and development planning within relevant government institutions (at all levels)

? Capacity to develop and practically undertake meaningful valuation

? Capacity to apply and utilize valuation in practical economic forecasting, planning and budgeting.

After gathering official and community support for such a process, the next step according to the Workplan (Annex H), is a gender-sensitive capacity needs assessment on key stakeholder and relevant decision-makers to futher address knowledge gaps for FOLUR objectives, targets and outline potential mechanisms for behavioural change and informed decision-making. Of special importance are 4 principal social collectives or groups for this task:

? Social groups that make of the core project beneficiaries, especially for development of outcomes in Component 2 and 3. The capacity needs assessment of these groups can also assess motivation and demand for CA and NbS, thus providing information to facilitate their formation in areas where they have the highest options for success. This will include members from the 3 land tenure formats, with special attention to vulnerable groups, youth and large commercial farmers given their influence over large land areas and project selected value chains

? Members of those agencies within the Inter-Ministerial Task Force.

? Administrators and public officials who will be informed of the results and will take action at the different scales of governance within the national and sub-national levels.

? Representative organisations, with special attention to the Association of Women Farmers, Water User Associations, representatives from project district Mahallas, local cooperatives, Wheat Clusters and pastoral user groups.

This is not a ToT approach as these participants are not expected to teach this information, but rather targeted capacity building activities among policy makers, administrative staff and extension services, as well as community leaders and value chain actors. Therefore, innovative approaches that may not require physical time in a classroom should also be considered if it has the capacity to increase knowledge and behaviroual change.

Output 1.1.4 Policy briefs, advocacy and awareness-raising materials prepared and published to inform discussions and decision making on priority issues related to FOLUR and project objective

While there are many options and issues that were identified during the project development phase that would worthy of further analysis and study, Outputs 1.1.1 and 1.1.3 provide a good foundation on which to develop targeted awareness campaigns and advocacy activities to promote FOLUR objectives and generate discussion within key stakeholder groups. These findings will guide the focus of the resulting products, but recommendations would be to address land tenure issues and policy disincentives to SLM and ILM, outline opportunities for crop diversification under current legislation and regulations on land use, provide examples of the benefits of ecosystem services and their economic contributions to agriculture, provide for increased women and youth empowerment and finally options to increase investments in SLM and remove financial barriers to sustainable development.

Therefore, the focus of this output will be to realise a total of 4 awareness raising and promotional campaign strategies have been launched that highlight and provide solutions/options for FOLUR principles and guidelines for ILM application and decision-making.

Outcome 1.2: National incentives adopted to promote ILM in line with LDN principles and climate-smart, environmentally sound wheat and wheat landscape production

Output 1.2.1: Assessment of existing and potential incentive mechanisms for ILM from national and international experiences carried out, including identification of innovative business models to encourage public and private investments in sustainable production in wheat landscapes

Initial work and research into available incentive programmes, both formal and informal, were a vital component of the stakeholder consultations that were undertaken during project development. While some incentive programmes do exist, they are limited in geographic scope and economic value. However, the process did identify a strong interest by both producers and value chain operators to introduce incentive programmes that not only included incentives for improve product quality, but for agro-environmental and social empowerment of vulnerable social groups.

Carbon markets are often considered under these outputs, though markets have yet to recover from earlier crisis. LDN is still in a stage of infancy, though payment options for achieving or maintaining LD neutrality may become a reality.

Therefore, the role of this output is further assess these lines of investigation but to also look outside the sub-national context to national, regional and international options for sustainable business models and practices, and then analyse their suitability to the Uzbekistan context and describe why through a series of reports, with clear recommendations. They will be used to inform the other outputs within this outcome.

The global FOLUR IP platform and Child Projects (CP) will also serve as a valuable source for incentive mechanisms for sustainable food systems and ecosystem restoration, as will the cross-border cooperation with the Kazakhstan FOLUR CP on issues of management of wheat landscapes. Also worthy of mention is the WOCAT database for SLM options and approaches in a wide range of socio-economic context.[2]

1.2.2 Inclusive and gender-responsive Renewable Energy incentives for VCs and GHG mitigation

The analysis of renewable energy potential across the country with a specific focus on the three target regions, showed that there is substantial potential for the deployment of solar energy powered applications, which can provide a sustainable energy supply to rural areas and thus provide a basis for improved agricultural practices and its related benefits to the small-scale farmers.

Although a legal framework for the use of renewable energy sources in agriculture has been established, the use of renewable energy is still limited. This project will facilitate the implementation of renewable energy policy by promoting new investments and showcasing the potential benefits. This can be achieved through activities that will address several key elements necessary for enabling small-scale renewable energy deployment: policy and regulatory framework, financing models, piloting and awareness raising. Within the policy and regulatory framework, the project will provide recommendations on policy measures for the promotion of renewable energy use in the agriculture sector and the alignment of electricity supply regulation, which will allow for farmers to use both, on-grid and off-grid electricity systems and act as renewable energy producers, to the extent possible. Another set of project activities will focus on developing specialised financing models for renewable energy investments, targeting farmers and entrepreneurs in the agri-food sectors.

The aim is to rely on the existing funding systems as well as to encourage public and commercial financial institutions (banks) to develop specialised loan portfolios. Finally, in order to showcase the potential benefits of the renewable energy use in the selected value chains, the project will support implementation of pilot projects. The pilots will be implemented in close collaboration with local partners and contribute to the promotion and awareness-raising among farmers within the target regions and beyond.

Output 1.2.3 Public Private Producer Partnerships (PPPP) on the ground for Nature-based Solutions in wheat-dominated landscapes

The interest demonstrated by district level stakeholders, the private sector and producers to engage in incentive programmes indicates enabling conditions and opportunities exist to develop agro-ecological and socially adept partnerships to address land management issues. Within this role The project needs to investigate a range of PPPP options, especially those with scaling potential and those that have the highest impact and RoI.

One well known example the faculty of these incentive schemes are the Public Private Producer Partnerships (PPPP) that allowed Brazil to develop the practice of zero tillage in the early 1970s, which later was used to establish the concept of Conservation Agriculture.[3] The concept had already been described by visionary people dating back to the early 1940s, but only in Brazil it was extensively mainstreamed into the agricultural practice through the multisector synergies created under the PPP schemes.

Nonetheless, a potential option that option to specifically address the need to scale up production of some of the more promising locally-adapted wheat varieties would be to enter into a PPPP agreement with a number of larger producers to multiply those have been developed by both international and national research stations. Under this hypothetical scenario, i) the research station provides the seed in exchange for funding, payment or in-kind return of seed, ii) the commercial farmers or Wheat Cluster receive a fixed price from the MoA through an agreement with the State seed company Uzdunmahsulot, in addition to potential incentives for quality or sustainable practices and iii) Uzdunmahsulot receives the largest amount to distribute as it sees fit among its producers. Isolated, key production areas could also be mandated with production and genetic maintenance of improved varieties.

There is also a wide range of Payment of Ecosystem Services (PES) and other informal agro-environmental schemes to consider that can improve landscape function and ecosystem productivity. The project aims to identify at least 2 potential PPPP schemes and pilot at least 1 per Oblast, with a priority for those that operate in protected areas. The results are to be shared among project stakeholders and showcased within global FOLUR IP communication channels.

To ensure that project core indicators are met in terms of land restored or under improved practices, it is also recommended that links are made to project selected value chains, especially dairy and wheat, given the impact of livestock and area under wheat cultivation.

Output 1.2.4 Economic case for scaling-up at national and sub-national levels for integrated management of sustainable production in wheat landscapes and ILM developed, tested, and endorsed by the Task Force

Stakeholder consultations showed significant similarities and land use issues and value chain barriers. Likewise, the policy barriers identified were aligned with national policies, rather than district level bylaws or arrangements. There are biophysical and land management practices that differ in Kashkadarya from Khorezm and Karakalpakstan, but the overall, most issues are shared and connected to irrigation, LD, financial access and marketing opportunities.[4] Therefore, the results and conclusions of this output have capacity for scaling beyond their district or Oblast boundaries.

This output relies on working through Causal Pathway CP7: Data collection on key Performance Indicators to determine what economic indicators represent sustainable production or business practices within the project selected value chains and then apply them to producers, Wheat Clusters and other value chain operators to guage and assess the state of the system, highlighting those that meet or exceed the criteria. The process also provides clear indication of where the production and value chain cycles need improvement, and leverage points for investment. Potential access points for renewable energy has been provided under Annex O, and similar methods could be used for environmental audits on the industry.

While there exist limitations on crop diversification of commercial farms or scaling of diversified Dehkan farming and household practices, options for diversification and Best Practice within the current land tenure systems exist and efforts to allow for more decision-making capacity by producers and market liberalisation are captured in key strategy documents produced by the GoU. Therefore, economic efficiency is often achieved through increased resource efficiency and the RoI for upgrading of farm infrastructures, investments in renewable energy and CA need to be calculated and demonstrated in economic terms. Field demonstrations of these practices helps convey the practice to local producers but large investments require concrete figures before scaling can be achieved.

Outcome 1.3. Land use planning approaches in the target regions of Kashkadarya, Khoresm and Karakalpakstan transformed to ensure development of inclusive, sustainable, and multifunctional landscapes with agreed partnership and sustainable financing and methodology to enable vital ecosystem services, biodiversity conservation and multi-functional wheat production landscapes

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Output 1.3.1. Integrated landscape and wheat production suitability analysis conducted based on agro-climatic conditions to inform ILM, farm and value chain level interventions, including effective and inclusive biodiversity, and climate-smart options developed, tested, and demonstrated

Wheat suitability analysis was interpreted by project developers to mean development of criteria to understand land use as contrasted with land potential (Land Potential as defined as the inherent potential of the land to sustainably generate ecosystem services required to meet today?s needs without compromising our ability to meet the needs of the future.[5]). To facilitate this process, land suitability map will be generated using ArcGIS integrated with GIS environment by assigning weights of individual criteria and classifying land into 4 potential classes, being ?not suitable, moderately suitable, suitable and optimum? for particular land uses, as seen in the Figure below (Figure 37).

[1] https://circabc.europa.eu/sd/a/aef908bc-a235-4285-8237-a56a28f8a131/ECNC_MAES%20in%20EECCA%20and%20SEE%20countries_scoping_document_reviewed_2015_final.pdf

[2] https://www.wocat.net/en/

[3] Speratti et al., 2015.; Derpsch 2001

[4] PPG reports

[5] https://landpotential.org/knowledge/what-is-land-potential/

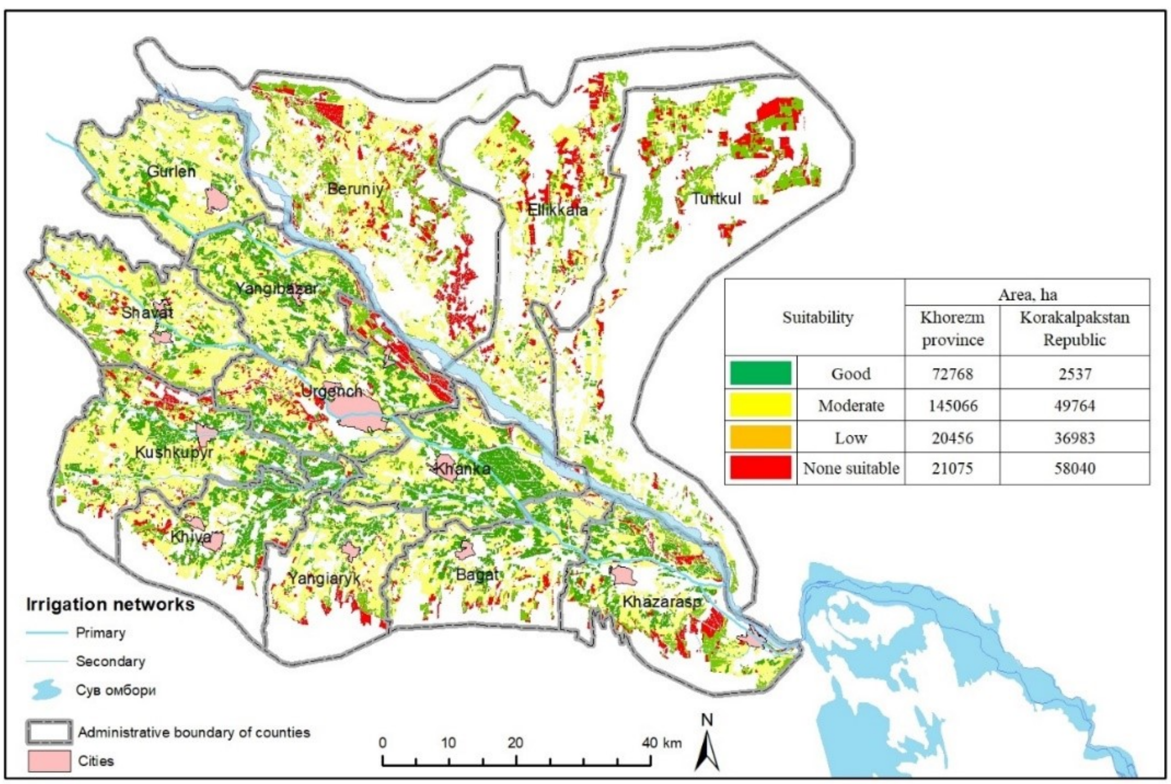

Figure 37. Results of Land suitability in terms of potential of land productivity for Khozem Oblast.

It is recommended as well that the interactive mapping app created during the project PPG phase be used as the basis and foundation for DSS development, and that this data layer be finalised according to the methodology developed during the project development phase and presented under Annex T.

The DSS can be used to assess and monitor the project districts using the land suitability map sets, as well as those developed under the UNCCD endored Good Practice Guidelines to show the SDG 15 indicators and calculate LD according to this data. Field and participatory monitoring should be used to strengthen the data layers in the DSS.

The current project Design Support System App[1] already serves as a mean to test some of the future functionalities of the DSS, the layout is presented in the next figure (Figure 38). The system as 3 main panels: (1) Layer and Tool panel, where the user do most interactions, (2) Map view panel where cartographic responses are shown, (3) Statistic and Chart panel where information is updated according to the user choices: Charts, Figures and Tables can be zoomed and downloaded together with their data. In the Section 4 of the Tool panel, the user can choose how to query areas, either administrative areas from a list . The base layers are shown in section 5 for the user to choose, but extra layers can be found in toolboxes. The first toolbox is the multi-Criteria analysis (6) which allows to combine specific layers in order to find areas of interest (For example: Grasslands with decreasing productivity in non-mountain areas for restoration or Forest with stable or improving productivity in mountain areas to protect or avoid degradation). The tool also provides statistic on the combination of three global LDN indicators: Land Cover, Soil Organic Carbon and Land Productivity Dynamics, including reporting tables. The second toolbox is the Land Cover Transition analysis (7) where users can choose to compare changes (Gain/Loss) from different initial years. Finally the system has a Drawing tool (8) that users can use to create layers to provide feedback or submit ideas i.e: mark areas of interest, sites undergoing important issues, map or system errors, priority sites for specific SLM, etc.

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[1] https://projectgeffao.users.earthengine.app/view/uzbekistan-folur

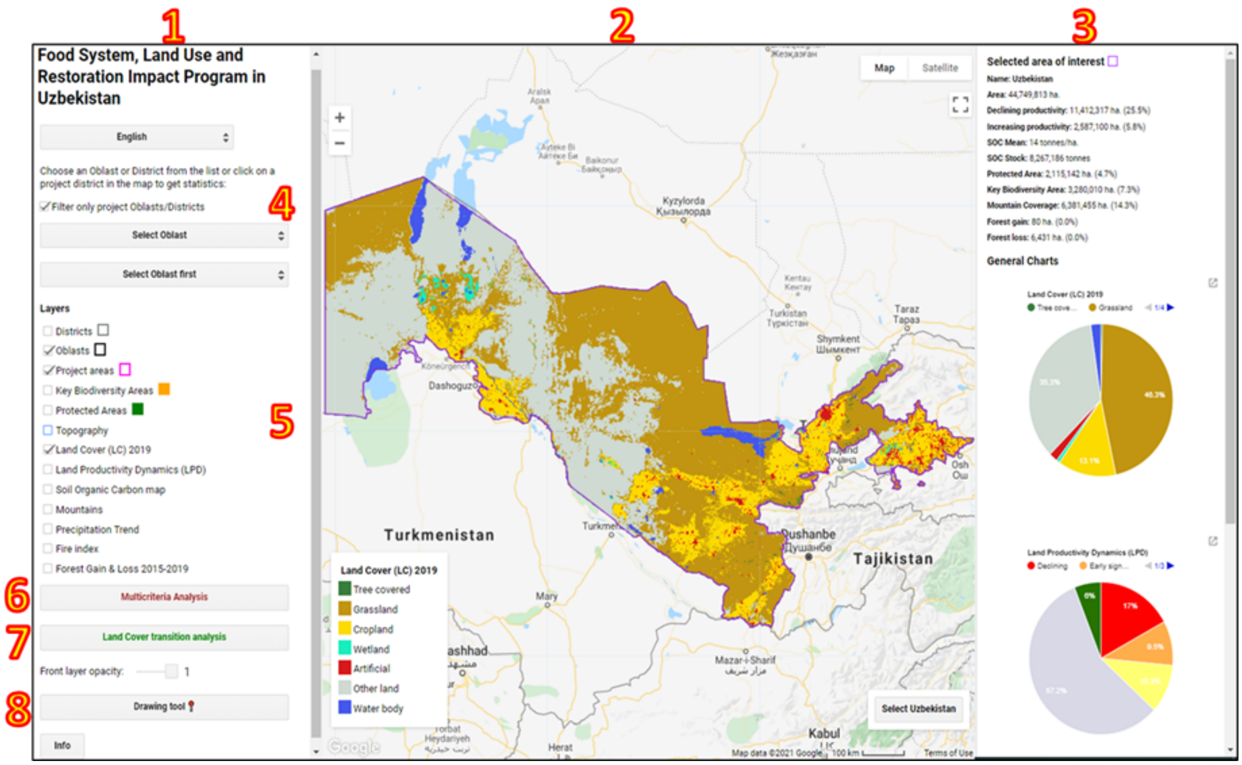

Figure 38. Layout of the current project App and its functionalities.

It is intended that the DSS incorporate the data layers outlined be applied to the project selected districts and these limits are considered the contextual boundaries, given the ambitious project targets and core indicators. The idea is that by addressing LD and ecosystem service conservation at a wider landscape level, the restoration activities being achieved within the project demonstration sites will be further supported and enhanced and the process will provide for learning opportunities and adaptive measures will be achieved at various sectoral levels. Therefore, it is the participatory learning process itself in addition to the development of the DSS that provides recommendations for land use should be the focus of work within this output.

Output 1.3.2. ILM plans using FAO Land Resources Planning Toolbox elaborated, inclusively consulted, and adopted by authorities in accordance with Land Code

Land use planning is intrinsic to achieving FOLUR objectives and other biodiversity and LDN targets. Public participation in land use planning is encouraged under this output, as well as close collaboration with similar initiatives such as GCP/UZB/003/GFF to understand what expectations arise when the term participatory ILM is presented and what potential outcomes are realistic under current cultural and regulatory frameworks.

To aid the resulting planning process and to ensure that participatory, gender appropriate approaches are used, the FAO Land Resources Planning Toolbox has a number of manuals and methodologies for this process, as well as FAO?s Voluntary Guidelines on Land Tenure (VGGT).

Land management units under the ILM plans should be those used by the MoA and the Council of Farmers to ensure and increase appropriation and synergies between the project developed land use plans and the institutional and regulatory realities that currently exist within the country. Where possible privately-managed land areas can enter into Land Stewardship agreements to fulfil key landscape features, habitat types, wildlife corridors or other local conservation targets.

To increase participation by pastoralists in ILM plans, provide technical and material support to increase water and pasture access. Grazing would not be restricted, but would allow for plant recovery times (2-3 months minimum) in heavily grazed areas and open new areas to graze through improved water distribution within the landscape. River and riparian zones should follow the graze-recovery cycles and livestock access to river water can be restricted to sacrifice areas in order to reduce impact and allow for increased riparian vegetation growth, especially at grass and understorey levels. In Kashkadarya Oblast, piedmont pasture areas rehabilitation works will be conducted and contribute towards the SDG Indicator 15.4.2: Mountain Green Cover Index

Lastly, the land use plans are essential for the counterbalancing within land cover types to achieve LDN.[1] If forestry land cover is lost within a selected area, then this same amount of forest needs to be restored in another area, hence the key links of LDN to land use planning. Recommendations for development of this output in the Workplan (Annex H) call for use of the spatial analysis and mapping products produced during the project development phase and their further refinement through implementation of Component 1 to be linked to current water and urban land development planning frameworks to ensure LDN is considered and integrated into decision-making.

Land planning should also be short to mid-term in length (12-24) to allow for adaptation and learning within the provided project timeline, and lessons learnt and results should be shared with global FOLUR IP platforms.

Component 2: Promotion of sustainable food production practices & responsible commodity value chains

Component 2 is based on the partnership with the MoA, the State Environmental Committee, Authorities of the three participant Oblast, producers, investors and value chain operators to develop new modalities of financial assistance to stimulate consumer market/demand for the wheat that will be sustainably produced. GEF financing will go towards scaling-up sustainable food production on irrigated and rain-fed systems in agricultural landscapes through the causal pathways outlined in the beginning of this section. The project will also work towards diversifying crop options for the commercial land tenure format and scale local, national and international best practices via a mix of proven participatory approaches. GEF funding will also go towards enabling the 3 land tenure systems to access incentives for sustainable production practices that conserve or increase biodiversity, land restoration, and reduce environmental impacts of farming. Cooperative platforms for wheat value chain actors focusing on sustainable wheat production, marketing, and sale will be developed to enhance the delivery of GEBs. The work under this component will be done following FAO experiences on sustainable wheat production ?Save and Grow in practice: maize, rice, wheat? and in line with the principles laid out in the ?Voluntary guidelines on sustainable Soil management?, ?International Code of Conduct for the Sustainable Use and Management of Fertilizers?, and ?Principles for Responsible Investment in Agriculture and Food Systems?

Outcome 2.1. Sustainable food production demonstrated on an area of 350,000 ha on irrigated and rain-fed productive landscapes

Output 2.1.1 Formation of new and/or capacity building of existing producer organizations and Wheat Clusters to implement sustainable wheat production and diversification at farm and landscape levels (including Farmer Field Schools, FFS and Training of Trainers, ToT) to implement improved farming management practices and landscape management

This output is primarily focused on the organisation and resource development needed for the training and capacity building exercises that are necessary to address the knowledge barriers identified. It includes establishment of FFS or collaboration with existing entities and ToT of 60 extension workers/community leaders/ representatives of participant organisations (20 per Oblast).

The activities, indicators and targets outlined in the project Logical Framework (Annex A) and Workplan (Annex H) are based on the assumption that there are gains to be had in efficiency and project impact by establishing close lines of collaboration with existing organisations, rather than have the project create, maintain and finance FFS or other similar organsations, though that this option is provided for within the project design for areas that have little social infrastructure or development capacity. In fact the FFS model is still a recommended tool for increasing women and youth involvement and gaining direct lines of communication and capacity building with key project beneficiaries. This said, each FFS is a project unto itself and the ambitious project GEB targets mean commercial farmers and the newly formed Wheat Clusters will also need to be part of the approach. Therefore, a mix approach will most likely provide the highest return on investment of project resources.

It is therefore recommended that collaborations are established with other organisations to provide location, utilities and contact and organization of their members for the training sessions. Access to land to realise demonstrations or manage learning sites would also be provided by the host organisation where possible, though this is the principal focus of Output 2.1.2. The project would then provided trainers, educational or practical training materials, specialized equipment and other forms of support, such as food and drink. These groups could include, but are not limited to: Water Users Associations (WUA), rural community mahallas, currently existing FFS and other project initiatives. The Farmers Councils, while not offering extension or other farmer demanded services, could also provide contact information for commercial farmers and facilitate capacity building activities in efforts to improve RoI of the Council development funds. Wheat clusters could also facilitate meeting spaces for their producers, administrative support, and access to machinery and other specialised tools to conduct training or demonstrations.

The provision of flexibility on how the project should approach the training component of this output should not be seen as providing for a lack of compromise on key issues and promotion of GEF principals of transparency, participatory decision-making and gender equality. This approach might also suffer delays and issues to find adequate organisations with the targeted number and profiles of beneficiaries, especially under the current COVID-19 pandemic. To ensure project success, it is therefore recommended that the project develops its networks and training support systems at an early stage in project implementation, and utilise where possible the FAO and GEF guidelines on CSO, FFS and community engagement standards to ensure quality delivery on project targets.

For the ToT exercises, care must be taken in who is selected, and recommendations are to select from a range of actors at Oblast and district levels that have capacity to influence land use and management over key project locations. This can also include value chain actors, as they learn about the impacts of conventional agricultural practices and its impact on landscapes and ecosystem services they will become more active in offering incentives. There was strong interest from value chain actors to see more agro-environmental and social empowerment incentive schemes.

Output 2.1.2. Diversification approaches to maintain diversity of production systems (diversification, crop rotation and inter-cropping, improved wheat germplasm) demonstrated

This output is closely linked to the previous (Output 2.1.1) in that it seeks to create the conditions and provide resources for training and showcasing SLM practices as applied to wheat and other project selected value chains. And while smaller plots for horticultural demonstrations will be part of this output?s activities, the target of 350,000 ha being placed under improved management practices promoted by the FOLUR IP will require working with Wheat Clusters, commercial farmers, pastoralists and administrators to succeed. In fact, the concept of ?demonstration site? as a small plot of >1000 m2 needs to be reconsidered under the scale of the output?s target. Demonstration sites as identified under the ILM plans (Output 1.3.2) may be small areas, but they should be representative of the landscape model that is being promoted under this project and in close association with the LDN planning and processes ongoing within the country.

The demonstrations should also be aligned with the value chains and potential incentive programmes, so that economic indicators are showcased at the same time as SLM techniques and best practices. Finally, GEB and ecosystem services from the approach should be calculated if possible, especially for soil fertility and pesticide use under different scenarios given they are simple to calculate.

The demonstration sites development should also take a critical look at past failures to scale CA and other SLM options. If root causes of these failures are not addressed, then the project assumes the same risk of failure. This will require a participatory approach in the design and management practices used in the demonstration sites, especially among the larger wheat producers and Clusters.

Involvement of the Council of Farmers within this output could also provide for increased understanding and promotion of CA by the leading agency responsible for assigning land use under leasing agreements. This could include as well diversification options for abandoned lands; approximately 400,000 ha of arable lands were abandoned from the period 2010 to 2019.

Output 2.1.3. Improved management of productive croplands to increase crop production (conservation agriculture, integrated soil nutrient management, improved wheat cultivars, subsurface drip irrigation system, integrated pest management, etc.) demonstrated

With the results of the gender-sensitive Capacity Needs Assessment completed (Output 1.1.3) and through an adapted mix of participant organisations and project activities, the capacity building program outlined under this output is expected to train a total of 3.800 people on FOLUR issues and the practices and approaches outlined in the project Workplan (Annex H). The optimal distribution of producers trained is suggested as 75% smallholders / 25% Commercial farmers. A minimum adoption rate of 50 percent is expected for the SLM techniques and practices. At least 2 WOCAT articles are expected from these activities, in combination with the other outputs under Outcome 2.1.

Project funding will supply basic tools, materials and inputs for practical exercises, rental costs and fuel for machinery, fund open field days and travel of invited experts, as well as provide for trainers and their expenses. The project will also apply a ?no one left behind? approach by ensuring inclusive and gender-sensitive participation of beneficiaries, especially in order to provide certified training to women, youth and other vulnerable populations. Four specific knowledge products for project VCs developed to strengthen investment and development are also developed under this Output based on the lesssons learnt through this output, and other activities of the project.

Outcome 2.2. Incentives for innovative, inclusive and sustainable value chains under implementation

Output 2.2.1. Menu of ?sustainable wheat contract? models with attributes that satisfy heterogeneous needs of different segments of the wheat value chain (producers, millers) and farmers introduced, responsive to needs and capacities value chain actors

While contract models have been extensively used since Soviet times until today, they typically have been very precise on land use and management practices and have sought to increase production without considering quality or environmental consequences. Of course, there are valid food security and economic issues behind the the policy to maximise production of wehat and cotton on suitable lands, but contract language and options need to take into account other indicators and factors to achieve more sustainable food production systems and livelihoods.[2]

The stakeholder consultations conducted through KIIs with key value chain actors revealed a strong interest on part of the sector to increase sustainability through improved incenctives schemes.[3] Not only to improve environmental and social issues, but to address quality issues in all project selected value chains. Within the pricing and quota system of the State purchasing system currently in place for wheat, quality is not considered and premiums are not provided. Commercial dairy farms have expressed concerns over fodder quality on offer and have stated interest in paying higher prices if consistent flows of quality fodder is provided.

While encouraging social baselines exist, the project need to take a critical look at its potential options to influence national laws and policies. Therefore, recommendations are to work where possible with the private sector, most concisely smallholder producers (principally with forage crops, dairy, horticulture), commercial farmers (all 4 project value chains) and wheat clusters to develop the suits of contract models.

Where potential opportunity to influence national policy is identified is through the vast areas of abandoned lands. A recent decree is being developed to reclaim these lands and put them back under previous land use patterns. However, the root cause of the initial abandonment are often LD and resource issues. Other less demanding land uses or crop types could be considered for these lands, or even a free hand in crop choice in exchange for restoration of productive capacity, to be measured in crop volume following a predetermined amount of years. The Inter-Ministerial Task Force (Output 1.1.2) is a necessary component of this output if success is to be had in adapting some policy aspects.

In any case, this output will create a suit of contract options that promote inclusive FOLUR objectives.

Output 2.2.2. Cooperative platform for wheat value chain actors developed focusing on sustainable wheat production, marketing, and sale

The aim of this output is to provide an economic stimulus and driver of change by increasing demand and opportunities for high quality, sustainably produced wheat and other agricultural products. Cooperatives and especially wheat clusters could potentially increase trade and obtain premiums. It also would potentially provide a channel to engage and influence upper levels of the VC that move large volumes of goods.

This output faces a number of challenges. The first is given the current legislation and State controlled purchasing system, there is limited data on which to base potential demand for such a service or potential volumes of trade. The role, or lack of one, of Uzdunmahsulot so alneeds to be addressed at an early stage by the Inter-Ministerial Task Force, together with project coordinators, given its place within current markets. Women and smallholders will also not benefit from the Platform unless there is a dedicated section to low volumes of specialty goods. Ownership and the transition to financial independence once the project concludes should be addressed early in the development process.

In support of the platform practicality is the fact that trade among the 3 farm types and among local, national and international value chain actors is a current reality that is expected to increase under ongoing GoU reforms. And international trade in wheat and other goods will increase demand for food safety and quality. Other options for increasing platform use would be to offer informal trading options such as collective transport, bartering, cross-breeding options for livestock, temporary job listings, etc.

The scale of operation also needs consideration, and it is recommended to begin activities in the districts with a strong private wheat and cereal milling sector (Kashkadarya) and move to outlying districts and national scales once potential demand and operational protocols have been successfully piloted. Value chain mapping would need to be conducted for this to be effective at a district level early in the process to understand potential uses and needs for the platform, as outlined in the Workplan.

2.2.3. Locally appropriate and equitable agro-environmental incentives adopted to link smallholder outputs to local and potentially regional markets for sustainably sourced commodities from sustainably managed landscapes by leveraging wide stakeholder involvement, including the private sector

While the two former outputs are principally wheat based, this output seeks to provide incentives to non-wheat value chains that link directly with the project selected non-wheat value chains (dairy, alfalfa, horticulture) and provide opportunities for smallholders (household and Dehkan farms) through formal and informal incentive schemes that provide for both agricultural and socio-environmental impacts. It also takes a wider, landscape view of active sectors to identify cross-cutting incentive options and partnerships.

The international and national incentive schemes outlined under Output 1.2.1 will provide options and guidance for this output, as will supporting activities under Component 1.

Component 3: Conservation & restoration of natural habitat

Component 3 builds on the baseline investment in conservation relying on the partnership with the State Environmental Committee aiming to address problems stemming either from expanding wheat production frontier into the adjacent ecosystems of high conservation value or to increase ecosystem services important to support agriculture in the productive landscapes. **GEF financing** will go towards supporting high nature value ecosystem/habitat restoration for GEB and enhanced ecosystem services to support agriculture in an equitable manner.

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<u>Outcome 3.1: Enhanced conservation and restoration of habitats/ ecosystems in production landscapes for GEB and enhanced ecosystem services to support agriculture in an equitable manner</u>

3.1.1. Enhanced conservation and restoration of habitats/ ecosystems in production landscapes for GEB and enhanced ecosystem services to support agriculture in an equitable manner

Ecosystem restoration activities can at times be laborious and conducted in rough terrain. It also requires a degree of technical knowledge to ensure works are adequate for the context and aligned with land management objectives. Many projects rely on non-monetary options to increase participation and volunteering for such ecological conservation and restoration works, such as education, certification, land tenure options, access to natural resources, in-kind payments in materials, etc. While these are all considered valid under this project, Payment for Ecosystem Services (PES) should also be considered, especially for more vulnerable social groups.

Ecosystem restoration at the scales proposed by the project also call for well-prepared teams that are specifically trained and capacitated in realising such works. Rarely can the necessary human or physical resources be found within areas to fill requirements for ecosystem restoration works. There should be a baseline of trained people with access to basic tools and means to react to LD and maintain ecosystem services for the wider landscape.

Also missing from the project baseline are locally sourced native and production nurseries that can produce small quantities of a wide range of local and production varieties of crop and tree species. Training should include then basic species identification and multiplication and provide the required tools and materials to organise small community nurseries.

Therefore, this output is intented to supply a large group of capacitated individuals to carry out the necessary ecosystem services, in exchange for payment (PES), training and certification following successful compnletion of the cirruculum. The total target is to have 300 people trained in ecosystem services, SLM and ecosystem restoration activities, native species multiplication and ILM and LDN principles and have been engaged to realise project ecosystem restoration activities by project midterm review. This would provide 100 trainees per Oblast, or 50 per district.

They would most be on-hand for activities identified under the ILM plans (Output 1.3.2), in addition to the others descibed under this outcome (Outcome 3.1). Where potential RoI calculations are possible regarding action/no action scenarios, outline in economic terms the contributions that the improved ecosystem services are having for the wider communities. Increase engagement with communities by providing native and local variety fruit trees to increase landscape diversity and habitats.

Study options for PPPP or continued employment of trainees under GoU programmes or through other project initiatives to increase project impact and create markets and services around ecosystem service restoration and maintenance. Ensure ecosystem services are inclusive by benefits to marginal social classes, landless, women-led households and unemployed youth.

3.1.2 Models of benefit sharing from ILM between communities and other stakeholders for conservation and restoration of habitats/ ecosystems in production landscapes developed

There are increasing uses of benefit sharing models that provide for livelihoods in exchange for resource conservation and responsible use. Assisted Natural Reforestation in return for land tenure rights or access to specific resources have been piloted successfully in Central Asia.[4] Holistic Planned Grazing and other traditional pastoral systems such as Hima[5] or Jango Pastoril[6] have increased productivity and livelihood resilience in drylands and rangelands. Grazing patterns and scheduled have also been mapped and studied to increase pasture recovery times under ILM plans. Transhumance herders are provided with water and accommodation in exchange for respecting livestock corridors and crop fields.

There are a range of informal and formal options to consider under this output. Water point rehabilitations are the most common of these models, and they can include monetary, in-kind and win-win partnership schemes.

As mentioned, Carbon trading is often a considered option under these schemes. Market weaknesses and issues may be resolved within the project duration, though it should be considered a high-risk option under current situation. Payments for habitat conservation for specific endangered species has successfully been conducted and could be considered, especially in protected areas of project districts.

The final target is for 2 gender-responsive and inclusive models for benefit sharing to have been piloted that benefit a minimum of 300 people, with scaling potential in other project districts and links to policy, capacity building and incentive programmes developed under Components 1 and 2.

3.1.3 Alternative livelihoods demonstrated for community members involved in activities that threaten global environmental values for conservation and restoration of habitats/ ecosystems in production landscapes

Communities at large have a leading role in global environmental damage and habitat loss. Therefore, the role of this output is not to find fault with a particular group of people. Rather its to engage those production types that have the most impact and provide means to mitigate practices, or transition to more sustianble livelihood models. Mapping of environmental contaminants and impacts caused by management will be the first step to understand each sectors role in landscape processes.

Smallholder producers are often diversified, use resources more sustainably and support agro-ecosystems around them. They also operate on reduced land areas, as determined under Uzbekistan Civil Code, Art. 165. Their activities will most likely not be among the significant contributors to LD and ecosystem loss. This said, commercial farmers and operators logically have more capacity to damage, and conserve, habitat and land productivity given the size of land and the volume of products they manage.

The same Civil Code article that establishes land size limits for the 3 land tenure types also outlines land use options for commercial farmers, which in many cases is wheat and/or cotton. Power of decision over crop type and land use was further limited by the creation and powers of the Council of Farmers.[7] Therefore, alternative livelihood options that can be implemented on the leased farm land they manage are limited.

Options for this output therefore include diversification in mixed cropping practices that meet wheat and cotton quotas, yet provide for increased plant diversity and income from the cropping space. This could also include temporary grazing and housing of livestock or installation of solar panels in marginal lands or strips within the planting space. Options will not only include agricultural alternatives, but potential opportunities in biodiversity conservation efforts, ecological tourism and value chains for products based on natural and agricultural biodiversity should be considered. Basic economic indicators will guide further development and study of those options showing the most promise.

The abandoned fields are also an excellent resource and opportunity for this output. As mentioned before, unless the underlying issue for abandonment in the first place is addressed, land productivity under more sensitive or resource demanding crops will most likely be suboptimal. Other crop types that have economic demand and provide for increased soil fertility and ecosystem services could be produced using less water, fertiliser and machinery inputs.

Having piloted and tested alternatives and options, recommendations are to showcase success stories and disseminate lessons learned through the various awards and recognitions provided by the project before closure.

3.1.4. Degraded ecosystems/habitats of high nature value in target areas in production landscapes put under sustainable management and restored

This output has an ambitious target of 50,000 ha of land being restored through a variety of mechanisms. These may include PES, PPPP, restoration in exchange for access and tenure rights and co-financing collaborations. They may take place wit existing projects and initiatives, or be more project driven activities. As the definition of ?restored? can be contextual and responde to a number of stress and state indicators, it is recommended that the LDN response hierarchy of ?avoid, reduce and restore? be used, and consulted within the LDN conceptual framework to improve decision-making. This approach provides an endorsed set of criteria and the an increasing network of supporting tools and advisory resources.

Resources need for this activity needs to be developed through a coordinated effort with other outputs and landscape actors. It also needs to be prepared to identify the physical material and biological resources that will be needed and work with other outputs to ensure they are prepared in sufficient time to meet project goals. Rarely do projects find the necessary human resources and materials needed at project onset due to the contextual nature of their objectives and design.

It is also recommended to focus attention of the output on protected areas and existing or potential buffer zones that are identified through stakeholder consultations and the ILM plans from Output 1.3.2. To aid this process, recommended restoration options are provided in the Workplan (Annex H) and the Restoration Opportunity Assessment (ROAM) developed by IUCN is included to identify options suitable for the project areas near valuable and threatened ecosystems, including PAs and adjacent areas to support ecosystem integrity and ecological connectivity.

Physical mapping of biophysical elements of biodiversity, such as range of animals, key forage areas, wildlife water points, will also be undertaken in this output and introduced as data layers in the project DSS. Other free software based on global datasets also have options to analyse ecosystem connectibity and integrity, and can be included in the analysis.[8] Remote sensing tools will continue to improve in coming years and the project needs to take a proactive approach to ensure the DSS is updated during the project implementation with the biodiversity and ecosystem restoration results of this output.

So far no detailed assessment of ecosystem services is available for the project districts. The existing ecosystems and main landscape features as well as actual land use patterns and other human needs suggest that the following ecosystem services are especially important:

? Support of nationally and globally important biodiversity: This concerns in particular the high and medium mountain belts covered by Hissar State Strict Nature Reserve and its surrounding areas, but also biodiversity in human-modified ecosystems of lower mountains and piedmonts. The riparian areas of the Amu Darya River with their fragments of *tugay* forest, channels and islands are also critically important for the region. This dynamic mosaic of riparian habitats is continuous with neighboring Karakalpakstan and provides an important habitat extension as well as connectivity as corridor and stepping stones for the specific biodiversity of the riparian ecosystems.

? Regulation of water: The riparian ecosystems are potentially important retention areas in case of flooding in the Amu Darya River and could contribute to flood protection in further downstream located areas. However, the regulation of the waterflow in the Amu Darya and withdrawal for irrigation has caused a massive reduction in runoff and a complete lack of floods. At the same time, the high and medium mountain belts in Kashkadarya province receive the highest precipitation and their ecosystems are of major importance for retention of water from snow and rain, reducing surface runoff and supporting of infiltration into the ground and replenishment of aquifers and by this reducing flood risk and balancing water flow in downstream areas.

? Carbon sequestration is an important regulatory ecosystem service. Of particular importance are alpine meadows with comparably high humus content and woodlands with carbon storage in plant biomass above ground and in root systems. Live and dead wood of the *tugay* forest is the main storage of carbon.

? Prevention of erosion: The *tugay* forests stabilize the riverbanks and reduce lateral erosion

? Provision of various goods: The provided goods reflect the variety of ecosystems in the project districts and the diversity of their direct and indirect use. The major provisioning services include the production of biomass used directly (in form of various crops) and indirectly (in form or forage for livestock) and the provision of water for irrigation, drinking, household and industrial needs. Further provisioning services include timber, fuel wood and non-wood forest products. The potential of sustainable use of game animals in the context of hunting is currently low.

? Recreational services: The high and medium mountains around Hissar State Strict Nature Reserve are of importance as areas for tourism and recreation at local, national and international level. Some sites are particularly famous natural monuments, like the Cave of Amir Timur, Sutushar waterfall or Hazret Sultan. The recreational potential of the *tugay* is important in the context of Lower Amu Darya Biosphere Reserve, where some visitor infrastructure is under development. The recreational potential of some natural and anthropogenic ecosystems has recently been additionally recognized by the establishment of Khorezm National Nature Park.

Finally, it is recommended that the process result in 2 WOCAT articles being developed and published on the global database.

Component 4: Knowledge Management and M&E

Component 4 targets Knowledge Management and Outreach to other wheat landscapes, through improved monitoring framework, metrics/indicators and establishing a country-level online platform to monitor GEBs. Linkages with the Kazakhstan FOLUR child project will enhance the potential for lessons learned across different production systems and within global wheat value chains for the benefit of other FOLUR IP countries. GEF financing will go towards supporting standardized indicators introduced linking to the FOLUR IP; A national experience exchange network on sustainable food production established at the Ministry of Agriculture and linked to the Kazakhstan FOLUR IP exchange network; RBM Gender-Sensitive system of the project promoted adaptive management through capturing key results of the project activities and peer-to-peer training; Communication Strategy and KM strategy; Project Mid-term review and Final Evaluation; and finally Global IP platform engagement & coordination.

As a note to project developers, good M&E consultants and experts are hard to find and often high cost. Project staff in FAO and other projects were able to confirm this for the Uzbekistan context. At the same time, M&E for a project of this size and ambition should not be limited to one professional.

A potential option that has been found to work well in similar circumstances as these described is to have each project consultant present a M&E plan, complete with methodology, indicators, frequency of data collection, etc., for approval and have them produce semester or yearly reports accordingly. The structure of this M&E methodology should adjust where possible to the reporting formats outlined in the PIR, PPPs and those formats requested by the project steering committee to save time adapting data from one format to the next.

Someone will have to collect and analyse this information. This task can fall on the project coordinator if they are experienced with this work, or as a second and recommended option, a project M&E working group can be created that included a select number of stakeholders and project staff. Given the complexity and ambition of the project, this option could work well to provide consistent guidance on project development if meeting were timely and well organised. A more representative group will also allow for more informed discussions on recommendations for action and adjustments on a wider range of issues.

Outcome 4.1: Project implementation based on RBM and lessons learned/good practices documented and disseminated

4.1.1: Standardized indicators introduced linking to the FOLUR IP (calculation, testing, integration SDG indicators, extrapolation from local to national scale)

An important function of the Global Platform is monitoring and evaluation (M&E) and aggregation and reporting on progress across FOLUR Child-Projects (CP) on the basis of key indicators and other M&E tools. It is important to have a shared understanding and definitions of these indicators and tools from the outset. Each CP should only use indicators and tools that are applicable to their activities. This guidance note aims to help CPs understand key indicators and choose appropriate ones for their projects. Technical assistance and appropriate tools for measuring these indicators can be provided by the GP.

The FOLUR Global Platform will be collecting and reporting on 5 sets of information from all CPs:

1. ***Core GEF indicators***[9] (annually):

   a) **Terrestrial protected areas** created or under improved management for conservation and sustainable use (Hectares) - *reported as the aggregate total of terrestrial protected areas newly created; and terrestrial protected areas under improved management effectiveness*

   b) Area of **land restored** (Hectares) - *reported as the aggregate total of area of degraded agricultural lands restored; area of forest and forest land restored; area of natural grass and shrublands restored; and area of wetlands (including estuaries and mangroves) restored (To avoid double-counting, the hectares reported under each Sub-Indicator should not overlap)*

   c) Area of **landscapes under improved practices** (excluding protected areas) (Hectares) - *reported as the aggregate total of area of landscapes under improved management to benefit biodiversity (qualitative assessment, non-certified); area of landscapes that meets national or international third-party certification and that incorporates biodiversity considerations; area of landscapes under sustainable land management in production systems; and area of High Conservation Value forest loss avoided*

   d) **Greenhouse Gas Emissions Mitigated** (metric tons of CO2e) - *reported as the aggregate of carbon sequestered or emissions avoided in the sector of Agriculture, Forestry, and Other Land Use; and Emissions avoided*

   e) Number of **direct beneficiaries disaggregated by gender** as co-benefit of GEF investment - *this indicator captures the total number of direct beneficiaries**[10]** including the proportion of women beneficiaries*

2. ***Indicators that are in each CP?s Results Framework*** (annually):

These are custom indicator and specific to a CP and should be SMART (specific, measurable, attributable, reliable and time-bound).

3. ***Global Platform Indicators*** (annually) ? these come from the Global Platform?s Results Framework; the CPs will be asked to report on the following information, as appropriate for each particular country project (and many of these should be), for aggregation at Program level.

Capacity/training:

f) **Government counterparts and CP team members participating in global, national and regional forums and workshops** (total number of participants; % female) - *an indicator involving counting the number and proportion of female participants of CP/partner participants in FOLUR-related national, regional or global forums, meetings, or workshops, virtual or otherwise - e.g. GLF, CGIAR, Good Growth Platform events, multi-stakeholder dialogues, S-S exchanges, commodity value chain events, etc.*

g) FOLUR-related solutions, guidance notes, training materials, etc developed and shared with country stakeholders (number) ?? *this relates to any capacity-strengthening related outputs, products, materials, videos, etc.*

h) **Participants trained in FOLUR best practices or cross-cutting issues** (total number; % female) ? an output indicator involving counting the number and proportion of female participants of any capacity strengthening efforts, virtual or otherwise, related to ILM, promotion of sustainable food practices and responsible FOLUR commodity value chains; cross-cutting issues relate to sustainability, equity, etc.

i) **Inclusive, participatory Integrated Land Use Management (ILM) Plans developed** (number) ? this includes outputs from participatory, inclusive forward-planning exercises that CPs have contributed towards; any plans or strategy documents at any level ? local, subnational, national, regional or global. For alternative ILM terms, see: https://ecoagriculture.org/about-landscapes/many-words-for-integrated-landscape-management/

Policies/Value Chains:

j) Global, regional, national and subnational FOLUR commodity chain policies, standards, etc influenced or informed by/using FOLUR products (number) ? *this includes the use of any knowledge products supported by the GP or CP in the formulation of new government or private sector policies, standards, certifications, pledges relating to implementation of sustainable practices in coffee, cocoa, palm oil, rice, wheat, beef, maize, soybean*.

k) **New public-private partnerships developed with FOLUR Community of Practice members, coalition partners** (number) ? such as new coalitions, networks, platforms or initiatives between government and private sector actors working toward FOLUR outcomes.

l) **Private sector actors or coalitions, commodity value chain events, documents, press releases, etc. citing/using FOLUR products** (number) ? *this involves tracking citations, uses and uptake of CP-generated (and GP-supported) knowledge and advocacy products and recommendations by companies, coalitions ? e.g. in company or coalition press releases, reports, etc.*

Knowledge:

m) **Diagnostic, analytical, synthesis, communication products and tools (from FOLUR) shared with country stakeholders** (number) ? an output indicator at the national level involving counting all CP-generated products shared with government, NGO, private sector, etc stakeholders

n) Members of FOLUR-supported Communities of Practice (total number of members; % female)

4. **Descriptive case studies** ? These will be outcome stories. Each CP will be asked to submit at least **one outcome story** annually (further guidance for these will be supplied by the Global Platform).

5. **Gender** ? The CPs are responsible for developing **gender actions plans** that include gender-disaggregated indicators of relevance to their activities. *As per the GEF gender guidance, they should indicate in which results area(s) they will be contributing to gender equality*: 1) closing gender gaps in access to and control over resources; 2) improving women?s participation and decision-making; and 3) social and economic benefits or services for women. ***In addition to the core GEF indicator e), and the sex-disaggregated indicators in f, h, and n above***, the Global Platform?s gender strategy recommends including some the following gender indicators, as appropriate[11]:

o) **Project/program-supported plans, strategies, policies incorporating gender analysis and actions** (number) (Results Areas 1, 2 &/or 3) ? *includes projects that undertake a gender analysis to identify project-specific gender gaps/issues/constraints AND project activities to address some of them; and project or program initiatives influencing gender-responsive policies, strategies, practices related to food systems, landuse and restoration investments in FOLUR countries.*

p) **Women in leadership roles in groups supported by the CP** (number) (Results Area 2) ? all women assuming positions of leadership in community groups, community-based organizations, producer groups, forest user groups, etc. after receiving project support e.g. training in facilitation, negotiation, leadership, communication, etc; or due to project rules (e.g. quotas, targets)

q) **Women with greater ownership, access to, and decision-making power over productive resources through project actions** (e.g. land, livestock, water, community forests, seedlings, agricultural inputs, equipment, credit) (number) (Results Area 1) ? *all women in project areas owning, accessing and/or using productive resources/assets (that they previously did not) as a result of project interventions (e.g. technical assistance, trainings, asset transfers, grants)*

r) Women with increases in sole or joint control over use of income from FOLUR key commodity value chains as a result of project support/activities (number) (Results Area 3) ? *all women in project areas that have input in decisions related to how to use income and outputs from value chain activities they now participate in due to project support (e.g. women-targeted technical trainings, support to women?s value chain commercialization groups, etc.)*

Results from the Global Platform will be measured through the following set of outcome indicators.

? Pillar A: Program Capacity Strengthening:

Outcome Indicators:
(i) # of CPs rating program management at satisfactory or above
(ii) # of new policies, strategies, citing FOLUR or using FOLUR tools in CP countries

? Pillar B: Policy and Value Chain Engagement:

Outcome Indicators:

(i) # of subnational /national/regional commodity value chain policies, certifications, standards informed by FOLUR CPs
(ii) # of private sector actors or coalitions, commodity value chain events, documents, press releases, etc. citing/using FOLUR products

? Pillar C: Strategic KM and Communications:

Outcome Indicators:
(i) GLF and other global events promoting FOLUR
(ii) CP country documents, events, press promoting FOLUR

Additionally, indicators and data will be collected on the LDN indicators, including National LDN indicators, as well as others relevant to SDG 15, as described earlier in the previous sections.

4.1.2: A national experience exchange network on sustainable food production established at the Ministry of Agriculture and linked to the Kazakhstan FOLUR IP exchange network

In addition to increasing trade in wheat and other basic commodities, Kazakhstan and Uzbekistan are both developing FOLUR projects within their territories focused on wheat-dominant landscapes. Opportunities for joint learning and cooperation would be expected between neighbouring FOLUR participant countries but the intense trade of wheat and its role in rural economies makes this cooperation necessary and logical.

It is recommended that information sharing start at an early stage with meeting to present project approaches, especially in regards to value chain strengthening and SLM options. Sustainable business models and community benefit sharing schemes would also be a common need between projects, as would economic incentives for biodiversity conservation.

The final target of the output will be a joint programme that has used information sharing and exchange to apply adopted approaches and lessons learnt by partner country, resulting in the strengthening of 2 value chains and joint efforts to conserve or increase biodiversity in wheat landscapes.

4.1.3: RBM Gender-Sensitive system of the project promoted adaptive management through capturing key results of the project activities

Options listed in workplan include:

? Gender-responsive M&E framework based on logframe and GAP, bulding on farmer consultations
? Annual participatory Impact Monitoring conducted, 50% women informants/ FGDs including women heads of household
? Annual workplans/ GAP and project capacity development initiatives adjusted to the extent possible to reflect findings

4.1.4: Communication Strategy and KM strategy are developed and implemented

Activities include:

•Development of communication strategy in consultation with key national and sub-national stakeholders.
•Adoption of the communication strategy by the national LDN coordination mechanism that will be established under outcome 1.2.2.

4.1.5: Project Mid-term review and Final Evaluation are conducted

Activities include:

? Project mid-term evaluation

? Project final evaluation

4.1.6: Global IP platform engagement & coordination

The workplan has identified those elements which need to be communicated to the Global IP platform. Proactive engagement on part of project staff to receive technical guidance reports and other communications from the Global IP Platform is recommended.

1.6. Alignment with GEF focal area and/or Impact Program strategies;

The proposed project is well-aligned with 4 of the Focal Area Outcomes:

? Biodiversity Focal Area Strategic Objective 1-1: ?Mainstream biodiversity across sectors as well as landscapes and seascapes through biodiversity mainstreaming in priority sectors?: The project will promote biodiversity conservation through data collection, ILM planning, ecosystem restoration, habitat improvement and development, improved land productivity, reduction in agricultural inputs reaching waterways and acquifers, increased land productivity, ecosystem services and gender and social empowerment. SLM and ILM will also target 2 protected areas that are located within project districts, as well as a Ramsar site.

? Climate Change Mitigation Strategic Objective 2-6: ?Demonstrate mitigation options with systemic impacts for food systems, land use and restoration impact program?: In addition to targeting activities aimed at reducing N fertiliser use and demand, the project relies on a holistic approach to GHG mitigation, including increasing SOC through management practices, value chain interventions, as well as ILM planning and landscape approach that relies on agroecology, CA and NbS.

? Land Degradation Focal Area Strategy Objective 1-1 ?Maintain or improve flow of agro-ecosystem services to sustain food production and livelihoods through Sustainable Land Management (SLM)?. The project has presented a well-researched catalogue of SLM options, but also placed them within the correct socio-economic and project context, with supporting causal pathways that aim to increase positive bahavioural change.

? IP FOLUR Strategic Objective: ?Promoting effective coordination and adaptive management for Food Systems, Land Use and Restoration?: The project is not only well-aligned with FOLUR objectives, outcomes and indicators, it takes a systematic, yet realistic, approach to project activities and spheres of influence to achieve sustainable gains in GEB. Activities are also developed in a manner that generates materials, information and data to inform the Global FOLUR IP Platform.

? Also, the project will build technical capacity of local farmers and support resource mobilization efforts and financial schemes, developing awareness on the importance of ecosystem services and bring the private sector into the discussion. Furthermore, the principles and mandatory requirements of GEF?s Guidelines on Gender Equality (2017) will be applied during the project design, implementation and monitoring.

The project will work to promote production practices and value chains that support and increase national and subnational biodiversity, contribute to the transition to a changing climatic scenarios and sustainable production techniques that mitigate the effects and causes of CC, develop SLM options within landscape context that increase productivity and landscape connectivity while decreasing the effects of agricultural production on local ecosystems and finally the project will work to promote the shared FOLUR IP strategic global objectives.

1.7. Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing;

The project?s incremental reasoning adds value to the ongoing efforts in the country and enables conditions towards scaling of biodiversity, CC, LD and sustainable food systems. The project provides funds and capacities for Uzbekistan to address key policy constraints that currently act a barriers to improved management and investment in SLM. The project will leverage major baseline investments in the region targeting and scaling out sustainable wheat production and other agricultural commodities.

Without GEF support, baseline interventions would lack a comprehensive, landscape-level planning process, project developed tools and decision-support systems and professional capacities needed to spatially locate and define priorities emphasizing the restoration of ecosystem services and sustainable production through innovative SLM/SFM approaches and technologies and sustainable value chain development that brings socio-economic co-benefits (Table 17). This would increase the environmental and social risks from drivers of land degradation, aggravating pressures on the vulnerable ecosystems of selected project areas.

With GEF funding, the project will complement baseline interventions with: (i) additional resources to capacitate key stakeholders for an integrated planning and implementation of sustainable landscape-level interventions, (ii) in-depth analysis of policies and practices that are reducing biodiversity and affecting local ecosystems, (iii) enable knowledge development and capacity building through key value chains and among key producers and producer groups, (iv) provides funds and enabling environment to upscale/outscale SLM and SFM practices that show adequate returns on investment, and finally, introduction and leverage investments for sustainable value chains with focus on gender and youth inclusion, diversification of production, and restoration climate-resilient SLM measures.

Table 17. Incremental cost reasoning and the expected contributions from the baseline, the GEF financing and co-financing for each component.

Project component	Baseline scenario	With-project scenario

Component 1: Integrated Landscape Management (ILM) system	The country has a stable and robust institutional structure with relevant state institutions having the mandates on the environmental protection, management and use of land and natural resources, monitoring and impact assessment. The implementation of environmental protection measures are entrusted to a number of Ministries and entities, whose functions and actions are clearly defined. The responsibilities of these structures include the development and implementation of specialized programs, strategies and action plans in the field of environmental protection and nature management. However, the country does not have a robust coordination mechanism that allows for the spatial identification and analysis of trends of natural resources at larger landscape scales, nor tools or protocols that allows for informed decision-making based on findings. Without such systems, it will be difficult to transition landscapes to those that are energy efficient, CC resilient, ecologically and economically productive and socially equatative through the production chain.	GEF funds will be invested through a bottom-up approach to integrate landscape management principles into sector strategies and ensure strong linkages between value chain components to generate environmental and socio-economic benefits, as well as to engage multiple stakeholders at multiple scales, as per FOLUR IP objectives and indicators. GEF support will strengthen capacities at national and sub-national level to integrate ILM into decision-making to address and reduce the loss of productive, arable land and restore ecosystems in wheat-dominant landscapes and protected areas. Monitoring and decision-support system for this has been created and will be further developed and fine-tuned during project implementation. GEF funds will be invested in strengthening capacities for value chain actors and key sectors based on multi-stakeholder, science-based planning. More concisely, this component will train 300 people in FOLUR issues and solutions, develop ILM plans for an area covering a total of 50,000 ha, run 4 awareness campaigns, developed renewable energy models, developed and promoted 3 policy papers and piloted Private Public Producer Partnerships (PPPP). The project has developed and tested a DSS for the pilot landscape activities and incorporated various layers of spatial analysis, including land suitability classificiations, LD rates (UNCCD definitions/Good Practice Guidelines), optimal areas for wind and solar energy generation. These more technological tools will be backstopped by capacity building within local, subnational and national stakeholder groups, as ILM will rely on vision-setting and other value judgements and resource priorisation decisions that ILM requires. Lastly, the concept of landscapes as wholes that are more than the sum of their individual parts will allow for more concise planning for ecosystem services, as well allow for scaling at the dimensions needed to achieve the objectives of the FOLUR IP and those specifically under this project.

Component 2. Promotion of sustainable food production practices & responsible commodity value chains	The baseline section above outlined in detail the barriers and challenges the industry faces and that will need to be addressed for SLM investments to transition value chains to more sustainable practices. They are substantial and highly complex. There is at the same time substantial movement through recent and upcoming decrees and strategies which aims to improve current trends, recover lost arable lands, increase diversification of the private sector and livelihoods, while reducing negative effects from agriculture and food systems.	This FOLUR IP is well positioned, and in a timely manner, to influence current legislative changes and policy decisions. This is due to the understanding of policy makers and project stakeholders of the need for adaptation to current socio-economic, global trade and climatic realities, but also in face of the LD and ecological devastation agriculture and food systems are contributing to at a global level. The GEF project will make targeted investments in capacity building, planning and implementing ecological restoration through climate resilience and preparation. Agroecology, Conservation Agriculture and Nature-based Solutions will act as foundations for ILM and farm design. More precisely, activities through this component will lead to over 350,000 Ha being placed under improved management practices promoted by the FOLUR IP, a total of 3.800 people receiving training and capacity building on FOLUR issues (75% smallholders / 25% Commercial farmers), innovative production contract options and agro-environmental incentive schemes being developed and tested, cooperative platform for wheat value chain actors being developed and 2 innovative WOCAT articles published. The GEF supported SLM/SFM measures will also enhance the resilience of producers in the 6 project districts to climate-change induced stress and shocks. The project with GEF support will also be building sustainable livelihoods through SFM/SLM practices and improve market access through effective private sector engagement through project value chains. It is anticipated that the improved practices and restoration interventions will generate significant land degradation GEBs and deliver climate change mitigation and substantial socio-economic co-benefits.

Component 3: Conservation & restoration of natural habitat	Uzbekistan hosts unique natural habitats, including water-rich wetlands and numerous threatened species. The proposed project area alone hosts three PAs and one Ramsar site. There are 15 Key Biodiversity Areas (KBA) located in direct proximity to the cropping systems of Karakalpakstan, Khorezmand Kashkadarya. The country?s unique riparian ecosystems of tugai forests are mostly located in the Khorezm and Karakalpakstan regions alongside the Amudarya delta. The country also has a rich agro-biodiversity, with Uzbekistan having been the birthplace of multiple landraces of wheat and alfalfa, which are known and distinguished for their tolerance to drought, heat, soil salinity and frost damage. The main threats to these areas and resources are pressures due to agricultural expansion and intensification and climate change.	Project activities under this component are targeted towards providing funds, knowledge and materials to develop and improve landscape conditions and ecological productivity and connectivity. It seeks to develop innovative ecological and economic solutions that scale and support nature conservation and biodiversity, and a technical capable group of professionals who have the training and experience to cost-effectively address LD and apply restoration works at landscape scales. More precisely, GEF financing will go towards capacity building and training 700 people. This group will provide the human resources and knowledge base for ecosystem restoration of over 50,000 ha of land outside of protected areas. It will also pilot 2 community-wide benefit sharing models that distribute benefits derived from landscape restoration and biodiversity targets being achieved. To support the ecosystem restoration work 3 models of habitat restoration are to be piloted during project implementation

Component 4. Project Monitoring, Evaluation and lesson learned	In the baseline, the Ministries, universities and research organizations, international organization, and other actors, are contributing to knowledge creation and exchange with regard to SLM within the country and at the producer level using the regional platforms. There is, however, no systematic effort to share knowledge and coalesce action towards ILM or SLM practices among target beneficiary and producer groups.	Component 4 targets Knowledge Management and Outreach to other wheat landscapes, through improved monitoring framework, metrics/indicators and establishing a country-level online platform to monitor GEBs. Linkages with the Kazakhstan FOLUR child project will enhance the potential for lessons learned across different production systems and within global wheat value chains for the benefit of other FOLUR IP countries. GEF financing will go towards supporting standardized indicators introduced linking to the FOLUR IP; A national experience exchange network on sustainable food production established at the Ministry of Agriculture and linked to the Kazakhstan FOLUR IP exchange network; RBM Gender-Sensitive system of the project promoted adaptive management through capturing key results of the project activities and peer-to-peer training; Communication Strategy and KM strategy; Project Mid-term review and Final Evaluation; and finally Global IP platform engagement & coordination

Cofinancing will be provided principally by 4 partners, being the Uzbekistan Ministry of Agriculture, State Committee on Ecology and Environmental Protection, IUCN and FAO, though other forms of co-financing with time and resources is expected at community and field levels by project participants and local administrations. The baseline provided indicates current and future policy reforms and sectoral restructuring that would take place without inputs and data regarding land planning, area affected by degradation, innovative spatial analysis and planning tools, considerations and solutions for habitat loss and wildlife conservation and mitigation and transition to more CC resilient landscapes and VCs that the GEF funding will allow. Other social issues such as gender equality, land tenure or water access under increasingly arid conditions would also most likely not receive the support or attention that it will with this project and GEF funding.

Likewise, the funding represents a unique opportunity to support the transition of major community value chains and landscapes towards a more sustainable production system that ensures food security under changing climate scenarios. For this reason, the lessons learnt are not only applicable to Uzbekistan, but to regional and global partners, and will help build the FOLUR global platform and response.

The Ministry of Agriculture co-financing will be provided in the amount of 29,985,000 USD and is described as follows:

? 19,000,000 USD investments in sustainable agricultural production within Presidential Decree No. ??-4575 "On measures for implementation of the tasks defined in the Strategy of agricultural development of the Republic of Uzbekistan for the period of 2020-2030, 2020-01-28;

- ? 9,000,000 USD investments restore abandoned irrigated land to cultivate agricultural crops within Presidential Decree No. 5742 (dated 17 June, 20l9).
- ? 1,985,000 USD to organize national experience exchange network on sustainable food production.

There are several projects financed by bilateral and multilateral donors, which will serve as technical references on the feasibility of private wheat clusters in the country. The Ministry of Agriculture ?nsur?s to support involving 24,500,000 USD grant money from private wheat clusters across Karakalpakstan, Khorezm and Kashkadarya provinces within Resolution #806 of the Cabinet of Ministers of September 26, 2019. The detailed grant breakdown is as follows:

- ? 13,000,000 USD t? support wheat clusters to implement sustainable wheat production and diversification at farm and landscape levels
- ? 7,500,000 USD t? support wheat value chain
- ? 2,000,000 USD t? organize cooperative platform for wheat v?lu? chain actors
- ? 2,000,000 USD in promotion of sustainable food production practices & responsible commodity v?lu? chains

The **State Committee for Ecology and Environmental Protection** will provide in-kind cofinancing for the amount of 18,000,000 USD, from which:

- ? 10,000,000 USD in investments in effective management and restoration of habitats within approved Strategy for the conservation of biological diversity in the Republic of Uzbekistan for the period 2019-2028
- ? 3,000,000 for the creation of protected areas in the target districts as per resolution in the field of ecology and environmental protection
- ? 2,500,000 USD in investments to address degraded ecosystems and habitats in target areas in production landscapes
- ? 1,500,000 USD in support for renewable energy sources in the country
- ? 1,000,000 USD in support for increased carbon sequestration

FAO will provide co-financing, in the form of investment mobilized, for the amount of 269,400 USD through its activities in Uzbekistan in 2022/2026, including the following projects:

- ? TCP/UZB/3804 - Strengthening sustainable food systems through geographical indications (USD 100,000)

? GCP /SEC/016/TUR - Strengthening regional collaboration and national capacities for management of wheat rust diseases (USD 89,400)

? TCP/UZB/3801 - Support in implementation of inclusive agricultural policies (USD 80,000)

The component wise split is as follows:

Component	USD Amount	Type of Co-financing	Investment Mobilized or Recurrent Expenditures
Component 1: Integrated Landscape Management (ILM) system	10,000	Grant	Investment Mobilized
Component 2: Promotion of sustainable food production practices & responsible commodity value chains	259,400	Grant	Investment Mobilized
Total	**269,400**		

1.8. Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF);

The project will generate a range of global environmental benefits in the Biodiversity, CC Mitigation, Land Degradation and FOLUR IP focal areas. The GoU has indicated interest in increasing food security, sustainability and investments in renewable energies

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The global environmental benefits thus include the following:

? Increased quantity (ha.) of restored lands using LDN response hierarchy (avoid, reduce, restore) (**50,000 ha**)

? Increased quantity (ha.) of lands under sustainable practices under the ?avoided or reduced? LDN response hierarchy (**350,000 ha)**

? Increased CO_2 sequestration or mitigation (**1 Mton CO2-eq**)

? Direct beneficiaries disaggregated by sex (**5,160 , 50% women**)

In addition, strengthening of key value-chains will lead to improved income generation opportunities and more diversified livelihoods for around Increased social resilience and human well-being (Gender equality, access to information and finance) of **5,160 beneficiaries (50% Women)** in the target districts. Section 10 *Benefits* outlines the additional socio-economic benefits resulting from the project.

1.9. Innovativeness, sustainability, potential for scaling up and capacity development[12] . ?

Innovation

Measurement of innovation is complex in any context, and as applied to the agricultural sector of Uzbekistan it is no different. Nonetheless, the project addresses clear needs and does respond to land management issues in innovative ways. Innovation as introduced by the project is summarised in one element, and that is the landscape approach, and the subsequent actions or innovations that come about through this holistic, scale-specific approach. While individual SLM options are often the focal point of funding for such projects, this project would innovate the application of many SLM options and practices within the same land space under an integrated farm design, to increase productivity and ecosystem services that provides local value chains and livelihoods. It is based on the fact that complex systems are more than the sum of their parts and need to be managed at the correct scale in order to be effective. It is also well integrated into Agroecology and Nature-based Solutions approaches and provide a context on which to base these concepts.

This thinking is well captured in Integrated Land Management (ILM) theory, though perhaps the best tool for ILM and LD is the LDN conceptual framework, which provides a framework on which to analyse trends and status of land resources and make improved, informed decision-making. This stems from an understanding that resources to address LD are in fact limited and activities that offer the highest marginal reaction and return need to be identified and conducted. The LDN targets and global objective of LD neutrality also offer a collective vision for the future and a context on which to base decisions within the framework.

Another innovation worthy of mention is the DSS approach that has been developed during the project design phase, which includes the latest data on LD and land suitability for a range of decision making processes and investments. It is not a panacea for land management decisions, and technical interpretation and analysis, combined with political value judgements and considerations, will need to be applied to the results for the DSS to deliver on objectives. However, it is a valid tool for spatially located and evaluating with remote sensing data large land areas and their socio-economic and ecological trends.

Finally, Component 3 builds capacity in ecosystem restoration works and practices among a group of people that can then be available and prepared for further works within a public domain, or as technicians and labours for other ecological restoration initiaties. As has been cited, the returns on ecosystem and LD restoration are in order of 3-5 USD per every 1 USD invested.[13] The project will therefore work to place an economic impact and return on the land restored through this project in order to establish economic grounds for continuing work and support of these professionals within their communities.

Sustainability

As can be seen in the project Logical Framework (Annex A) and the project Workplan (Annex H), many activities are aimed at providing for transition to another stakeholder organisation, or development into an economically viable model that will allow for growth and development. In contrast, it recognises the challenges and obstacles that exist to development of such enabling conditions in terms of land tenure, private enterprises, current views on collectives and cooperatives, State-monopolies on seed production and sale and access to credit and financial services.

As such, the project has included activities and processes work at the landscape scale through a range of sectors and actors within key value chains, to ensure the sustainability of project investments. Capacity development and training of policy-makers as well as technical staff in implementation and monitoring of ILM plans will further support the sustainability of the project approach and be supported by strengthened capacities and participation at the sub-national level of extension staff and local communities. Connection between project development coordinators, project consultants and University and international and national Research centres will be supported by the project to support the studies on economic options and models for sustainable value chains.

Links to the GEF funded project GCP/UZB/003/GFF are fundamental to the success and sustainability of this FOLUR IP, and discussion and collaborations will include activities aimed at increasing long-term impact and sustainability of results on a frequent basis between the two projects. The projects share similar outputs and objectives, such as LDN mapping and monitoring, and data exchange and shared learning form part of project design. Likewise, links and interactions with the global FOLUR IP Platform and exchange network will increase interest and recognition of FOLUR objectives and issues at all levels of intervention. The project will also collaborate and take advantage of the experience of international partners working in the region (FAO, ICARDA, WB, UNDP, IUCN and others).

Finally, to increase the project?s climate resilience[14], climate change risks and opportunities at various levels were assessed and incorporated in the project design during project development and design. Annex N provides a detailed analysis of the historical trends in climate and extreme weather events, future projected changes according to climatic scenarios, impacts on target agro-climatic resources and agro-food systems in the project area and proposed risk mitigation measures for project implementation. This assessment and incorporation of climate considerations at every stage of the project design, ensures that resilience is integrated across the project and targeted measures have been integrated into the project design.

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Scaling up

The project will achieve large-scale impact and transformative change through the causal pathways provided in the project Theory of Change. This is integral to guiding longer-term scaling of impact. **Scaling up** to national level will be supported by policy and institutional strengthening, incentive programmes, multi-sectoral landscape planning and value chain approaches, as well as effective monitoring, knowledge management and capturing of best SFM and SLM practices and lessons learned. **Scaling up** will also be supported by collaboration and partnerships with GoU institutions, research centres and the private sector, including commercial farmers, value chain actors and local institutions.

For **scaling out** strategy a Similarity Analysis should be conducted to support the dissemination of SLM. This requires the collection of SLM technologies and approaches applied in the field and data on their result and site-specific characteristic to evaluate the biophysical ranges on which they can be applied. This process has been captured by the Landscape Suitability Analysis that was conducted on the Khoresm Oblast and will be applied to the other project regions during project implementation (Annex H). This type of spatially informed data and its analysis through mapping and other models informs the ILM planning activities to extent the amount of land being monitoring and under improved management.

Scaling activities ultimately involve economic considerations, and the project has made links to the private sector and GoU investments by including project Outputs that include piloting economic production models, or RoI for SLM technologies, Private Public Producer Partnerships for ecosystem restoration and social empowerment and benefit-sharing models for rural communities.

1.10. Summary of changes in alignment with the project design with the original PIF

Changes between the original approved PIF and the current project Logframe are provided below in Table 19.

Table 19. Modifications from PIF to current project design

Original PIF	Current Logical Framework

Outcome 1.1: National legal, regulatory, and institutional frameworks strengthened to support sustainable wheat landscapes and value chains to enhance delivery of global environmental benefits and sustainable livelihoods *Indicators:* ? Number of new legal/regulatory frameworks drafted under the framework of Land Code to support project objectives ? A functional platform to enable the Task Force at national and sub-national levels ? Number of men and women with enhanced capacities to promote sustainable FOLUR	**Outcome 1.1:** National legal, regulatory, and institutional frameworks strengthened to support sustainable and inclusive wheat landscapes and value chains to enhance delivery of global environmental benefits and sustainable livelihoods *Indicators:* ? Number of new legal/regulatory frameworks drafted under the framework of Land Code and other relevant policy processes to support project objectives ? A functional platform to enable the Task Force at national and sub-national levels ? Number of men and women with enhanced capacities to promote sustainable and inclusive FOLUR
Output 1.1.1: Assessment of enabling conditions and regulatory framework for multi-agency and regional management of wheat landscapes and sustainable food systems carried out	Output.1.1.1: Assessment of enabling conditions and regulatory framework for multi-agency and regional management of wheat landscapes and sustainable and inclusive food systems carried out
Output 1.1.3: Capacity development program initiated based on needs assessment of stakeholders involved in wheat value chain, including use and implementation of the toolbox for ILM	Output 1.1.3: Capacity development program initiated for stakeholders involved in wheat and wheat landscape value chains, including use and implementation of the toolbox for ILM

Outcome 1.2: National financial incentives adopted to promote ILM in line with LDN principles and climate-smart, environmentally sound wheat production *Indicators:* ? Number/amount of innovative government programs to support scale up of project actions at different parts of the country ? Number of PPP investments in nature-based solutions including natural infrastructure and other soft-infrastructure investments in wheat landscapes to preserve farmer natural capital and provide cost-effective natural solutions	**Outcome 1.2:** National incentives adopted to promote ILM in line with LDN principles and climate-smart, environmentally sound wheat and wheat landscape production - *Indicators:* - ? Number of initiatives to support scale up of project actions at different parts of the country ? Number of PPPP including natural infrastructure and other soft-infrastructure investments in wheat landscapes to preserve farmer natural capital and provide cost-effective natural solutions
Output 1.2.: Assessment of existing and potential incentive mechanisms for ILM from national and international experiences carried out, including identification of innovative business models to encourage public and private investments in sustainable wheat production	Output.1.2.1: Assessment of existing and potential incentive mechanisms for ILM from national and international experiences carried out, including identification of innovative business models to encourage public and private investments in sustainable production in wheat landscapes
Output 1.2.2: Provision of incentives to the farmers who apply sustainable wheat production practices established	Output.1.2.2: Inclusive and gender-responsive Renewable Energy incentives for VCs and GHG mitigation -
Output 1.2.3: PPPs on the ground for nature-based solutions in wheat-dominated landscapes	Output.1.2.3: PPPPs on the ground for nature-based solutions in wheat-dominated landscapes
Output 1.2.4: Economic case for scaling-up at national and regional levels for integrated management of sustainable wheat production landscapes and ILM developed, tested, and adopted by the Task Force	Output.1.2.4: Economic case for scaling-up at national and sub-national levels for integrated management of sustainable production in wheat landscapes and ILM developed, tested, and endorsed by the Task Force

Outcome 1.3: Land use planning approaches in the target regions of Karakalpakstan, Khoresm, and Kashkadarya transformed to ensure development of sustainable, multifunctional landscapes with agreed partnership, (impact-) and sustainable financing and methodology to enable vital ecosystem services, biodiversity conservation and multi-functional wheat production landscapes *<u>Indicators:</u>* ? Number of agreed landscape management plans that promote strategic land use planning/zoning for multiple use in participatory manner ? Number of people from the Local and National authorities and key groups of land users trained on implementation of principles and rules outlines in the land use plans of the target regions	Outcome 1.3: Land use planning approaches in the target regions of Kashkadarya, Khoresm and Karakalpakstan transformed to ensure development of inclusive, sustainable, and multifunctional landscapes with agreed partnership and sustainable financing and methodology to enable vital ecosystem services, biodiversity conservation and multi-functional wheat production landscapes - *<u>Indicators:</u>* - ? Number ILM plans ? Number of people from the Local and National authorities and key groups of land users trained[15] on implementation of principles and rules outlined in the land use plans of the target regions
<u>Output 1.3.1:</u> Integrated landscape and wheat VC life cycle assessments (e.g. EX-ACT VC tool or others) and wheat production suitability analysis conducted based on agro-climatic conditions to inform ILM, farm and value chain level interventions, including effective biodiversity, and climate-smart options developed, tested, and demonstrated	<u>Output.1.3.1:</u> Integrated landscape and wheat production suitability analysis conducted based on agro-climatic conditions to inform ILM, farm and value chain level interventions, including effective and inclusive biodiversity, and climate-smart options developed, tested, and demonstrated
<u>Output 1.3.2:</u> ILM plans using FAO Land Resources Planning Toolbox elaborated, consulted, and adopted by authorities in accordance with Land Code	<u>Output 1.3.2:</u> ILM plans using FAO Land Resources Planning Toolbox elaborated, inclusively consulted, and adopted by authorities in accordance with Land Code[16]

Outcome 2.1: Sustainable food production demonstrated on an area of 350,000 ha on irrigated and rain-fed productive landscapes *Indicators:* ? Number of households and communities adopting sustainable production practices at landscape level with significantly reduced environmental impacts (GHG emissions, water use efficiency, biodiversity conservation) based on the agreed Standard and validated by impact indicators, whilst ensuring sustainable production ? Number of communities adopting economically viable alternatives to wheat for increasing biodiversity, land restoration and reducing environmental pollution. ? Number of Extension agents with capacity for supporting best on-farm practices, responding to gender-differentiated needs of producers ? Number of stakeholders with capacity to promote effective wheat value chain and market-based solutions (including linkages to green value chains / commodity platforms and standards, consumer awareness and brand-building) that drive demand for sustainable climate-smart agri-food systems and products. ? Hectares transformed with land use practices	**Outcome 2.1:** Sustainable food production demonstrated on an area of 350,000 ha on irrigated and rain-fed productive landscapes *Indicators:* ? Number of households and communities adopting sustainable production practices at landscape level with significantly reduced environmental impacts (GHG emissions, water use efficiency, biodiversity conservation) based on the agreed Standard and validated by impact indicators, whilst ensuring sustainable production ? Number of communities adopting economically viable alternatives to wheat for increasing biodiversity, land restoration and reducing environmental pollution. ? Number of Extension agents with capacity for supporting best on-farm practices, responding to gender-differentiated needs of producers ? Number of stakeholders with capacity to promote effective wheat value chain and market-based solutions (including linkages to green value chains / commodity platforms and standards, consumer awareness and brand-building) that drive demand for sustainable climate-smart agri-food systems and products. ? Ha brought under land use practices
Output 2.2.1. Suits of ?sustainable wheat contract? models with attributes that satisfy heterogeneous needs of different segments of the wheat value chain (producers, millers) and farmers introduced, responsive to needs and capacities of men and women producers	Output 2.2.1. Menu of ?sustainable wheat contract? models with attributes that satisfy heterogeneous needs of different segments of the wheat value chain (producers, millers) and farmers introduced, responsive to needs and capacities value chain actors

Outcome 3.1. Enhanced conservation and restoration of habitats/ ecosystems in production landscapes for GEB and enhanced ecosystem services to support agriculture in an equitable manner *Indicators:* ? Hectares of land under effective management and restoration of habitats such as riparian zones for enhanced biodiversity conservation, ecosystem connectivity and species conservation	**Outcome 3.1.** Enhanced conservation and restoration of habitats/ ecosystems in production landscapes for GEB and enhanced ecosystem services to support agriculture in an equitable manner *Indicators:* - ? Ha of land under effective management and land degradation avoided/ reduced/restored in habitats such as riparian zones for enhanced biodiversity conservation, ecosystem connectivity and species conservation ? Number of people trained
Output 3.1.2: Models of benefit sharing from ILM between communities and other stakeholders for conservation and restoration of habitats/ ecosystems in production landscapes developed	Output 3.1.2: Inclusive models of benefit sharing from ILM between communities and other stakeholders for conservation and restoration of habitats/ ecosystems in production landscapes developed
Output 3.1.4: Degraded ecosystems/habitats of high nature value in target areas in production landscapes put under sustainable management and restored	Output 3.1.4: Degraded ecosystems/habitats of high nature value in target areas in production landscapes and Protected Areas under sustainable management and restored

[1] Orr et al. 2017. Scientific Conceptual Framework for Land Degradation Neutrality. A Report of the Science-Policy Interface. United Nations Convention to Combat Desertification (UNCCD), Bonn, Germany.

[2] PPG baseline reports and stakeholder consultations (See Annexes ?)

[3] PPG report, Stakeholder Consultations

[4] Conservation and Sustainable Use of Agricultural Biodiversity to Improve Regulating and Supporting Ecosystem Services in Agriculture Production? 30 conducted by GEF (2013-2016)

[5] Myint MM, Westerberg V 2015, An economic valuation of a large ? scale rangeland restoration project through the Hima system in Jordan, The Economics of Land Degradation, https://www.eld-initiative.org/en/where-we-work/asia/jordan/

[6] https://qcat.wocat.net/af/wocat/approaches/view/approaches_3173/

[7] PPG Report, Khaknazar U 2021, Draft Report on Land Tenure Rights in Uzbekistan, GCP/UZB/011/ GFF

[8] https://www.globalforestwatch.org/map/

[9] The detail definitions of each indicator and sub-indicators can be referred in the GEF 7 Core Indicators Guidelines https://www.thegef.org/sites/default/files/documents/Results_Guidelines.pdf

[10] Ibid, pg. 23.

[11] Technical assistance and appropriate tools for measuring these indicators can be provided by the Global Platform.

[12] System-wide capacity development (CD) is essential to achieve more sustainable, country-driven and transformational results at scale as deepening country ownership, commitment and mutually accountability. Incorporating system-wide CD means empowering people, strengthening organizations and institutions as well as enhancing the enabling policy environment interdependently and based on inclusive assessment of country needs and priorities.

- Country ownership, commitment and mutual accountability: Explain how the policy environment and the capacities of organizations, institutions and individuals involved will contribute to an enabling environment to achieve sustainable change

- Based on a participatory capacity assessment across people, organizations, institutions and the enabling policy environment, describe what system-wide capacities are likely to exist (within project, project partners and project context) to implement the project and contribute to effective management for results and mitigation of risks.

- Describe the project?s exit / sustainability strategy and related handover mechanism as appropriate.

[13] Aw-Hassan et al.. 2016. Economics of land degradation and improvement in Uzbekistan. In: Nkonya E., Mirzabaev A., von Braun J. (eds) Economics of Land Degradation and Improvement - A Global Assessment for Sustainable Development. Springer, Cham.

[14] STAP guidance on climate risk screening. 2019. Available at https://stapgef.org/stap-guidance-climate-risk-screening

[15] Training completed under Output 3.1.1

[16] Output develops ILM plans, Output 3.1.1 funds and builds capacity for their implementation

[1] PPG Report, Khaknazar U 2021, Draft Report on Land Tenure Rights in Uzbekistan, GCP/UZB/011/ GFF

[2] Onobrychis spp.- Sainfoin is an introduced non-bloat causing legume which can be used as hay, or grazed in pastures alone or in a grass-legume mix

[3] PPG report, Nurbekov, A 2021, Report on the Status of Conservation Agriculture in Uzbekistan.

[4] Nurbekov et al, 2008, 2012a, 2012b, 2013, 2016).

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[1] PPG draft report, Sharma, R, Akramkhanov, A & Amanov, A, 2021 ?Draft report on issues related to wheat landscapes, crop diversification, and improving production and productivity?, GCP/UZB/011/GFF

[2] idem

[3] idem

[4] Brisson N, Gate P, Gouache D, Charmet G, Oury F, and Huarda F. 2010. Why are wheat yields stagnating in Europe? A comprehensive data analysis for France. Field Crop Research 119:201-212.https://doi.org/10.1016/j.fcr.2010.07.012

[5] Schauberger B, Ben-Ari T, Makowski D, Tomomichi K, Hiromi K, and Philippe C. 2018. Yield trends, variability and stagnation analysis of major crops in France over more than a century. Sci Rep 8:16865.https://doi.org/10.1038/s41598-018-35351-1

[6] Li X, Liu N, You L, Ke K, Liu H, Huang M, and Waddington SR. 2016. Patterns of cereal yield growth across china from 1980 to 2010 and their implications for food production and food security. PLoS One 11: e0159061.https://dx.doi.org/10.1371%2Fjournal.pone.0159061

[7] Bakhtiyor Pulatov, 2021. PPG Climate Change risk Report.

[8] World drought management and mitigation assessment for Central Asia and the Caucasus. ? Phase two. Country drought management and mitigation profile and strategy, Tashkent, Uzbekistan. ? World Bank, 2006

[9] Drought characteristics and management in Central Asia and Turkey: FAO Waters Report. 44. Rome, Italy: FAO, 2017

[10] PPG report, Pulatov B 2021, A review of existing climate impact assessments and geospatial datasets, GCP/UZB/011/GFF

[11] Yusupov, N., S. Muminov, I. Ibragimov, and B. Gojenko. 2012. Present problems of water management and agrarian reforms in Uzbekistan. Agricultural Sciences, 3(4):524-530.

[12] PPG report, Rybchynskyi R 2021, Wheat Value Chain Analysis in Uzbekistan, GCP/UZB/011/GFF GCP

[13] Resolution of CM RUz on measures for the rational land use plan for agricultural crops and forecasted volumes of crop production for 2020, effective use of land and water resources. 20.12.2019, # 1025

[14] PPG report, Renewable Energies (pending)

[15] Law on the Use of Renewable Energy Sources (RES) of 16 April 2019

[16] Burbidge, T., K. Civic, B. Delbaere and A. Schrauwen (2015) Initiatives related to mapping and

assessment of ecosystems and their services in EECCA and SEE countries ? Scoping Document. ECNC,

Tilburg, the Netherlands

[17] PPG Report, Khaknazar U 2021, Draft Report on Land Tenure Rights in Uzbekistan, GCP/UZB/011/ GFF

[18] For example, in the United States, 40% of land is "publicly owned", ie. they have the status of ?protected areas?. The state acts as a manager for the management and protection of such lands, but not as an owner. The US Protected Areas Database is publicly available.

[19] Article 11 of the Law on Farming, Article 5 of the Law on Dehkan Farms, Article 5 of the Law on Agricultural Cooperatives (shirkat).

[20] Such banks as JSCB " Microcreditbank ", JSC " Agrobank " and JSC People's Bank of the Republic of Uzbekistan

[21] Including a grace period of up to 1 year, until December 31, 2019 - with an interest rate of 7 percent per annum, taking into account the bank's margin of 2 percent. From January 1, 2020, the placement of resources is carried out at the refinancing rate of the Central Bank of the Republic of Uzbekistan, minus 4 percentage points;

[22] Training, retraining and advanced training of managers and workers of farms and dehkan farms, as well as owners of household land in the field of agricultural technologies , horticulture, vegetable growing, livestock, poultry, fish farming and beekeeping in vocational training centers, colleges and higher educational institutions

[23] PPG report, Nurbekov, A 2021, Report on the Status of Conservation Agriculture in Uzbekistan, GCP/UZB/011/GFF

[24] See http://www.uzdaily.com/en/post/48426

[25] See https://samarkand.uz/en/press/news/yangi-vazirlik-tashkil-etildi-xotin-qizlar-qomitasi-va-mahalla-kengashi-tugatildi

[26] The Presidential Decree ?On measures to improve the social and spiritual atmosphere in society, further support of the mahalla institute, and also to raise the system of work with families and women to a new level? (PD-5938 dated 18 February 2020)

[27] Canada: Immigration and Refugee Board of Canada, *Uzbekistan: Role of "mahalla" in Uzbek society; whether mahalla are involved in extortion; state protection*, 7 April

2004, UZB42472.E, available at: https://www.refworld.org/docid/41501c6f23.html [accessed 31 October 2021]

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[1] PPG report, Nurbekov, A 2021, Report on the Status of Conservation Agriculture in Uzbekistan

[2] PPG report,   PPG report, Akramkhanov A 2021, Soil salinity assessment in Uzbekistan, GCP/UZB/011/GFF

[3] Khamzina, A., Lamers, J., Martius, C., M. Worbes, P. Vlek. 2006. Potential of nine multipurpose tree species to reduce saline groundwater tables in the lower Amu Darya River region of Uzbekistan. Agroforestry Systems. 68. 151-165. 10.1007/s10457-006-9006-9.

[4] UNEP and Glavgidromet, 1999

[5] Gintzburger et al. 2003, ?Rangelands of the arid and semi-arid zones in Uzbekistan?,ISBN ClRAD 2-876 14-555-3 / ISB N ICARDA 92-91 27-137-8

[6] PPG report,   PPG report, Akramkhanov A 2021, Soil salinity assessment in Uzbekistan, GCP/UZB/011/GFF

[7] PPG report, Nurbekov, A 2021, Report on the Status of Conservation Agriculture in Uzbekistan

[8] idem

[9] idem

[10] PPG report, Colangeli M 2021, Rapid Appraisal Sustainability Assessment Report on wheat sector in Uzbekistan, GCP/UZB/011/GFF

[11] PPG report, Nurbekov, A 2021, Report on the Status of Conservation Agriculture in Uzbekistan

[12] PPG report, Colangeli M 2021, Rapid Appraisal Sustainability Assessment Report on wheat sector in Uzbekistan, GCP/UZB/011/GFF

[13] PPG draft report, Sharma, R, Akramkhanov, A & Amanov, A, 2021 ?Draft report on issues related to wheat landscapes, crop diversification, and improving production and productivity?, GCP/UZB/011/GFF

[14] idem

[15] Nkonya, E., Gerber, N., Baumgartner, P., Von Braun, J., De Pinto, A., Graw, V., et al. (2011). The Economics of Desertification Land Degradation, and Drought IFPRI Discussion Paper. IFPRI:Washington DC.

[16] Aw-Hassan et al.. 2016. Economics of land degradation and improvement in Uzbekistan. In: Nkonya E., Mirzabaev A., von Braun J. (eds) Economics of Land Degradation and Improvement - A Global Assessment for Sustainable Development. Springer, Cham.

[17] The main indicators of agriculture. State Committee of the Republic of Uzbekistan on Statistics, November 2020

[18] PPG report, Colangeli M 2021, Rapid Appraisal Sustainability Assessment Report on wheat sector in Uzbekistan, GCP/UZB/011/GFF

[19] Project Document, Food Systems, Land Use and Restoration (FOLUR) Global Knowledge to Action Platform

[20] Project Document, Food Systems, Land Use and Restoration (FOLUR) Global Knowledge to Action Platform

[21] Gender Action Plan

[22] Sudochye Lake, Mashankul and Khojakul lake complex, Zholdyrbas Lake, Akpetky Lakes and surrounding Aralkum Desert, Khorezm Fish Farm and adjacent lakes

[23] Karnabchul Steppe (77,156 ha), Achinskoe Lake (6,363 ha), Chimkurgan Reservoir (4,189 ha), Talimardzhan Reservoir (85,989 ha), Gissar State Nature Reserve (110,105 ha), South-West Gizzar foothills (19,928 ha) and Lake Dengizkul (49,658 ha). Lake Dengizkul is a Ramsar site as well (31,300 ha).

[24] (Ministry of Energy, 2020

[25] (ADB, 2019).

[26] (GlobalPetrolPrices, 2021).

[27] (Ministry of Energy, 2020

[28] PPG report, Rybchynskyi R 2021, Wheat Value Chain Analysis in Uzbekistan, GCP/UZB/011/GFF GCP

[29] idem

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[1] The main indicators of agriculture. State Committee of the Republic of Uzbekistan on Statistics, November 2020

[2] Gross domestic product of the Republic of Uzbekistan. State Committee of the Republic of Uzbekistan on Statistics, December 2020

[3] Gintzburger et al. 2003, ?Rangelands of the arid and semi-arid zones in Uzbekistan?,ISBN ClRAD 2-876 14-555-3 / ISB N ICARDA 92-91 27-137-8

[4] The main indicators of agriculture. State Committee of the Republic of Uzbekistan on Statistics, November 2020

[5] PPG Report, Khaknazar U 2021, Draft Report on Land Tenure Rights in Uzbekistan, GCP/UZB/011/ GFF

[6] Amendment by the Law of September 29, 2020, No.639

[7] idem

[8] PPG Report, Khaknazar U 2021, Draft Report on Land Tenure Rights in Uzbekistan, GCP/UZB/011/ GFF

[9] Law of the Republic of Uzbekistan "On Dehkan Farms"

[10] Law of the Republic of Uzbekistan "On Farming"

[11] PPG Report, Khaknazar U 2021, Draft Report on Land Tenure Rights in Uzbekistan, GCP/UZB/011/ GFF

[12] WBG. 2019. Farm Restructuring in Uzbekistan: How Did It Go and What is Next?

[13] PPG report, Rybchynskyi R 2021, Wheat Value Chain Analysis in Uzbekistan, GCP/UZB/011/GFF GCP

[14] idem

[15] PPG report, Muskinov, T 2020, "Sustainable Forest and Rangeland Management in the Dryland Ecosystems of Uzbekistan (PPG)?, Draft report to inform the project document on issues related to pasture and livestock management, produced for GCP/UZB/003/GFF

[16] Idem

[17] PPG report, Muskinov, T 2020, "Sustainable Forest and Rangeland Management in the Dryland Ecosystems of Uzbekistan (PPG)?, Draft report to inform the project document on issues related to pasture and livestock management

[18] PPG report, Nurbekov, A 2021, Report on the Status of Conservation Agriculture in Uzbekistan

[19] World Bank. 2019. Farm Restructuring in Uzbekistan: How Did It Go and What is Next?

[20] idem

[21] PPG report, Muskinov, T 2020, "Sustainable Forest and Rangeland Management in the Dryland Ecosystems of Uzbekistan (PPG)?, Draft report to inform the project document on issues related to pasture and livestock management

[22] World Bank. 2019. Farm Restructuring in Uzbekistan: How Did It Go and What is Next?

[23] Clusters are geographic concentrations of interconnected companies or institutions that manufacture products or deliver services to a particular field or industry. Definition: https://www.inc.com/encyclopedia/clusters.html

[24] PPG Report, Khaknazar U 2021, Draft Report on Land Tenure Rights in Uzbekistan, GCP/UZB/011/ GFF

[25] PPG report, Rybchynskyi R 2021, Wheat Value Chain Analysis in Uzbekistan, GCP/UZB/011/GFF GCP

[26] Aw-Hassan et al.. 2016. Economics of land degradation and improvement in Uzbekistan. In: Nkonya E., Mirzabaev A., von Braun J. (eds) Economics of Land Degradation and Improvement - A Global Assessment for Sustainable Development. Springer, Cham.

[27] idem

[28] PPG report, Akramkhanov A 2021, Soil salinity assessment in Uzbekistan, GCP/UZB/011/GFF

1b. Project Map and Coordinates

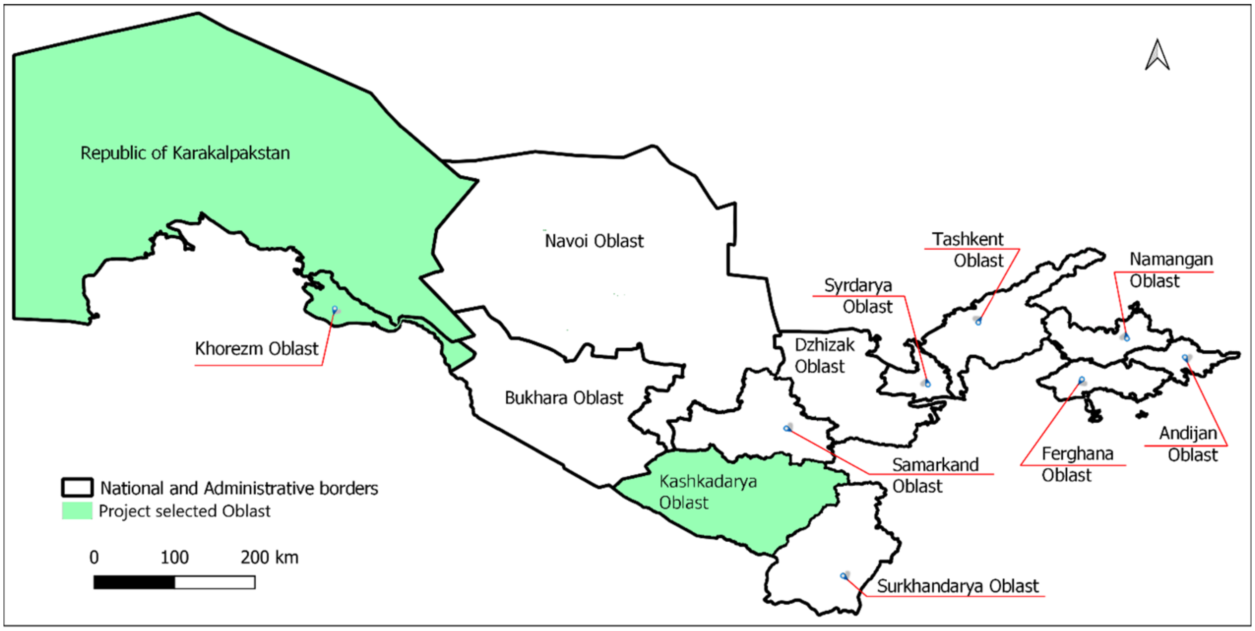
Please provide geo-referenced information and map where the project interventions will take place.

.11. Project Map and Geo-Coordinates.

Project Coordinates:

Autonomic Republic of Karakalpakstan	**Latitude:** 43? 09' 60.00" N **Longitude:** 58? 44' 59.99" E
Khorezm Region	**Latitude:** 41? 19' 60.00" N **Longitude:** 61? 00' 0.00" E
Kashkadarya Region	**Latitude:** 38? 49' 59.99" N **Longitude:** 66? 04' 60.00" E

Project-selected regions can be seen in the following map:



1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

The Global Food Systems, Land-Use and Restoration (FOLUR) Impact Program (IP) has been developed and designed to ?promote sustainable integrated landscapes and efficient food value chains at scale?, and the project design has laid out ambitious targets in this sense for the country of Uzbekistan. This Child Project has been designed under the Global IP to address the challenges and barriers to sustainable land management, commodity production and value chains.

Uzbekistan?s agriculture sector is undergoing a transition to a more liberal market, with the aim of transitioning wheat value chains to meet changing demands. At the same time, there is recognition by the Government that this needs to happen in a sustainable, inclusive, responsible way, to protect the environment and improve livelihoods, and ensure the long-term resilience of production systems. The project aims to trigger wide-scale adoption of efficient land management technologies and conservation approaches and promote green value chains to change the trajectory from ecosystem degradation to sustainable management for multiple benefits. As a result, the project plans to sequester 1M tonnes of CO2, ecologically restore 50,000 ha, place 50,000 under improved biodiversity management and aid the transition of 300,000 ha under improved land management practices within the wheat-dominant landscapes of the project regions of the country. There are important opportunities for cooperation with the Kazakhstan FOLUR project, which could trigger change in neighbouring countries and similar transitioning economies towards sustainable production and green value chains.

Uzbekistan proposes to transform the management of critical and highly degraded landscapes where globally important biodiversity coexists with production systems, under threat from overexploitation and agriculture intensification. Uzbekistan?s participation presents a strategic opportunity for this IP to harness the Government?s interest to transform the agricultural commodity systems, given the country?s changing State order-driven system towards a market-oriented system for wheat value chains, together with the strategic engagement with the Kazakhstan FOLUR project. Wheat is one of the eight agricultural commodities targeted by the GEF FOLUR project, and the project takes a broad, holistic approach to FOLUR objectives within wheat-dominant landscapes, and aims to work closely with its neighbour Kazakhstan whose FOLUR IP project also focuses on wheat.

This child project will therefore contribute to the Global IP through the following mechanisms:

? Development and sharing of a consistent supply of knowledge products, reports and lessons learned through products and outputs outlined in Component 4. The need to engage and supply the global platform for information is understood and has been incorporated into project design. In fact, the Renewable Energy study carried out during the PPG phase is being developed as a publication and will be one of the first products of the child project for exchange with the global network.

? Participation of key policy makers and technicians in Global IP meetings and workshops, as well as coordination and project management forums.

? Programmed interaction and engagement with neighbouring FOLUR Child Projects. Given such interactions are part of the project Logical Framework and Output 4.1.1, they are required activities and achievement will form part of the MTR and final evaluation results.

2. Stakeholders

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

Civil Society Organizations Yes

Indigenous Peoples and Local Communities Yes

Private Sector Entities Yes

If none of the above, please explain why:

Stakeholder engagements to inform project development took place from November 2020 to August 2021. The timing of the PPG work coincided with the Covid-19 pandemic. Nonetheless, the overall approach and subsequent results met with expectations from different stakeholders and does provide a basis on which to inform the project development and design.

The overall approach was varied and multisectoral, including smaller, virtual meetings, FGD, KIIs and field surveys and and consultations. They also included meetings with key personnel within the MoA and State Committee on Environment and Ecology, as well as sub-national administrators and the private sector, including value chain actors and producers. Specific organisations regarding gender equality, water users associations, Wheat Clusters, the Farmers Council, etc, were also approached, or data from the GCP/UZB/011/GFF was analysed under this context. The large number of national and international consultants working during the project design phase also increased the access and type of information the project designers had available for project implementation activities and outputs.

After the multisectoral consultation phase was completed, the information was validated again through many of the same channels and lines of communication that were established for project design. This included the sharing of the PRODOC drafts among key stakeholder groups, especially those responsible for execution, as well as a transparent, open validation workshop held on the 15th of September 2021 in Tashkent. Through this validation workshop, those private, public and non-profit sectors affected or interested in project objectives, outcomes and activities were free to participate and provide feedback and instruction.

The stakeholder engagement and consultation process at all times met with with GEF guidelines and GoU protocols and standards for participatory stakeholder data collection and gender equality, and provided for a range of opinions and opportunities to voice concerns or needs.

For more information, please consult the document provided in Annex I2

Please provide the Stakeholder Engagement Plan or equivalent assessment.

2.1. Stakeholder Engagement Plan for project implementation

This section provides an overview of the stakeholder engagement methodologies and consultations during the project development phase (Table 20) in addition to those that will be applied during project implementation (Table 21).

Table 20. Stakeholders engagement during project development and design.

Stakeholder	Stakeholder Type	Stakeholder Profile	Consultation Methodology	Consultation Findings	Consult. Dates	Engagement in the project

Ministry of Agriculture	Executing agency/ Chair of PSC	Ministry	Joint Planning Meetings and workshops Project Inception and Validation Workshops	? Key role in Agriculture, SLM and land policy frameworks ? Provided advisorary services to project development	November 2020-September 2021	? Decision-maker (chair of PSC) ? Executing agency ? Co-financier, and responsible for upscaling; ? Beneficiary of capacity development ? Beneficiary of policy papers and recommendations ? Beneficiary of DSS and other spatial planning tools and monitoring systems
State Committee on Ecology and Environmental Protection (SCEEP)	Executing agency PSC	National Governmental Institution	Joint Planning Meetings and workshops Technical Meetings Project Inception and Validation Workshops	? Has interest in protected areas, biodiversity and economic benefits from NbS ? Provided advisorary services to project development	November 2020-September 2021	? Executing agency ? Co-financier ? Member of PSC ? Beneficiary of DSS and other spatial planning tools and monitoring systems ? Supervision of ecosystem restoration works

Councils of farms, dehkan farms and owners of garden plots and pasture user associations of Uzbekistan (Farmer?s Council)	Co-financing partner PSC	National Governmental Institution	KII (conducted under GCP/UZB/003/GFF) Project Inception and Validation Workshops	? Have key role in land use planning, land leasing and supervision of land output and productivity	November 2020-September 2021	? Member of PSC ? Beneficiary of DSS and other spatial planning tools and monitoring systems ? Beneficiary of ILM, SLM demonstrations and cost-efficiency analysis ? Beneficiary of capacity development ? Beneficiary of policy papers and recommendations

Regional Government authorities of the Autonomic Republic of Karakalpakstan and the Khoresm and Kashkadarya Regions	Co-financing partner PSC	Regional Governmental Institutions	Joint planning Meetings and Workshops Technical Meetings Project Inception and Validation Workshops	? Have interest in protected areas, biodiversity and protecting land from LD	November 2020-September 2021	? Member of PSC ? Beneficiary of DSS and other spatial planning tools and monitoring systems ? Beneficiary of ILM, SLM demonstrations and cost-efficiency analysis ? Beneficiary of capacity development ? Beneficiary of policy papers and recommendations

IUCN: regional project ?Building capacity to implement IPBES Global Assessment in Asia?.	Co-financing partner PSC	International Non-Governmental Organisation	Project Inception and Validation Workshops	? CN is a membership Union composed of both government and civil society organisations. It harnesses the experience, resources and reach of its more than 1,400 Member organisations and the input of more than 18,000 experts. This diversity and vast expertise makes IUCN the global authority on the status of the natural world and the measures needed to safeguard it.	November 2020-September 2021	? Co-financier ? Member of PSC ? Advisory services on issues of biodiversity, ecosystem restoration, models of community benefit-sharing, PPP agreements and other NbS approaches ? Awareness raising campaigns ? Support in Value Chain strengthening ? Data sharing
ICARDA	Co-financing partner PSC	International Research Institution	Technical Meetings Project Inception and Validation Workshops	? Have a wide range of SLM techniques, approaches and experience relevant to project objectives	November 2020-September 2021	? Member of PSC ? Support for training and capacity building exercises ? Advisory services and technical backstopping ? Crop diversification and improved variety development and upscaling

National Agricultural Research Institutes	Co-financing partner	National Research Institutions	Technical Meetings Project Inception and Validation Workshops	? There are numerous barriers and obstacles to SLM, crop diversification and improved varieties upscaling ? Increasing supply of improved varieties will require engagement of pivate sector to produce sufficient quantities	March 2021 ? September 2021	? Support for training and capacity building exercises ? Advisory services and technical backstopping ? Crop diversification and improved variety development and upscaling
Local government bodies (khokimiyats)	Direct Beneficiaries	Local Government Institutions	Joint Planning Meetings and Workshops Project Inception and Validation Workshops	? Main project initiator. ? Key role in Agriculture, SLM and LDN-related policy frameworks.	March 2021 ? September 2021	? Advisory role on ILM and land planning activities ? Beneficiary of DSS and other spatial planning tools and monitoring systems ? Beneficiary of ILM, SLM demonstrations and cost-efficiency analysis ? Beneficiary of capacity development ? Beneficiary of policy papers and recommendations

Private Wheat Clusters	Co-financing partner Direct Beneficiaries	Private Sector	KII (Annex I2)	? Low quality of wheat produced is an issue for the industry ? Are interested in establishing incentive programmes aimed at improving Wheat quality and increasing efficiency of straw use	March 2021 ? September 2021	? Advisory role on wheat market issues and trade ? Beneficiary of ILM, SLM demonstrations and cost-efficiency analysis ? Beneficiary of capacity development ? Beneficiary of incentive programmes ? Beneficiary of policy papers and recommendations

Regional Milling plants in the Autonomic Republic of Karakalpakstan, Khoresm and Kashkadarya regions (Koson & Tortkol Flour Milling Plants)	Co-financing partner Indirect Beneficiaries	Private Sector	KII (Annex I2)	? Expressed interest in providing incentives to producers for increased quality of wheat ? Expressed interest in providing incentives to programmes or producers to promote agro-environmental benefits ? Expressed interest in providing incentives to programmes or producers to promote gender or social empoowerment	March 2021 ? June 2021	? Beneficiary of incentive programmes ? Advisory role on wheat market issues and trade ? Beneficiary of ILM, SLM demonstrations and cost-efficiency analysis ? Beneficiary of capacity development ? Beneficiary of incentive programmes ? Beneficiary of policy papers and recommendations

Alfalfa, Dairy and Horticulture value chain actors	Indirect Beneficiaries	Private Sector	KII (Annex I2)	? providing incentives to producers for increased product quality, especially for the dairy and fodder value chains ? Expressed interest in providing incentives to programmes or producers to promote agro-environmental benefits ? Expressed interest in providing incentives to programmes or producers to promote gender or social empoowerment	March 2021 ? June 2021	? Beneficiary of incentive programmes ? Beneficiary of ILM, SLM demonstrations and cost-efficiency analysis ? Beneficiary of capacity development ? Beneficiary of policy papers and recommendations ? Advisory role on VC market issues and trade ?

Small-holder farmers in the Autonomic Republic of Karakalpakstan, Khoresm and Kashkadarya Regions	Direct Beneficiaries	Private Sector	FGDs (Annex I2)	? Confirmed interest in wheat, alfalfa and dairy value chains and, with some variations, from both women and men across project districts ? Confirmed scope to support enhanced value addition towards better quality/greater quantities, thereby avoiding food loss and waste and contributing to GHG mitigation/ stress on land and water resources ? ?Bright spots? or good practices in SLM exist, practised by both women and men, yet there is clear scope to enhance and upscale ? Key barriers to more sustainable food production credit, lack of land tenure insecurity, lack of access to affordable credit and lack of technical	May ? June 2021	? Contribute to problem solving at household level; ? Beneficiary of project support, including capacity development. ? Recipient of SLM approaches, tools and materials ? Value Chain strengthening, including renewable energy technologies and training, Beneficiary of Value Chain strengthening activities

Commercial farmers in in the Autonomic Republic of Karakalpakstan, Khoresm and Kashkadarya Regions	Direct Beneficiaries	Private Sector	KII (Annex I2)	? Key stakeholder group for achieving project core targets ? Access to credit, efficient irrigation and access to improved animal breeds and wheat varieties were cited as the strongest incentives for commercial farms to change their production system to a more sustainable one.	May ? June 2021	? Beneficiary of project support, including capacity development. ? Recipient of SLM approaches, tools and materials ? Beneficiary of Value Chain strengthening activities, including renewable energy technologies and training
NGOs / CSOs	Indirect Beneficiaries	Non-Governmental Organisation	Technical meetings and workshops Focus groups discussions Project Inception and Validation Workshops	? Few organisations represent farmers or producers interest ? Mahallas have collaborated in the past with projects and are eligble partners for organising trainings and demonstrations sites.	November 2020- September 2021	? Awareness raising campaigns ? Support in Value Chain strengthening ? Recipient of capacity building, ILM and other SLM approaches, tools and materials

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement

Table 21. Stakeholder Consultation foreseen in project Implementation

Stakeholder Name	Stakeholder Type	Stakeholder profile	Consultation Methodology	Expected timing	Comments
Ministry of Agriculture	Co-financing partner Chair of PSC	*National Government Institution body*	? PSC ? Joint Planning ? Meetings ? Project Workshops	*Trimesterly*	*Chair of PSC, executing agency and* *key policy partner*
State Committee on Ecology and Environmental (SC EEP)	Co-financing partner PSC	*National Government Institution body*	? --	--	*Executing agency*
Councils of farms, dehkan farms and owners of garden plots and pasture user associations of Uzbekistan (Farmer?s Council)	Co-financing partner PSC	*National Government Institution body*	? PSC ? Joint Planning Meetings ? Project Workshops ? Technical meetings	*Semesterly*	*Collaboration on issues relating to land use planning, land suitability analysis, policy issues and land tenure*
Regional Government authorities of the Autonomic Republic of Karakalpakstan and the Khoresm and Kashkadarya Regions	Co-financing partner PSC	*Regional Government Institution body*	? PSC ? Joint Planning Meetings ? Project Workshops ? Technical meetings	*Semesterly*	*Key stakeholder for Regional Policy considerations and upscaling of ILM, SLM and incentive programmes*
IUCN: regional project ?Building capacity to implement IPBES Global Assessment in Asia?.	Co-financing partner PSC	*International NGO*	? PSC ? Joint Planning Meetings ? Project Workshops ? Technical meetings	*Trimesterly*	*Key collaborator on activities in Component 3 and Outputs focused on producing economic-environmental models*

ICARDA	Co-financing partner PSC	*International Institution body*	? PSC ? Joint Planning Meetings ? Project Workshops ? Technical meetings	*Trimesterly*	*Key collaborator on technical issues relating to farming, LD, improved varieties, crop diversification and potential SLM and cost-saving technologies*
National Agricultural Research Institutes	Co-financing partner	*National Government Institution body*	? Project Workshops ? Technical meetings	*Semesterly*	*Key partner on SLM, crop diversification and improved varieties*
Local government bodies (khokimiyats)	Direct Beneficiaries	*Local Government Institution body*	? Joint Planning Meetings ? Project Workshops ? Technical meetings	*Trimesterly*	*Key partner and beneficiary of ILM planning and capacity building*
Private Wheat Clusters	Co-financing partner Direct Beneficiary	*Private Sector*	? Project Workshops ? Technical meetings ? FGDs ? KII	*Trimesterly*	*Co-financing partners and direct beneficiaries of capacity building, SLM demonstrations and technologies and incentive programmes*
Regional Milling plants in the Autonomic Republic of Karakalpakstan, Khoresm and Kashkadarya regions (Koson & Tortkol Flour Milling Plants)	Co-financing partner Indirect Beneficiaries	*Private Sector*	? Project Workshops ? Technical meetings ? FGD ? KII	*Semesterly*	*Co-financing partners and indirect beneficiaries of project activities and incentive programmes*
Alfalfa, Dairy and Horticulture value chain actors	Indirect Beneficiaries	*Private Sector*	? Project Workshops ? Technical meetings ? FGD ? KII	*Semesterly*	*Indirect beneficiaries of project activities and incentive programmes*

Small-holder farmers in the Autonomic Republic of Karakalpakstan, Khoresm and Kashkadarya Regions	Direct Beneficiaries	*Private Sector*	? Project Workshops ? FGD ? KII	*Trimesterly*	*Direct beneficiaries of project activities, capacity building, materials and incentive programmes*
Commercial farmers in in the Autonomic Republic of Karakalpakstan, Khoresm and Kashkadarya Regions	Direct Beneficiaries	*Private Sector*	? Project Workshops ? FGD ? KII	*Trimesterly*	*Key stakeholder for scaling and promotion of SLM and LDN principles to meet GEF core indicator targets* *Direct beneficiaries of project activities, capacity building, materials and incentive programmes*
NGOs / CSOs	Direct Beneficiaries	*Local Government Institution/body*	? Project Workshops ? Technical meetings ? FGD ? KII	*Semesterly*	*Partner for scaling of FOLUR objectives and results*

Select what role civil society will play in the project:

Consulted only; Yes

Member of Advisory Body; Contractor; Yes

Co-financier; Yes

Member of project steering committee or equivalent decision-making body; Yes

Executor or co-executor; Yes

Other (Please explain)

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

This Gender Assessment was conducted to meet the FAO requirements, and was developed based on FAO gender policy standards, to eliminate all forms of discrimination against women, ensure that access to resources is more equal and that agricultural policies and programs are gender-aware, and make women?s voices heard in decision-making at all levels.

Gender dimensions are key to the project, which recognizes that ?(i)n the selected FOLUR IP countries, both women and men make crucial contributions in commodity value chains, agricultural landscapes and forest sectors as farmers, workers, processors and entrepreneurs, and yet women are seldom recognized for doing so, much less empowered to shift toward more sustainable practices?.[1]

In brief, the gender analysis provides a summary overview of gender dimensions in land and natural resource management, and agricultural production in Uzbekistan, specifically in the project oblasts. The findings of the analysis guide the GAP. It is informed by GEF and FAO policies on gender as well as specific guidance from the FOLUR Impact Program. It focuses on identifying gender related issues, gaps and opportunities in (i) access to and control over resources, (ii) decision making and participation and (iii) access to socio-economic benefits and services, which correspond to the GEF results areas for gender.The gender analysis is based primarily on: (i) desk review and (ii) primary data collected through 6 Focus Group Discussions (FGDs) conducted with smallholder women and men and also key informant interviews (KIIs) with large farms and private sector organizations in the project sites. The GAP is based on the project logical framework and builds on the gender analysis. Both the GAP and gender analysis have benefitted from inputs from the GoU and other actors through a gender stakeholder workshop.

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[1] FOLUR Project Document

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; Yes

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

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

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

While obstacles and barriers exist within the agricultural sector of Uzbekistan, there are also many opportunities for growth, innovation and sustainable development. This is in part due to an increasing understanding of how SLM and improved soil fertility are linked to product quality and cost savings in external inputs, and demand for food-grade wheat increases. Consumer demands for reduced impacts on health and ecosystem services by the food production system are affecting how they spend. Therefore, it is often in the industry interest to improve production practices by increasing SLM, SFM and biodiversity conservation through incentive programmes.

In 2019, primary agriculture created 27 percent of agri-jobs in the economy, while the food industry, light manufacturing, and food services together added a meagre 3 percent.[1] Economic growth and job creation is therefore still linked to agricultural value chains. The KII and FGD conducted during project development also showed considerable trade among the 3 land tenure formats and at community and district levels. Commercial farms and value chain actors interviewed almost consistently showed willingness to provide for incentives with those who they traded with in the local and district level value chains, and were also willing to explore agro-environmental and gender empowerment incentives with their suppliers and producers.

From section 2. Stakeholders, it is clear that the private sector is very involved and a co-financier of project activities. Additionally, a relatively high number of project outputs of the Uzbekistan FOLUR project are in fact linked to incentive programmes, economic modelling, or assessment of how policy structures affect or disincentivise SLM or product quality, with Components 1 and 2 being especially focused on private sector concerns and strengthening of sustainable value chains from a variety of approaches and sectors. Project activities outlined in the Workplan (Annex H) also build on multisectoral consultations and involvement in landscape management. Furthermore, the core targets approved for this project, such as the area of land restored, placed under improved management and the number of beneficiaries, requires a proactive engagement with the private sector to be successful in covering the area of land and the number of beneficiaries stipulated.

While this project allows for FFS development in key areas as a means of ensuring gender and transparency issues are met as according to FAO methodology, it also takes a more interactive, wide-scale approach as to the type of organisations that are approached for training and capacity building. In addition to smallholders, Dehkans and other CSOs, Wheat Clusters, cooperatives, large commercial farms, value chain actors and industry would be potential entities or persons who would be eligible for project-funded training and capacity building as they are actors within their landscapes, and thus need to be part of potential land management decisions that could affect their livelihoods. This is both a challenge and potential opportunity for project coordinators to find the correct mix of stakeholders that allows for the highest marginal reaction on investment.

The FOLUR IP has also established targets for private sector engagement for its Child Projects, and recognises the private sector as key partners in delivering sustainable production practices across commodity value chains. One of the greatest challenges key private sector players face is how best to engage and work with government agencies (at all levels). Private Public Producer Partnerships (PPPP) therefore have an important role in project activities, with Output 1.2.3 specifically promoting activities to pilot gender responsive PPPPs under different socio-economic conditions and criteria. Under the FOLUR programme, activities will be promoted that ?*seek to catalyze targeted, efficient and effective engagements, while recognizing that the private sector, in particular, will be highly skeptical unless the business benefits of such engagement are clear and tangible*?.

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[1] World Bank. 2020. ?Uzbekistan:Agri-Food Job Diagnostic?. World Bank, Washington, D.C.

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

This section presents risks **to the project**, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.

Table 22. Risks to Project implementation and objectives.

Description of risk	Impact[1]	Probability of occurance	Mitigation actions	Responsible party within project
Incapacity of project to influence or find solutions to policy barriers and disincentives to sustainable production practices and food systems.	Mod.	Low	Changes and modifications to current legislative frameworks is already envisioned within Uzbekistan?s Agriculture Development Strategy for 2020-2030, and recent decrees show motivation within political leaders to follow this strategy. At the same time, there are sufficient options within the current legislative status quo to achieve FOLUR objectives and project core indicators, most of which are captured and described in detail in the baseline section.	MoA, in collaboration with project partners

Lack of coordination between key institutional stakeholders, such as MoA, SCEEP, Regional Governments, local district administrations and other institutional partners	Mod.	Low	This risk will be mitigated under Component 1, especially Output under which the Inter-Ministerial Task Force chaired by the SCEEP is established to oversee development and adoption/ amendment of policies/regulations to enable implementation of ILM principles, including addressing perverse fiscal subsidies for wheat. Component 1 will therefore strengthen inter-sectoral coordination mechanisms to enhance cooperation on FOLUR issues and objectives.	SCEEP
Weak interaction and response of local communities and institutions to project objectives and interventions.	Moderate	Low	Embedding effective capacity building and training measures, to ensure effectiveness and sustainability at all levels. Targeted project consultant profiles that include community outreach and engagement, including the Gender and Community Development Experts (see section 6. Institutional Arrangements)	SCEEP, in collaboration with MoA and other project partners
Wheat yields fall below district quota levels during transition to Conservation Agriculture, Climate-Smart or Good Agricultural Practices	High	Mod.	Studies and experiences in other countries, especially those in Southern Europe and Central Asia, show that crop yields can suffer during transition to CA and organic agriculture, often leading producers to abandon the practices before their benefits can be seen or measured. This must be planned for and options to reduce lost production and finance transitions to more sustainable practices must be provided for. Therefore, a number of Outputs are focused on developing the economic basis to support investments and identify gaps.	SCEEP, through Outputs and collaborations with the technical institutions participating in project (ICARDA, IUCN, Research Stations, Universities, other GEF projects and initiatives)
Lack of commitment of local stakeholders at the community level to adopt ILM or supporting Action Plans	Mod.	Mod.	Implementation will be undertaken through community-based participatory approaches that address local cultural, socio-economic and ecological concerns. The project will pilot incentives to farmers to engage in more sustainable production and value chains, involving both capacity building, awareness, and value-chain strengthening. PPG consultations with the target districts demonstrate a strong commitment of the local population to landscape conservation and CC mitigation.	SCEEP, in collaboration with local government bodies (khokimiyats) and CSO.

Incapacity of project to pilot incentive programmes that provide for increased agroenvironmental protection and gender empowerment, or expand the current contract farming options	Low	Mod.	Stakeholder consultations held during project development phase shows a clear interest and demand for incentive programmes and contract options that provide for increased environmental protection and socio-economic empowerment of vulnerable social groups. Given the correct support from local institutions and private sector, this process should provide for the expected outcomes and benefits.	SCEEP
Wheat clusters are not operational, capable or positioned to introduce innovation and incorporate project interventions	Low	Low	While Wheat Clusters are co-financiers and an integral part of project development, the project has a variety of alternative means of accessing project benficiaries and meeting land restoration and management targets. This said, the greater the degree of involvement, the easier it will be for project coordinators to meet these targets. Mitigation options could include training in business management, transparency and gender equality, as well as more technical subjects and opportunities to introduce crop diversity, SLM and use of improved varieties.	MoA
Climate change risks	Low	Low	The upward trends in temperature in Uzbekistan are expected to continue and further accelerate, aridity is expected to increase and precipitation will increase slightly in central and western parts of country and decrease in mountainous areas. Reductions in snowfall in Tian Shan ranges expected to decrease water resources for region. CC Mitigation is achieved through the described project Causal Pathways and is both an objective and outcome of project activities.	SCEEP

COVID-19	Mod.	Mod.	World Bank analysis shows that the poverty rate rose to between 8.7 and 10 % following the outbreak, compared to pre-COVID estimates of 7.4 %, which adds between 0.45 and 0.88 million people to existing poverty numbers. Food insecurity has shown the share of households reporting reduced food consumption increased to 26 % in April 2020[2]. Nevertheless, Uzbekistan?s outlook remains positive as reforms continue to shift the economy toward greater resource efficiency and private sector growth. Relevant state agencies are currently drafting Poverty Reduction and Employment Strategies that will define further measures the Government will take until 2030 to protect the most vulnerable. The project directly supports a wide range of landscape actors and livelihoods, though is centred on food systems that provides for food security, rural employment, and where possible, provides for social empowerment and Decent Rural Employment[3]..	SCEEP
Low participation of women/ limited benefits to women			The GAP contains a full list of measures and actions to minimize risks and maximize benefits to women and men, as well as youth.	SCEEP

Due to policy reforms supporting the transition to a more market-oriented economy, Uzbekistan was one of the three countries in Europe and Central Asia to maintain positive growth over 2020, according to the World Bank.[4] This economic situation has not benefited vulnerable social groups and poverty has increased under the pandemic, up to 9 percent from 7.4 percent in 2020 as the continued pandemic led to job losses, income reductions and reductions in remittances. A study by the UNDP in 2020 also found that women are being especially affected by the pandemic, with gender-based violence up five-fold during early lockdowns and front line health workers (82% of which are female) have been under heavy pressure.[5]

The fact that the Covid19 crisis will continue, at least until a safe and accessible vaccine is available to everyone, will oblige the project team and partners to define alternative measures regarding: (i) the collection of information and consultations with the stakeholders involved, (ii) the organization of teamwork, working meetings, workshops, training, and visits to / from other countries involved in the program, (iii) the provision of technical assistance from national and international experts, and (iv) the community-based participation and relationships among members of local communities, and among members of producer organizations, market-based platforms, etc. In this sense, the project team and its partners should define strategies that best adapt to the conditions of Covid19 during the inception workshop, in order to account for the evolution of the pandemic and updated health restrictions or recommendations.

As for the Climate Risk Analysis, the report developed under the PPG phase found that the upward trends in temperature in Uzbekistan are expected to continue and further accelerate; aridity is expected to increase and precipitation will increase slightly in central and western parts of country and decrease in mountainous areas. Reductions in snowfall in the Tian Shan ranges are expected to decrease water resources for the entire region, and could increase cross-border tensions.

CC mitigation is one of the principal outcomes and focuses of this project, in that the SLM solutions outlined either directly address climatic variations and CC, such as increasing production and availability of climate-adapted landrace or improved crop varieties, modifications in cropping calendars, increases in SOC (water retention), intercropping and crop rotations, etc. Project activities using the landscape approach increase capture and flow of materials and energy by increasing land productivity, maintaining current land cover type. SLM activities and approaches have also been selected and validated by local and regional stakeholders and some are designed specifically to address future climate scenarios. The water saving and water harvesting structures, their placement in the landscape and their strength and impact or retention thresholds will be calculated with CC risks and threats in mind to ensure they withstand increased temperature, flooding and drought events.

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[1] H: High; M: Moderate; L: Low.

[2] Uzbekistan Emergency COVID-19 Response Project. World Bank, 2020. Available at https://projects.worldbank.org/en/projects-operations/project-detail/P173827

[3] Specific guidance on how FAO can promote the Four Pillars of Decent Work in rural areas is provided in the Quick reference for addressing decent rural employment (as well as in the full corresponding Guidance document). For more information on FAO?s work on decent rural employment and related guidance materials please consult the FAO thematic website at: http://www.fao.org/rural-employment/en/.

[4] https://www.worldbank.org/en/country/uzbekistan/overview, viewed 02/09/2021

[5] UNDP 2020, Uzbekistan?s health care system, economy hit hard by COVID-19, https://www.undp.org/press-releases/uzbekistans-health-care-system-economy-hit-hard-covid-19, viewed 02/09/2021

6. Institutional Arrangement and Coordination

Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

6.1. Institutional arrangements for project implementation.

From an operational perspective, the project will be comprised of the following components:

? Project Steering Committee (PSC)

? Project Management Unit (PMU)

? Project Support Staff and Consultants

? Project Partners and Co-financiers

The Uzbekistan Ministry of Agriculture and the State Committee on Ecology and Environmental Protection (SCEEP) will have the overall executing and technical responsibility for the project, with FAO providing oversight as GEF Agency as described below. The SCEEP will act as the lead executing agency and will be responsible for the day-to-day management of project results entrusted to it in full compliance with all terms and conditions of the Operational Partnership Agreement signed with FAO. As OP of the project the (State Committee on Ecology and Environmental Protection) is responsible and accountable to FAO for the timely implementation of the agreed project results, operational oversight of implementation activities, timely reporting, and for effective use of GEF resources for the intended purposes and in line with FAO and GEF policy requirements. Disclaimer: ?*It should be noted that the identified Operational Partner(s) or OP, results to be implemented by the OP and budgets to be transferred to the OP are non-binding and may change due to FAO internal partnership and agreement procedures which have not yet been concluded at the time of submission of this proposal*?.

The government will designate a **National Project Director (NPD)**. Located in the SCEEP, the NPD will be responsible for coordinating the activities with all the national bodies related to the different project components, as well as with the project partners. S/he will also be responsible for supervising and guiding the Project Coordinator (see below) on the government policies and priorities.

The NPD (or designated person from lead national institution) will chair the Project Steering Committee (PSC) which will be the main governing body of the project. The PSC will approve Annual Work Plans and Budgets on a yearly basis and will provide strategic guidance to the Project Management Team and to all executing partners. Members and roles of the PSC will be comprised as follows (Table 23).

Table 23. Members and roles within the PSC.

Organisation	Role
Ministry of Agriculture	Chair
State Committee on Ecology and Environmental (SCEEP)	National member
Councils of farms, dehkan farms and owners of garden plots and pasture user associations of Uzbekistan (Farmer?s Council)	National member
Regional Government authorities of the Autonomic Republic of Karakalpakstan and the Khoresm and Kashkadarya Regions	National member
IUCN: regional project ?Building capacity to implement IPBES Global Assessment in Asia?.	Member
ICARDA	National Member
FAO	Member

The members of the PSC will each assure the role of a Focal Point for the project in their respective agencies. Hence, the project will have a Focal Point in each concerned institution. As Focal Points in their agency, the concerned PSC members will: (i) technically oversee activities in their sector; (ii) ensure a fluid two-way exchange of information and knowledge between their agency and the project; (iii) facilitate coordination and links between the project activities and the work plan of their agency; and (iv) facilitate the provision of co-financing to the project.

The **National Project Coordinator** (see below) will be the Secretary to the PSC. The PSC will meet at least once per year to ensure: i) Oversight and assurance of technical quality of outputs; ii) Close linkages between the project and other ongoing projects and programmes relevant to the project; iii) Timely availability and effectiveness of co-financing support; iv) Sustainability of key project outcomes, including up-scaling and replication; v) Effective coordination of governmental partners work under this project; vi) Approval of the six-monthly Project Progress and Financial Reports, the Annual Work Plan and Budget; vii) Making by consensus, management decisions when guidance is required by the National Project Coordinator of the PMU.

The **Project Management Unit** (PMU) will be co-funded by the GEF grant and established within SCEEP. The main functions of the PMU, following the guidance of the PSC, are to ensure overall efficient management, coordination, implementation and monitoring of the project through the effective implementation of the annual work plans and budgets (AWP/Bs). The PMU will be composed of a National Project Coordinator (NPC) who will work full-time for the project lifetime. In addition, the PMU will include a project coordinator, administrative/finance staff, technical specialists, and M&E specialist.

The **National Project Coordinator** (NPC) will oversee daily implementation, management, administration and technical supervision of the project, on behalf of the Operational Partner and within the framework delineated by the PSC. The NPC will be a senior staff member located within FAO, and will provide both administrative and technical support as follows:

A. Adminsitrative support (75% of the time)

Project execution

? Preparation of Annual Work Plans and Budgets (AWP/B)for approval by the PSC

? Preparation of Terms of Reference and Contracts required to implement AWP/B

? Coordination and close monitoring of the implementation of project activities;

? Tracking the project?s progress and ensuring timely delivery of inputs and outputs;

? Providing administrative support and assessing the outputs of the project national consultants hired with GEF funds, as well as the products generated in the implementation of the project,;

? Maintaining documentation and evidence that describes the proper and prudent use of project resources as per OPA provisions, including making available this supporting documentation to FAO and designated auditors when requested;

? Organizing project workshops and meetings to monitor progress and preparing the Annual Budget and Work Plan;

? Coordination with relevant initiatives;

? Ensuring a high level of collaboration among participating institutions and organizations at the national and local levels;

Reporting and evaluation

? Submitting the six-monthly Project Progress Reports (PPRs) with the AWP/B to the PSC and FAO;

? Preparing the first draft of the Project Implementation Review (PIR);

? Supporting the organization of the mid-term and final evaluations in close coordination with the FAO Budget Holder and the FAO Independent Office of Evaluation (OED);

? Supervise the project?s M&E and communications plans.

Compliance with donor requirements

? Ensuring compliance with all Operational Partners Agreement (OPA) provisions during the implementation, including on timely reporting and financial management;

? Informing the PSC and FAO of any delays and difficulties as they arise during the implementation to ensure timely corrective measure and support;

? Ensuring implementation of the Gender Action Plan and Stakeholder Engagement Plan

? Inform the Project Steering Committee (PSC) and FAO of any technical bottlenecks, delays and difficulties that arise during implementation to ensure timely corrective action and support. Discuss and find the best technical solutions for unexpected challenges.

Financial management

? Monitoring financial resources and accounting to ensure accuracy and reliability of financial reports;

? Submitting the OP six-monthly technical and financial reports to FAO and facilitate the information exchange between the OP and FAO, if needed;

? Approving and managing requests for provision of financial resources using provided format in OPA annexes;

? Ensuring timely preparation and submission of requests for funds, financial and progress reports to FAO as per OPA reporting requirements;

B. Technical Support (25%, charged to Project Component 1)

Under Component 1, the Project Coordinator will ensure Cooperation between the two executing partners is effective, and will serve as a neutral broker to ensure the interests of both organizations are taken into account in the project. Specifically, the NPC will:

- ? Lead the technical work under the inter-ministerial Task Force established to oversee development and adoption/amendment of policies/regulations to enable implementation of ILM principles, including addressing perverse fiscal subsidies for wheat
- ? Lead the design and implementation of the wheat-value chain stakeholder needs assessments, including ensuring that ILM toolbox is used
- ? Lead the inter-institutional negotiations to ensure priority issues related to FOLUR are taken up by higher levels of government management
- ? Lead national dialogue to design and promote incentives to adopt ILM in line with LDN principles
- ? Lead national dialogue to design and promote incentives for renewable energies for improved value chains and GHG emissions mitigation
- ? Ensure coordination with GEF-funded LDN project and targets in Uzbekistan

A **Project Finance Officer (full-time)** The Assistant will be responsible for the financial management, contract and day-to-day operations of the project activities implemented by the project. S/he will be responsible for procurement and financial actions as well as their monitoring, documentation and preparation of financial reports. S/he will be responsible for the timely delivery of inputs needed to produce results.

Administrative Assistant (full-time) The Assistant will support daily operations of the project as such as preparing/typing documents and organising meeting arrangements, workshops and other events related to project. Provide other support to PMU during meeting such as logistics, taking of minutes, or other administrative support services required.

In addition to this core team will be two **Team Leader Positions** seated in the MoA and SCEEP. The Team Leader seated in the MoA will be responsible for coordination and implementation of project activities under Component 2, and will act as liaison or focal point between MoA and the FAO Rep. Office in Uzbekistan, reporting to Project National Coordinator and PSC according to agreed M&E plan in agreed format and calendar. S/he will also support financial and administrative reporting and act as a resource person in workshops and land planning events. The Team Leader in SCEEP will be responsible for coordination and implementation of project activities under Component 3, and carry out similar activities as described in the MoA Team Leader position.

Furthermore, a **Project Assistant** position in the MoA and subsequently in the SCEEP will be created. These positions will ensure timely delivery of FAO project reports and accounting for Components 2 (MoA) and 3 (SCEEP), provide logistical support for project events, undertake procurement and financial activities and support consultant field work and data collection as under Components 1 to 4.

FAO will be the GEF Implementing Agency (IA) for the Project, providing project cycle management and support services as established in the GEF Policy. As the GEF IA, FAO holds overall accountability and responsibility to the GEF for delivery of the results. In the IA role, FAO will utilize the GEF fees to deploy three different actors within the organization to support the project (see Annex J for details):

? The Budget Holder, which is usually the most decentralized FAO office, will provide oversight of day to day project execution;

? The Lead Technical Officer(s), drawn from across FAO will provide oversight/support to the projects technical work in coordination with government representatives participating in the Project Steering Committee;

? The Funding Liaison Officer(s) within FAO will monitor and support the project cycle to ensure that the project is being carried out and reporting done in accordance with agreed standards and requirements.

FAO responsibilities, as GEF agency, will include:

? Administrate funds from GEF in accordance with the rules and procedures of FAO;

? Oversee project implementation in accordance with the project document, work plans, budgets, agreements with co-financiers, Operational Partners Agreement(s)and other rules and procedures of FAO;

? Provide technical guidance to ensure that appropriate technical quality is applied to all activities concerned;

? Conduct at least one supervision mission per year; and

? Reporting to the GEF Secretariat and Evaluation Office, through the annual Project Implementation Review, the Mid Term Review, the Terminal Evaluation and the Project Closure Report on project progress;

? Financial reporting to the GEF Trustee.

Given FAO?s role, a **Data Management Expert (M&E)** will be seated with FAO to oversee correct management and use of project resources in accordance with FAO regulations. In addition to this position, each National Consultant will be responsible for developing a specific M&E tracking tool and indicators to measure project progress and impact, using those indicators provided under Component 4 of the project.

The PMU is supported by a range of experts and consultants, either periodically or full time in the case of select National Consultants. Among the National Consultants, the three **Regional Gender and Community Development Experts** will be key for project success within project districts. They will be in charge as project outreach for communities and support the capacity building and incentive programmes developed under the various project Components, including logistics for FFS, training exercises, workshops. They will also act as Gender Focal Points for project activities, ensuring GEF Gender requirements and the project GAP are being met, as well as collecting data on for project and FOLUR IP Gender issues and indicators. Their roles therefore are closely linked to the Conservation Agriculture Experts (FFS / APFS / SLM facilitators) and the ILM Planning & Development Experts.

Supporting the project in all matters relating to agricultural best practices, technical issues on cropping and soil management, plus supervision of all technical training and capacity building relating to Component 2 are the three **Conservation Agriculture Experts (FFS / APFS / SLM facilitators)** who will provide training to the FFS and other participant organisations, but also act as a resource person for workshops and development of technical manuals, WOCAT articles and inputs to the knowledge products.

ILM planning Output 1.3.2 and other land planning related project Outputs will be supported by three **ILM Planning & Development Experts**. Each of the three will work for a total of 36 months to establish a ILM land planning approach, gather stakeholder endorsement and put the plans into action under the related project outputs and activities, ensuring a landscape approach is well integrated and benefits and project impact is monitored under Component 4 of the project.

As the project is closely linked to the Global FOLUR IP and regional FOLUR partners a position of **Knowledge Man. Expert (communications/advocacy)** is recommended for a period of 32 total months (or 8 months per year) to document, record, edit, promote and disseminate project results and recommendations, as well as develop the project communications strategy in early project development under Output 4.1.4.

The PMU and National Consultants will be supported by select International Consultants. This includes the **International Agriculture Policy Expert** (wheat knowledge) to provide recommendations and guidance on all matters related to agricultural policy, incentives and other reform-related issues from an international standpoint, the **International ILM Expert** to assist with participatory ILM planning, the International Wheat Production and VC Expert to provide advisory services and support on market issues, trends and wheat VC development, the Payment for Ecosystem Services and Ecosystem Restoration Expert who will support ecological restoration, monitoring and economic modelling outputs and the International GIS Expert who will provide support on a range of remote sensing issues, as well as update and maintain the DSS.

Included in the International Consultants is the position of **International Community Development/Field School (FFS) Master Trainer-** Farmer Field School methodology and community engagement are dynamic and consistently evolving approaches. Therefore, this position has been included to not only provide training to project staff and stakeholders, but also be available to answer the more difficult questions and issues that come during formation, operation and potential transition into sustainable enterprises of project groups.

The **Renewable Energies Experts** (both National and International) will provide support to the PMU and National Consultants on the selection of equipment and materials, importation and procurement, design of the system and maintenance issues. An **International Gender and Social Inclusion Expert** is also provided for, to supervise the GAP implementation and ensure the Gender and other FOLUR indicators regarding social inclusion and gender equality are being collected adequately.

The Governate project staff will be supported in turn by a group of experts in their field, including VC development and other technical expert positions. They are available to support FFS training, provide inputs on marketing opportunities and value adding, as well as support the Local Regenerative Ag. Experts in cropping, rangeland management or animal husbandray questions and issues.

For further information on these positions, please see Annex L.

The following table outlines stakeholder roles for specific Outputs (Table 24).

Table 24. Responsibilities for specific project Outputs.

Output	**Lead Responsible Institution**	**Supporting Institutions or Beneficiaries of tools/approaches**
Output.1.1.1: Assessment of enabling conditions and regulatory framework for multi-agency and regional management of wheat landscapes and sustainable and inclusive food systems carried out	MoA	SCEEP
Output 1.1.2: Inter-Ministerial Task Force chaired by the SCEEP established to oversee development and adoption/ amendment of policies/regulations to enable implementation of ILM principles, including addressing perverse fiscal subsidies for wheat	SCEEP	MoA, Cabinet of Ministries

Output 1.1.3: Capacity development program initiated for stakeholders involved in wheat and wheat landscape value chains, including use and implementation of the toolbox for ILM	MoA	SCEEP, Local Administrations, Wheat Clusters
Output 1.1.4: Policy briefs, advocacy and awareness-raising materials prepared and published to inform discussions and decision making on priority issues related to FOLUR and project objective	MoA	SCEEP
Output.1.2.1: Assessment of existing and potential incentive mechanisms for ILM from national and international experiences carried out, including identification of innovative business models to encourage public and private investments in sustainable production in wheat landscapes	MoA	IUCN, SCEEP
Output.1.2.2: Inclusive and gender-responsive Renewable Energy incentives for VCs and GHG mitigation	MoA	SCEEP
Output.1.2.3: PPPPs on the ground for nature-based solutions in wheat-dominated landscapes	SCEEP	IUCN
Output.1.2.4: Economic case for scaling-up at national and sub-national levels for integrated management of sustainable production in wheat landscapes and ILM developed, tested, and endorsed by the Task Force	ICARDA	MoA/ IUCN
Output.1.3.1: Integrated landscape and wheat production suitability analysis conducted based on agro-climatic conditions to inform ILM, farm and value chain level interventions, including effective and inclusive biodiversity, and climate-smart options developed, tested, and demonstrated	MoA	SCEEP, SFC, Regional and Local Authorities, Council of Farmers, Wheat Clusters
Output 1.3.2: ILM plans using FAO Land Resources Planning Toolbox elaborated, inclusively consulted, and adopted by authorities in accordance with Land Code[2]	MoA	SCEEP, SFC, Regional and Local Authorities, Council of Farmers, Private Sector, NGO/CSO, WUA

Output.2.1.1: Formation of new and/or capacity building of existing producer organizations and Wheat Clusters to implement sustainable wheat production and diversification at farm and landscape levels (including Farmer Field Schools, FFS and Training of Trainers, ToT) to implement improved farming management practices and landscape management	MoA	SCEEP
Output 2.1.2: Diversification of approaches to maintain diversity of production systems (e.g. diversification, crop rotation and inter-cropping, improved wheat germplasm) demonstrated	SCEEP	MoA, ICARDA, National Research Stations, Council of Farmers, Wheat Clusters, Private Sector
Output 2.1.3: Improved management of productive croplands to increase crop production (conservation agriculture, integrated soil nutrient management, improved wheat cultivars, subsurface drip irrigation system, integrated pest management, etc.) demonstrated	MoA	MoA, ICARDA, National Research Stations, Council of Farmers, Wheat Clusters, Private Sector
Output 2.2.1. Menu of ?sustainable wheat contract? models with attributes that satisfy heterogeneous needs of different segments of the wheat value chain (producers, millers) and farmers introduced, responsive to needs and capacities value chain actors	MoA	SCEEP, ICARDA, National Research Stations, Council of Farmers, Wheat Clusters, Private Sector, Industry and Value Chains
Output 2.2.2. Cooperative platform for wheat value chain actors developed focusing on sustainable wheat production, marketing, and sale	MoA	SCEEP
Output 2.2.3.: Locally appropriate and equitable agro-environmental incentives adopted to link smallholder outputs to local and potentially regional markets for sustainably sourced commodities from sustainably managed landscapes by leveraging wide stakeholder involvement, including the private sector	MoA	SCEEP, IUCN
Output.3.1.1: Capacity building and resource mobilization carried out for implementation of ILM plans through local producers, government and other stakeholders ? including the private sector for conservation of existing high biodiversity areas or restoration of degraded areas	SCEEP	MoA, IUCN

Output 3.1.2: Inclusive models of benefit sharing from ILM between communities and other stakeholders for conservation and restoration of habitats/ ecosystems in production landscapes developed	ICARDA	SCEEP, IUCN
Output 3.1.3: Alternative livelihoods demonstrated for community women and men involved in activities that threaten global environmental values for conservation and restoration of habitats/ ecosystems in production landscapes	ICARDA	SCEEP, IUCN
Output 3.1.4: Degraded ecosystems/habitats of high nature value in target areas in production landscapes and Protected Areas under sustainable management and restored	MoA	SCEEP, IUCN
Output.4.1.1: Standardized indicators introduced linking to the FOLUR IP (calculation, testing, integration SDG indicators, extrapolation from local to national scale)	SCEEP	SCEEP, MoA
Output.4.1.2: A national experience exchange network on sustainable food production established at the Ministry of Agriculture and linked to the Kazakhstan FOLUR IP exchange network	MoA	SCEEP
Output 4.1.3: RBM Gender-Sensitive system of the project promoted adaptive management through capturing of key results of project activities	SCEEP	MoA
Output 4.1.4: Communication Strategy and KM strategy are developed and implemented	SCEEP	MoA
Output 4.1.5: Project Mid-term review and Final Evaluation are conducted	SCEEP	MoA, FAO
Output 4.1.6: Global IP platform engagement & coordination	SCEEP	MoA, FAO

The following figure (Figure 24) below provides for a graphic overview of how the arrangements will work.

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[1] It should be noted that the identified Operational Partner(s) or OP, results to be implemented by the OP and budgets to be transferred to the OP are non-binding and may change due to FAO internal partnership and agreement procedures which have not yet been concluded at the time of submission of this funding proposal.

[2] Output develops ILM plans, Output 3.1.1 funds and builds capacity for their implementation

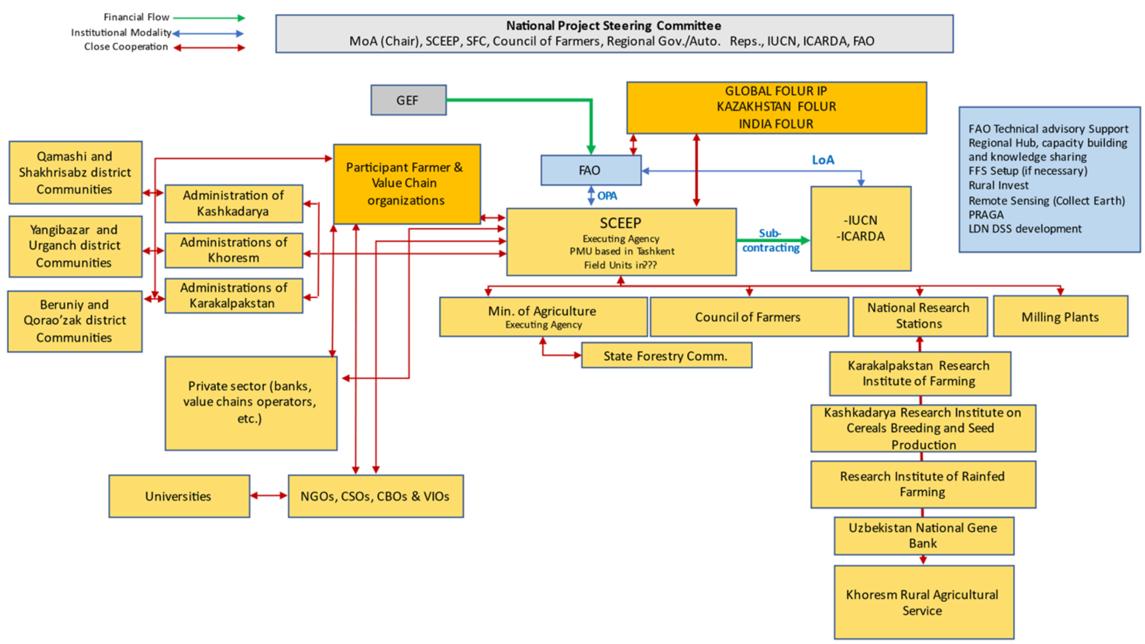

Figure 24. The project organization structure.

6.2. Coordination with other relevant GEF-financed projects and other initiatives.

A number of GEF funded projects are active in the country, and include the following:
? FAO-GEF ?Sustainable Forest and Rangelands Management in the Dryland Ecosystems of Uzbekistan?. This project has the objective to ?Promote SLM/SFM and landscapes restoration for achieving LDN commitments of Uzbekistan? and has great potential for synergies with the Uzbekistan FOLUR IP. Both are based on ILM and planning and incorporate LDN principles and conceptual frameworks to increase informed decision making. The project is focused on the Bukhara-Navoi Oblast lying between Karakalpakstan, Khorezm, and Kashkadarya, addressing dryland productivity and management, while the FOLUR IP supports SLM and ILM within wheat-dominant landscapes and agricultural production within protected areas.

?	FAO-GEF project ?Integrated natural resources management in drought-prone and salt-affected agricultural production landscapes in Central Asia and Turkey (CACILM-2)?. Building on the experience of CACILM-1, CACILM-2 set its objective as ?to scale up integrated natural resources management (INRM) in drought prone and salt-affected agricultural production landscapes in Central Asian countries and Turkey?. SLM within salt affected areas and other conservation agriculture measures and demonstration site results are well documented for this project and can provide economic indicators on SLM investments.

?	UNDP-GEF project ?Reducing pressure on natural resources from competing land use in non-irrigated arid mountain, semi-desert and desert landscapes of Uzbekistan?. Project objective was to promote integrated management of rangeland and forests at the landscape level (focus on non-irrigated, arid mountain, semi-desert, and desert landscapes) to reduce pressures on natural resources from competing land uses and improve the socio-economic stability of communities?. Lessons learnt can be taken from project results.

?	UNDP-GEF project ?Conservation and sustainable management of lakes, wetlands, and riparian corridors as pillars of a resilient and land degradation neutral Aral basin landscapes supporting sustainable livelihoods?. Project is aiming to enhance the resilience and sustainability of landscapes and livelihoods in the Aral basin, and progress toward Land Degradation Neutrality (LDN), through integrated management of land, lake, wetland, and riparian ecosystems, with engagement of private sector and local communities. This project is targeting all of the regions for the FOLUR IP and is very much linked to the ILM and LDN. Clear areas for collaboration and cooperation exist to bring in all components and land covers types within the landscape approach.

?	FAO-GEF project ?Sustainable management of forests in mountain and valley areas in Uzbekistan?. Project objective is to introduce Sustainable Forest Management (SFM) in Uzbekistan, thereby sequestrating carbon and improving the quality of forests and tree resources. While the project is closing, there are lessons learnt and other information and data that can inform this project?s implementation.

Synergies with ongoing or active GEF funded projects will include:

?	Access to the interactive online mapping app that lets a wide range of users and stakeholders have public access to vital LD and other planning and spatial information.

?	Sharing of materials, information and data, especially on issues of ILM planning processes, policy entry points, awareness campaigns, results from project pilot programmes and those related to LDN conceptual framework application.

?	Joint policy proposals and workshops on key policy issues and recommendations

?	Joint participation in project trainings, capacity building and other events.

?	Access to platforms, websites and other online media.

?	Exchange visits to demonstration sites, FFS facilities and other project related experiences.

?

Lessons learnt will be taken from those GEF-funded projects that have finalised.

The project will also establish technical linkages and coordination with the following projects:

? WB loan ?Agriculture Modernization Project? in Uzbekistan;

? WB loan ?Horticulture Development Project? in Uzbekistan;

? WB-GCF project ?Climate adaptation and mitigation program for the Aral Sea Basin (CAMP4ASB)?;

? GIZ project on Ecosystem Based Land Use and Ecosystems Conservation along the Lower reaches of Amu Darya (IKI Amu Darya) in the framework of the International Climate Initiative;

? EBRD public and private investments in Uzbekistan: DFF - Kokand Fertilisers GET Capex; FIF - CA WiB Programme-DAVR Bank;

? IFAD Agriculture Diversification and Modernization Project;

? UNDP-GEF project ?Sustainable natural resource use and forest management in key mountainous areas important for globally significant biodiversity?;

? UNDP-Adaptation Fund project ?Developing climate resilience of farming communities in the drought prone parts of Uzbekistan;

Other relevant projects for baselines, lessons learnt and collaboration include:

? FAO project ?Central Asian Desert Initiative? in the framework of the International Climate Initiative.

? IUCN: regional project ?Building capacity to implement IPBES Global Assessment in Asia?. Uzbekistan is one of the outreach countries with the budget allocation of US$1 million over five years (2021-2024)

Other international commitments under the current Conventions addressed by project activities include:

? Bonn Challenge: Restoration of 0.5 million ha of deforested and degraded land by 2030.

? UNCCD: A national LDN strategy is being prepared within the scope of GEF-7 LDN project GCP/UZB/003/GFF (FAO).

? UNFCCC: Adaptation of agriculture and water management sector (Climate resilience of agriculture through diversification of food crop production patterns; Improvement of irrigated lands affected by desertification, soil degradation and drought, increase in soil fertility of irrigated and rain-fed lands; Improvement of water management). Mitigation of the Aral Sea disaster impacts (Conservation of the ecological balance in Priaralie, combating desertification, improvement of management system, efficient and rational water resources use). Adaptation of ecosystems (Restoration of forests in mountain and piedmont areas, conservation of indigenous plant species in semi-deserts and deserts; Improvement of sustainability in management of fragile desert ecosystems).

? CBD: Uzbekistan?s NBSAP emphasizes the control of negative externalities in unsustainable agricultural production. National Targets to 2025: (5) a set of measures to reduce the rate of degradation and fragmentation of the most vulnerable natural ecosystems; (8) the state programme for conservation and sustainable use of agricultural biodiversity; (10) the activities on conservation and sustainable use of biodiversity and maintenance ecosystem services are financed from state, private and international financial resources.

? Ramsar: Uzbekistan currently has two Ramsar Sites, one of which is located in the project target region.

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assesments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

The Government set out its Agriculture Strategy in October 2019 to redefine the State?s role and a shift to market-oriented, inclusive, and private sector-led agriculture. Included are reforms that seek to: (i) strengthen the transparency of land allocation and land tenure security; (ii) eliminate the state production system for cotton and wheat, while attracting private investments in agriculture; (iii) shift agricultural public expenditures from subsidies to public goods; (iv) invest in the agricultural knowledge and innovation system; (v) enhance the management of soils and water; and (iv) collect and disseminate better data and information. It recognizes the structural and policy weaknesses of Uzbekistan?s agriculture and prioritizes public investments in quality, reliability, safety, and logistics, while creating space for the private sector to benefit from public investments and generate profits and jobs.

The Uzbekistan FOLUR Child Project is aligned and closely linked through the project?s ?Investments Mobilised? to the developing ?Wheat Clusters?, envisioned by the Uzbekistan?s Agriculture Development Strategy for 2020-2030. In addition to the development and implementation of national policies on food security and the entry of market forces and private investment, it foresees the role of these clusters as essential players for the transitions needed within productive and value-adding contexts. This Cluster-based strategy aims to ?position Uzbekistan as one of the leading producers and exporters of high-value agri-food products in Central Asia[1]?.

The Wheat Clusters also provide a unique opportunity for accessing key beneficiaries and actors in the wheat productive and value chain cycles. Project activities aimed at capacity-building, presentation of SLM options and streamlining of improved inputs and grain varieties have organisational frameworks with which to work. Other issues such as participatory inputs on land planning, policy and management objectives for communal resources are also readily accessible through exchanges with the cluster members and partners. Participant clusters can serve provide land and resources to test more innovative, sustainable and profitable production systems.

Under the reforms envisioned is i) strengthen the transparency of land allocation and land tenure security. In this sense, the Council of Farmers, Dehkan Farms and Landowners is a key component, and their capacity will be strengthened to improve the basis of decision making and information available. and the IPBES regional project ?Building capacity to implement IPBES Global Assessment in Asia?, which specifically seeks to improve the Science-Policy interface to conserve and increase biodiversity and ecosystem services within participant countries.

In addition, other National Priorities or Conventions are as follows:

? National Action Program (NAP) under UNCCD: The project addresses priority areas for adaptation, including i) water, ii) biodiversity, ecosystems and protected areas, ii) Sustainable development-oriented socioeconomic adaptation, iv) Gender and v) Agriculture.

? CBD National Targets 5: By 2025, a set of measures to reduce the rate of degradation and fragmentation of the most vulnerable natural ecosystems is developed and is in the process of implementation, and Target 8: By 2025, the state programme for conservation and sustainable use of agricultural biodiversity is developed.

? UNFCCC NDC:

? Adaptation of agriculture and water management sector

? Improvement of the climate resilience of the agriculture through diversification of food crops production pattern; conservation of germplasm and indigenous plant species and agricultural crops resistant to droughts, pests and diseases; development of biotechnologies and breeding new crop varieties adopted to conditions of changing climate.

? Improvement of irrigated lands affected by desertification, soil degradation and drought, increase in soil fertility of irrigated and rain-fed lands.

? Further improvement of water management practice in irrigated agriculture with wide use of integrated water resources management approaches and innovative technologies for water saving, including broad introduction of drip irrigation systems.

? Adaptation of ecosystems

?   Restoration of forests in mountain and piedmont areas, conservation of indigenous plant species in semi-deserts and deserts;

?   Conservation, restoration and maintenance of ecological balance in the protected nature territories;

?   Improvement of sustainability in management of fragile desert ecosystems.

?   Social:

?   Widening the participation of the public, scientific institutions, women and local communities in planning and management

Bonn Challenge

?   National commitment to forest landscape restoration: 500,000 ha (2011-2030).

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[1]Lloyd, C 2020, Focus on Uzbekistan, World-Grain.com, https://www.world-grain.com/articles/13229-focus-on-uzbekistan

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

Elaborate the ?Knowledge Management Approach? for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project?s overall impact. Please also describe how the project is incorporating lessons learned from previous interventions in the same context[1].

Finally, describe the project?s communication strategy.

Learning and knowledge sharing is a key component to achieving the expected transformative impact of the project in Uzbekistan. Inter-ministerial Task Force that will be established under Component 1 and the Cooperative platform for wheat value chain actors that will be established under Component 2 will be used to convene leaders and public and private stakeholders of other key agricultural players and regions to exchange knowledge and lessons learned and inspire others. The newly established Wheat Clusters will be an important catalyst for scaling and technology transfer within Uzbekistan. In addition, by demonstrating to the local and national government in the target regions and to other regions and counties how to sustainably transform wheat landscapes and value chains, and by ensuring that knowledge from the project is transferred into the Government?s action plans, such as land use plans, will ensure wider scale-up of the innovations to be implemented under the project.

Regionally, Uzbekistan plays an active role in transboundary water management, integrated land degradation, and energy issues. The key initiatives include CACILM-2; Astana Resolution on Forest Landscape Restoration and the Bonn Challenge in the Caucasus and Central Asia; Central Asian Desert Initiative (CADI); Aral Sea Commission; Central Asia Nexus Dialogue: Fostering Water, Energy and Food Security Nexus Dialogue and Multi-Sector Investment (Nexus), the Green Central Asia Initiative, and others. The project will connect and coordinate with these initiatives to ensure lessons learned reach the countries in the region. The project will make efforts to establish close linkages with the Kazakhstan FOLUR child project targeting wheat commodity.

The project will engage actively with the FOLUR global platform to share lessons learned outward and bring lessons, investment and good practice to Uzbekistan. This engagement will be highly collaborative with the global platform enabling catalytic engagement by the child projects to benefit from global level dialogue and action. Lessons learned across the FOLUR portfolio, and particularly in the Central Asian region, will leverage global coalitions and lessons learned of global relevance to pursue FOLUR objectives. The project will generate knowledge on sustainable restoration and wheat value chains management for the countries in the region and globally with shifting agricultural dialogues from a centrally-controlled planned economic system to a market-based economy that maximizes GEBs in the process.

Good practices and lessons learnt from the project will also feed into the global FOLUR platform, while tools, methods, and expertise will be drawn from the global FOLUR platform to enhance project implementation. The global FOLUR platform will critically serve to leverage South-South cooperation with other FOLUR beneficiary countries, in this case specifically with Kazakhstan given the shared wheat focus of the projects and potentially others, such as the Indian FOLUR which is also working with wheat.

A number of tools and approaches will be used to foster learning, knowledge exchange and cooperation among practitioners. At landscape level, the project will use proven methods for participation and engagement of local stakeholders, one such option being the Restoration Opportunities Assessment Methodology (ROAM) to develop identify links between sustainable value chains and SLM. The project will also rely on participatory, people-centered methods for learning, e.g. Farmer Field Schools (FFS), and for disseminating information, e.g. Wheat Clusters. More classic approaches, like exchange visits, will be used to strengthen linkages with ongoing efforts (in particular baseline projects) and to highlight past successes. Lessons learnt from local implementation will be institutionalized in the departmental planning processes, and will feed into the national cross-sectoral platform for FOLUR and into the above mentioned regional and global online Communities of Practice, that will uptake and further disseminate within their own countries the fruits of those exchanges. Linkages and collaboration opportunities will be extended to private sector as well.

In order to ensure efficient data capture and recording of results and lessons learnt to inform project partners, co-financiers, stakeholders, beneficiaries and the Global FOLUR IP Platform, a specific position has been created in the form of the Knowledge Man. Expert (communications/advocacy). They will not only develop the communication strategy but will ensure capture and dissemination of project results within the corresponding channels, as well as ensure that the project and its stakeholders are benefiting from the knowledge being generated in other FOLUR Child Projects, regionally and around the world.

In addition to the media, reports, policy papers and other project generated materials, the following knowledge products will be edited, produced and publicly disseminated within national and international channels:

?

? Output 2.1.3: 4 specific knowledge products targeting project VCs developed to strengthen investment and development

? Output 2.1.3: At least 2 WOCAT articles published based on project knowledge products.

? Output 3.1.2: 2 resulting WOCAT articles are published based on ecosystem restoration work and results.

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[1] FAO?s Knowledge Management Strategy requires formulators and implementers to consider sound knowledge management practices throughout the project cycle.

9. Monitoring and Evaluation

Describe the budgeted M and E plan

The project will ensure transparency in the preparation, conduct, reporting and evaluation of its activities. This includes full disclosure of all non-confidential information, and consultation with major groups and representatives of local communities. The disclosure of information shall be ensured through posting on websites and dissemination of findings through knowledge products and events. Project reports will be broadly and freely shared, and findings and lessons learned made available.

The monitoring and evaluation of progress in achieving the results and objectives of the project will be based on targets and indicators in the Project Results Framework (Annex A). Project monitoring and the evaluation activities are budgeted at 139,380 USD (see Monitoring & Evaluation Summary Table 25 below in this section). Monitoring and evaluation activities will follow relevant FAO and GEF policies and guidelines. The monitoring and evaluation system will also facilitate learning and replication of the project?s results and lessons in relation to the integrated management of natural resources.

Oversight and monitoring responsibilities

The monitoring and evaluation roles and responsibilities specifically described in the Monitoring and Evaluation table (see Table 25 below) will be undertaken through: (i) day-to-day monitoring and project progress supervision missions; (ii) technical monitoring of indicators (PMU and Lead Technical Unit in coordination with partners); and (iii) monitoring and supervision missions (FAO).

At the beginning of the implementation of the GEF project, the PMU will establish a system to monitor the project?s progress. It is recommended that each project Consultant (Annex B, Budget) present individual M&E indicators and systems that provide data to the established project M&E system. Participatory mechanisms and methodologies to support the monitoring and evaluation of performance indicators and outputs will be developed and realised by project staff and consultants, and be overseen by the project coordinator, and by the Data Management Expert (M&E) seated within FAO and hired specifically for this task.

During the project inception workshop, the tasks of monitoring and evaluation will include: (i) presentation and explanation (if needed) of the project?s Results Framework with all project stakeholders; (ii) review of monitoring and evaluation indicators and their baselines; (iii) preparation of draft clauses that will be required for inclusion in consultant contracts, to ensure compliance with the monitoring and evaluation reporting functions (if applicable); and (iv) clarification of the division of monitoring and evaluation tasks among the different stakeholders in the project.

The M&E and Communications Expert (in this case, separate Consultancies) will prepare a draft monitoring and evaluation matrix that will be discussed and agreed upon by all stakeholders during the inception workshop. The M&E matrix will be a management tool for the PSC and the Project Partners to: i) six-monthly monitor the achievement of output indicators; ii) annually monitor the achievement of outcome indicators; iii) clearly define responsibilities and verification means; iv) select a method to process the indicators and data.

The **M&E Plan** will be prepared by the M&E and Communication Specialist together in the three first months of the PY1 and validated with the PSC. The M&E Plan will be based on the M&E summary (Table 25) and the M&E Matrix. It will include: i) the updated results framework, with clear indicators per year; ii) updated baseline, if needed, and selected tools for data collection (including sample definition); iii) narrative of the monitoring strategy, including roles and responsibilities for data collection and processing, reporting flows, monitoring matrix, and brief analysis of who, when and how will each indicator be measured. **Responsibility of project activities may or may not coincide with data collection responsibility**; iv) updated implementation arrangements, if needed; v) inclusion of data collection and monitoring strategy to be included in the final evaluation; vi) calendar of evaluation workshops, including self-evaluation techniques.

The day-to-day monitoring of the project?s implementation will be the responsibility of the PC and will be driven by the preparation and implementation of an AWP/B followed up through six-monthly PPRs. The preparation of the AWP/B and six-monthly PPRs will represent the product of a unified planning process between main project stakeholders. As tools for results-based management (RBM), the AWP/B will identify the actions proposed for the coming project year and provide the necessary details on output and outcome targets to be achieved, and the PPRs will report on the monitoring of the implementation of actions and the achievement of output and outcome targets. Specific inputs to the AWP/B and the PPRs will be prepared based on participatory planning and progress review with all stakeholders and coordinated and facilitated through project planning and progress review workshops. These contributions will be consolidated by the PC in the draft AWP/B and the PPRs.

An annual project progress review and planning meeting should be held with the participation of the project partners to finalize the AWP/B and the PPRs. Once finalized, the AWP/B and the PPRs will be submitted to the FAO LTO for technical clearance, and to the Project Steering Committee for revision and approval. The AWP/B will be developed in a manner consistent with the Project Results Framework to ensure adequate fulfillment and monitoring of project outputs and outcomes.

Following the approval of the project, the PY1 AWP/B will be adjusted (either reduced or expanded in time) to synchronize it with the annual reporting calendar. In subsequent years, the AWP/Bs will follow an annual preparation and reporting cycle.

Reporting schedule

Specific reports that will be prepared under the monitoring and evaluation program are:

(i) Project inception report;

(ii) Annual Work Plan and Budget (AWP/B);

(iii) Project Progress Reports (PPRs);

(iv) Annual Project Implementation Review (PIR);

(v) Technical reports; (vi) Co-financing reports; and

(vii) Terminal Report.

In addition, the GEF-7 Core Indicator Worksheet will be completed and will be used to compare progress of project Core Indicator 3: ?Area of land restored?, Core Indicator 4: ?Area of landscapes under improved practices?, as well as Core Indicator 11: ?Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment? with the baseline established during the preparation of the project.

Guidance will be provided by the international and national consultants, in close collaboration with the project technical partners, to define ?restoration, or land restored?, in addition to parameters for ?avoid, reduce and restore? actions and activities, as linked to LDN.

Project Inception Report. After FAO internal approval of the project, an inception workshop will be held. Immediately after the workshop, the NPC and SCEEP will prepare a project inception report in consultation with the FAO Representation in Uzbekistan and other project partners. The report will include a narrative on the institutional roles and responsibilities and coordinating action of project partners, progress to date on project establishment and start-up activities and an update of any changed external conditions that may affect project implementation. It will also include a detailed first year AWP/B and the M&E Matrix. The draft inception report will be circulated to, FAO, the PSC and for review and comments before its finalization, no later than three months after project start-up. The report will be cleared by the FAO BH, LTO and the FAO/GEF Coordination Unit. The BH will upload it in FPMIS.

Annual Work Plan and Budget(s) (AWP/Bs). The NPC will present a draft AWP/B to the PSC no later than 10 December of each year. The AWP/B should include detailed activities to be implemented by project Outcomes and Outputs (including from the Gender Action Plan) and divided into monthly timeframes and targets and milestone dates for Output and Outcome indicators to be achieved during the year. A detailed project budget for the activities to be implemented during the year should also be included together with all monitoring and supervision activities required during the year. The FAO Representation in Uzbekistan will circulate the draft AWP/B and will consolidate and submit FAO comments. The AWP/B will be reviewed by the PSC and the PIU will incorporate any comments. The final AWP/B will be sent to the PSC for approval and to FAO for final no-objection. The BH will upload the AWP/Bs in FPMIS.

Project Progress Reports (PPR). The PPRs are used to identify constraints, problems or bottlenecks that impede timely implementation and take appropriate remedial action. PPRs will be prepared based on the systematic monitoring of output and outcome indicators identified in the Project Results Framework (Annex A), AWP/B and M&E Plan. Each semester the National Project Coordinator (NPC) will prepare a draft PPR, and will collect and consolidate any comments from the FAO PTF. The NPC will submit the final PPRs to the FAO Representation in Uzbekistan every six months, prior to 10 June (covering the period between January and June) and before 10 December (covering the period between July and December). The July-December report should be accompanied by the updated AWP/B for the following Project Year (PY) for review and receive no-objection by the FAO PTF. The Budget Holder has the responsibility to coordinate the preparation and finalization of the PPR, in consultation with the PIU, LTO and the FLO. After LTO, BH and FLO clearance, the FLO will ensure that project progress reports are uploaded in FPMIS in a timely manner.

Annual Project Implementation Review (PIR). The NPC, under the supervision of the LTO and BH and in coordination with the national project partners, will prepare a draft annual PIR report covering the period July (the previous year) through June (current year) no later than July 1st every year. The LTO will finalize the PIR and will submit it to the FAO-GEF Coordination Unit for review by July 10th. The FAO-GEF Coordination Unit, the LTO, and the BH will discuss the PIR and the ratings. The LTO is responsible for conducting the final review and providing the technical clearance to the PIR(s). The LTO will submit the final version of the PIR to the FAO-GEF Coordination Unit for final approval. The FAO-GEF Coordination Unit will then submit the PIR(s) to the GEF Secretariat and the GEF Independent Evaluation Office as part of the Annual Monitoring Review of the FAO-GEF portfolio. The PIR will be uploaded to FPMIS by the FAO-GEF Coordination Unit

Technical reports. The technical reports will be prepared as part of the project outputs and will document and disseminate lessons learned. Drafts of all technical reports must be submitted by the NPC to the PSC and FAO Representation in Uzbekistan, which in turn will be shared with the LTO for review and approval and to the FAO-GEF Coordination Unit for information and comments before finalization and publication. Copies of the technical reports will be distributed to the Liaison Committee and the PSC and other project stakeholders, as appropriate. These reports will be uploaded in FAO FPMIS by the BH.

Co-financing reports. The NPC will be responsible for collecting the required information and reporting on in-kind and cash co-financing provided by all the project co-financiers and eventual other new partners not foreseen in the Project Document. Every year, the NPC will submit the report to the FAO Representation in Uzbekistan before July 10th covering the period July (the previous year) through June (current year). This information will be used in the PIRs.

Core Indicators worksheet. In compliance with GEF policies and procedures, at project mid-term and completion, Agencies report achieved results against the core indicators and sub-indicators used at CEO Endorsement/ Approval.

An independent **mid-term review** will be undertaken at the mid-point of project implementation. The review will determine progress being made towards achievement of objectives, outcomes, and outputs, and will identify corrective actions if necessary. The MTR will be decentralized and under the overall responsibility of the BH, who may call upon OED for guidance and support. The MTR will, inter alia: (i) review the effectiveness, efficiency and timeliness of project implementation; (ii) analyse effectiveness of implementation and partnership arrangements; (iii) identify issues requiring decisions and remedial actions; (iv) identify lessons learned about project design, implementation and management; (v) highlight technical achievements and lessons learned; and (vi) propose any mid-course corrections and/or adjustments to the implementation strategy as necessary.

Final evaluation. The GEF evaluation policy foresees that all medium and large size projects require a separate terminal evaluation. Such evaluation provides: i) accountability on results, processes, and performance; ii) recommendations to improve the sustainability of the results achieved and iii) lessons learned as an evidence-base for decision-making to be shared with all stakeholders (government, execution agency, other national partners, the GEF and FAO) to improve the performance of future projects.

The BH will be responsible to contact the Regional Evaluation Specialist (RES) within six months prior to the actual completion date (NTE date). The RES will manage the decentralized independent terminal evaluation of this project under the guidance and support of OED and will be responsible for quality assurance. Independent external evaluators will conduct the terminal evaluation of the project taking into account the ?GEF Guidelines for GEF Agencies in Conducting Terminal Evaluation for Full-sized Projects.? FAO Office of Evaluation (OED) will provide technical assistance throughout the evaluation process, via the OED Decentralized Evaluation Support team ? in particular, it will also give quality assurance feedback on: selection of the external evaluators, Terms of Reference of the evaluation, draft and final report. OED will be responsible for the quality assessment of the terminal evaluation report, including the GEF ratings.

After the completion of the terminal evaluation, the BH will be responsible to prepare the management response to the evaluation within four weeks and share it with national partners, GEF OFP, OED and the FAO-GEF CU.

Final Report. Within two months prior to the project?s completion date, the NPC will submit to the PSC and FAO Representation in Uzbekistan a draft final report. The main purpose of the final report is to give guidance to authorities (ministerial or senior government level) on the policy decisions required for the follow-up of the project, and to provide the donor with information on how the funds were utilized. Therefore, the terminal report is a concise account of the main products, results, conclusions and recommendations of the Project, without unnecessary background, narrative or technical details. The target readership consists of persons who are not necessarily technical specialists but who need to understand the policy implications of technical findings and needs for ensuring sustainability of project results. Work is assessed, lessons learned are summarized, and recommendations are expressed in terms of their application to the integrated landscape management in the three pilot districts, as well as in practical execution terms. This report will specifically include the findings of the final evaluation. A project evaluation meeting will be held to discuss the draft final report with the PSC before completion by the National Project Coordinator and approval by the BH, LTO, and FAO-GEF Coordination Unit.

Table 25. Summary of the main monitoring and evaluation reports, parties responsible for their publication and time frames.

M&E Activity	Responsible parties	Time frame/ Periodicity	Budget
Inception workshop in Taskent	NPC; SCEEP and MoA; FAO Representation in Uzbekistan (with support from the LTO and FAO-GEF Coordination Unit)	Within two months of project startup	USD 6,000

M&E Activity	Responsible parties	Time frame/ Periodicity	Budget
Inception workshops in Project districts	NPC; SCEEP and MoA; FAO Representation in Uzbekistan (with support from the LTO and FAO-GEF Coordination Unit)	Within two months of project startup	USD 15,000 (3500*3)
Project Inception Report	NPC; SCEEP and MoA; FAO Representation in Uzbekistan	Immediately after the workshops	SCEEP and MoA time
Project M&E System	NPC; M&E and Knowledge Man. Experts	Within 3 months of project startup	Through M&E, FAO and PMU funds and Consultancies
Project Steering Committee Meetings	SCEEP and MoA, NPC, FAO Representation in Uzbekistan with other PSC members	Once a year	USD 9,000 (3x3,000)
Knowledge Man. Expert	Consultancy within FAO	Continuous	USD 36,000
Field-based impact monitoring	NPC; project partners, local organizations	Continuous	Through LDN and component 1
Supervision visits and rating of progress in PPRs and PIRs	NPC; SCEEP *FAO-GEF Coordination Unit may participate in the visits if needed	Annual, or as needed	FAO visits will be borne by GEF agency fees Project Coordination visits shall be borne by the project?s travel budget:
Project Progress Reports (PPRs)	SCEEP and MoA, NPC, FAO Representation in Uzbekistan with stakeholder contributions and other participating institutions	Six-monthly	SCEEP and MoA and FAO staff time

M&E Activity	Responsible parties	Time frame/ Periodicity	Budget
Project Implementation Review (PIR)	Drafted by the NPC, with the supervision of the LTO and BH. Approved and submitted to GEF by the FAO-GEF Coordination Unit	Annual	FAO staff time financed though GEF agency fees. PC time covered by the project budget.
Co-financing reports	NPC with input from other co-financiers	Annual	PC staff time
Technical reports	NPC; FAO (LTO, FAO Representation in Uzbekistan)	As needed	GEF Agency fees
Independent mid-term review	NPC and PMU; FAO Representation in Uzbekistan; FAO-GEF; FAO technical staff not participating in project implementation	Midpoint of year 3 of project	USD 30,000
Final Evaluation	The BH will be responsible to contact the Regional Evaluation Specialist (RES) within six months prior to the actual completion date (NTE date). The RES will manage the decentralized independent terminal evaluation of this project under the guidance and support of OED.	To be launched 6 months prior to terminal review meeting	USD 60,000
Regional Project Completion Workshop	SCEEP and MoA, NPC, FAO Representation in Uzbekistan with stakeholder contributions and other participating institutions	At least 4 months before project closure	USD12,000 (3x4,000)
National Project Completion Workshop	SCEEP and MoA, NPC, FAO Representation in Uzbekistan with stakeholder contributions and other participating institutions	At least 3 months before project closure	USD 6,000
Terminal Report	PC; FAO (FAO Representation in Uzbekistan, LTO, FAO-GEF Coordination Unit, Business Development and Resource Mobilization (PSR) Reporting Unit)	Two months prior to the end of the project.	USD 6,880
Total budget			**USD 180,880**

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

The project promotes full and productive employment and decent work in rural areas, aiming at the progressive realization of their right to Decent Rural Employment[1]. Strengthening of key value-chains and introduction of target SLM measures will lead to improved income generation opportunities and more diversified livelihoods for around 5,160 people (of which 50% are women) in the target landscape. Additional socio-economic benefits include the following and will be calculated during initial stages of project implementation:

? Increase in number of farmers with access to advisory or extension services (total # per administrative district per region)

? Increased investments in SLM

? Increased awareness of ILM concept, LD impacts and LDN principles

? Increased livelihood and economic resilience through improved policy environment and land use diversification

? Increased social resilience and human well-being (women?s empowerment and workload reduction, access to information and finance) of 5,160 beneficiaries (50% women)

? Improved food security and nutrition through increased productivity and delivery of ecosystem services (project contribution defined, but not monitored)

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[1] Specific guidance on how FAO can promote the Four Pillars of Decent Work in rural areas is provided in the Quick reference for addressing decent rural employment (as well as in the full corresponding Guidance document). For more information on FAO?s work on decent rural employment and related guidance materials please consult the FAO thematic website at: http://www.fao.org/rural-employment/en/.

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
	Low		

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

Description of risk	Impact[1]	Probability of occurance	Mitigation actions
Incapacity of project to influence or find solutions to policy barriers and disincentives to sustainable production practices and food systems.	Mod.	Low	Changes and modifications to current legislative frameworks is already envisioned within Uzbekistan?s Agriculture Development Strategy for 2020-2030, and recent decrees show motivation within political leaders to follow this strategy. At the same time, there are sufficient options within the current legislative status quo to achieve FOLUR objectives and project core indicators, most of which are captured and described in detail in the baseline section.
Lack of coordination between key institutional stakeholders, such as MoA, SCEEP, Regional Governments, local district administrations and other institutional partners	Mod.	Low	This risk will be mitigated under Component 1, especially Output under which the Inter-Ministerial Task Force chaired by the SCEEP is established to oversee development and adoption/ amendment of policies/regulations to enable implementation of ILM principles, including addressing perverse fiscal subsidies for wheat. Component 1 will therefore strengthen inter-sectoral coordination mechanisms to enhance cooperation on FOLUR issues and objectives.
Weak interaction and response of local communities and institutions to project objectives and interventions.	Moderate	Low	Embedding effective capacity building and training measures, to ensure effectiveness and sustainability at all levels. Targeted project consultant profiles that include community outreach and engagement, including the Gender and Community Development Experts (see section 6. Institutional Arrangements)

Wheat yields fall below district quota levels during transition to Conservation Agriculture, Climate-Smart or Good Agricultural Practices	High	Mod.	Studies and experiences in other countries, especially those in Southern Europe and Central Asia, show that crop yields can suffer during transition to CA and organic agriculture, often leading producers to abandon the practices before their benefits can be seen or measured. This must be planned for and options to reduce lost production and finance transitions to more sustainable practices must be provided for. Therefore, a number of Outputs are focused on developing the economic basis to support investments and identify gaps.
Lack of commitment of local stakeholders at the community level to adopt ILM or supporting Action Plans	Mod.	Mod.	Implementation will be undertaken through community-based participatory approaches that address local cultural, socio-economic and ecological concerns. The project will pilot incentives to farmers to engage in more sustainable production and value chains, involving both capacity building, awareness, and value-chain strengthening. PPG consultations with the target districts demonstrate a strong commitment of the local population to landscape conservation and CC mitigation.
Incapacity of project to pilot incentive programmes that provide for increased agroenvironmental protection and gender empowerment, or expand the current contract farming options	Low	Mod.	Stakeholder consultations held during project development phase shows a clear interest and demand for incentive programmes and contract options that provide for increased environmental protection and socio-economic empowerment of vulnerable social groups. Given the correct support from local institutions and private sector, this process should provide for the expected outcomes and benefits.
Wheat clusters are not operational, capable or positioned to introduce innovation and incorporate project interventions	Low	Low	While Wheat Clusters are co-financiers and an integral part of project development, the project has a variety of alternative means of accessing project benficiaries and meeting land restoration and management targets. This said, the greater the degree of involvement, the easier it will be for project coordinators to meet these targets. Mitigation options could include training in business management, transparency and gender equality, as well as more technical subjects and opportunities to introduce crop diversity, SLM and use of improved varieties.

Climate change risks	Low	Low	The upward trends in temperature in Uzbekistan are expected to continue and further accelerate, aridity is expected to increase and precipitation will increase slightly in central and western parts of country and decrease in mountainous areas. Reductions in snowfall in Tian Shan ranges expected to decrease water resources for region. CC Mitigation is achieved through the described project Causal Pathways and is both an objective and outcome of project activities.
COVID-19	Mod.	Mod.	World Bank analysis shows that the poverty rate rose to between 8.7 and 10 % following the outbreak, compared to pre-COVID estimates of 7.4 %, which adds between 0.45 and 0.88 million people to existing poverty numbers. Food insecurity has shown the share of households reporting reduced food consumption increased to 26 % in April 2020[2]. Nevertheless, Uzbekistan?s outlook remains positive as reforms continue to shift the economy toward greater resource efficiency and private sector growth. Relevant state agencies are currently drafting Poverty Reduction and Employment Strategies that will define further measures the Government will take until 2030 to protect the most vulnerable. The project directly supports a wide range of landscape actors and livelihoods, though is centred on food systems that provides for food security, rural employment, and where possible, provides for social empowerment and Decent Rural Employment[3]..
Low participation of women/ limited benefits to women			The GAP contains a full list of measures and actions to minimize risks and maximize benefits to women and men, as well as youth.

[1] H: High; M: Moderate; L: Low.

[2] Uzbekistan Emergency COVID-19 Response Project. World Bank, 2020. Available at https://projects.worldbank.org/en/projects-operations/project-detail/P173827

[3] Specific guidance on how FAO can promote the Four Pillars of Decent Work in rural areas is provided in the Quick reference for addressing decent rural employment (as well as in the full corresponding Guidance document). For more information on FAO?s work on decent rural employment and related guidance materials please consult the FAO thematic website at: http://www.fao.org/rural-employment/en/.

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
ESS Checkllist	**CEO Endorsement ESS**	
Risk Certification	**CEO Endorsement ESS**	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Annex A1: Project Results Framework **[1]**

Notes: MoA ? Ministry of Agriculture; FFS = farmer field schools; GoU = Government of Uzbekistan; ILM = Integrated Landscape Management; IMTF = Inter-Ministerial Task Force; LD = land degradation; LDN = land degradation neutrality; PPPP = Public Private Producer Partnerships; RoI = Return on Investment; SOC = soil organic carbon; SLM = sustainable land management; VC = value chain.

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Objective: To scale up best practices and innovations for sustainable and inclusive wheat-based production landscapes and value chains							
Component 1: Integrated Landscape Management (ILM) system							

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Outcome 1.1: National legal, regulatory, and institutional frameworks strengthened to support sustainable and inclusive wheat landscapes and value chains to enhance delivery of global environmental benefits and sustainable livelihoods	-Number of new legal/regulatory frameworks drafted under the framework of Land Code and other relevant policy processes to support project objectives -Number of platforms to enable the Task Force at national and sub-national levels -Number of men and women with enhanced capacities to promote sustainable and inclusive FOLUR	Actual regulatory frameworks, especially those related to land tenure, are acting as barrier to SLM investment and agricultural diversification[2].	-1 Draft policy review including action plan to address land tenure issues and economic barriers to smallholders -2 platforms to enable the Task Force at national and sub-national levels -100 men and women with enhanced capacities to promote sustainable and inclusive FOLUR	-3 gender-responsive Policy Papers have been developed and shared among project stakeholders -300 men and women with enhanced capacities to promote sustainable and inclusive FOLUR (Core Indicator 11; Direct beneficiaries; 50% women). Included on the target for Output 1.1.3	-Reports, publications and other materials -Minutes and other event records and financial statements -Sex disaggregated data PIRs, PPRs Midterm Review and Final Evaluation	Project objectives are well aligned with the Agriculture Development Strategy for 2020-2030 and other pending or recent decrees The Task Force and other measures under Outcome 1.1 are well developed and proactive within legislative circles	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output.1.1.1: Assessment of enabling conditions and regulatory framework for multi-agency and regional management of wheat landscapes and sustainable and inclusive food systems carried out	-Number of stakeholders and institutions interviewed/ engaged -Sex disaggregated data on potential beneficiaries -Number of indicators used in assessment	Policy and land tenure issues have been identified though various participatory means and peer-reviewed literature as principal barriers to crop and economic diversification[3]	A draft policy review has been developed and presented to key stakeholders and national experts, including clear conclusions and an action plan to address Land Tenure issues and economic barriers	A minimum of 3 gender-responsive Policy Papers have been developed addressing specific issues and policy barriers to improved subnational management of resources and policy dialogues have been achieved.	-Policy papers developed -Output Action Plan (Mid-term) -Publications associated with policy papers and recommendations -Event reports and financial statements	A demand exists among Senior administrators and officials for increased evidence-based approach to policy development and increased institutional coordination on issues affecting wheat landscapes, value chains and increased access by producers to resources and markets Policy recommendations will have sufficient political support to be promoted and ratified	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 1.1.2: Inter-Ministerial Task Force chaired by the SCEEP established to oversee development and adoption/ amendment of policies/regulations to enable implementation of ILM principles, including addressing perverse fiscal subsidies for wheat	-Number and type of events conducted -Number of policies adopted -Number of policy incentives adopted/ disincentives addressed -Number and type of agencies and institutions involved in Task Force -Number of potential beneficiaries of policy measures (sex-disaggregated data)	No Inter-Ministerial Task Force to promote ILM and the address the negative effect of agricultural production exists	Inter-Ministerial Task Members are identified, approved and responsibilities established early in project implementation phase (see workplan, Annex III). By project mid-term, Inter-ministerial Task Force has selected gender responsive policy recommendations and workplan for lobbying and adoption and has established at least 2 communications platforms	Inter-ministerial Task Force has advocated policy measures through project components and has brokered their adoption among policy makers	-Event reports and financial statements -Meeting records and publications -Legislative records	Sufficient project capacity and political motivation exists to successfully to form and maintain the Inter-Min. Task Force Private sector and commercial farmers are represented and support changes to current agricultural policies Unforeseen consequences of policy change will be identified and mitigation measures ensured	SCEEP

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 1.1.3: Capacity development program initiated for stakeholders involved in wheat and wheat landscape value chains, including use and implementation of the toolbox for ILM	-Number and type of institutions assessed in capacity needs assessment -Number of GoU staff and official administrators trained in FOLUR activities	Multiple agencies and project consultations have identified lack of capacity in key areas regarding ecosystem services, ILM, system-thinking and SLM.	100 key stakeholders and policy advisors (including approximately 20 from each Oblast/ 40 at a national level) are trained or participate in project workshops aimed at awareness of key FOLUR issues, agricultural productivity under CC scenarios and preliminary results of Output 1.1.1, and objectives of Inter-Ministerial Task Force (Output 1.1.2)	A total of 300 people from diverse stakeholder groups have gained a knowledge of FOLUR issues, policy barriers and incentive programmes (50% women) (Contributes to GEF Core Indicator 11, Direct beneficiaries)	-Course curriculum and materials -Course reports and participant lists -Event reports and financial statements	The project will find participants that are motivated, available and capable of applying gained knowledge and increased capacities within policy groups and advisors	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 1.1.4: Policy briefs, advocacy and awareness-raising materials prepared and published to inform discussions and decision making on priority issues related to FOLUR and project objective	-Number and type of products developed -Number of physical copies, or traffic/downloads in virtual platforms	Current policy structures and lack of knowledge on key issues are not allowing for the necessary transition to sustainable food systems, land-use and ecosystem restoration[4]	-At least 2 awareness raising and promotional campaign strategies have been launched that highlight and provide solutions/options for FOLUR principles and guidelines for ILM application and decision-making and are closely related to results from Output 1.1.1.	-Following on the results and lessons learnt over the course of the project, a total of 4 awareness raising and promotional campaign strategies have been launched that highlight and provide solutions/options for FOLUR principles and guidelines for ILM application and decision-making	-Awareness and promotional campaigns through media, reports or publications developed under Output -Meeting minutes with IMTF -Financial statements and invoices	The project will be capable of translating complex issues and policy amendments to administrators through developed materials and awareness campaigns Close collaboration and information shared is conducted with GCP/UZB/003/GFF	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Outcome 1.2: National incentives adopted to promote ILM in line with LDN principles and climate-smart, environmentally sound wheat and wheat landscape production	-Number of assessments conducted -Number of initiatives to support scale up of renewable energies within beneficiary groups -Number of PPPP including natural infrastructure and other soft-infrastructure investments in wheat landscapes to preserve farmer natural capital and provide cost-effective natural solutions	Limited incentive programmes exist that promote more sustainable food systems or restoration of ecosystem services.	- 2 assessments conducted for incentives - 2 initiatives to support scale up of renewable energies within beneficiary groups - 2 PPPP including natural infrastructure and other soft-infrastructure investments in wheat landscapes to preserve farmer natural capital and provide cost-effective natural solutions are researched and drafted for each province	- 4 assessments conducted - 4 total initiatives to support scale up of renewable energies within beneficiary groups - By project closure, at least 1 gender responsive PPP has been finalised for each Oblast, and showcased through project and FOLUR IP channels (Output 4.1.2; 4.1.6)	-PPPP agreements - Documents and showcasing materials developed under Output PIRs, PPRs Midterm Review and Final Evaluation	Demand exists among legislators and private operators to trial and develop incentive programmes	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output.1.2.1: Assessment of existing and potential incentive mechanisms for ILM from national and international experiences carried out, including identification of innovative business models to encourage public and private investments in sustainable production in wheat landscapes	-Number of sectors and VC actors analysed - Number of incentive mechanisms identified -Number of incentive mechanisms trialed	National legislation and policy act as significant barriers to sustainable production and value-adding options. Laws and decrees limit not only what can be grown and how but include obligatory sale to State operators at preestablished prices.[5] Under this system, few national level incentives or innovative business models exist for increased product quality or sustainable production techniques in wheat and other key VCs (Alfalfa, Dairy, alternative crops)[6]	- Assessments of existing and potential incentives are conducted with key stakeholders for 2 project selected VC	- Assessment results are presented to National and sub-national stakeholders, including Inter-Ministerial Task Force (1.1.2) for 4 total VC	-Incentive Mechanisms assessment reports including recommendations for scaling and national policy amendments	Formal and/or informal incentives options will be considered Disincentives are considered within output activities	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output.1.2.2: Inclusive and gender-responsive Renewable Energy incentives for VCs and GHG mitigation	- Number and type of solar powered applications deployed - Number of smallholders, large farms and private entrepreneurs involved and/or affected by the deployed solar-powered applications	Various initiatives are in place but their use is still limited. The country is endorsed with vast solar energy potential, but more action is needed if government targets for 2030 are to be met.[7]	By project midterm, renewable energy applications are being delopyed with VC actors (especially small and large farmers), in at least 2 VCs	By project closure, 4 total initiative or demonstration programmes on renewable energy technologies have been conducted	- Participatory Impact Monitoring (KII, FGD, results questionnaire) -EX-ACT analysis of VCs	Availability of technologies Farmers interested in trialling renewable options/ large farms and private sector willing to co-finance Government policy continues to be supportive, where REs may form part of an incentives menu	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output.1.2.3: PPPPs on the ground for nature-based solutions in wheat-dominated landscapes	-Number and type of institutions and private sector entities consulted -Number of PPPP as result of project activities -PPPP economic and physical indicators (Ha, total investment) -Number of potential beneficiaries of PPPP activities	Limited use of PPPP to fund natural resource management, biodiversity conservation or economic diversification solutions	By project midterm, at least 2 PPPP have been researched with potential partners in each project Oblast	By project closure, at least 1 gender responsive PPP has been finalised for each Oblast, and showcased through project and FOLUR IP channels (Output 4.1.2; 4.1.6)	-Reports and materials detailing results of PPPP activities	Adequate mechanisms exist within current legislation to meet the PPPP objectives and project needs District public and private partners have an interest and capacity to participate	SCEEP

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output.1.2.4: Economic case for scaling-up at national and sub-national levels for integrated management of sustainable production in wheat landscapes and ILM developed, tested, and endorsed by the Task Force	-Number of baseline indicators selected and monitored -Number and type of sectors analysed -Number of pilots of scaling options	Lack of economic data, land tenure issues and policy logjams are limiting investment in sustainable agriculture models in wheat dominant landscapes by smallholders, commercial farmers and the private sector[8]	Intial results from project activities, especially those resulting from Output 1.2.1 and 1.2.2 have been collected and provide scenarios of no action taken/action taken and potential returns on each	Final results and calculations have been made and scenarios have been showcased for key stakeholders	-Economic viability analysis reports and scenarios costed and outlined -Event reports and financial statements -Inter-Ministerial Task Force meeting minutes and reports	The RoI calculations require realistic time frames for ILM interventions to yield benefits	ICARDA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Outcome 1.3: Land use planning approaches in the target regions of Kashkadarya, Khoresm and Karakalpakstan transformed to ensure development of inclusive, sustainable, and multifunctional landscapes with agreed partnership and sustainable financing and methodology to enable vital ecosystem services, biodiversity conservation and multi-functional wheat production landscapes	-Number of ha evaluated using Land Suitability Analysis system -Number ILM plans -Number of ha of land under planning processes	Land Man. Planning is not currently coordinated through a multisector or multiagency approach, and is therefore not integrated	-25,000 ha of land analysed using land suitability methodology -2 ILM plans developed -25,000 ha of land under planning processes	-50,000 ha of land analysed using land suitability methodology -4 ILM plans developed and endorsed -50,000 ha of land under planning processes	-Project reports -Documents and mapping products developed under Output -Event reports and financial statements PIRs, PPRs Midterm Review and Final Evaluation	Land-use planning will be informed by participatory criteria, allow for greater diversificaiton of the production space and will consider ecosystem services and economic demand.	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output.1.3.1: Integrated landscape and wheat production suitability analysis conducted based on agro-climatic conditions to inform ILM, farm and value chain level interventions, including effective and inclusive biodiversity, and climate-smart options developed, tested, and demonstrated	-Number and type of VC actors and stakeholders interviewed/ engaged (sex disaggregated) -Number of land units assessed under suitability analysis -Number of policy recommendations specific to VC/ land use potential produced -Number policy assessments and recommendations produced	Land suitability based on Land Potential and other socio-economic indicators is not conducted to inform land planning (0 ha analysed)	The approach for the suitability analysis is endorsed and is used to analyse 25.000 ha. Results are compared with actual land-use to identify areas where current land-use has potential for improvement	The suitability analysis approach has been refined to meet GoU needs, allowing for inclusive and gender-responsive land-use recommendations to be based on land potential parameters and criteria, providing basis for crop and land-use diversification. This system is applied to a total of 50,000 ha to inform Output 1.3.2.	-Land suitability methodology -Output maps and other graphic outputs -Publications or other support materials -EX ACT results	Land suitability analysis is useful for government decision-making	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 1.3.2: ILM plans using FAO Land Resources Planning Toolbox elaborated, inclusively consulted, and adopted by authorities in accordance with Land Code[9]	-Extension of area covered (ha) under tool and approaches -Number and variety of institutions involved in ILM planning processes - Number of smallholders consulted in development of plans (disaggregated by sex) -Number of plans developed	There is an established tradition of water basin planning and other technically focused tools and planning approaches that FAO tools and approaches can integrate into and serve to provide data. Other initiatives are currently working on ILM plans[10] in neighbouring Oblast, providing opportunities for shared learning and collaboration.	Project staff in close collaboration with key stakeholders and GCP/UZB/003/GFF have developed ILM planning procedures, based on FAO tools and methodologies, LDN mapping and the preliminary results from Output 1.3.1 for an areas covering 25,000 ha in at least 2 of the 6 project districts	ILM plans have been presented to relevant stakeholders through support of the Inter-Ministerial Task Force for an area covering a total of 50,000 ha in at least 4 of the 6 project districts, with the process having been documented and distributed to Global FOLUR IP partners	-Reports capturing planning procedures and results -ILM plans and associated documents and supporting materials -Event reports and financial statements	An enabling environment exists that will allow for ILM plans developed through Output activities to be integrated into the Land Code rules and regulations Optimal land use proposals under ILM plans would be voluntary for private land tenures	MoA
Component 2: Promotion of sustainable food production practices & responsible commodity value chains							

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Outcome 2.1: Sustainable food production demonstrated on an area of 350,000 ha on irrigated and rain-fed productive landscapes	-Number of ToT or extension agents with capacity for supporting best on-farm practices, responding to gender-differentiated needs of producers -Ha brought under improved land use practices -Tons of CO2-eq sequestered through improved land use practices -Number of stakeholders with capacity to promote effective wheat value chain and market-based solutions (including linkages to green value chains / commodity platforms and standards, consumer awareness and brand-building) that drive demand for sustainable	The area under conservation tillage is approximately 50,000 ha in irrigated lands and according to information from the MoA, 600,000 ha of wheat was sown into standing cotton crop as a means to increase productivity and improve soil cover.[11] CA and NbS upscaling face knowledge and economic barriers that limit further upscaling and transition to more sustainable landscapes.	- 60 extension workers/community leaders/ representatives of participant organisations trained on FOLUR objectives and ILM - 175,000 Ha is placed under improved management practices - 1.800 people in FOLUR objectives. - 4 specific knowledge products targeting project VCs developed to strengthen investment and development	- Sustainable food production is scaled to 350,000 ha under a range of diverse production contexts, -1 million tons of CO2-eq being sequestered -3.860 project beneficiaries, 50% of which are women (Core Indicator 11), including: 3,800 people trained in FOLUR issues (75% smallholders / 25% Commercial farmers), Included on Output 2.1.3 -60 producers with impeoved management capacity, included on Output	As per outputs PIRs, PPRs Midterm Review and Final Evaluation	Component 1 will provide timely policy opptorutnities that allow for demonstration and upscaling of sustianable agricultural production	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output.2.1.1: Formation of new and/or capacity building of existing producer organizations and Wheat Clusters to implement sustainable wheat production and diversification at farm and landscape levels (including Farmer Field Schools, FFS and Training of Trainers, ToT) to implement improved farming management practices and landscape management	-Number of organisations and local branches assessed -Number of participant organisations and/or new organisations created -Number of sectors included within approach -Number of beneficiaries (sex disaggregated data)	Previous interventions and existing farmer social structures offer a relatively unconsolidated, yet available point of entry for project activities. However, most do not currently offer farmer support services or training programmes to their members, though demand exists.[12] Wheat Clusters are newly formed organisations and their training needs are unclear, neither the training services they offer their members or smallholder suppliers.[13] Women farmer are rarely part of these organisations nor are their interest currently served.	Gender-responsive assessment of existing outreach programmes, associations, FFS, producer coops, community-scale mahalla and farmer councils conducted in initial implementation phase for the 6 target districts. ToT training provided to 60 extension workers/community leaders/representatives of participant organisations on FOLUR objectives and ILM (15% women participants) by end of project year 1	Enhanced capacity of local organisations to support sustainable agriculture and FOLUR value chains 60 extension workers trained (50% women) (Contributes to GEF Core Indicator 11, Direct beneficiaries)	-Course curriculum and attendance sheets -Course facilitator or trainer records and reports -Sex disaggregated data of ToT -Event and materials financial statements	There are sufficient numbers of existing organisational structures and producer groups to meet core beneficiary targets, and/or the project will be capable of creating and operating those needed Working with existing organisations is more efficient and is preferred to the project creating and operating new ones, with the exception of women?s groups and interest	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 2.1.2: Diversification of approaches to maintain diversity of production systems (e.g. diversification, crop rotation and inter-cropping, improved wheat germplasm) demonstrated	-Change in production indicators over baseline (ton/ha) - Number of farmers adopting improved practices (disaggregated by sex) -Number of Ha. converted to water-saving irrigation systems -Investment increase in Improved Man. practices over baseline	Farmer consultations Project reports produced during PPG phases for the FOLUR IP and GCP/UZB/003/GFF indicate that policy disincentives, land tenure insecurity, lack of knowledge and lack of credit are limiting management options and investment. Weak social capital is also a barrier for small farmers.	Project activities have led to over 175,000 Ha being placed under improved management practices promoted by the FOLUR IP	Project activities have led to over 350,000 Ha being placed under improved management practices promoted by the FOLUR IP	-Output-based reports comparing crop yields of project partners and participant demonstration sites against historic and actual baselines, under different input variables (water, soil amendments, pesticides, etc) -Sales of specialised equipment and materials at district scale -Participatory Impact Monitoring	The transition to more sustainable production techniques will allow producers to maintain or increase production levels There are sufficient adopters of SLM and project capacity to influence 350,000 Ha The amount of abandoned or uncultivated lands provides opportunities for project activities and impact	SCEEP

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
2.1.3: Improved management of productive croplands to increase crop production (conservation agriculture, integrated soil nutrient management, improved wheat cultivars, subsurface drip irrigation system, integrated pest management, etc.) demonstrated	-Number of people trained in crop rotation and diversification benefits and practices -Number of demonstration sites (including private, PPPP or project operated lands) -Number of demonstrations conducted / diversity of approaches	The majority of stakeholders consulted in administrative, technical and producer forums during the PPG development stated that Policy structures (land use restrictions under leasing agreement) and a lack of prime materials and inputs (quality seed, fertilisers) were substantial barriers to increased diversification and rotational cropping[14]	By mid-term, the project is working with participant organisations and community-scale mahalla in 6 districts and has trained 1.800 people in FOLUR objectives. 4 specific knowledge products targeting project VCs developed to strengthen investment and development	Through an adapted mix of participant organisations and project activities, a total of 3,800 people have received training and capacity building on FOLUR issues (75% smallholders / 25% Commercial farmers) (Contributes to GEF Core Indicator 11, Direct beneficiaries). Minimum of 50% adoption rate of SLM techniques and practices. At least 2 WOCAT articles published as result of output activities	-Course curriculum and attendance sheets -Documentation of demonstration site approach and results, including GPS coordinates per site -Final Output report compiling results, impact over baseline and lessons learnt -Participatory Impact Monitoring	COVID-19 will allow for in-person training Demonstration options are relevant to women as well as men Elite capture of resources and tools will be avoided	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Outcome 2.2: Incentives for innovative, inclusive and sustainable value chains under implementation	-Number of scalable market-based instruments that support innovative, sustainable and inclusive value chains -Number of sustainable wheat platforms developed and operational -Number of PPPP and small holder to access credit and de-risking of investments and financial services which maximize integrity and sustainability wheat value chains	Current contract models are based on a Resolution from 2003. In addition to restricting access to land for certain social groups, current leasing options limit both land-use type and extent of cropping area. The leasing agreements include ?normative yields? (ton/ha) which do not take into account biophysical conditions, producer access to resources or promote sustainable practices.[15]	-Contract menu options identified and endorsed by stakeholders for wheat VC -1 sustainable wheat and VC platform developed -2 incentive schemes and/or programmes mapped for 2 non-wheat value chains.	-10 VC entities, including Wheat Clusters, parthat result in an increased area under more sustainable wheat production (ha) -1 sustainable wheat and VC platform operational -2 incentive schemes are consolidated in 2 non-wheat value chains and results have been reported and documented for each participant Province.	PIRs, PPRs Midterm Review and Final Evaluation	High-level support provided to increase contract options for smallholders and commercial farmers	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
2.2.1. Menu of ?sustainable wheat contract? models with attributes that satisfy heterogeneous needs of different segments of the wheat value chain (producers, millers) and farmers introduced, responsive to needs and capacities value chain actors	-Number of participant actors -Number of contract types -Number of VC nodes engaged -Potential ha covered under project promoted contracts	While contract models have been extensively used since Soviet times until today, contracts have been restrictive regarding land use and have not allowed for sustainable wheat production.[16]	Contract types researched and options identified based stakeholder and value chain consultations along wheat value chain	The project has brokered ?contracts? among at least 10 VC actors, including Wheat Clusters, that result in an increased area under more sustainable wheat production (ha)	-Contracts in place -Sex disaggregated data on beneficiaries PIRs, PPRs Midterm Review and Final Evaluation	There is sufficient motivation from political and private sector entities to allow for a wider range of contract types that include greater economic and production diversity at field and VC level The sustainable or regenerative contracts will provide financial incentives and returns for commercial and smallholder farmers	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 2.2.2. Cooperative platform for wheat value chain actors developed focusing on sustainable wheat production, marketing, and sale	-Number and type of participant organisations and institutions -Potential and real volume of sales from Platform	No sustainable wheat production platform currently exists	Cooperative platform is being piloted, representing and bringing together VC actors, producers and potential buyers	Cooperative Platform is operational and informing sustainable wheat and alternative broad-acre production	-Platform outline, membership certificates and online presence -Event reports and financial statements	All, including smaller scale, actors have an opportunity to express needs There is a demand for sustainably produced agricultural goods and products that is currently unmet The Platform will develop as a politically neutral, transparent organisation whose goal is to promote sustainable, diversified, CCA, regenerative and biodiverse friendly agricultural products and VC	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 2.2.3.: Locally appropriate and equitable agro-environmental incentives adopted to link smallholder outputs to local and potentially regional markets for sustainably sourced commodities from sustainably managed landscapes by leveraging wide stakeholder involvement, including the private sector	-Number of incentives lines or types developed -Number of VCs and sectors covered -Number of smallholder beneficiaries of agro-environmental incentives (disaggregated by sex)	With one minor exception, every VC actor interviewed in KII reported sourcing products from local farms, and the majority have declared an interest in offering incentives to their producers.[17]	Existing incentive schemes have been mapped, building on PPG stakeholder consultations. Project has facilitated at least 2 incentive schemes in 2 non-wheat value chains.	Agro-environmental incentive schemes are consolidated in at least 2 non-wheat value chains and results have been reported and documented for each Province.	-Outline or reports based on incentive programme and results -Communication of schemes to FOLUR IP and through project channels -Participatory Impact Monitoring	The project, in close collaboration with stakeholders and the Inter-Ministerial Task Force, are positioned and capable of promoting incentive schemes in the private sector by removing policy logjams and barriers in a proactive, timely manner	MoA
Component 3: Conservation & restoration of natural habitat							

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Outcome 3.1: Enhanced conservation and restoration of habitats/ ecosystems in production landscapes for GEB and enhanced ecosystem services to support agriculture in an equitable manner	-Number of ha of land under effective management and land degradation avoided/ reduced/restored in habitats such as riparian zones for enhanced biodiversity conservation, ecosystem connectivity and species conservation -Number of people trained -Number of Benefit-sharing models piloted -Ha of land restored -Number of landscape scale restoration models piloted	Ecosystem services and land degradation avoidance/ reduction/ reversal programmes are not coordinated within ILM context in project Oblast, leading to a reduction in ecosystem services and agricultural productivity	-400 People trained, of which 50% women -4 potential benefit sharing models identified and endorsed -20,000 ha of land restored; -3-4 potential models identified	-50,000 ha of land restored 1,000 beneficiaries (Core Indicator 11) from project activities including: -700 People trained, of which 50% women, included on Outputs 3.1.1 and 3.1.3. - 300 people (50% women) benefit from sharing models. Included on Output 3.1.2 -2 benefit sharing models piloted under field conditions -3 models of habitat restoration piloted -2 resulting WOCAT articles are	As per outputs PIRs, PPRs Midterm Review and Final Evaluation	As per outputs	SCEEP

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output.3.1.1 : Capacity building and resource mobilization carried out for implementation of ILM plans through local producers, government and other stakeholders ? including the private sector for conservation of existing high biodiversity areas or restoration of degraded areas[18]	-Number of people capacitated in SLM and ILM restoration techniques -Number of stakeholder institutions and sectors engaged -Value (USD) of resources mobilised under ILM -Ha restored	Various intiatives and studies have found the concept of Payment for Ecosystem Services (PES) or similar incentive schemes are not widely utilised as potential options for ecosystem and habitat restoration[19] [20] [21]	By project mid-term, 200 people are trained in SLM and ecosystem restoration activities, native species multiplication and ILM and LDN principles and serve as a resource for project activities	300 people are trained in ecosystem services, SLM and ecosystem restoration activities, native species multiplication and ILM and LDN principles and have been engaged to realise project ecosystem restoration activities. (Contributes to GEF Core Indicator 11, Direct beneficiaries)	-Training materials and curriculum -Participant lists, course evaluations, reports and financial statements	Payment for Ecosystem Services or similar schemes are the most effective approach to incentivise locals to practice more ILM-compatible sustainable production practices	SCEEP

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 3.1.2: Inclusive models of benefit sharing from ILM between communities and other stakeholders for conservation and restoration of habitats/ ecosystems in production landscapes developed	-Number of mechanisms or models developed for sharing of benefits derived from increased coordination of land planning and use -Number of potential beneficiary in project areas -Number of Ecosystem Services potentially enhanced for agriculture	There are currently no community-wide incentive schemes or potential benefit-sharing models applied at landscape scales	Based on the ILM plans developed under Output 1.3.2, the project has studied and documented 4 models for increased benefits sharing and access to resources.	The project has piloted 2 gender-responsive and inclusive models for benefit sharing, with scaling potential in other project districts and links to policy, capacity building and incentive programmes developed under Components 1 and 2, that benefits a total of 300 people. (Contributes to GEF Core Indicator 11, Direct beneficiaries)	-Reports detailing assessment results of 4 potential models -Reports detailing experience and lessons learnt from testing of 2 models of benefit sharing -Participatory Impact Monitoring	The Agriculture Development Strategy for 2020-2030, and activities undertaken in Component 1 and 2, will allow for solutions to be found for land tenure issues and access to resources, providing a means for ILM negotiations to take place within an enabling *de jure* and *de facto* context	ICARDA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 3.1.3: Alternative livelihoods demonstrated for community women and men involved in activities that threaten global environmental values for conservation and restoration of habitats/ ecosystems in production landscapes	-Number of economic viability studies and VC options for wheat and alternative VCs developed -Number of people receiving training and participating in field trips and excursions (disaggregated by sex) -Number of gender-responsive and innovative business models and livelihood strategies showcased through project activities -Proximity of project activities to recognised protected areas or habitats	Lack of alternative livehoods has led to 400,000 ha of cultivated lands being abandoned over the period 2011 to 2019[22] The Fund for Support of Farms and Dehkan Farms and Owners of Household Plots under the Council of Farmers, Dehkan Farms and Owners of Household Lands of Uzbekistan provides loans to smallholders but have little acceptance among this group, according to IFAD[23]	200 people, of which 50% women, receive training and undertake exchange visits to innovative business models showcasing alternative livehoods, value adding options and marketing strategies.	400 people, of which 50% women, receive training and undertake exchange visits to innovative business models showcasing alternative livehoods, value adding options and marketing strategies. (Contributes to GEF Core Indicator 11, Direct beneficiaries) The project has selected and provided awards to those farmers and VC actors who best represent FOLUR principles ahead of project closure	-Course curriculum and materials -Event reports, participant lists and financial statements -Criteria, selection process and finalist of recognitions/ awards -Communication of programmes to FOLUR IP and through project channels	Alternative livelihood options exist, are legally sanctioned and are economically viable[24] Land Tenure barriers to alternative livelihoods would be overcome through policy changes introduced through the Agriculture Development Strategy for 2020-2030, and activities undertaken in Component 1 and 2	ICARDA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 3.1.4: Degraded ecosystems/ habitats of high nature value in target areas in production landscapes and Protected Areas under sustainable management and restored	-Number of field-based indicators and baselines established -Ecosystem and habitat types covered by output activities -Number of ha restored	Uzbekistan?s ecosystems and habitats of high nature value located within production landscapes within the target areas are not being sustainably managed	Through project activities and resources mobilised 25,000 ha of land are restored through a variety of mechanisms, including PES, PPP and cooperation with existing projects and initiatives	Project activities and resources mobilised resulting in the restoration of 50,000 ha of land near biodiversity or protected areas. 2 resulting WOCAT articles are published based on this work	-Output reports on field activities -GPS coordinates siting project activities or participant farms	Ecosystem restoration will be based on addressing socio-economic root causes of poor management and not only address symptoms of LD	MoA
Component 4: Knowledge Management and M&E							

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Outcome 4.1: Project implementation based on RBM and lessons learned/good practices documented and disseminated	MRV system for agriculture sector established National outreach campaign Increased national awareness on sustainable food systems and landscape restoration practices A gender-sensitive monitoring and evaluation system established	0	Standardised M&E and systematic data colletion system is developed and operational and provides at least 18 months of data for mid-term evaluation, as well as meeting the Global FOLUR IP data requirements	Standardised M&E and systematic data colletion system allows Uzbekistan FOLUR project to meet its obligations and demonstrate impact and behavioural change	As per outputs	As per outputs	TBD

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output.4.1.1: Standardized indicators introduced linking to the FOLUR IP (calculation, testing, integration SDG indicators, extrapolation from local to national scale)	-Number of indicators and type of indicators used -Frequency of indicator monitoring and assessment	Document ?Guidance to the Food Systems, Land Use and Restoration (FOLUR) Impact Program on Monitoring and Evaluation for FOLUR Country Project teams? outlines baseline indicators and data collection requirements for global IP	Project has successfully set baselines for the standardized monitoring system as per IP indicators and guidelines is operational and informing project decision-making	FOLUR IP standardised indicators and monitoring system used during project implementation to identify and address deviations from GEB objectives.	Meeting minutes Indicator baseline and assessment reports	Standardised indicators will allow for improved communication and evaluation of IP Child-Project within global context	SCEEP

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output.4.1.2: A national experience exchange network on sustainable food production established at the Ministry of Agriculture and linked to the Kazakhstan FOLUR IP exchange network	-Number of shared events completed -Number and type of shared communication platforms -Potential audience of communications - gender-related experiences included -Number of users of online platforms	The CACILM II website offers experience exchange information and results for SLM and SFM practices. This could be built upon and further developed by introducing more interactive tools and updated content, particularly in gender-responsive approaches. WOCAT is a platform that provides regional and global examples that also provides venue for project experiences and developed practices.	Experience exchange network established and operational, allowing for cross-border exchange of ideas and results. At least one joint programme aimed at a Value Chain developed and activities conducted At least one joint programme on biodiversity within wheat-dominant landscapes	FOLUR IP results are available in an online format in regional languages, capturing approach, experiences, results and lessons learnt. Joint programme has undertaken activities to strengthen 2 VCs (1 gender-sensitive) and 1 programme to increase biodiversity within wheat-dominant landscapes	-Communication strategy reports Event reports and financial statements -Sex disaggregated data on output activities	The Ministry of Agriculture from the participant countries is the proper place to establish and operate the SLM network. There currently exists a enabling environment and desire for cross-bordor collaboration on issues relating to wheat VCs and biodiversity	MoA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
4.1.3: RBM Gender-Sensitive system of the project promoted adaptive management through capturing of key results of project activities	-Number and type of impact indicators used in system -Frequency of analysis	0	RBM Gender-sensitive indicators provided within the GAP and incorporated within project outcomes and outputs, in addition to those listed in the Standardised Global IP, are incorporated into the M&E system developed under Output 4.1.1	RBM Gender-sensitive indicators monitoring through project M&E system has provided key data to increase project efficiency and impact, especially relating to gender objectives	-Meeting minutes -Indicator baseline and assessment reports	The project can correctly monitor and apply gender as a cross-cutting issue within complex socio-economic environments	SCEEP

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
4.1.4: Communication Strategy and KM strategy are developed and implemented	-Number of appearances in local media, partners/regions and partner websites -Number of awareness raising activities completed -Number and type of Knowledge products developed -Number of Gender-specific KM/ communications	0	Gender-responsive communication strategy modelled on Global IP guidelines is operational and utilizing project and other platforms to communicate project objectives and promote FOLUR	Communication strategy has reached project beneficiaries and potential adopters of SLM practices 4 resulting WOCAT publications developed under project (Outputs 1.2.3 / 3.1.4)are included in the WOCAT database	- Communication strategy reports - Knowledge products and publications -Meeting minutes	0	SCEEP
4.1.5: Project Mid-term review and Final Evaluation are conducted -	Mid-term and final evaluation reports, including dedicated section on gender and GAP progress	0	Mid-project review recommendations implemented	Final evaluation	Evaluation reports (FAO evaluation office)	Evaluations conducted in a timely manner and conclusions are used to address project deficiencies	SCEEP

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
4.1.6: Global IP platform engagement & coordination	-Frequency of participation or hosting of international IP events - Number of interactions focussing on/ integrating gender dimensions -Number of publications or knowledge products shared with Global partners -Number of project produced articles, documents or experiences published on Global FOLUR IP platforms	Regional trade, aid and cooperation are well established in the regional, providing resources and platforms to build on for global scaling under IP	Contact and information sharing channels are established, functional and provide demonstrated benefits to project beneficiaries	Network and information sharing has increased project impact at different scales of decision-making	Communication strategy reports Knowledge products and publications Meeting minutes PIRs, PPRs Midterm Review and Final Evaluation	Experiences, gains in productivity and reductions in land degradation realised by the project will fit within a Global context	SCEEP

[1] Please note that output based indicators are not mandatory as long as the targets for each output are well defined.

[2] PPG Report, Khaknazar U 2021, Draft Report on Land Tenure Rights in Uzbekistan, GCP/UZB/011/ GFF

[3] PPG baseline reports (See Annexes ?)

[4]PPG baseline reports (See Annexes ?)

[5] Regulations on the procedure for the provision of land plots for long-term lease to farms, approved by the Resolution of the Cabinet of Ministers of the Republic of

Uzbekistan dated October 30, 2003 No. 476; Civil Code Art.457-460

[6] PPG baseline reports and stakeholder consultations (See Annexes ?)

[7] PPG report, Renewable Energies report

[8] PPG baseline reports and stakeholder consultations (See Annexes ?)

[9] Output develops ILM plans, Output 3.1.1 funds and builds capacity for their implementation

[10] GCP/UZB/003/GFF

[11] PPG report, Nurbekov, A 2021, Report on the Status of Conservation Agriculture in Uzbekistan

[12] PPG report for GCP/UZB/003/GFF, ?

[13] PPG baseline reports and Stakeholder Consultations (See Annexes ?)

[14] PPG Reports (See Annexes ?.)

[15] PPG report on land tenure rights in Uzbekistan, Umida Haqnazar

[16] PPG baseline reports and stakeholder consultations (See Annexes ?)

[17] PPG report, Stakeholder consultation methodology and results?

[18] Output develops ILM plans, Output 3.1.1 funds and builds capacity for their implementation.

[19] https://circabc.europa.eu/sd/a/aef908bc-a235-4285-8237-a56a28f8a131/ECNC_MAES%20in%20EECCA%20and%20SEE%20countries_scoping_document_reviewed_2015_final.pdf

[20] Conservation and Sustainable Use of Agricultural Biodiversity to Improve Regulating and Supporting Ecosystem Services in Agriculture Production? 30 conducted by GEF (2013-2016).

[22] PPG Wheat Value Chain Report, Rodion Rybchynskyi, 2021

[23] Per. Comm., 24/02/2021

[24] PPG Alternative Crop Report, Ram Sharma, 2021

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Part I: Project Information		STAP Comments	Agency Response (FAO & GoU)
GEF ID		10201	----------
Project Title		Food Systems, Land Use and Restoration (FOLUR) Impact Program	----------
Date of Screening		13.05.2019	29/11/2021
STAP member Screener		B. Ratner, F. Toth, M. Stafford Smith	Nicholas Sharpe, PDE
STAP secretariat screener		Z. Zommers	----------
STAP Overall Assessment		Concur	

		The PFD provides an excellent narrative description of root causes, barriers, and baseline scenario. Activities presented in the alternative scenario are well justified in relation to the overall objective and the intended outcomes and tied together in a coherent theory of change. The rationale for country program selection is well-described and presents an opportunity for significant synergies and important levers of influence on priority value chains. More than 20 relevant global collaborations and initiatives with demonstrated links to the FOLUR objectives constitute a strong asset for the program to strategically influence key stakeholder groups. The STAP encourages additional quantification of key trends during the next phase of program preparation as a baseline from which to measure change, and further specification of the change mechanisms indicated in the theory of change, especially those essential to achieve scaling. The scale of outcomes is difficult to predict and highly dependent upon quality of stakeholder engagement	These comments are well-received, understood and incorporated where needed into the project design. Attention to detail and efforts have especially been made to establish relevant, meaningful baselines so as to better monitor and scale project impact at the different socio-economic national and subnational levels.

Part I: Project Information		----------	
B. Indicative Project Description Summary		----------	
Project Objective	Is the objective clearly defined, and consistently related to the problem diagnosis?	Yes	Noted.
Project components	A brief description of the planned activities. Do these support the project?s objectives?	Yes, well conceived	Noted.
Outcomes	A description of the expected short-term and medium-term effects of an intervention.	Yes	Noted.
	Do the planned outcomes encompass important global environmental benefits/adaptation benefits?	Yes	Noted.
	Are the global environmental benefits/adaptation benefits likely to be generated?	Yes, reasonable chance, but dependent upon critical assumptions regarding scaling ? see below	The project is very ambitious in its core targets regarding land restored and placed under improved management practices. These need to be met to achieve the GEBs
Outputs	A description of the products and services which are expected to result from the project. Is the sum of the outputs likely to contribute to the outcomes?	Preliminary but adequate for PFD stage. Yes, likely to contribute ? but scale of outcomes is difficult to predict and highly dependent upon quality of stakeholder engagement processes at multiple levels	There are a range of products and services which the project will provide through its outputs to achieve project outcomes. They are described in section 1.3 Theory of Change.
Part II: Project justification	A simple narrative explaining the project?s logic, i.e. a theory of change.	Presented under PII 1 3)	A programme-wide ToC is available, though this child project has its own ToC to support the execution process

1. Project description. Briefly describe:	----------	----------	----------
1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description)	Is the problem statement well-defined?	Yes	This has also been consolidated and confirmed by stakeholders at national and subnational scales.
	Are the barriers and threats well described, and substantiated by data and references?	Yes, with clear description of need for system transformation. Good recognition of impact that shifts in consumption and market demand continue to have on production patterns	This has been strengthened where possible with supporting data and inputs from key stakeholder groups, including the private sector.
	For multiple focal area projects: does the problem statement and analysis identify the drivers of environmental degradation which need to be addressed through multiple focal areas; and is the objective well-defined, and can it only be supported by integrating two, or more focal areas objectives or programs?	Does not apply.	----------
2) the baseline scenario or any associated baseline projects	Is the baseline identified clearly?	Yes	Baselines have been further developed and described in detail in the project document. This will guide project developers and informs the project ToC.

	Does it provide a feasible basis for quantifying the project?s benefits?	A reasonable basis for supporting the project but little quantification for measuring the project?s benefits	Further attempts at providing more quantitative means for project M&E have been provided, especially given data requirements the Global FOLUR IP places on the child projects.
	Is the baseline sufficiently robust to support the additional cost reasoning for the project?	Programmatically sufficient for overall design, but quantitatively weak as a basis for subsequent monitoring of program impact.	The baseline has been expanded and consolidated during the PPG phase to cover the wide range of project activities and the holistic approach to FOLUR
	For multiple focal area projects:	----------	----------
	are the multiple baseline analyses presented (supported by data and references), and the multiple benefits specified, including the proposed indicators;	N/A	----------
	are the lessons learned from similar or related past GEF and non-GEF interventions described; and	----------	They are described in section 1.2.4. GEF Funded projects and initiatives for baseline and collaboration.
	how did these lessons inform the design of this project?	----------	Lessons learnt informed policy approaches, SLM options and strategies, gaps and challenges, value chain options and opportunities and provided an established network of contacts and resources.

3) the proposed alternative scenario with a brief description of expected outcomes and components of the project	What is the theory of change?	Theory of change is that action interventions at landscape level (integrated landscape management and restoration), combined with value chain interventions focused on sustainable food production, can generate sufficient lessons, tools and innovations to support effective global knowledge exchange and outreach to key actors influencing value chains, policies and financial incentives in ways that yield global environmental benefits at scale. The theory of change presents a coherent summary of the program logic, linking problem analysis, intervention structure, key assumptions and planned outputs. While outcomes, longer-term outcomes and GEBs are clearly specified, the causal links at these levels are less explicit. In other words, the mechanisms or pathways to achieve scaling merit closer attention and explicit treatment (and debate among partners) during the next stage of program design. (Visually, this includes expanding the arrows between ?Outcomes? and ?Longer-term Outcomes? layers in Fig 2, along with	Individual ToC were not developed for each VC, principally given the complexity of the project and limitations on length and detail of the PRODOC template. Nonetheless, sufficient information, recommendations and baseline analysis were provided on the principal VCs during the PPG to guide project execution and the STAP?s guidelines for the application of the Scientific Conceptual Framework for LDN integrated, their work on ToC and causal pathways influenced how this was developed under this project.

	What is the sequence of events (required or expected) that will lead to the desired outcomes?	The program structure aims to catalyze learning, capacity and global knowledge sharing through strategically selected Country Projects (promoting integrated landscape management, sustainable food production practices and restoration of natural habitats), synthesizing lessons from landscape / national to regional / global levels. Good visual depiction of linked global and national outcomes (Figure 1)	While global information sharing and learning processes are important, the uniqueness of the Uzbekistan agricultural sector requires locally tested and adapted approaches to FOLUR, and sufficient attention has been proved to ensure lessons learnt were captured and clear guidelines were provided for the execution stage.
	What is the set of linked activities, outputs, and outcomes to address the project?s objectives?	Activities, outputs and outcomes are logically integrated	See above
	? Are the mechanisms of change plausible, and is there a well-informed identification of the underlying assumptions?	Plausible causality chain presented.	Noted.
	? Is there a recognition of what adaptations may be required during project implementation to respond to changing conditions in pursuit of the targeted outcomes?	Possible adaptations not addressed as part of the theory of change but later as part of the risk assessment and risk management plan	Not only has a ToC been developed and integrated, project design has incorporated an acceptable degree of flexibility regarding how the outcome and output targets are acquired in order to better adapt to changing conditions and socio-economic situations.

5) incremental/additional cost reasoning and expected contributions from the baseline, the GEF trust fund, LDCF, SCCF, and co-financing	GEF trust fund: will the proposed incremental activities lead to the delivery of global environmental benefits?	Yes, incremental reasoning is clear	Changing socio-political environment in Uzbekistan has meant that opportunities exist to leverage investments to increase sustainability and resilience. These are described in the relevant sections within the document.
	LDCF/SCCF: will the proposed incremental activities lead to adaptation which reduces vulnerability, builds adaptive capacity, and increases resilience to climate change?	N/A	-----------
6) global environmental benefits (GEF trust fund) and/or adaptation benefits (LDCF/SCCF)	Are the benefits truly global environmental benefits, and are they measurable?	The main emphasis is on local and regional benefits, and the resulting GEBs. Little attention is devoted to trade-offs and possibly negative side effects, though social and environmental risks are mentioned in the Risks section. There is little explicit attention to power dynamics, including potential winners and losers from the changes envisioned and how potential conflicts may be addressed. This will be essential to address explicitly during the course of full program development, with regards to each value chain and country project.	Power dynamics were well considered during the PPG stakeholder engagements, as described in Annex I2, and continue to be a risk to project outcomes given the current policy structures and government-controlled economy. Commercial and smallholder producers are particularly vulnerable to policy changes and current power structures. Where possible, attempts have been made to increase producer capacities and land tenure rights through benefit sharing and other initiatives as models of best practice. Private sector incentive programmes were also studied in great detail, and have been captured in Annex I2.

	Is the scale of projected benefits both plausible and compelling in relation to the proposed investment?	Yes	Noted.
	Are the adaptation benefits explicitly defined?	Yes	Noted
	Are indicators, or methodologies, provided to demonstrate how the adaptation benefits will be measured and monitored during project implementation?	Yes	Indicators and methodologies are provided and capture key indicator sets and requirements for FOLUR IP platform reporting
	What activities will be implemented to increase the project?s resilience to climate change?	Climate resilience not addressed in detail, though mentioned in the section on risks. The proposed response to climate change is quite general at this level; more detail expected in development of country projects and in program-level monitoring and targeted capacity support functions	There are various ways the project addresses this. On the one hand, it is addressed at the land management unit scale, by training and addressing value chain gaps for smallholders. On another hand, it is looking at landscape scale options that have a wider benefit and effect on ecological processes and capacities to adapt and reduce CC impact. At the same time, it is working within communities to increase awareness and responses to CC. Lastly, it provides data and information for informed policy decisions and targets LD hotspot areas in order to increase efficiency of economic and human resources in dealing with these areas and the LD drivers.

7) innovative, sustainability and potential for scaling-up	Is the project innovative, for example, in its design, method of financing, technology, business model, policy, monitoring and evaluation, or learning?	The program is innovative in its concept, structure, and the combination of global and country-level engagements. Specific innovations are expected to emerge from CPs. Emphasis is on policy and institutional innovations. More thinking about possible technological, financing, and business model innovations would be desirable, from which each country and the IP as a whole could benefit. The theory of change relies strongly on the interactions between innovations at landscape / country level and in regional / global value chains. Therefore, attention is needed during full program development to explicitly identify innovations at each of these levels. Given the broad geographic and value chain coverage of the program, a hallmark contribution may be innovative approaches to rapidly scale tested solutions ? working across countries and value chains. Moreover, a view on the different ways to scale (see notes on scaling out, up or deep in STAP priority criteria document) would also ask whether there are cultural norms or other cultural	Project innovation is describe in detail in section 1.7, and includes a detailed section on options for scaling.

	Is there a clearly-articulated vision of how the innovation will be scaled-up, for example, over time, across geographies, among institutional actors?	Given the geographic and commodity coverage of this IP, scaling up beyond country-level outcomes is integral to planned program-level outcomes, targeting fundamental transformation in food systems. Achieving these outcomes at scale is likely to be more difficult than it seems to be depicted. In particular, the scaling potential relies significantly on shifting patterns of investment, with the intent that ?policy and coordination platforms will crowd-in investment,? but it remains unclear how this will be achieved. Barriers to adoption of innovations at landscape level and in value chains are addressed well, if still at a general level, in the discussion of governance issues and in program risks. But explicit barriers to scaling and transformation are less well-covered. The program design brings the advantage of planned engagement with key industry platforms, partnerships and global initiatives that, collectively, bring a vast range of experience, including experience confronting barriers	Options for different levels of scaling, of SLM practices, lessons learnt and land monitoring tools and systems, in section 1.7 of the document.

	Will incremental adaptation be required, or more fundamental transformational change to achieve long term sustainability?	Transformational change is envisioned. See notes above.	Transformation change is needed and key to project success given the current socio-political environment, especially in regards to land tenure and strict stipulations on productivity output and land use.
1b. Project Map and Coordinates. Please provide georeferenced information and map where the project interventions will take place.		Global map appears cut off in PDF. But the map in Annex A1 appears in full and is very useful	Mapping is now interactive and consultations can be tailored to needs and objectives at a wide range of scales. It is believed this tool will greatly aid the project development process.

2. Stakeholders. Select the stakeholders that have participated in consultations during the project identification phase: Indigenous people and local communities; Civil society organizations; Private sector entities.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.	Have all the key relevant stakeholders been identified to cover the complexity of the problem, and project implementation barriers?	Yes, including strong identification of relevant multi-stakeholder platforms and initiatives. Multi-stakeholder interactions and collaboration are at the heart of the program design. Various types of interactions are discussed, but in the next stage of program development these should be presented more specifically to assess their feasibility and potential effectiveness. In particular, it will be essential to describe the value addition of the IP in relation to existing platforms and initiatives, and to validate (from the perspective of actors engaged in these) the demand for specific inputs, knowledge products, policy dialogue activities, or other services. Moreover, it will be essential to show plans for ensuring that all child projects are appropriately engaged with the appropriate global and regional platforms during the period of full project design. If this is done in particular with an eye to testing and validating for each country project the barriers, planned innovations and theory of change, this can help bring critical insights to project design that will aid subsequent	Stakeholder inputs and feedback on the proposals has been systematically collected at all project scales, with local to national collectives and groups actively participating in the design process, as can be seen in Annex I2. Stakeholder roles and responsibilities are now clearly described and were validated by representatives in the project document validation workshop.

	What are the stakeholders? roles, and how will their combined roles contribute to robust project design, to achieving global environmental outcomes, and to lessons learned and knowledge?	All key public and private sector actors assumed to join in following their respective mandates and commitments. Expected engagement of civil society actors is dependent upon existing networks and platforms.	This is clearly described in Section 1.2 and in Section 2, and Section 6 and the workplan outline both executing entity and supporting entities.

3. Gender Equality and Women?s Empowerment. Please briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis). Does the project expect to include any genderresponsive measures to address gender gaps or promote gender equality and women empowerment? Yes/no/ tbd. If possible, indicate in which results area(s) the project is expected to contribute to gender equality: access to and control over resources; participation and decision-making; and/or economic benefits or services. Will the project?s results framework or logical framework include gender-sensitive indicators? yes/no /tbd	Have gender differentiated risks and opportunities been identified, and were preliminary response measures described that would address these differences?	Yes, including strong intention to develop action plans that address linked dimensions of access to productive assets, inclusive decision-making, and benefit sharing. Gender sensitive indicators are missing ? but dimensions above indicate a suitable framework. Consider applying indicators and measurement protocols of Women?s Empowerment in Agriculture Index (WEAI).	GAP and the Gender Report are provided in Section 3 of the project. Gender was also addressed and incorporated throughout the project design and activities.

	Do gender considerations hinder full participation of an important stakeholder group (or groups)? If so, how will these obstacles be addressed?	No hindrance indicated, but this merits deeper analysis during full program preparation, particularly regarding barriers to gender-equitable resource access and tenure rights, and to inclusive decision-making in landscape-level planning and policy formulation.	Gender empowerment and sensitivities are addressed and the GAP provides clear indicators and mechanisms for increasing women?s participation in both activities and project benefits.
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	Are the identified risks valid and comprehensive? Are the risks specifically for things outside the project?s control?	Yes, a broad range of valid risks identified. Not all are external, e.g. coordination failure. Risk management and mitigation plans remain general in several cases	Potential risks to the project are described in Section 5 of the document, and include narrative sections on COVID19 and CC scenarios.
	Are there social and environmental risks which could affect the project?	Various kinds of policy, government and other stakeholder risks are mentioned (such as policy change, non-delivery of agreed contributions). While generic policy and governance risks are noted, there is inadequate explicit attention to political and economic interests that could (and are likely to) oppose desired changes.	Numerous risks exist and have the potential to increase during project execution. Where possible, they have been identified and described in greater detail (see sections 1.1 and 1.2) and mitigation mechanisms are provided (section 5), but some degree of adaptive management will be needed in order to achieve the project objective.

	For climate risk, and climate resilience measures:		
	? How will the project?s objectives or outputs be affected by climate risks over the period 2020 to 2050, and have the impact of these risks been addressed adequately?	Although various longer-term drivers are identified (as summarized in the ?contextual factors?, theory of change Fig.2), their implications are poorly analysed. FOLUR cannot expect to change these, but it can ensure that all projects are thinking about the significance of these factors and whether they mean different approaches might be more robust to future change. This would consider, for example, if future climate may undermine productivity of (or even demand for) a current staple in a region, then either improved management of that staple is addressed as an explicitly interim strategy while other solutions are developed; or improved management might be aimed at a different crop that is robust to the expected change in climate. Either way, at least the project level activities should include discussion of these possibilities early in design.	CC projections and scenarios were taken into consideration throughout project design. In any case, most of the CC adaptive approaches are applicable under all CC possible scenarios. For example, retention and accumulation of Soil Organic Carbon is a basic fundamental rule of sustainable agricultural practice, as is increasing soil cover and water retention rates. What the project is attempting to introduce, in addition to best practices and sustainable VC links, is the application of CC mitigation and adaptation approaches to landscape scales and planning processes.

	? Has the sensitivity to climate change, and its impacts, been assessed?	No climate impact assessment is presented; only the possibility of climate change impacts on productivity and resilience is alluded to. Since impacts will be region and location-specific, climate impact assessments and response strategies will need to be developed in the country projects	CC sensitivity and impacts are provided in Annex O, and the core indicator related to GHG mitigated has been supported through Annex W
	? Have resilience practices and measures to address projected climate risks and impacts been considered? How will these be dealt with?	Climate mitigation and adaptation goals are well integrated in the high-level program description, and climate-smart agriculture (CSA) practices and technologies are integral to the planned landscape-level responses. Yet, assessment of program-level sensitivity to climate impacts is not presented.	These are presented in the Baseline (section 1.2) and Annex O.

	? What technical and institutional capacity, and information, will be needed to address climate risks and resilience enhancement measures?	Only generic reference to national climate change action plans is made. Systematic climate impact and adaptation assessments will require atmospheric/climate scientists to produce a range of plausible scenarios of regional climate change for the next few decades, and ecological, technology / economic experts to assess the potential impacts on climate-sensitive ecosystems and sectors together with various types of vulnerability and adaptation options under those scenarios. In addition, the Risk table mentions possible but significant social and environmental risks posed by the country projects but does not indicated what risks; only the Global Coordination Project is mentioned to undertake risk assessment and mitigation advisory service. More detail should be provided during full program development regarding systematic risk identification and assessment of risk management options and strategies	As described above, CC adaptation and mitigation will be principally introduced through improved landscape and regional planning mechanisms that not only provide indicators on LD hotspots, but also provide tools and mechanisms to assess Land Potential and contrast with current land use obligations imposed through the leasing contracts (Annex T)

6. Coordination. Outline the coordination with other relevant GEF-financed and other related initiatives	Are the project proponents tapping into relevant knowledge and learning generated by other projects, including GEF projects?	Yes, including IAP on Food Security in Africa, and IAP on Commodities.	The project was systematic in its engagement with former projects and initiatives, and will build close links and systems of exchange with regional FOLUR child projects in Kazakhstan and India which are also working on similar commodity chains, in addition to its links to the Global FOLUR platform
	Is there adequate recognition of previous projects and the learning derived from them?	Yes	Yes, Section 1.2 is where they are specified and described.
	Have specific lessons learned from previous projects been cited?	Yes	Yes, Section 1.2 is where they are specified and described.
	How have these lessons informed the project?s formulation?	Yes	They have provided an overview of how sustainable practices at field level need to be placed within a more holistic context in order to be relevant and scalable.
	Is there an adequate mechanism to feed the lessons learned from earlier projects into this project, and to share lessons learned from it into future projects?	The opportunity to feed lessons into this project is demonstrated; the mechanisms and responsibilities should be more clearly specified to ensure this happens at the more detailed level required for specific value chains, partnerships, and geographies	Knowledge collection and management is a key feature of the FOLUR programme and adequate funds and human resources are provided to ensure lessons learnt are captured and shared within the various networks and communication channels.

8. Knowledge management. Outline the ?Knowledge Management Approach? for the project, and how it will contribute to the project?s overall impact, including plans to learn from relevant projects, initiatives and evaluations.	What overall approach will be taken, and what knowledge management indicators and metrics will be used?	KM is a central element of the program. One of the three pillars of the global platform is explicitly devoted to KM and communications. Yet no KM indicators and metrics are specified; these will be needed to prepare more specific KM plans and actions.As noted in the main STAP screen, KM is a central element of the program, and the explicit focus of one of the three global platform pillars. Yet no KM indicators and metrics are specified; doing so will be important to help prepare more specific KM plans and actions. development. Also, although learning is discussed, it is not yet clear how this learning will be applied to support adaptive management in program implementation, for example using a regular review of the nested theories of change at program and project levels as a structured approach to this. See, for example, Thornton et al (2017) for description of such an approach. Thornton, P.K., Schuetz, T., Forch, W., Cramer, L., Abreu, D., Vermeulen, S.& Campbell, B.M. 2017 Responding to global change: A theory of change approach to making	Section 8 of the document clearly defines the strategy and outputs/products of this process.

	What plans are proposed for sharing, disseminating and scalingup results, lessons and experience?	Proposed plans for sharing, disseminating and scaling-up results are presented at a general level. They include a global platform for transferring knowledge and information in multiple directions: from country programs up, from the global dissemination platform down, and through fostering South-South exchange. The planned focal activities (testing methods, learning, capturing, sharing lessons) are reasonably identified at this stage. The specified objectives are also sensible but a more detailed operational plan would be needed during full program development	The project has various routes to undertake this task. Firstly, there is the development of the project online platform that will host the interactive mapping tools and provide information and results on project processes. Secondly, the project has identified a range of knowledge products that will use different formats to reach their intended audiences. Finally, the FOLUR IP, in addition to other FAO platforms described in the project document, also provide a global platform for information sharing and scaling.

ANNEX C: Status of Utilization of Project Preparation Grant (PPG). (Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF: **USD 200,000**			
Project Preparation Activities Implemented	***GETF/LDCF/SCCF Amount ($)***		
	Budgeted Amount	***Amount Spent to date***	***Amount Committed***
Salaries Professional Budget	8,000	8,000	0
Consultants - Locally-recruited	30,400	30,400	0
Consultants Budget	68,250	68,250	0
Contracts Budget	84,000	84,000	0

Travel - Duty Budget	5,200	3,300	1,900
Training Budget	2,000	1,400	600
General Operating Expenses Budget	2,150	2,020	130
Support Costs Budget	0	0	0
Total	200,000	197,370	2,630

If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue to undertake exclusively preparation activities (including workshops and finalization of baseline, when needed) up to one year of CEO Endorsement/approval date. No later than one year from CEO endorsement/approval date. Agencies should report closing of PPG to Trustee in its Quarterly Report.

ANNEX D: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.

ANNEX E: Project Budget Table

Please attach a project budget table.

FAO Cost Categories	Component Total	Component Total	Component Total	Component Total	Subtotal Components	PMC	Total GEF	M&E (accounted for in 4.1)	SCEEP executed	MoA executed	FAO executed	Total GEF
5013 Consultants												
International Agriculture Policy Expert (wheat knowledge)	13,500	27,000	0	4,500	45,000		45,000		0	45,000	0	45,000
International INRM Expert	19,200	0	9,600	3,200	32,000		32,000		32,000		0	32,000
International Community Development/FFS Expert	0	21,600	0	2,400	24,000		24,000		12,000	12,000	0	24,000
International Wheat production and VC Expert	24,000	12,000	0	4,000	40,000		40,000		0	40,000	0	40,000
PES/Ecosystem Restoration Expert	0	0	21,600	2,400	24,000		24,000		24,000		0	24,000
International GIS Expert	14,700	0	4,200	2,100	21,000		21,000		21,000		0	21,000
Renewable Energies Expert/Team	25,600	0	3,200	3,200	32,000		32,000		32,000		0	32,000
Gender and Social Inclusion Expert	6,000	10,000	2,000	2,000	20,000		20,000		10,000	10,000	0	20,000
Sub-total international Consultants	103,000	70,600	40,600	23,800	238,000	0	238,000	0	131,000	107,000	0	238,000
Core team of permanent and semi-permanent staff												
National Project Coordinator	33,600	0	0	0	33,600	100,800	134,400		0		134,400	134,400
Project Finance Assistant	0	0	0	0	0	72,000	72,000		0		72,000	72,000
Admnistrative Assistant	0	0	0	0	0	57,600	57,600		0		57,600	57,600
Wheat Production Specialist	0	86,400	0	0	86,400		86,400		0	86,400	0	86,400
Biodiversity Expert	0	0	86,400	0	86,400		86,400		86,400	0	0	86,400
Junior Wheat expert (in the field)	0	72,000	0	0	72,000		72,000		4,800	67,200	0	72,000
Junior Biodiversity expert (in the field)	0	0	72,000	0	72,000		72,000		72,000	0	0	72,000
INRM Planning & Development Experts	38,880	0	19,440	6,480	64,800		64,800		64,800		0	64,800
Conservation Agriculture Experts (FFS / APFS / SLM facilitators)	0	55,080	0	6,120	61,200		61,200		7,200	54,000	0	61,200
Regional Gender Experts	27,000	16,200	5,400	5,400	54,000		54,000		27,000	27,000	0	54,000
Community Development Experts	30,600	18,360	6,120	6,120	61,200		61,200		34,200	27,000	0	61,200
Knowledge Man. Expert (communications/advocacy) (8 months per year)	0	0	0	64,000	64,000		64,000		0		64,000	64,000
National INRM Expert	6,000	12,000	0	2,000	20,000		20,000		20,000		0	20,000
National Agriculture Policy Expert	6,000	12,000	0	2,000	20,000		20,000		0	20,000	0	20,000
National GIS Expert	32,000	4,000	0	4,000	40,000		40,000		40,000		0	40,000
*Data Management Expert (M&E)	0	0	0	36,000	36,000		36,000	36,000	0		36,000	36,000
(Experts for specific tasks)			0									
Renewable Energies Expert	16,000	0	2,000	2,000	20,000		20,000		20,000		0	20,000
Translator	24,000	8,000	4,000	4,000	40,000		40,000		10,000	10,000	20,000	40,000
Economist (Ecosystem service accounting, case studies, marginal reaction)	10,000	8,000	0	2,000	20,000		20,000		20,000		0	20,000
Business development Experts	6,000	10,000	2,000	2,000	20,000		20,000		400	19,600	0	20,000
Wheat VC Expert	0	18,000	0	2,000	20,000		20,000		0	20,000	0	20,000
Dairy VC Expert	0	18,000	0	2,000	20,000		20,000		0	20,000	0	20,000
Fodder production Expert	0	18,000	0	2,000	20,000		20,000		0	20,000	0	20,000
Horticulture VC Expert	2,000	16,000	0	2,000	20,000		20,000		0	20,000	0	20,000
Sub-total national Consultants	232,080	372,040	197,360	150,120	951,600	230,400	1,182,000	36,000	406,800	391,200	384,000	1,182,000
5013 Sub-total consultants	335,080	442,640	237,960	173,920	1,189,600	230,400	1,420,000	36,000	537,800	498,200	384,000	1,420,000

5650 Contracts												
Knowledge Products	40,000	0	0	0	40,000		40,000		20,000	20,000	0	40,000
Online Cooperative platform for wheat value chain actors creation and maintenance (Output 2.2.2)	0	44,881	0	0	44,881		44,881		0	44,881	0	44,881
Awareness campaigns for policy issues under Output 1.1.4	80,000	0	0	0	80,000		80,000		0	80,000	0	80,000
Ecosystem Restoration Works (per district)	0	0	831,000	0	831,000		831,000		831,000		0	831,000
Salinity control works and infrastructures	0	110,000	440,000	0	550,000		550,000		0	550,000	0	550,000
Renewable Energy instalation for VC support	444,000	111,000	0	0	555,000		555,000		555,000		0	555,000
Project VC Awareness campaign and FOLUR recognitions	0	45,000	0	0	45,000		45,000		45,000		0	45,000
Mid Term review	0	0	0	30,000	30,000		30,000	30,000	0		30,000	30,000
Final Evaluation	0	0	0	60,000	60,000		60,000	60,000	0		60,000	60,000
Terminal report	0	0	0	6,880	6,880		6,880	6,880	0		6,880	6,880
OPIM Spot checks	0	0	0	0	0	16,000	16,000		0		16,000	16,000
OPIM Audit	0	0	0	0	0	28,000	28,000		0		28,000	28,000
5650 Sub-total Contracts	564,000	310,881	1,271,000	96,880	2,242,761	44,000	2,286,761	96,880	1,451,000	694,881	140,880	2,286,761
5021 Travel												
(Lump sum) International travel	45,000	35,000	10,000	10,000	100,000		100,000		50,000	50,000	0	100,000
(Lump sum) National travel	128,250	99,750	28,500	28,500	285,000		285,000		175,000	110,000	0	285,000
5021 Sub-total travel	173,250	134,750	38,500	38,500	385,000	0	385,000	0	225,000	160,000	0	385,000
5023 Training												
National Inception workshop	0	0	0	6,000	6,000		6,000	6,000	1,000		5,000	6,000
Regional Inception workshops	0	0	0	15,000	15,000		15,000	15,000	4,500		10,500	15,000
Participation in Global FOLUR platform	0	0	0	39,400	39,400		39,400				39,400	39,400
Policy paper workshops	15,000	0	0	0	15,000		15,000		4,500		10,500	15,000
Inter-Ministerial Task Force meetings and materials support	40,000	0	0	0	40,000		40,000		36,000		4,000	40,000
Training sessions on INRM concept and practice, Climate Smart Agriculture, LD, SLM and markets, land tenure within a policy framework (Output 1.1.3)	54,000	0	0	0	54,000		54,000		0		54,000	54,000
Training of private sector and other actors in Renewable Energy systems use and maintenance (Output 1.2.2)	30,000	30,000	0	0	60,000		60,000		15,000		45,000	60,000
Participatory LDN & INRM plan formulation	24,000	0	0	0	24,000		24,000		12,000		12,000	24,000
Participatory INRM plan validatation workshops	24,000	0	0	0	24,000		24,000		12,000		12,000	24,000
2nd stage INRM planning workshops	24,000	0	0	0	24,000		24,000		12,000		12,000	24,000
Range of training events conducted under Output 2.1.3	0	100,000	0	0	100,000		100,000		28,000		72,000	100,000
Ecosystem restoration training sessions	0	0	120,000	0	120,000		120,000		0		120,000	120,000
Training of women entrepreneurs in business management, marketing and value-adding options within selected value chains, with special importance to dairy and Horticulture	0	36,000	0	0	36,000		36,000		12,000		24,000	36,000
District level producer exchange visits	0	36,000	0	0	36,000		36,000		0		36,000	36,000
Demonstration site open field days	0	27,000	0	0	27,000		27,000		0		27,000	27,000
Project Steering Committee meetings	0	0	0	9,000	9,000		9,000	9,000	0		9,000	9,000
Regional Project Completion Workshop	0	0	0	12,000	12,000		12,000	12,000	0		12,000	12,000
National Project Completion Workshop	0	0	0	6,000	6,000		6,000	6,000	0		6,000	6,000
5023 Sub-total training	211,000	229,000	120,000	87,400	647,400	0	647,400	48,000	137,000	0	510,400	647,400
5024 Expendable procurement												
*FFS and other community organisation training tools, equipment and water storage and distribution materials	0	375,000	0	0	375,000		375,000				375,000	375,000
*Native forest and forage nursery materials	0	42,000	168,000	0	210,000		210,000				210,000	210,000
Native seed and improved varieties of forage, cereal, horticultural species	0	90,000	90,000	0	180,000		180,000				180,000	180,000
*Soil measurement and monitoring equipment	90,000	0	0	0	90,000		90,000			90,000	0	90,000
*GPS and spatial data collection equipment, including tablets, cameras, etc.	60,000	0	0	0	60,000		60,000		60,000		0	60,000
PPPP support materials	45,000	0	0	0	45,000		45,000		15,000	15,000	15,000	45,000
Publications	25,200	0	12,600	4,200	42,000		42,000		21,000	21,000	0	42,000
IT equipment	13,500	10,500	3,000	3,000	30,000		30,000		10,000	10,000	10,000	30,000
Furniture	13,950	10,850	3,100	3,100	31,000		31,000		10,000	10,000	11,000	31,000
*VC support matierals	0	10,500	0	0	10,500		10,500		10,500		0	10,500
5024 Sub-total expendable procurement	247,650	538,850	276,700	10,300	1,073,500	0	1,073,500	0	126,500	146,000	801,000	1,073,500
6100 Non-expendable procurement												
Innovative, specialised farm equipment & machinery for ecosystem restoration	0	144,000	36,000	0	180,000		180,000		90,000	90,000	0	180,000
Vehicles (to implement project interventions on site including 2 vehicles @USD45k/each)	0	0	0	0	0		0		0	0	0	0
6100 Sub-total non-expendable procurement	0	144,000	36,000	0	180,000	0	180,000	0	90,000	90,000	0	180,000
									0			0
TOTAL	1,530,980	1,800,121	1,980,160	407,000	5,718,261	274,400	5,992,661	180,880	2,567,300	1,589,081	1,836,280	5,992,661

Max PMC	Budget
285,365	5,992,661

SUBTOTAL Comp 1
SUBTOTAL Comp 2
SUBTOTAL Comp 3
SUBTOTAL Comp 4
Subtotal
Project Management Cost (PMC)
TOTAL GEF
M&E (accounted for in Comp. 4)

ANNEX F: (For NGI only) Termsheet

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

N/A

ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agencys is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

N/A

ANNEX H: (For NGI only) Agency Capacity to generate reflows

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies? capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).

N/A