



**Decision Support for Mainstreaming and Scaling up of
Sustainable Land Management
GCP/GLO/337/GEF**

**OPERATIONAL STRATEGY AND TARGETED ACTION PLAN
for SLM Mainstreaming and Scaling Out at the Local Level**



Republic of Uzbekistan

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Ministry of Water Resources

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Abbreviations

ADB	Asian Development Bank
CACILM	Central Asian Countries Initiative for Sustainable Land Management
DLDD	Desertification, Land Degradation and Drought
DPSIR	Driving force–Pressure–State–Impact–Response
DS-SLM	Decision Support for Mainstreaming and Scaling up of Sustainable Land Management
CDW	Collector-drainage water
GEF	Global Environment Facility
HEI	Higher Education Institution
I&D	Irrigation and drainage
FAO	Food and Agriculture Organization
LADA	Land degradation assessment in Drylands
LD	Land Degradation
LUS	Land Use System
MWR	Ministry of Water Resources
MAR	Ministry of Agricultural Resources
MES	Ministry of Emergency Situations
MFA	Ministry of Foreign Affairs
NGO	National Non-Governmental Organizations
SLM	Sustainable Land Management
UNDP	United Nations Development Program
O&M	Operation and maintenance
QT	Questionnaire of technologies
QA	Questionnaire of approaches
WB	World Bank
WEMP	GEF Water Resources and Environment Management Project
WUA	Water user associations

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EXECUTIVE SUMMARY

This Strategy and the Action plan are prepared within a national component of the global project financed by the Global Environment Facility (GEF) and the Food and Agriculture Organization of the United Nations (FAO) «Decision Support for Mainstreaming and Scaling up of Sustainable Land Management (DS-SLM)» it is the FAO project which is implemented in 15 countries of the world, including Uzbekistan.

National component of Uzbekistan - DS-SLM project has been implemented since 2015 in accordance with the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan (№ 190 dated 11.07. 2014) under coordination of the National Coordination Council CACILM and National Focal Point for UNCCD. DS-SLM - Uzbekistan is executed by the Ministry of Agriculture and Water Resources Republic of Uzbekistan (now, Ministry of Agriculture) with financial support from the Global Environmental Facility and lead by the United Nations Food and Agricultural Organization is the GEF Executing Agency. The Internal Executing Agency is the Design and Research UZGIP Institute, Ministry of Water Resources RUZ.

The Strategy was developed in parallel to development of the DLDD/ SLM assessments in line with the global DS-SLM Project Decision-Support Framework based on seven modules, and FAO methodological guidelines, such as the DS-SLM Sustainable Land Management Mainstreaming Tool (2015, 2017, 2018), developed by the global FAO DS-SLM project team.

The Strategy and Plan are the result of a consultative process with stakeholders, analysis and evaluation of available documents (FAO reviews and guides, national sectoral programs and projects, reports, publications, etc.), regulations and work of key departments and agencies, and research on gaps of SLM decision-making processes at the national and local levels, with the goal of integrating, enhancing and exploring how these needs can be implemented for different target groups by the Mainstreaming Strategy.

Development of the DS-SLM strategy was carried out in stages by successive steps: assessment of the main barriers hindering the implementation of SLM; (i) briefs of enable environment (strategies, planning, financing, etc), (ii) key decision-making processes to ensure integration into SLM; (iii) Objectives of the mainstreaming Strategy and expected activities; (iv) identification and roles of responsible institutions and target groups; and (v) Action Plan

Increased decision support on DLDD and SLM at the local and subnational levels is expected to improve the integration of SLM in the planning and financing of land improvement and agricultural services, which, in turn, will lead to practical implementation in the field.

The Strategy is divided into two parts, covering (i) **Political and Institutional setting** that addressed on the main barriers of SLM and opportunities to overcoming them, policies, strategies, regulatory, financial, planning and other decision-making processes, (2) DS-SLM **Mainstreaming Strategy** that highlighted mainstreaming objectives and target activities, approaches, key stakeholders and institutions involved into strategy, and an **Action Plan**. The «Mainstreaming Tables» are given in **Annex**.

Introduction



1. Rationale and overall goal

During the years of independence in Uzbekistan, there have been significant changes in the agricultural sector - a change in land use patterns, socio-economic and environmental changes. The country has achieved significant growth in agricultural production, grain independence and improved food security. In the structures of government bodies, an understanding that the decision-making process on agricultural development should be linked to systemic management of natural resources has been gained in the structures of government bodies.

Objectives of the DS-SLM Mainstreaming Strategy. The Strategy and Action Plan for mainstreaming and scaling out SLM is aimed at supporting the implementation of the national priorities of the Strategy of Actions for the further development of Uzbekistan in 2017-2021 for achieving the Sustainable Development Goals (SDGs) and ensuring the implementation of the UNCCD LDN targets.

The Strategy and Action Plan is designed for supporting the process of making use of national and local assessments of land degradation and SLM best practices for decision making processes, in particular for integrating SLM into the planning processes and facilitate SLM implementation and scaling out. The DS-SLM Mainstreaming Strategy shall define the mechanism for the country to support decisions, by strengthening the contribution of the DLDD/SLM methodological assessments, tools and project findings to key decision-making processes (*mainstreaming*) in order to promote the dissemination of identified SLM practices (*scaling out*).

The DS-SLM Strategy should have impact in:

- Improving the understanding and importance of land degradation and SLM issues
- Facilitating SLM implementation
- Providing long term support for SLM implementation and scaling out (beyond the DS-SLM project)

What are the most pressing problems in the Uzbekistan? Major problems include i) secondary salinization of irrigated lands; ii) water logging of the irrigated lands; iii) loss of organic matter and increase of fertility decline soils; iv) wide spread occurrence of irrigation erosion of irrigated soils; v) wind erosion or deflation of desert lands; vi) soil pollutions; vii) aerosol transport of salt and dust from the dry bed of Aral Sea to irrigated area.

The causes of land degradation are multiple, complex, and vary across different regions of the country, but are largely attributable to the abuse and over-exploitation of the natural resource base, particularly through an inappropriate land use, mainly unsustainable agricultural practices, overgrazing, and deforestation.

Why is sustainable land management important? Uzbekistan has successfully coped with the threat of national food security for two decades after gaining independence. About 4, 3 million hectares of irrigated arable land are intensively used in agriculture. About 95% of agricultural production is produced on these lands. Continuing demographic growth is shaping an increase in demand for food products. By 2025, demand is expected to exceed grain production by 26.88%, meat by 92.5% and milk by 69.52%, etc. [12].

Increasing the efficiency of using natural resources on a sustainable basis is one of the urgent and important tasks facing the agricultural sector in the context of the reforms of Uzbekistan.

Why global WOCAT SLM data-base? Uzbekistan, implementing the national component of the global GEF / FAO-WOCAT project, contributes not only to the national, but also to the global knowledge base. The most successful practices and technologies of SLM adapted in the country are integrated into the WOCAT global base of SLM approaches and technologies to be accessible to a wide range of stakeholders.

What can be expected from this Strategy and Action Plan? The DS-SLM mainstreaming Strategy and Plan, as a set of concrete actions, determines the main directions of the future scaling up of SLM. The Strategy will serve as a guide for decision-makers at the local, district and national levels on the implementation of activities envisaged by the Strategy and Action Plan in the project area and outside the project in adjacent areas in the Djizak region and in the Upper Kashkadarya catchment area (Kitab, Shakhrisabz and Yakkabag).

2. Project Area

The project area covers the two highest priority agricultural landscapes - irrigated and rain-fed arable land, located within two major economic regions - Djizak and Kashkadarya in the central and southern part of the country. These regions were selected on the basis of national priorities and the need to increase the productivity of agricultural land to improve the livelihood of the population and food security.

A set of bioclimatic, socio-economic and environmental indicators was used to identify and prioritize landscapes, which allowed assessing the current status of land use, the extent of land degradation, and the need for SLM in the face of climate challenges.

These landscapes are the most densely populated and valuable categories of land use, as they produce the bulk of food and technical products and play a dominant role in ensuring food security. However, the problems of degradation (salinization, erosion and water scarcity and drought) severely limit their potential productivity.

The following two sites were selected to demonstrate SLM within the project area: a) irrigated arable lands prone to salinization and drought in the Zarbdar district of Djizak region; and b) rainfed arable lands suffering from lack of natural moisture, drought and soil erosion in the Kamashi district of the Kashkadarya region (Figure 1.1).



Figure 1.1. The Overall Location of the Republic of Uzbekistan

PART 1. Political and Institutional Setting



Political and Institutional Setting

1.1. General Information

The Republic of Uzbekistan is located in the central part of the Eurasian continent in the Aral Sea basin between 37° and 45° north latitudes and 56° and 73° east longitudes. The landscape of Uzbekistan is extremely diverse - plateaus, lowland and piedmont plains, spurs of mountains and mountain ranges.

According to the UNEP aridity index¹, most of Uzbekistan's territory, except for the foothills and mountains, falls into drought zones, and it is considerably susceptible to processes of land degradation, desertification and drought accordingly.

Population of Uzbekistan is 32.6 million people, nearly half (49%) of it are rural inhabitants, and irrigated agriculture is the main source for life-support, prosperity and employment for them. Annual increase in population is 2, 3%, that is one of the highest in Central Asia. The republic is referred to the countries of human development average level, with human development index of 0.702 (HDR 2009). According to the World Bank assessments the level of poverty in the country had reduced from 27, 5% (2001) to 25, 8% by the year of 2005, but it remains high in rural areas.

The main water resources of Uzbekistan are the surface runoff, formed by the transboundary Amudarya and Syrdarya Rivers with their tributaries and also the Kashkadarya and Zarafshan rivers. The main flow of Amudarya and Syrdarya rivers are formed on the territory of Tajikistan and Kyrgyzstan respectively. The total surface runoff of these rivers is estimated as 126.9 km³ for the years with 90% probability [32]. The surface flow that formed in Uzbekistan area is 11, 5 km³/year, or around 18% from the total water demand. Total land resources of the country are 44, 4 million ha, including 20.3 million ha from that are agricultural lands, 23, 4 million ha are low productive pastures and 4,3 mln. ha are irrigated lands.

Irrigated arable land is the most valuable and multifunctional category of land and the main means of agricultural production, it occupies 3.5 million hectares. 745 thousand hectares are accounted for rainfed arable land, moreover, over 73% of the dry land is located in the semi-rainfall zone, 13% - in the unsecured one. In this regard, the effectiveness of the use of rainfed land is very low and depends on the amount and mode of precipitation. The continuing risks of drought and other climate challenges pose a serious threat and impact to the sustainable development of the country.

Today, irrigated agriculture, which accounts for only 9% of the total area of the country, already consumes over 91% of the total water intake, and the demand for water to ensure the food security of the country's population will be increased due to high population growth. As a result of population growth, the area of arable land per inhabitant of the country has decreased from 0.195 ha to 0.129 ha over the past 25 years.

1.2. Current State of DLDD for Mainstreaming SLM

Consultation meetings and discussions with stakeholders at the national level, including representatives of responsible ministries, institutions, scientific and public organizations, etc., allowed us to assess the current status of land degradation and SLM, and obstacles to scale out SLM on a large scale. The recommendations of local farmers, partners and decision makers received in the results of field discussions and trainings of the FFS, interviews, participatory seminars and meetings in 4 Village Community Assemblies (Kamashi) and the WUA "Keriz" (Zarbdar) of DS-SLM project were discussed and taken into account.

An overview of the assessment of desertification, land degradation and drought at the national, sub-national and local levels based on national data is summarized below and illustrated in Figure 1.2.

¹ According the UNEP aridity index (*correlation of precipitation rate to potential evapotranspiration*) arid regions of the world are divided into three regions: arid 0.05-0.20, semi-arid 0.20-0.50, dry sub-humid 0.50-0.65 (Middleton and Thomas, 1992; 1997).

National level

Owing to its geographical and climatic characteristics, Uzbekistan is highly susceptible to environmental degradation and affected by desertification, land degradation and drought (DLDD). The GLADIS reference base (FAO LADA, 2005) confirms that the drylands of Uzbekistan are most prone to suffer land degradation caused by low vegetation and land cover and vulnerability of arid ecosystems to external influences. About 47-49% percent of irrigated croplands are salt-affected and/or waterlogged (Qadir, et al. 2008). According to [28] land degradation is observed on the area of 8037 km² due to moderate and severe soil salinization, and 7603 km² of land is covered by irrigation erosion in the irrigated area. Annual losses of agricultural productivity are estimated to be approximately \$31 million USD, and economic losses due to land abandonment because of high salinity are estimated to be \$12 million USD (WB, 2009, IFPRI, IMF 2010). The regional losses each year just from salinization have been estimated to be at least \$2 billion (or roughly 5% of the region's GDP), and it is a problem faced by all five Central Asian countries.

Desertification, incremental soil salinization, wind and water erosion, overgrazing and deforestation lead to loss of biodiversity, increase instability of agricultural production, atmospheric accumulation of CO₂ and threatening the country's natural resources and living standards of population. The becoming more frequent dangerous phenomena, such as drought, flooding, landslides also contribute to reinforce of hazard risks. Practically all the country's ecosystems have undergone significant changes.

The estimated total area of the country territory occupied by areas affected by DLDD is 127 117 km² or 28,6% of total territory [UNCCD PRAIS, 2018]. In addition, about 4% of the area falls on the dried bottom of the Aral Sea – which is the main source of dust storms and salt transport to adjacent irrigated oases and sandy landscapes of the Kyzylkum desert. The drastic desiccation of the Aral Sea leads to intensive desertification processes and formation of a new desert, the Aralkum, on the dried sea bottom. In the last few decades the exposed bottom became the new “hotspot” of dust and salt storms in this region.

DLDD negative impact is common everywhere there, but the most priority geographic areas include: terrestrial and marginal ecosystems and rural inhabitants in desert and semi-desert landscapes of the Amudarya and Syrdarya River Basins (Karakalpakstan Republic, Khorezm, Bukhara, Navoiy, Kashkadarya, Djizak, Syrdarya) and the broad Aral Sea disaster region.

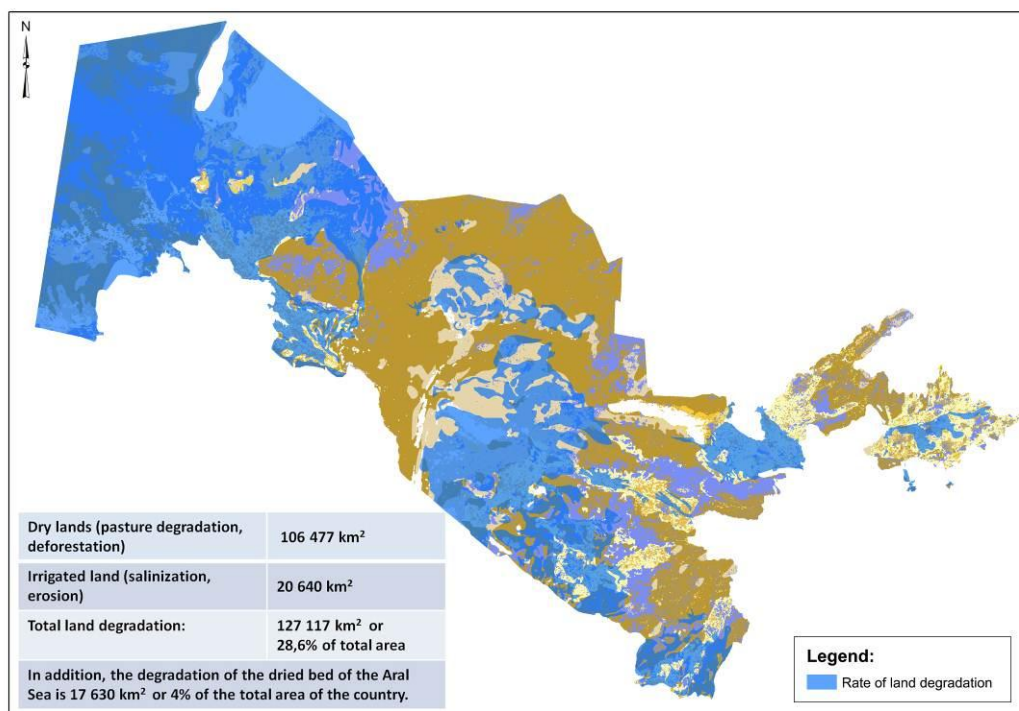


Figure 1.2. Map of land degradation in Uzbekistan

Source: UZGIP MWR based on LDN TSP guidance, 2018

Sub-national and local levels

The two economic regions – Djizak and Kashkadarya were chosen by the DS-SLM project due to a most dangerous combination of factors such as a tension water scarcity, drought-prone, salt affected soils and salinity risks, densely populated, primarily dependent upon agriculture and a widespread environmental degradation.

Djizak region is located in the center of the country. The climate is an extreme continental, with dry and hot summers and winters relatively soft. The total area of agricultural lands makes 1.249 Mln.ha, including 0.260 Mln.ha is irrigated lands and 0.220 Mln.ha - rainfed. The most attractive and valuable categories of agricultural lands are arable lands, which is subdivided into irrigated (56 %) and rainfed (44 %) croplands.

About 82% of irrigated lands are subjected to soil salinization, from them 44% classified as a medium and strong degree of salinization, which are distributed in Arnasay, Dustlik, Mirzachul, Zarbdar and Farish districts. Rainfed croplands are suffered from soil erosion and water scarcity. From 40 up to 70% of rainfed landscapes in Bakhmal, Gallyaaral, Djizak and Zaamin districts are characterized as medium- and highly-eroded and drought-prone lands.

Kashkadarya region is located in the south part of Uzbekistan between the offsets of the Zarafshan and Gissar ranges in the Kashkadarya River basin characterized by well-defined vertical zonality. Most of western part is occupied by extensive spaces of plains, which gradually pass into the foothills (adyrs) and mountains to the east and the northeast. The river flow probability is only 66% of water demand for irrigation. The total area of the agricultural lands is 2.194 Mln ha, including 0.511 Mln.ha is irrigated soils, from them 0.422 Mln is irrigated arable lands and 0.257 Mln.ha rainfed croplands. The population is 3,088,800, with annual rate of grows of 2.5 %, which is much higher than in other regions of the country [23].

About 67% of irrigated area is subjected to soil salinisation and soil pollution. These lands have also suffer several consecutive years of drought, which have drastically crop yields and led to accelerated soil degradation.

1.3. SLM Technologies

Uzbekistan has gained extensive experience in the field of sustainable land management. Government policy aims at expanding innovation, investment, develop institutional transformations to create a favorable environment, for scaling out of SLM technologies, resource and water conservation, mitigate drought and adapt climate-sustainable agriculture management etc.

Within the framework of scientific programs, grants and projects implemented with the support of international organizations (WB, ADB, GEF, FAO, UNDP, SGP, etc.), a lot of work is being done on testing, implementing and adapting effective soil protection and water saving technologies in various agro-ecological regions of the country [5-7, 17,18].

In order to identify and list of best practices a large number of various technologies to address major LD and SLM issues were analyzed and the most acceptable and suitable practices have been selected and drafted based on multi-criteria analysis. General list includes 60 technologies and approaches (T&A) and 4 target areas, including: (i) integrated soil, nutrient and crop management, (ii) agroforestry, (iii) management of irrigation/ water saving, (iv) pasture management. The selection of SLM technologies and approaches was done through stakeholder workshops, expert meetings and consultations at local, national and regional levels:

The National SLM Delivery Capacity Building Workshop for a wide range of national experts and representatives of research and environmental institutions and SLM projects was held in September 2002 at which the overview on SLM technology assessment in the country Uzbekistan was presented.

The SLM delivery workshop produced a number of outputs vital for the technology prioritization and scaling out in the country. The following are some of the outputs:

- experts agreed on target areas and criteria for selection of technologies
- 29 technologies for cost-benefit analysis and their prioritization was identified and undertaken
- from them about 13 most appropriate and reliable technologies, including 6 SLM BPs that demonstrated on the DS-SLM project sites, were selected and prioritized for mainstreaming at local levels (Table 1.1.).

Table 1.1. SLM technologies integrated into WOCAT SLM database

	Tethnology/Approach integrated into WOCAT database	Benefits	
		Socio-economic	Environmental
A) Updated national SLM technologies from WOCAT database in accordance with new QT&QA			
1	Field Farm Schools in the irrigated croplands	Building capabilities, skills and income of farmers and end land users	Reduction of salinization, prevention of land degradation
2	Improvement of lands in arid conditions through creation of pistachio varietal plantations	Increasing farmer income (up to 500-600%), improving food products and people’s livelihoods during 100 years	Improving soil surface, reducing erosion, CO ₂ sequestration in biomass and soil
3	Agroforestry melioration of degraded irrigated lands	Diversification of income (fuel and timber), fodder feed. Income of 2.5 ‘000 US / ha in the 5th year of afforestation	Increased soil coverage, CO ₂ sequestration, bio-drainage, soil fertility restoration
4	Rotation of pastures in desert regions of Uzbekistan	Increase of pastures feeding capacity and incomes from livestock (\$ 24 from 1 animal)	Increased vegetation cover and biodiversity, prevention of soil erosion
5	Communal forestry in Karakalpakstan	Increased employment, income, experience, human responsibility for forests conservation	Increasing surface coverage and biodiversity in degraded areas, preventing deforestation
6	Use of the artesian mineralized waters for the organization of irrigation agriculture in Kyzylkum desert	Increasing feed production, income (1.5 Mln Uzb Soums / ha), diversity of food products	Prevention of erosion, increase of vegetation cover and biodiversity, removal of 40% of salts from the soil
B) New T&A integrated into WOCAT SLM database			
1	Diversification of crops on salt-affected soils with introduction legumes and siderats	Diversification of income sources and diversity of food products, the requirement of fewer chemical inputs, revenue increase by 20-25%	Increasing of soil organic carbon, maintaining productive soils, and support important ecosystem functions such as nutrient cycling
2	Shelterbelts to protect pastures in the Central Kyzylkum Desert	Increase of pastures feeding capacity and livestock income	Improved pasture phytocenoses, prevention of degradation and growth of biodiversity
3	Use of biogas production wastes to improve soils fertility	Saving energy costs, increasing yields and income by 20%, production of own feed	Improving land fertility, using clean energy, climate change mitigation
4	Laser land leveling to rise on-farm water use efficiency	Yield increase by 10-15%, income by 50-57%, reduction of work load by 5-7%, water saving by 20-30%	Improving vegetation cover, reducing greenhouse gas emissions
5	Planting of almonds on small terraces to increase efficiency eroded soils of rainfed landscapes	Increase farmers ’income and food product diversity	Increasing living soil cover, biodiversity, preventing erosion, CO2 sequestration in biomass and soil
6	Every-other furrow irrigation with alternation of the dry and watered furrows	Saving water by 20-25%, preventing crop losses by 30-40% when water shortages, reducing labor costs for watering, increasing income	Reducing the removal of nutrients during watering, reducing the risk of degradation
7	Cultivation of desert drought-resistant crops on rainfed lands to reduce erosion and provision of fodder production increase	Ensuring guaranteed feed stocks, increasing livestock productivity and farmers' income (2.5 Mln. Uzb Soums of net income)	Improvement of land / vegetation cover, reduction of water erosion, adaptation to drought. Indirectly: reduction of pasture load

The Regional WOCAT–FAO Training Workshop on SLM Mainstreaming Technologies and Approaches Questionnaires and Database was held in August 7-12, 2017. About 42 experts of DS-SLM Project from Turkey, Bosnia-Herzegovina and Uzbekistan, experts of Kazakhstan, Kyrgyz Republic, Russia, and national consultants of the ICARDA, IWMI, ICBA, and UNDP Projects were trained to documenting of SLM best practices and approaches, as evidential basis for decisions support on sustainable management of land resources.

The general considerations for developmental of SLM options potential to enhance scaling out and integration of selected SLM BPs into global WOCAT SLM database has been promoted. In the framework of DS-SLM Project more than 760 people trained and contributed to SLM scaling out based on FAO and WOCAT approaches, tools and guidelines. Benefits and assets of DS-SLM UZB ere following:

Socio-economic benefits

- SLM technologies demonstrated at the project sites lead to adoption and outscaling of at least 4-6 cost effective and innovative SLM technologies in salt affected and drought-prone landscapes;
- Farmer benefits are: (i) increasing cotton yield of «Gulistan» new variety from 1.8 t/ha to is 3.2 t/ha at average; (ii) water saving during vegetation season is about 1,600-2,000 m³/ha that equal 2 irrigation events; (iii) farmer income increased up to 4.8 times, etc.;
- The area under SLM during 2 crop seasons are increased from 2347 ha (2017) to 4723 ha (2018) supported by agrofirms.

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In the framework of DS-SLM Project more than 760 people trained and contributed to SLM scaling out based on FAO and WOCAT approaches, tools and guidelines. Benefits and assets of DS-SLM UZB ere following:

Global Benefits

- 11 best SLM technologies integrated into the global WOCAT SLM database;
- DLDD assessment outputs mainstreamed into the UNCCD PRAIS reporting, national programs and projects;
- Collaborative partnerships of DS-SLM project with regional and global initiatives (FAO GSP, EASP, CACILM-2, etc.) has been established

The project results and the expected scaling out of the SLM areas after the completion of the DS-SLM project are shown in the roadmap (Table 1.2).

Table 1.2. SLM Scaling out Roadmap on the short and medium term

	Outputs of SLM «With Project»		Expected Scaling out «After Project»	
Salt affected irrigated landscapes (Zarbdar district)				
Project demo site	5	5		
Scaling out of SLM practices:				
- farms supported by agrofirm	2347	4723	5000	6000
- with funding from the Land Reclamation Fund			500	500
- forthcoming/expected follow up into CACILM-2				95000
Drought-prone rainfed landscapes (Upper Kashkadarya)				
Project demo site	2	2		
DS-SLM scaling out area:				
- farms	2	4	6	15
- forthcoming/expected follow up into CACILM-2				125000
Total area under SLM, ha			5500	226500

1.4. SLM policies, programmes and finance setting

With independence, the Government of the country implemented cardinal measures to reform the economy, together with the development of market relations and private ownership in the countryside.

The main priority for the Republic of Uzbekistan at all stages of the on-going economic reform is to ensure reliable social guarantees and measures for social security and protection of the environment.

SLM Policy and Programs

Since 2017, a new stage of development of the country has begun on the transition to the path of innovative development, aimed at radical improvement in all spheres of the life of the state and society. The country has adopted a number of fundamental decrees and resolutions of the President of the Republic of Uzbekistan and the Cabinet of Ministers of the Republic of Uzbekistan, and initiated national programs, institutional reforms and reforms aimed at ensuring food security and sustainable development for the long term.

The «State Program on implementation of Strategy of Actions in five priority directions of development of the Republic of Uzbekistan in 2017-2021» (2017) became major program document, which has defined priority directions of state policy in the medium term. Each stage of Strategy is carried out on the basis of the annual State Program that concentrates attention on research development and innovative activity, as well as mobilization of financial resources for these purposes. Recently adopted Decrees of the President and state programs: «About the strategy of actions for further development of Uzbekistan Republic», State Program on Meliorative Improvement of the Irrigated Lands, etc are highlighting the decisive actions efforts of the country towards mainstreaming of SLM and agriculture development.

In accordance with the Presidential Decree "On Organizational Measures for the Fundamental Improvement of the State Management of Agriculture and Water Resources", the powers of the Ministry of Agriculture and Water Management were divided into two ministries - the Ministry of Agriculture and the Ministry of Water Resources; and approved Road maps for fundamental reform of the system of agriculture and food, and water management, with the introduction of modern information and communication and innovation technologies in these industries.

The Ministry of Innovation Development of the Republic of Uzbekistan, established in 2017, coordinates the activities of government bodies, research, information and analytical institutions and other organizations on the implementation of innovative ideas, developments and technologies [1].

As part of the implementation of the Program for the Development of Agriculture for 2015-2019 stage-by-stage optimization of the cropping patterns and the introduction of new non-traditional high-yielding crops, such as soybean and pepper, continue. It is planned to free up about 170.5 thousand hectares of irrigated land under cotton for growing vegetables, forage, oilseeds, orchards and vineyards by 2020.

The improvement of the current cotton-wheat crop rotation is carried out through the introduction of repeated sowing of legumes and other crops after harvesting winter wheat. District authorities (khokimiyats) actively support the scaling out of this technology with the involvement of agrofirms on the basis of a mutually beneficial agreement with farmers.

Recently, the Government of Uzbekistan adopted the "Comprehensive Program for Mitigating the Consequences of the Aral Disaster, Restoration and Socio-Economic Development of the Aral Sea Coastal Plain for 2015-2018 with the support of the Executive Committee of IFAS and the Charitable Foundation for the Protection of the Aral Sea Coastal Plain's Gene Pool, provides for the implementation of measures to improve the management system, the economical and rational use of water resources in the region.

National Action Program for Environmental Protection of the Republic of Uzbekistan for 2013-2017 includes environmental protection measures, as well as environmental management measures.

An important contribution to the support of local communities and NGOs on introduction of sustainable approaches to land use and environmental protection inputs the GEF Small Grants Program (SGP), which is realized with support of UNDP offices in Uzbekistan [31].

Recently adopted Government Decrees and Resolutions, national programs towards mainstreaming of SLM are summarized in Table 1.2.

Table 1.2. National Priorities for Mainstreaming of SLM (2016-2018)

#	National policy documents
1.	"About the strategy of action in 5 priority areas of development of the Republic of Uzbekistan for 2017-2021", UP-4947 dated February 7, 2017. Appendix 1.
2.	"About formation of the Ministry of Innovation Development of the Republic of Uzbekistan" No. УП -5264 dated 11.29.2017
3.	"About organizational measures to fundamentally improve the system of state management of agriculture and water resources" УП -5330 dated February 12, 2018 and УП -5418 dated 04/17/2018
4.	The concept of agricultural development of the Uzbekistan Republic until 2030. Tashkent, March, 2018
5.	The concept of development of the agricultural machinery industry for the period 2018-2021
6.	The concept of cooperation of the CIS countries in the field of land melioration
7.	"About measures for further reform and development of agriculture for the period 2016-2020" № ПП-2460 dated 12/29/2015
8.	"About measures to improve the procurement system and the use of horticultural production, potatoes and melons" No. PP-2520 dated April 12, 2016
9.	The program of comprehensive measures for development of irrigation, improvement of the meliorative state of irrigated land and rational use of water resources for 2018-2019. No. PP-3405 dated 27.11.2017
10.	"On additional measures to improve the activities of farms, dekhkan farms and owners of households" and "On measures to fundamentally improve the system of protection of the rights and legitimate interests of farmers, dekhkan farms and owners of households, efficient use of sown areas" N ПП-3680 dated 04.24.2018

Financing of SLM

The country has adopted a number of policies and legislative acts aimed at promoting sustainable land and water resources management [3,4,19]. In accordance with the above decisions, substantial funds are being allocated for the soil-conservation measures aimed at improvement of land and water resources. In addition, international organizations also contribute to environmental sustainability.

Domestic sources of financing include the state budget, own funds of economic entities, the Meliorative Improvement Fund, the Fund for Innovative Development, the Fund for Nature Conservation, the Fund for Reconstruction and Development, the private sector, NGOs and others.

The first priorities of the Action Strategy for the Further Development of the Republic of Uzbekistan were the most important policy document for the development of agriculture for the period 2017-2021. The state program for the implementation of the Strategy of Action in 2019 (in the Year of Active Investments and Social Development) provides for the implementation of projects totaling 16.9 trillion. UZ Sums or 8.1 billion dollars.

The Fund for Nature Conservation, managed by Goskompriroda, finances environmental protection measures laid down in the National Action Program for 2013-2017.

According to estimates [13], about \$ 1 billion were allocated for the period 2002-2012 for the implementation of investment projects in the water and agricultural sectors including water supply system in the framework of the state investment program with the participation of international financial institutions (WB, ADB, IDB, EU, etc.). The total contribution of the country to the financing of SLM projects for the period 2012-2016 is about 588 million US dollars, 494, 3 million USD of which (about 84%) are loan projects. The remaining \$ 94 million consists of grants and technical assistance to combat DLDD and adaptation of SLM were provided by international financial institutions and development agencies.

The International Fund for Aral Sea (IFAS) created in accordance with the decision of the Heads of Central Asian States is successfully operating at the regional level, which funds and provides loans for joint practical activities of 5 Central Asian Republics (CAR), prospective programs and rescue Aral, ecological rehabilitation of the Aral Sea Coastal Plain and of the Aral Sea basin as a whole [29].

A multi-partner Trust Fund for the region of Aral Sea Coastal Plain of Uzbekistan was created under the auspices of the UN in December 2018. With a view to sustainable development of the region, the Fund will ensure the unification and mobilization of technical and financial resources of the Government of Uzbekistan, UN agencies and the donor community, bringing new knowledge, innovative technologies and approaches to the region.

External financing. External sources of financing for SLM, which are key development partners, make a significant contribution to the financing of environmental activities, including projects related to sustainable land management and combating DLDD.

The key donors in terms of financing in the area of SLM / IWRM with borrowed funds are WB, ADB, IDB, and IFAD. Over the past 10 years, more than 20 large projects worth over 1.5 billion US dollars have been implemented aimed at (i) supporting institutional reforms; (ii) reconstruction of the I & D infrastructure; (iii) establishment of advisory services and development of training programs; (iv) improving water management, etc. Technical assistance mainly focuses on projects on capacity building on organizational, technical and social potential in various sectors of the economy, as well as grants in support of initiatives, programs and pilot projects related to SLM [7].

Analysis of funding trends for the period 2012-2016 demonstrates the expansion of support and diversification of external sources of funding from donor countries and governments of Europe, Asia, the United States, as well as international development agencies, and regional scientific organizations in agriculture and water management.

Numerous international funds created primarily to counter new challenges, such as the Adaptation Fund, the Green Climate Fund, play key role in financing SLM with the involvement of intellectual potential, the relevant legal and financial mechanisms and institutional structures established and operating in the country.

Innovative sources of financing. Innovative financial mechanisms (IFM), being a non-traditional form of financing, are based on the sustainable generation of funds and incomes of the beneficiaries of projects and programs. The main tools in the field of IFM are the use of fiscal incentives and anti-incentives in the form of payments for emissions or discharges of pollutants to water, air or soil, payments of users of utility services, payments for the use of natural resources, etc.

Numerous international funds, created primarily for the purpose of confronting new challenges, such as climate change, food security, natural risks and threats, can play key role in financing SLM in the country. In recent years, there has been an increase in the role of corporate finance and sponsorship in supporting environmental projects

Local governments and the private sector, represented by farmers, private firms or companies that have public-private property, show great interest and are willing to finance on-farm work within the framework of the Integrated Programs implemented in the country with the support of the Meliorative Fund. Their participation is manifested in the financing of meliorative work in farms at their own

expense, as well as in labor contributions and investments in agricultural activities, including the restoration / repair of the on-farm network, drainage, etc.

In general, despite the increase in financial flows in the field of SLM and the improvement of land reclamation conditions, the need for financial resources remains high.

1.5. Institutional Setting

A wide range of stakeholders are involved in land use in Uzbekistan: ministries, departments, institutions, decision makers, farmers, dekhkans, and households. They carry out various activities and play different roles in making decisions on the scaling out of SLM at different levels

Since scaling up of SLM is a long-term and evolving process, responsible institutions should constantly interact with partners and organizations at various levels. These include international donors, national funding agencies and programs, local and national governments, the private sector, civil society, community organizations and the research community. Each of these groups plays different roles in the scaling out of SLM.

The national level includes government organizations, ministries and departments, design and research institutions, as well as non-governmental non-profit organizations (NGOs). The execution of environmental protection measures, control functions and responsibility in individual natural areas is imposed to the whole number of ministers and institutional entities (Ministry of Water Resources, Ministry of Agriculture, State Committee for Nature Protection, Ministry of Health Care, Goskomzemgeodezkadastre, Uzhydromet, etc.).

Sub-national (oblast / district) level. The main stakeholders at the regional and district levels are: (i) regional and district khokimiyats, (ii) regional departments of the ministries of agriculture and water resources, including services responsible for monitoring salinization, waterlogging and meliorative conditions of irrigated land, monitoring the volume and quality of water consumption and drainage; (iii) basin irrigation systems administrations (BISA), irrigation systems administrations (ISA); (iv) research institutes, non-governmental organizations, and so on. Organizations and departments of the national and sub-national level represent the interests of the state, are responsible for developing strategies in the field of agriculture and water management, for the operation of agricultural and water management facilities and they are financed from the republican budget (except NGOs).

The local level of stakeholders includes: (i) agricultural producers and their associations; (ii) councils of farmers and citizens' self-government bodies; (iii) non-governmental organizations; and (iv) rural communities whose income depends on agricultural production. The beneficiaries at the local level conduct independent activities depending on the state policy. They are directly or indirectly suffer from the negative impact of land degradation and they are interested in introducing and scaling out of the area under the SLM.

Table 1.3 provides a list of stakeholders, describing their responsibilities and possible roles in scaling out of SLM at the national and local level.

Table 1.3. Key stakeholders related to the scaling out of SLM within the framework of DS-SLM

Stakeholders	Roles in the process of scaling out of SLM
KEY STAKEHOLDERS:	
Higher power structures: Oliy Majlis, Office of the President	They adopt laws, determine the main directions of state policy, including the use of natural resources, protection, improvement and maintenance of the environment
Executive structures	
Cabinet of Ministers (KM)	It provides guidance to the economy, execution of laws and decisions of the Oliy Majlis, decrees and orders of the President of the Republic of Uzbekistan, pursues a unified policy to maintain the proper state of the environment and regulates the use of natural resources.
Ministry of Innovation Development of the Republic of Uzbekistan and the Innovation Development Fund of the Republic of Uzbekistan	They coordinate the activities of government bodies, of research, information and analytical institutions and other organizations on the implementation of innovative ideas, developments and technologies and finances the development of new equipment and technologies, research, equipping and strengthening the material and practical base of research laboratories of research institutes and universities
Ministry of Agriculture (MA) Ministry of Water Resources (MWR) The Fund for the Development of Agriculture and Food Supply under the Ministry of Agriculture Fund for Development of Water Management under the Ministry of Water Resources. Meliorative Improvement Fund for Irrigated Lands	They pursue unified water management and agricultural policy, coordinate activities for the reform of agriculture, are responsible for the effective and rational use of land and water resources, for the introduction of modern agricultural technologies and the creation of a system for monitoring agricultural production, protecting water resources and their rational use Financial support for the development and implementation of scientific research, innovative projects and advanced technologies, the promotion of scientific work, the publication of guidelines and articles on agriculture and food security, as well as implementation of innovative projects and modern technologies They fund activities of the Program of meliorative improvement of irrigated land
State committees:	
State Committee on Land Resources, Geodesy, Cartography and State Cadastre (Goskomzemgeodezkadastr)	They perform state policy in the field of rational use of land resources, regulates land relations, land management, monitoring of land protection activities, increasing fertility and restoring soil
State Committee for Nature Protection (Goskomprirody) State Forestry Committee	They supervise the implementation of laws and regulations related to environmental protection and environmental management They provide management and rational use of forest resources, introduces advanced scientific and technical achievements in the industry
Local government bodies (Hokimiyats)	The executive and representative body, ensures the implementation of laws and decisions of the Government and the President, has the highest influence on stakeholders and a wide range of powers at the local level, including the use of land and water resources

Stakeholders	Roles in the process of scaling out of SLM
Water institutions	
Basin Irrigation Systems Administrations (BISAs); Irrigation Systems Administrations (ISAs)	They are responsible for the implementation of unified policy in the regulation and use of water resources, ensuring the technical reliability of irrigation systems and water management facilities. They may assist in the introduction and scaling out of advanced water-saving technologies..
Scientific organizations and societies	
Academy of Sciences, scientific and industrial organizations and associations, departments and laboratories (SRIs of Forestry, of Plant Protection, etc.) Agricultural Advisory Centers at Universities	They conduct research on SLM technologies and innovations, provide advice and training for land users They provide various agricultural advisory services to land users
Agencies and media organizations	They spread information and form public understanding of the role and importance of SLM
PRIMARY STAYKHOLDERS:	
Civil Society: Village Community Assemblies (VCAs)	An independent body of self-government, it carries out public initiatives and activities on sites, can assist in ensuring the participation of local communities in the scaling out of SLM, and monitor the implementation in the field.
Councils of farms, dekhkan farms and owners of households	It unites all land users, protects their rights, and is responsible for the rational use of land resources. It can assist in the creation and expansion of the network of consulting services and the scaling out of SLM
Water Users Associations (WUAs)	Associations of farms and other legal entities and individuals providing services for the distribution of water and operation of on-farm irrigation and drainage systems. They can assist in the introduction and scaling out of water-saving technologies
Farmers and dekhkans	They conduct independent agricultural activities that directly depend on the state policy. They are directly or indirectly experiencing the negative impact of land degradation and are interested in scaling out of SLM.
INTERNATIONAL ORGANIZATIONS-PARTNERS:	
FAO, GEF, WOCAT, ISRIC, GSP/ESP, ICBA, ICARDA, CACILM, Moscow State University named after Lomonosov (Russia) etc.	Submission of technical manuals and recommendations on tools and approaches to SLM scaling out, carrying out trainings, PLUD workshops, assessment of land degradation, development of DS-SLM mainstreaming Strategy, etc.

1.6. Extension Mechanisms and Services

The government, educational and scientific institutions and public organizations of the country pay special attention to increasing knowledge, raising public awareness and improving their access to advanced technologies for sustainable water & land management.

The state provides information to land users in the form of recommendations through state institutions, organization of campaigns and individual events. With the joint participation and financing of international projects, the Khokimiyats, and with the support of the Ministry of Agriculture and the Ministry of Agriculture and Water Resources, initiate an increase in the knowledge and awareness of farmers through events like “Fairs” and “Farmer Days”.

In accordance with the Decrees of the Cabinet of Ministers of the Republic of Uzbekistan, various forms of rural advisory services (RAS) have been created, including counseling centers and distribution services at higher educational institutions, departments and organizations of the country. Currently, these RASs annually serve 35 thousand farmers and about 50% of peasant farms [15]. The main providers of Rural Advisory Services are the following organizations:

- *Consultation and Information Centre of the Biology Faculty at the Tashkent State University*
- *Information and Consultation Center (ICC) at the Tashkent State Agrarian University (TSAU).*
- *Khorezm Agro Advisory Center NGO "KRASS"*
- *Information and consultancy services under farmers' organizations*
- *Uzbekistan Scientific Production Centre of Agriculture (UzSPCA) under Academy of Science of Uzbekistan and other.*

A significant contribution to raising awareness and scaling out of SLM practices for a wide range of beneficiaries is made by national and regional programs and projects implemented in the country. In particular, in the framework of CACILM-2 ICARDA, a collection of technologies and approaches to SLM was published, including 160 technologies and approaches in 5 key areas, adapted and applied in the countries of Central Asia.

1.7. Barriers for mainstreaming of SLM

Barriers for mainstreaming SLM include technical, economic, political, social and institutional aspects and factors that occur at each stage of SLM technology out-scaling process.

Major problems and gaps limiting mainstreaming of SLM are summarized in Table 1.4. The results of discussions the key barriers identified during consultation processes and stakeholder workshops are presented in Mainstreaming Table 1 (Annex M1).

Due to inputs of the Government and donor association, many of SLM practices are already employed in Uzbekistan, but need to be the more widely adopted. Today, soil reclamation measures are weakly used by farmers for the time being because the high cost of farming machinery, lack of water for leaching and on-farm water use, and insufficient knowledge and skills. Advanced SLM practices demonstrated on the DS-SLM project sites confirm their high efficiency and benefits. The wide distribution of these practices restricts a range of technical, organizational and institutional constraints that aggravated by the complexity of biophysical and socio-economic attributes, farm inputs and climate challenges.

There is knowledge gaps related to the costs and benefits of various SLM practices and the values/impacts (direct and indirect) of preventing, mitigating and enhancing ecosystem services. Many practitioners in the field of natural resources have limited access to integrated land use planning, and FAO LADA approach and tools to enhance scaling out of most effective SLM practices, traditional and innovative technologies across landscapes and production systems.

Another challenge is how to adapt multi-dimensional landscape approach emphasizing the mainstreaming and scaling up of INRM and SLM practices into national cross-sector planning to maintain multiple agro-ecosystem services and increase resilience to climate change risks in salt affected

landscapes and production systems in the country. It is thus difficult to make a convincing case to policy makers on the importance of investing in land degradation and promoting SLM mainstreaming.

Table 1.4. Barrier for mainstreaming of SLM

Category	Barrier description
Capacity	<i>Inappropriate institutional capacity and inter-sector coordination</i> – There is a lack of institutional capacity, inter-sector coordination and improvement of capability on sustainable land use planning and marginal water management have been revealed. Issues of multi-dimensional landscape approach and site-specific strategic planning linkage are not recognized in land use policies.
Technical	<i>Weak technical capacity and institutional facilities</i> - There are <i>weak technical capacity and institutional facilities</i> (specialized software, equipment, existing methods, etc.), and data exchange between institutions constrain possibilities to assess, planning and implementation of SLM outscaling. All tiers of institutions need training and exposure to international tools of FAO LADA, ILM/LUS, capacity to work with multiple partners, and experience of project monitoring and evaluation.
Regulatory and financing	<i>Insufficient scaling up of SLM practices</i> - There are many small initiatives in scaling up of SLM practices. Scale up of SLM can be achieved by integrating small initiatives into large-scale projects or/and programs and plans to generate a broad range of sustainable, improved economic and ecological benefits to many people, widely and equitably.
Institutional, knowledge, awareness	<i>Weak of institutional capacity and technical capability and experience</i> - There are insufficient institutional capacity and technical expertise and skills to incorporate of integrated multi-dimensional approach for scaling out of SLM practices in wider scale. <i>Lack of awareness, knowledge and skills of local private and civil society</i> - There are insufficient knowledge, awareness and skills of private and civil society and vulnerable groups for apply and adaptation of SLM technologies in local practices.

To help overcome the obstacles outlined above the Strategy and Action Plan will contribute to achieving national priorities and goals in terms of socio-economic and agricultural development in compliance with the national Strategies, Sectoral programs and Action Plans.

PART 2. The DS-SLM Mainstreaming Strategy



The DS-SLM Mainstreaming Strategy

2.1. Definitions

There are several definitions explaining the concept of actualization and scaling out [Klein, 2006, Huq and Ayers, 2008, UNDP, 2004, etc]. According to IIED (2008) and other sources, updating covers the processes by which aspects of SLM are brought to the attention of organizations and individuals involved in decision making. This confirms that the scaling out of SLM integrates issues of natural resource management, climate change or disaster risk reduction into sectoral, institutional and political processes.

The main problem for scaling out of SLM is to find a strategic relationship and compatibility between development priorities and land management goals, where compromise solutions can be found and potential opportunities that benefit both natural resources and functions and development priorities.

Empowerment as defined by the World Bank (2003), combining generalized and context-sensitive approaches that focus on the course of action, combining local and “open” knowledge and integrating new processes and principles (World Bank, 2003). This can occur horizontally by replicating promising or proven practices, technologies or models in new geographic areas or target groups (Linn, 2012; World Bank, 2013); vertically, catalyzing institutional and political changes (World Bank, 2003); and diagonally, by adding project components, changing project configurations, or changing strategies in response to an emerging reality

SLM scaling out processes require a landscape approach that provides multi-functionality or simultaneous achievement of several goals, taking into account interrelated agro-ecological systems, and community and organization dynamics, as well as innovative approaches, technologies and models adapted to specific sites, farms, catchment areas and agricultural landscapes [Freeman et al. 2015; Minang et al. 2015; Sayer et al. 2013].

These approaches and requirements are crucial for making operational decisions to scale out SLM on a wider scale, with taking into account the possibilities of synergistic effect, community support systems, value chains and scale effect.

2.2. General objective

General objectives of the Strategy and Action Plan is intended as a pathway for integrating SLM into local planning and resource mobilization related to decision-making process that can facilitate SLM implementation and scaling out in close coordination with responsible institutions, and promote scaling out of SLM approach and technologies in the neighboring districts/regions.

The DS-SLM Mainstreaming Strategy is directly addressed to building of partnership alliances, knowledge management and capacity building on SLM, supported by DLDD/SLM information. The main idea is to overcome barriers for SLM implementation through integrating SLM into key decision-making processes to facilitate the implementation and scaling out of SLM.

The strategy was implemented in parallel with the planning and evaluation of DLDD / SLM during the entire duration of the DS-SLM project in line with the global DS-SLM Projects Decision-Support Framework based on seven modules, and FAO methodological guidelines [20].

2.3. Key approaches and methods

The Strategy was developed based on FAO methodological guidelines [FAO LADA, WOCAT ILM/ LUS, PLUD, FFS] and tools, such as the DS-SLM SLM Mainstreaming Tool [20] and other international reviews, working papers and publications [B5, 2003, Linn 2012, Khartmann and Linn 2008].

The FAO-WOCAT DS-SLM technical guidelines “Mainstreaming Sustainable Land Management into National Policy Instruments” (2015) provides a wide range of inputs for the design of the DS-SLM

Strategy. The baseline information collected for formulation of draft Strategy and Action Plan has been compiled by the team experts and made available on the Progress and Annual Reports. The activities included field works from the local level in project demo sites, coordination meetings with local decision makers, rural citizens assemblies, farmers and households in the FFS and PLUD events to the national SLM delivery workshops, stakeholder consultations and other related actions. The project outputs and draft Strategy has been discussed in the meetings of the National Coordination Council with involving main target groups and local partners from the project areas.

There were also reviews and assessments conducted on the current status of DLDD and SLM, which allowed integrating local results and experience of SLM projects with international achievements and knowledge to ensure consistent and interrelated actions.

Development of the Strategy was carried out in according to the following steps:

1. *Assessment of the main barriers hindering the implementation of SLM;*
2. *Preparation of policy briefs (strategies, planning, financing etc) on key decision-making process to ensure integration into SLM;*
3. *Objectives of the Scaling out Strategy and expected activities;*
4. *Identification and roles of responsible institutions and target groups;*
5. *Action Plan.*

The Strategy integrates the joint work of the DS-SLM project team and UZGIP specialists under the coordination and supervision of the global project manager and international consultants of FAO DS-SLM project, and National Project Coordinator in close collaboration with national and local institutions and decision makers from the MAWR, MA, Uzhydromet, MWR and project partners.

The measures and actions included in the Strategy and Plan were formulated and tested by the DS-SLM project in the period 2016-2018 in the context of existing and ongoing program documents in the country and they are aimed at consolidating the efforts of responsible executive agencies and other interested SLM participants.

2.4. Mainstreaming Objectives and Target activities

Evaluation performed allowed to formulate the following four Mainstreaming Objectives of SLM at local level

1. Integration of SLM scaling out model into ICP planning in line with the Agricultural Development Program until 2030
2. Integration of FAO SLM Approaches and Tools into the State Program on improvement of the meliorative condition in irrigated lands
3. Ensuring coordination and interaction between all stakeholders, capacity building, awareness and resource mobilization for scaling out of SLM
4. Mainstreaming of approaches and technologies for SLM scaling out and sharing local experience and skills

Mainstreaming Tables of the DS-SLM Strategy, including barriers for SLM implementation, decision making process for mainstreaming SLM, the main strategic objectives with the list of activities, institutions and stakeholders to enhance scaling out of SLM, as well as a Plan of Action with a budget presents in Annex.

2.5. Relevance of Mainstreaming Strategy for the SDG goals and LDN targets

Operation Strategy and Action Plan for mainstreaming and scaling out SLM is aims at supporting the implementation of the national priorities of Uzbekistan for achieving the Sustainable Development Goals (SDGs) objectives and ensuring the implementation of the UNCCD LDN targets.

The Strategy promotes multi-dimensional and holistic approach to mainstream and scaling out of SLM technologies needed to maintain and provision of valuable agroecosystems services, and improving of rural livelihoods with focusing on the strengthening collaboration and capacity building, knowledge management and resources diversification in harmony with above legal provisions and in line with recommendations of the 13th UNCCD Conference of the Parties and the Rio Conventions (UNFCCC, UNCBD) targets.

The Strategy also will contribute to the regional GEF/FAO CACILM Phase II «Integrated natural resources management in drought-prone and salt-affected agricultural production landscapes in Central Asia and Turkey» project, which seeks to increase productivity of agroecosystems and scaling out of SLM practices in wider landscapes.

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ANNEX. Mainstreaming Tables of the DS-SLM Strategy

TABLE 1. BARRIERS TO SLM IMPLEMENTATION

BARRIERS FOR SLM IMPLEMENTATION AND SCALING OUT	OPPORTUNITIES TO INTEGRATE SLM
Policy and regulation barriers	
Insufficient execution of decisions made and measures for SLM scaling out	Improving the effectiveness and efficiency of existing services to oversight and monitoring of implementation of decisions and measures for the scaling out of SLM
Inappropriate institutional capacity and inter-sector coordination.	Enhance strengthening of institutional capacity and inter- sector coordination plans
Professional networks for technology exist but are insufficiently active	Enhance networking of SLM scaling out collaboration
Programs and projects	
The state programs on improvement of a meliorative condition of the irrigated lands exist, but scaling out of technologies is insufficiently active.	Enhance SLM outscaling planning and implementation
Integration of FAO LADA, ILM, approaches and instruments (PLUD, SHARP, etc) into assessment, planning and implementation is insufficient	Expand capacity building initiatives and program to integrate FAO approaches and tools (LADA,ILM, PLUD, SHARP, etc) into regional and local SLM scaling out plans
Economic, financing and incentive barriers	
Expensive agricultural equipment and high cost of installation limit access and scaling out of SLM technologies in small farms	Strengthen support of local communities on acceptable and low-cost farming techniques, and standard purchase agreement
Facilitating services for technical maintenance and financial support are insufficient	Involve local communities and civil society
Technologies and knowledge barriers	
Insufficient skills and experience for installing and maintaining of SLM technology at wider scale	Expand capacity building initiatives and programs
Insufficiently coordinated activities of agricultural advisory centers and services for scaling up and transferring of the technologies inhibit the scaling out of SLM on a large scale.	Establish on SLM technology operation and maintenance program in collaboration with agricultural and water services and education institutions
Technology may require modification to fit with local household conditions	Modification of technology to meet local needs
SLM technology and tools guides and information and is not widespread	Conduct adequate information, guides and awareness campaigns

TABLE 2. DECISION MAKING PROCESSES

DECISION-MAKING PROCESSES	Description of the process and opportunities for mainstreaming SLM
1. POLICIES AND REGULATIONS	
2. STRATEGIES, PROGRAMMES AND PROJECTS	
<p>“Program of integrated measures for the development of irrigation, improvement of the meliorative state of irrigated land and rational use of water resources for the period 2018-2019”</p>	<p>Integrate SLM into the Program of meliorative improvement of irrigated land, focusing on the introduction and scaling up of new drought-resistant and salt-tolerant high-yielding varieties of crops that are most adapted to salinization and negative impacts of climate change</p>
<p>The Program of actions on environmental protection of the Republic of Uzbekistan for 2013-2017. (update every 5 years), includes a set of measures to improve environmental protection (forestation, to increase soil carbon, agrobio-diversity, etc.)</p>	<p>Scale out the implementation of SLM technologies for agroforestry and afforestation to mitigate the risks of drought, the effects of climate change, sequestration of CO₂ and diversification of incomes of rural people</p>
<p>The Concept of cooperation among the Commonwealth of Independent States (CIS) countries in the field of land melioration aims to achieve a neutral balance of land degradation</p>	<p>To integrate the program of sustainable management of salinized, difficult-reclaimed irrigated lands on the example of the Djizak region in the planning of priority measures for the implementation of the Concept of Cooperation of the CIS.</p>
3. FINANCING AND INCENTIVE STRATEGIES AND MECHANISMS	
<p>The State Fund of Meliorative improvement of lands, which has been operating since 2007, and the Innovation Supporting Fund established in 2017, carry out financing of technical activities (rehabilitation of drainage infrastructure), introduce best practices, technologies and modern achievements of world science.</p>	<p>To involve the Fund of Meliorative Improvement of lands and the Innovation Supporting Fund in financing a set of measures for effective rehabilitation of salinized irrigated lands</p>
5. LOCAL LEVEL DECISIONS	
<p>Agricultural consultancy services are provided by a wide range of information providers and advisory services, but there is no unified coordination of their activities.</p>	<p>Strengthening advisory services with creation of the network to support information sharing at local partnerships</p>

TABLE 3. STRATEGY OBJECTIVES

MAINSTREAMING OBJECTIVES	EXPECTED RESULTS	COMPONENT OR ACTIVITIES	DECISION-MAKING PROCESS TO BE ADDRESSED	TARGET GROUP	Level decisions address				
					Policies	Programmes	Finance	Sub-national Planning	Local Decisions
MAINSTREAMING OBJECTIVE 1									
Integration of SLM scaling out model into ICP planning in line with the Agricultural Development Program until 2030	Sustainable SLM scaling out planning in catchment areas	1. Review/update of national SLM policies, strategies and programs, and initial information and trainings on integrated catchment planning, LRM and resilience gap analysis tools and guides.	Participatory Territorial planning process	Draft CACILM-2 Program, Khokimiyat, departments of the Ministry of Agriculture and the Ministry of Water Resources, farmers	+			+	
		2 Assessment of the current state of DLDD, SLM and development of SLM options based on the FAO LADA, LRM and SHARP instruments.							
		3. Integration of SLM scaling out model into the ICP (integrated catchment planning) in the Upper Kashkadarya in partnership and collaboration with the FAO SLM projects							
MAINSTREAMING OBJECTIVE 2									
Integration of FAO SLM Approaches and Tools into the State Program on improvement of the meliorative condition in irrigated lands	Integration of SLM into Salinity Mitigation Plan for salt affected irrigated lands in Djizak region under support of the Meliorative Fund	1. An overview of institutional transformations, analysis of key institutions and mapping of SLM target groups/actors.	Participatory Territorial planning process	Meliorative Fund, Hokimiyat, divisions of Ministry of Agriculture and Ministry of Water Resources, farmers	+			+	
		2. Conducting multi-stakeholder workshops and modular training program, establish of the Inter-Agency Working Group on coordination, oversight and monitoring of the SLM outscaling activities							
		3. Integration of SLM scaling out activities into the Salinity Mitigation Plan for salt affected irrigated landscapes in Djizak region.							

MAINSTREAMING OBJECTIVES	EXPECTED RESULTS	COMPONENT OR ACTIVITIES	DECISION-MAKING PROCESS TO BE ADDRESSED	TARGET GROUP	Level decisions address				
					Policies	Programmes	Finance	Sub-national Planning	Local Decisions
MAINSTREAMING OBJECTIVE 3									
Ensuring coordination and interaction between all stakeholders, capacity building, awareness and resource mobilization for scaling out of SLM	Adequate capability and partnership for the effective SLM scaling out financing flow has been strengthened	1.Creation of a Working Group to support the SLM scaling out activities	Building partnerships processes	Stakeholders of all levels (starting from decision makers to farmers and dekhkans, including NGOs)	+		+		+
		2. Involvement of all target actors, including NGOs, into SLM scaling out network to enhance the interactions and partnership through multi-stakeholder dialogues, forums and public consultations.							
		3.Adaptation of FAO approaches and instruments (LADA, PLUD) to involve beneficiaries on the participatory ICP/ILM planning and assessment process							
		4.Development of specific SLM Financing Capacity Building program to sustain financing flow for SLM scaling out							
MAINSTREAMING OBJECTIVE 4									
Mainstreaming of approaches and technologies for SLM scaling out and sharing local experience and skills	The base and enable conditions for implementation and sharing local experience on SLM have been created	1.Development of incentives and motivation to introduce best practices and improve experience on SLM	Building an enabling environment comprising appropriate policies, incentives, capacity-building processes	Khokimiyat, departments of the Ministry of Agriculture and the Ministry of Water Resources, farmers, dekhkans	+			+	+
		2. Providing demonstration of SLM technologies through the implementation of pilot projects at the local level							
		3.Involving farmers and the local community in the process of testing and implementing practices and technologies							

TABLE 4. INSTITUTIONS AND STAKEHOLDERS

MAINSTREAMING OBJECTIVE	INSTITUTION or STAKEHOLDER	ROLE IN SLM	SECTOR					SCOPE OF ACTION			Type of partner for the DS-SLM project (*)		
			Government	NGO	Productive sector	Research and extension	International cooperation	National	Sub-national (provincial, district, etc.)	Local	a. Partners for implementing DS-SLM activities	b. Targets for mainstreaming SLM	c. Participants and beneficiaries of DS-SLM information
MAINSTREAMING OBJECTIVE 1													
Integration of SLM scaling out model into ICP planning in line with the Agricultural Development Program until 2030	Draft of the CACILM-2 Program	Adaptation of landscape approach and SLM scaling out model in the upper reaches of Kashkadarya			+				+	+		+	
	Local authorities (Khokimiats)	Provide support for extension	+						+	+	+	+	
	Farmers	Implementation of SLM technologies			+					+	+	+	
MAINSTREAMING OBJECTIVE 2													
Integration of FAO SLM Approaches and Tools into the State Program on improvement of the meliorative condition in irrigated lands	Meliorative Fund at the Ministry of Finance	Financial support	+					+				+	
	Local authorities (Khokimiats)	Provide support for extension	+						+	+		+	
	DS-SLM project	Drawing up the program and its mainstreaming in planning					+		+			+	
	WUA, farmers	Introduction of innovations and SLM technologies			+					+	+		

MAINSTREAMING OBJECTIVE	INSTITUTION or STAKEHOLDER	ROLE IN SLM	SECTOR					SCOPE OF ACTION			Type of partner for the DS-SLM project (*)		
			Government	NGO	Productive sector	Research and extension	International cooperation	National	Sub-national (provin- cial, district, etc.)	Local	a. Partners for implemen- ting DS- SLM activities	b. Targets for mainstreaming SLM	c. Participants and bene- ficiaries of DS-SLM informa- tion
MAINSTREAMING OBJECTIVE 3													
Ensuring coordination and interaction between all stakeholders, capacity building, awareness and resource mobilization for scaling out of SLM	National SRIs	Innovations and researches				+		+					+
	Consulting centers, etc. suppliers of consulting services	Trainings, informing, consultations	+	+				+	+	+		+	
	Local authorities (Khokimiats)	Provide support for extension	+						+	+	+		
	WUAs, Councils of Farmers, Dekhkan farms, WCA, farmers, local communities	Внедрение инноваций и SLM технологий	+	+						+	+	+	
	DS-SLM Project	Programs of trainings, trainings, seminars etc.					+		+			+	
MAINSTREAMING OBJECTIVE 4													
Mainstreaming of approaches and technologies for SLM scaling out and sharing local experience and skills	DS-SLM Project	Develop of DS-SLM Strategy					+		+	+			
	Local authorities	Provide support for extension	+						+	+	+	+	
	MA and MWR departments	Provide support for mainstreaming	+						+	+	+	+	
	Farmers, dekhkans	Implementation of innovations and SLM technologies			+					+		+	

TABLE 5. ACTION PLAN

MAINSTREAMING OBJECTIVES	COMPONENTS AND ACTIVITIES	BUDGET	RESPONSIBLE	Dates
MAINSTREAMING OBJECTIVE 1 Integration of SLM scaling out model into ICP planning in line with the Agricultural Development Program until 2030	1. Review/update of national SLM policies, strategies and programs, and initial information and trainings on integrated catchment planning, LRM and resilience gap analysis tools and guides.			
	2 Assessment of the current state of DLDD, SLM and development of SLM options based on the FAO LADA, LRM and SHARP instruments.			
	3. Integration of SLM scaling out model into the ICP (integrated catchment planning) in the Upper Kashkadarya in partnership and collaboration with the FAO SLM projects			
MAINSTREAMING OBJECTIVE 2. Integration of FAO SLM Approaches and Tools into the State Program on improvement of the meliorative condition in irrigated lands	1. An overview of institutional transformations, analysis of key institutions and mapping of SLM target groups/actors.			
	2. Conducting multi-stakeholder workshops and modular training program, establish of the Inter-Agency Working Group on coordination, oversight and monitoring of the SLM outscaling activities			
	3. Integration of SLM scaling out activities into the Salinity Mitigation Plan for salt affected irrigated landscapes in Djizak region.			

MAINSTREAMING OBJECTIVES	COMPONENTS AND ACTIVITIES	BUDGET	RESPONSIBLE	Dates
MAINSTREAMING OBJECTIVE 3 Ensuring coordination and interaction between all stakeholders, capacity building, awareness and resource mobilization for scaling out of SLM	1. Creation of a Working Group to support the SLM scaling out activities			
	2. Involvement of all target actors, including NGOs, into SLM scaling out network to enhance the interactions and partnership through multi-stakeholder dialogues, forums and public consultations.			
	3. Adaptation of FAO approaches and instruments (LADA, PLUD) to involve beneficiaries on the participatory ICP/ILM planning and assessment process			
	4. Development of specific SLM Financing Capacity Building program to sustain financing flow for SLM scaling out			
MAINSTREAMING OBJECTIVE 4 Mainstreaming of approaches and technologies for SLM scaling out and sharing local experience and skills	1. Development of incentives and motivation to introduce best practices and improve experience on SLM			
	2. Providing demonstration of SLM technologies through the implementation of pilot projects at the local level			
	3. Involving farmers and the local community in the process of testing and implementing practices and technologies			