

### ANNEX 3. General List of SLM technologies and approaches

	SLM Technology	Benefits	Source
<b>Target area: irrigated soil fertility management</b>			
1.	Use of organic-mineral fertilizers on the basis of secondary resources for recultivation of low-fertile soils.	Gain of cotton productivity on 3-5 c/hectare, winter wheat - on 10-12 c/hectare	SRI of soil science and agrochemistry. M.Tashkuziev
2.	Combined sowing of cotton with mung bean and mulching of furrows.	Increase in economic efficiency for 90.9% at a row-spacing cotton of 90 cm and for 71.7% at a row-spacing of 60 cm.	CACILM: SLM –research. ICARDA
3.	Integrated management of salt-affected and gypsiferous soils.	Increase in marginal income by 2-2,5 times from cotton and from wheat	UZGIP,FAO/TCP/UZB/2901
4.	Crop diversification on salt-affected soils with introduction legumes and siderats.	Increase in productivity of cotton on 4-5 c/hectare, winterwheat on 1-2 c/hectare, economy of nitrogen fertilizers up to 20-30%, increase in biological control over wreckers	UZGIP, FAO/GEF DS-SLM
5.	Farmer Field Schools in the irrigated zone	In-service education, mass, interactive training, possibility of exchange of experience by the principle "farmer to farmer"	UZGIP, FAO TCP/ UZB/2903 Project
6.	Increase in fertility of alkaline and solonetzic lands on the basis of application of a phosphogypsum.	Increase in fertility of soils and productivity twice, reduction of costs of chemical melioration up to 30%, increase in profit up to 50%.	KazSRI of Water EconomyBekbayev R.K.
7.	Production technology of a biohumus.	Environmentally friendly organic fertilizer, improvement of structure, fertility of the soil, - increase in productivity.	WOCAT. Technologycode: T_KYR006ru
8.	Zero technology of crop cultivation on ridges	Maintaining soil fertility, balanced food of plants, increase in productivity, reduction of costs on the soil treatment, saving of irrigating	KazSRI of Water Economy. P.Kalashnikov
9.	Sowing crops on the ridges	Decrease in norm of sowing by 1,5 times, saving of irrigating water for 25-30%, increase in productivity of winter wheat on 5-8 c/hectare.	ICARDA/ CACILM Report
10.	Direct sowing of alfalfa in the conditions of rainfed and irrigated lands of the southern Kazakhstan.	Reduction of the soil treatment, saving of fuels and lubricants (fuel and lubricants) for 30%, increase in productivity on 54-61 c/hectare on the irrigated lands and on 20-30 c/hectare on rainfed lands.	SRI of livestock production and crop production. D.Sydyk, Kazakhstan
11.	Presowing treatment of soil preventing crust forming at cultivation of cotton.	Economy of seed grain, cost cutting of work and fuels and lubricants (fuel and lubricants).	Turkmenistan Academy of Science. A.Saparmiradov
12.	Complex scheme of preparation of the irrigated field.	Decrease in superficial washout of the soil, uniformity of moistening of the field, increase in crops productivity.	Kirgizstan SRI of Irrigation
13.	Fertilizer irrigation for optimization of the nutritional regime	Improvement of digestion of fertilizers by plants, decrease in unproductive losses of mineral fertilizers, prevention of environmental pollution, mechanization of application of fertilizers	Kyrgyzstan SRI of irrigation.

	SLM Technology	Benefits	Source
14.	The minimum tillage of soil at cultivation of grain.	Saving of fuels and lubricants (fuel and lubricants) on 10-20 l/hectare, decrease emission of CO <sub>2</sub> , consolidation of soil, and improvement of the habitat of useful soil microorganisms.	Agrarian University of Kirgizstan. A.Asanaliev
15.	Minimization of processing of the soil by crops of winter wheat in cotton row-spacing.	Petroleum, oil, and lubricants (POL) saving to 2.35 times, yield increase to 1.24 times.	Existing Practice of farmers of Uzbekistan
16.	Zero tillage.	Reproduction of soil fertility, preservation of moisture in soil, cutting of costs for mechanization and fuel, increase in profitability for 17% (wheat), and 12% (cotton).	SGPofGEF. UZB
17.	Mulching of the soil by transparent polyethylene film.	Decrease in moisture evaporation, prevention of crust formation, reduction of amount of works by 50% and costs of 20-25% (interrow processing and watering are carried out through a furrow).	TashAU, I. Turapov.UZB
18.	Cultivation of indigofer for the purpose of restoration of the salted degraded lands.	Restoration of marginal lands without big investments, high income due to dye sale (30 thousand of USD)	ZEF/ UNESCO A.ErgashevUZB
19.	Biodrainage - an alternative way of melioration of boggy lands.	Decrease in bogging and salinization, increase in efficiency of lands by 50-60% in a radius of 1 km.	Information packet, Dushanbe, 2006. www.fsci.freenet.tj
20.	Technology of compost preparation (composting).	Environmentally friendly organic fertilizer, improvement of structure, fertility of the soil, - increase in productivity.	Soil Science Institute (Dushanbe), Salimov K.
21.	Use of anti-erosive substance for increase in resistance of soils to erosion.	Decrease in an irrigational erosion, improvement of water physical properties of the soil, increase in productivity of cotton by 3-5 c/hectare.	SRI of soil science and agro-chemistry, O.Khakberdiev UZB
22.	Cultivation of crops on stony low-power soils.	Decrease in erosion, improvement of land covering, increase in fertility of the soil.	Center of training, consultation and innovation. www.taic.kg
23.	Cultivation of melon under a polyethylene film	Creation of optimum temperature, reduction of vegetative period of cultures for 12-15 days, decrease in loss of moisture by 70-80%, reduction of number of irrigations twice, increase in productivity twice.	Center of training, consultation and innovation, www.taic.kg
24.	Drainage ditches on steep slopes of arable lands.	Prevention of soil erosion	WOCAT. Technology code T_TAJ010ru.
25.	Mulching of rainfed vineyards on the terraces located on loessial hilly landscapes.	Prevention of lands degradation, increase in humus for 0.9%.	WOCAT. Technology code T_TAJ105ru
26.	The greenhouse in the earth (greenhouse thermos).	Economy of energy on heating, on lighting, stable, big crop during all the year round.	<a href="http://vasha-teplitsa.ru/karkas/teplika-termos.html">http://vasha-teplitsa.ru/karkas/teplika-termos.html</a>
27.	Crops of melon cultures on rainfed area in deeply loosened strips	Improvement of infiltration and accumulation of rainfall in the soil, prevention of wind erosion, improvement of vegetative cover.	Turkmenistan Academy of Science. A.Saparmiradov

	SLM Technology	Benefits	Source
28.	Transversal treatment of slope lands.	Decrease of surface run-off, saving of irrigating water, increase in accumulation of moisture in the soil and of crops productivity.	Kyrgyzstan SRI of Irrigation
<b>Target area: agroforestry /forest belts</b>			
29.	Creation of forest belts by a diagonal and group method.	Increase in relative humidity of air for 5-10%, decrease in evaporation by 20-30%, increase in productivity of grain crops by 18-23%, technical crops - for 20-26%, fodder plants – for 29-41%.	«KazAgroInnovatsia», Partnership of LL «Kazakhstan forestry SRI»
30.	Agroforestry melioration for rehabilitation of the degraded irrigated lands.	The net specified value of plantations on marginal lands 900-6500 USD/hectare.	WOCAT. Technology code: T_UZB004ru.
31.	Forest belts from the sucker ( <i>Elaeagnus</i> ) for protection of the irrigated fields.	Reduction of wind speed, of erosion, increase in productivity, additional ecological and economic benefits.	WOCAT. Technology code: TAJ110r
32.	Cultivation of a poplar on the salt-affected and water-logged lands.	Getting construction material and additional benefits, decrease in bogging and salinization of lands.	Information packet, Dushanbe, 2006. www.fsci.freenet.tj
33.	Creation of protections by construction of walls from stone and plantings of a poplar along site perimeter.	Improvement of land cover, of the land top layer structure, increase in biomass, in infiltration and accumulation of water in soil.	WOCAT. Technology code - TAJ376
34.	Joint management of the forestry.	Sustainable management of natural resources, improvement of pastures on the timberland, strengthening of social communications, formation at locals of responsibility for woods condition.	WOCAT. Approach code: TAJ 015r
35.	Communal forestry in Karakalpakstan.	Improvement of forest resources condition, increase in employment and improvement of material condition of the population.	WOCAT database. Approach code: A_UZB002ru
36.	Improvement of lands in arid conditions through creation of pistachio high-quality plantations.	Income over 100 million Sum / hectare, profitability of 500-600% in 18 years of their cultivation.	WOCAT. Technology code: T_UZB001ru.
37.	Cultivation of arundo-reed ( <i>Arundodonax L.</i> ) shields for creation of protective strips around estates from hot winds and for other economic purposes.	Improvement of land cover, increase in biomass, wind speed reduction, increase of biodiversity requires minor irrigation (for the first 2 years)	WOCAT. Technology code: T T_TUM002ru
38.	Fixing of mobile sands around settlements in the Kara Kum Desert and reforestation.	Protection of households: reduction of speed of wind for 20-25%, reduction of dust and sand transfer, improvement of life conditions of the population.	WOCAT database. Technology code: T_TUM001r.
39.	Agroforestry on the basis of orchard.	Protection of annual crops from strong winds, decreases of soils water erosion, increases content of humus and nitrogen	WOCAT database. Technology code: T_TAJ003ru
40.	Cultivation of forest cultures on slopes of mountains with use of moisture accumulative trenches.	Increase in accumulation of moisture in the soil, high survival of plants (up to 85%)	WOCAT. Technology code: T_TUM003ru
41.	Planting of almonds on small terraces for stabilization of slope rainfed lands.	Improvement of an earth cover, increase in biodiversity	UZGIP, FAO/GEF DS-SLM
42.	Forest plantation on small-hilly sands	Improvement of land cover, increase in biodiversity, prevention of wind	GIZ project, Turkmenistan

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		erosion and sanding up, requires minor irrigation (for the first 2 years)	
43.	Afforestation on takyr	Improvement of land cover, increase in biodiversity, requires minor irrigation (for the first 2 years)малойиригации (первые 2 года)	GIZ project, Turkmenistan
44.	Forest windbreak fields on rainfed areas	Prevention of wind erosion, preservation of moisture in the soil, increase in productivity of spring-wheat to 1.5 c/hectare.	Information collection, Dushanbe, 2006. www.fsci.freenet.tj
45.	Technology of improvement of "hanging gardens" on foothill low-hillsides.	Prevention of erosion and washout of nutritious elements from the soil, increase of irrigation water saving by 3-5 times, increase in productivity within 3-4 years.	Information collection, Dushanbe, 2006. www.fsci.freenet.tj
<b>Target area: management of irrigation/water saving</b>			
46.	Contour irrigation	Reduction of the irrigational erosion up to 70%, - maintaining fertility of the soil.	ICARDA/CACILM, Kyrgyzstan SRI of Irrigation
47.	The improved elements of the method and technology of furrow irrigation on lands with above-normal slopes.	Decrease in erosion, saving of irrigating water, increase in productivity of crops.	Kyrgyzstan SRI of Irrigation
48.	Introduction of drought-and salt-resistant variety cotton Gulistan.	Cost cutting of water on 1500 m3/hectare, increase in productivity for 30-50%	UZGIP, FAO/GEF DS-SLM
49.	Irrigation with use of polyethylene bottles.	Improving of land cover, prevention of water erosion, yield loss avoidance at water deficit years	BOKAT: Technology code: TAJ108r
50.	Cultivation of cotton in irrigation furrows bottom.	Reduce of watering time to 28-31%, reduce of water losses to 13-15 %, increase of water use factor	Turkmenistan Academy of Science. A. Saparmuradov
51.	Improved way of irrigation on level furrows.	Decrease in losses of water at watering, saving of irrigating water, increase in uniformity of moistening of the field, and efficiency of water use, improvement of a vegetable cover.	Turkmenistan Academy of Science.
52.	Intra soil irrigation system with root zone humidifiers for orchard crops.	Prevention of erosion, increase in humus for 0.9%.	Turkmenistan Academy of Science.
53.	Irrigation of cultivated crops on screened furrows.	Improvement of land cover, prevention of water erosion, lands degradation, increase in productivity at deficiency of water.	G.Bezborodov ,УзНИИХ. UZB
54.	Improvement of irrigation of cotton on the eroded lands	Decrease in irrigational erosion to norm (no more than 2,5 g/hectare for the vegetation period), saving of irrigating water for 15-20%, increase in humus for 5-10%, productivity of cotton for 5-10%.	N.BezborodovУзНИИХ UZB
55.	Irrigation of cotton on furrows, screened by the perforated polyethylene film.	Maintaining structure of the soil, prevention of erosion, saving of irrigating water (up to 30%), increase in uniformity of watering of the site up to 90-95%, increase in productivity of work of irrigators.	G.Bezborodov УзНИИХ . UZB
56.	Laser land leveling for increase in efficiency of use of irrigating water.	Reduction of irrigating water for 20% consumption, costs of time for technological operations of 10-15%, increase in productivity of 10-20%,	SGPofGEF.UZB

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		reduction of contamination of the field of 10-12%.	
57.	Multi layered irrigation on furrows.	Reduction of unproductive losses of water at watering for 15-20%, increase in efficiency of water to 1.0.	"WRIM - Ferghana" Tashkent, 2009. M.Khorst, S. NarosinUZB
58.	Drip irrigation.	Increase in productivity for 30-50%, cost cutting of water for 50-60%, mineral fertilizers for 40%, reduction of contamination of the field, labor costs, fuel and emission of greenhouse gases	Программа мелиоративного улучшения земель. UZB
<b>Target area: cattle breeding/management of pasture</b>			
59	Technology of space and land monitoring of ecologic and ameliorative condition of pastures.	Spatial regulation of use of fodder resources and possibility for management of efficiency of pastures.	<a href="http://www.zhailau.kz/">http://www.zhailau.kz/</a> <a href="http://agro.snauka.ru/2012/07/467">http://agro.snauka.ru/2012/07/467</a>
60	Pasture rotation in desert regions of Uzbekistan.	Increase in efficiency of cattle grazing for 30-35%, production for 20 - 50%. Income is 24 USD per one sheep	WOCAT. Technology code: T_UZB002ru
61	Use of artesian mineralized waters for the organization of irrigation agriculture in Kyzylkum desert.	Net income is 1,5 million sums/hectare	WOCAT. Technology code: T_UZB003ru
62	Creation of the seed plot of perennial grasses.	Decrease in degradation of lands, improvement of quality of grasses and fodder resources, increase in live weight of the cattle; additional income.	WOCAT. Technology code: T_KAZ007ru
63	Pastures condition monitoring.	Control and improvement of the lands covering, increase in biomass and of pastures condition.	WOCAT. Technology code: T_KYR007ru
64	Management of pastures through system recovery of distant-pasture livestock production and radical improvement of pastures.	Restoration of degraded pastures and increase in their efficiency.	WOCAT. Approach code A_KAZ0089ru
65	Joint planning of pastures use.	Sustainable use of pastures, achievement of stable income on livestock production.	WOCAT. Approach code A_KAZ0002ru