SLM options in Zaghouan: current patterns, issues on technological, economic and ecological efficiencies, adoptions and recommendations for effective out-scaling

Final Workshop "Sustainable Land Management to Achieve Land Degradation Neutrality: Options-by-Context Approach and Tools"

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Technical Analyses

WSC technique	Land Use type	Rang 1/2/ 3	Evaluation	Facteurs de succès / Facteurs limitant
TERRES EN PENTE				
Banquette mecanique	Céréales et olivier (à pente forte)	3	Olivier : CS + rentabilité Céréales : CS + rentabilité	Bonne exécution Entretien et Consolidation
Banquette manuelle	Olivier (moins fréquent pour céréales)	3	Idem	Bonne exécution Entretien et Consolidation
Cordon pierre seches	parcours dégradés (sol nu, pierreux, en pente)	3	CS, rétention de sédiment	Entretien
Technique douce (labour en courbes de niveau, en bandes alternees)	Céréales, à pente faible	1	Bonne adoption au niveau des terres domaniales (manque d'adoption chez les prives)(Taille des parcelles)	Manque de vulgarisation, Problèmes de morcellement foncier
Cuvette individuelle, bourrelet terre consolide par pierres	Olivier, amandier	3+	Adoption par les privés	Bonne exécution
Reboisement et amelioration pastorale	Parcours, sol nu	3/1	3 dans les terres domaniales 1 chez les privés.	Gestion pâturage, meilleures espèces forestières

Technical Analyses

TECHNIQUE CES (MOTS CLES)	Occupation des sols	Rang 1/2/3	Evaluation	Facteurs de succès / Facteurs limitant
AMENAGEMENT DES VOIES D'EAUX				
Ouvrages de recharge en gabion	Lit oued principale	2/3	Recharge de la nappe	Site bien choisi, bonne exécution
protection de ravins	Lit oued, ravines	3	Protection des terres agricoles	Entretien, bonne exécution
Seuils en pierre seches	Ravines	3	Control du ravinement	Entretien, bonne exécution
Lacs et barrages collinaires	Lit oued, périmètres irrigues	3/2	Disponibilité eau	Site bien choisi, création d'un GDA
Fixation biologique des berges	Lit oued, ravines	3	Stabilisation de berges, réserves fourragères	Mise en défens, choix des espèces

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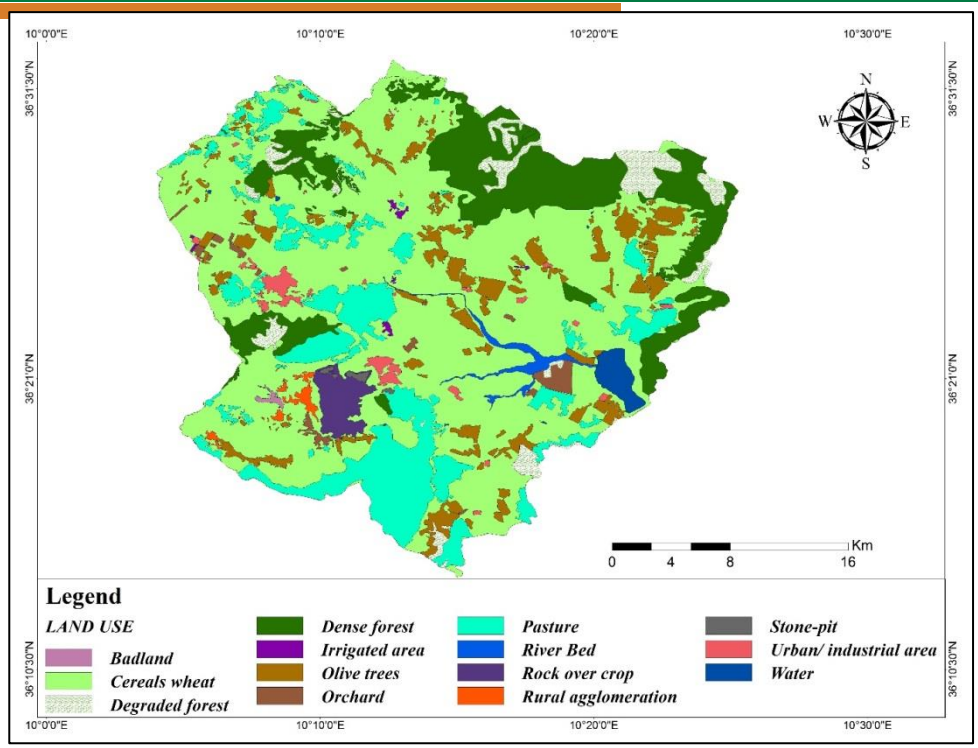
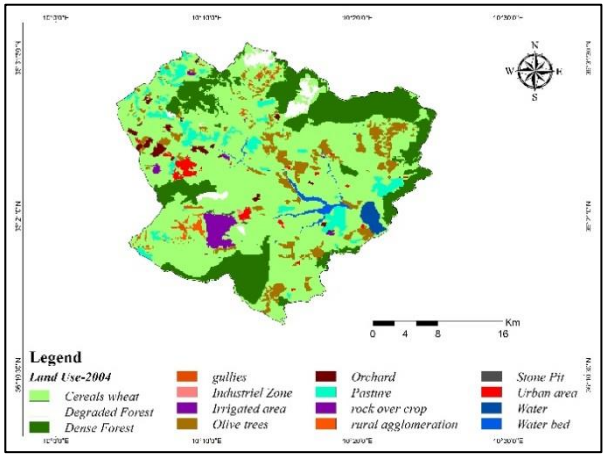
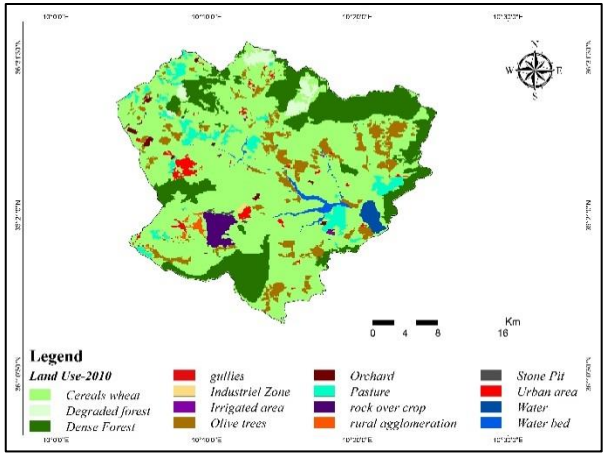
Land Use 2016







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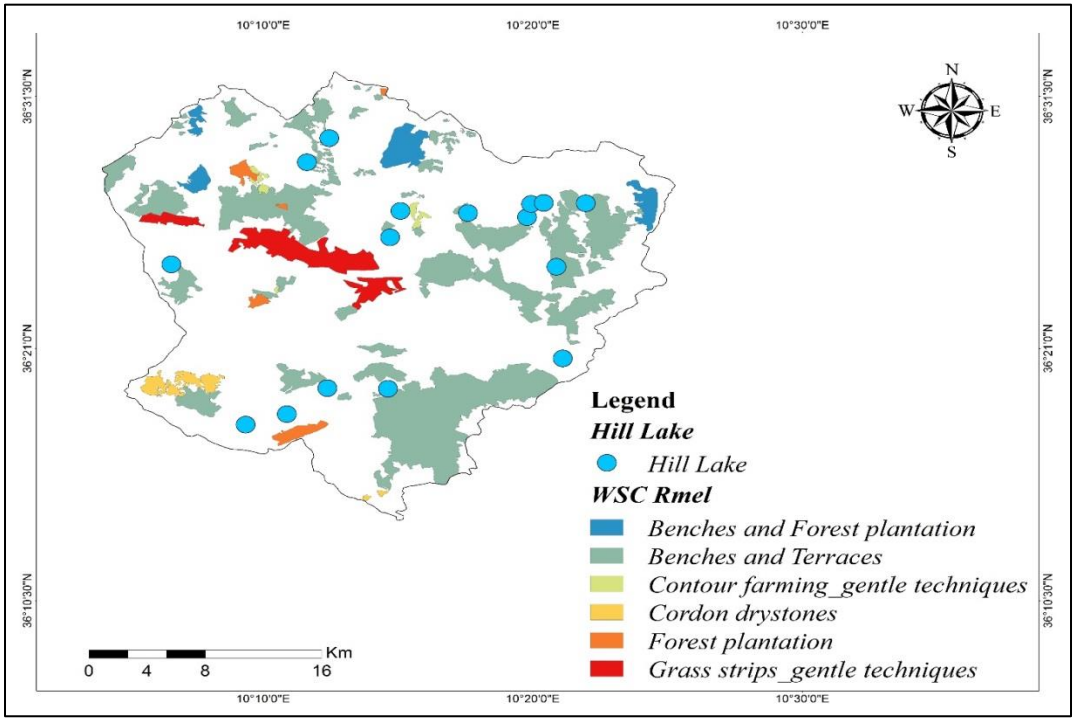
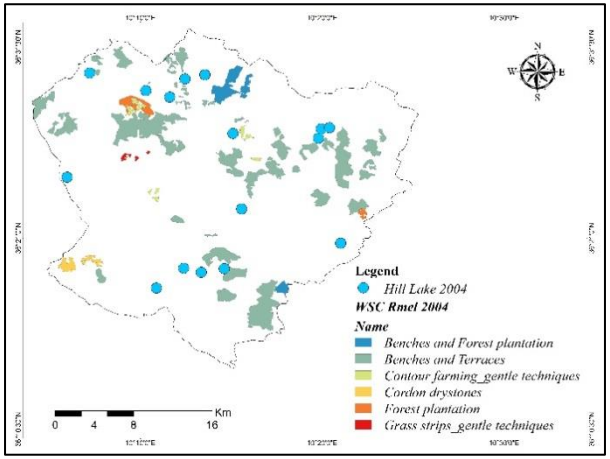
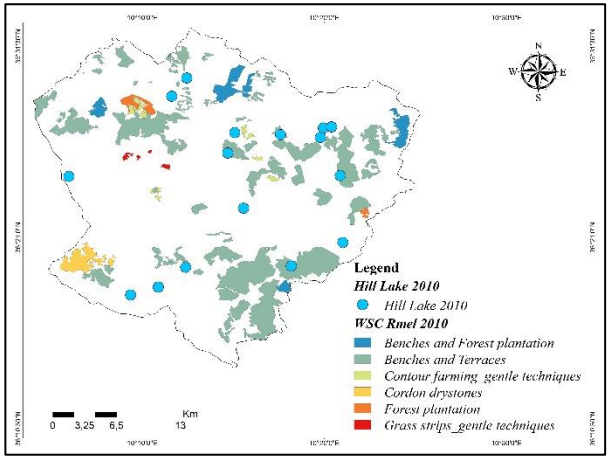
WSC 2016







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MECHANICAL BENCH TERRACES

The mechanical bench terraces are earth embarkments built along contour lines perpendicular to the slope, In order to intercept runoff water, promote infiltration and reduce erosion.

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Strengths/advantages/opportunities of the SLM Technology		
Simple		Plowing according to contour lines
Better water infiltration		reduction of the slope length
Better soil retention		Protection of downstream infrastructure
Increase yields		reduction of soil erosion
simple establishment		improvement of land cover
Weaknesses/disadvantages/risks of the SLM Technology and ways to overcome		
Reduction of planting area/ Reduce the width of the terrace		Implementation and maintenance are expensive
		absence of maintenance

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MANUAL BENCH TERRACES

Manual bench terraces are an earth embarkment done manual built on a slope land or approximately flat top to control soil erosion and preserve and enhance soil fertility.

Strengths/advantages/opportunities of the SLM Technology	
Can be constructed by land users	Simple construction
Can be maintained by land users	Simple maintenance
Better soil infiltration	Better soil infiltration
improve farm income	reduction of soil erosion
Increasing yield	increase in soil fertility and organic matter
Weaknesses/disadvantages/risks of the SLM Technology and ways to overcome	
absence of maintenance	manualy work cost more much than mechanical work/need subsidy from government
	Implementation and maintenance are expensive

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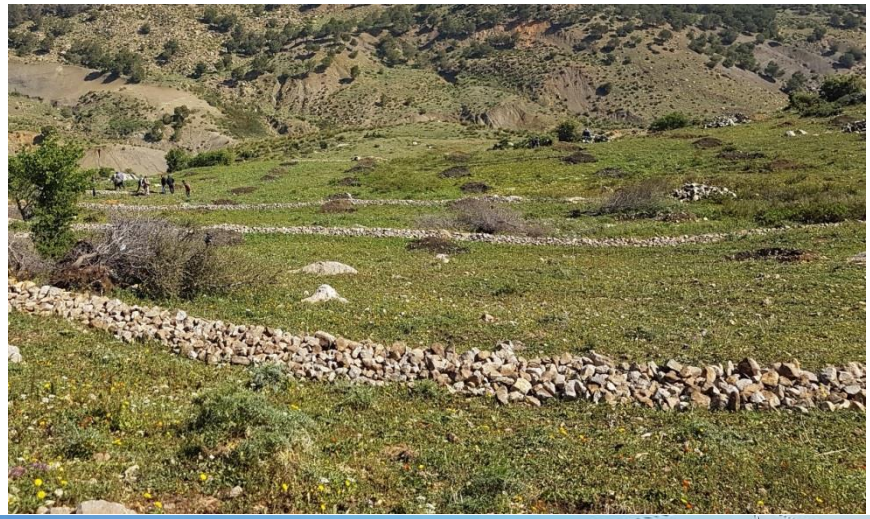
STONE BUND TERRACES

Stone bund terraces is an alignment of stones as physical barriers constructed accros the slope following the contour lines which slow down the velocity of runoff , promote its infiltration into the soil and the sedimentation of fine particles.



Strengths/advantages/opportunities of the SLM Technology	
Resistant and need less maintenance	Bunds are built on sloping fields
need Simple maintenance	Design and construction are easy and can be done without much specialised labour
They allow the sites to get rid of the stones that hinder their valorization	Reduction of steep slope
reduce the rate of runoff allowing infiltration	Increased crop production and erosion control as a result of the harvesting and spreading of floodwater
generally resistant and need less maintenance	Enhanced groundwater recharge
	Reduced runoff velocities
	Reduced runoff velocities and erosive potentials
	Improved land management as a result of the silting up of gullies with fertile deposits
Weaknesses/disadvantages/risks of the SLM Technology and ways to overcome	
building stone bunds can be expensive if stone resources are limited	Failure to respect the contour lines in its construction lead to loss of soil
Problem of the transport of stones	have a short lifetime
High transportation costs for farmers	
Need for large quantities of stone	

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SEMI-CIRCULAR BUNDS

Semi-circular bunds consist of earth embankments built in the shape of a semi circle with the tips of the bund on the contour and are arranged in staggered orientation in rows so that overflow from one row will run into the next downslope. It can be consolidated by dry stones.

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Strengths/advantages/opportunities of the SLM Technology	
semi-circular bunds may be used for uneven fields	Decreased slope length
Can be constructed on any slope, from almost flat terrain up to steep slopes	reduced velocity of runoff
improves the yield	Design and construction are easy and can be done without much specialised knowledge
increased soil moisture	Increased vegetation coverage and production
Simple maintenance	Reduced soil erosion

Weaknesses/disadvantages/risks of the SLM Technology and ways to overcome	
Reduced farm land/ Mass mobilization and improving the design.	Simple design approach (the same diameter and spacing for different slope ranges)/ Improve the design approach.
Increase labour requirement/ increased incentives to households, Reducing the size of the structure.	Semi-circular bunds cannot be made mechanically and are therefore time consuming in their construction
Labour-intensive work	short life-time of the structure
Need for large quantities of stone	Earthen bunds are not suitable in case of heavy rainfall

HILL RESERVOIRS

Hill reservoirs contain ten thousands to few millions of m^3 of water collected on watersheds covering areas from few hectares to some km^2

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GABION THERSHOLD

It is a structure built of uncemented stones but well anchored on the banks in order to increase its cohesion and rigidity.

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STONE THERSHOLD AND

BIOLOGICAL RESTORATION

REFFORESTATION

Refforestation is one of the key technologies to address the fragility of ecosystems: it provides better protection against erosion and makes better use of rainfall in order to maintain the sustainability of agricultural systems.

Eucalyptus plantation

Plantation wof Aleppo Pine

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FORAGE SPECIES PLANTATION

Plantation of Sulla

Cactus

Cactus with native species

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RANGELAND IMPROUVEMENT

The rangeland improvement is used to prevent and remediate degradation of soils and to meet the needs of livestock forage by planting of desirable species.

Accacia

Accacia

Atriplex

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RMEL DAM

Dam is as an obstruction constructed across a river. At the back of this barrier water is collected forming a reservoir. The side on which water is collected is called upstream side and the other side of the barrier is called downstream side. The pool of water which is formed upstream is called a Reservoir.

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Thank You!