Decision Support for Sustainable Land Management

The need to mainstream and scale-out SLM

Mainstreaming and scaling-out of SLM over large areas is a key requirement in changing towards more sustainable landscapes and maintaining multiple ecosystem services. Mechanisms and processes for mainstreaming and scaling-out SLM are needed for different contexts: they should be grounded in the existing wealth of knowledge about SLM at different levels (local to global), while linked to evidence-based decision-making processes. Projects and programs often only consider the scaling-out of specific and tested SLM good practices – such as soil, water, crop, livestock and/or biodiversity management – without adequate exploration or integration of options or putting an enabling environment in place only at the very end of a project’s lifecycle.

Sometimes their focus is confined to influencing high-level policy. However, to be successful and have an impact beyond a project’s implementation area and timeframe – that is to achieve institutionalization and broad adoption of SLM – a knowledge management system for evidence-based decision making and a mainstreaming and scaling-out strategy with key and concrete activities have to be in place from the very beginning. SLM mainstreaming and scaling out strategies need to support different levels of decision-making, including policies, financing mechanisms, and land use planning, at decentralized and local levels, and a realistic budget needs to be allocated to these processes.
An analysis of enabling and hindering factors in the implementation and adoption of SLM documented in the “Global WOCAT Database on SLM” show that financial resources are the most frequently cited hindering factor, followed by knowledge about SLM including technical support, the legal framework and institutional settings. This applies for all three categories of the LDN response hierarchy (types of intervention): prevention, reduction and restoration. The legal framework is also considered to be by far the most important enabling factor under all three stages of intervention (Liniger et al. 2019, Environmental Science and Policy, Special Issue on Land Degradation Neutrality Framework and Policies).

Enabling and hindering factors for SLM

Prevent land degradation

- Financial resources
- Institutional settings
- Collaboration/coordination of actors
- Legal framework
- Policies
- Land governance
- Knowledge about SLM

Reduce land degradation

- Financial resources
- Institutional settings
- Collaboration/coordination of actors
- Legal framework
- Policies
- Land governance
- Knowledge about SLM

Restore degraded land

- Financial resources
- Institutional settings
- Collaboration/coordination of actors
- Legal framework
- Policies
- Land governance
- Knowledge about SLM

Source of data: https://qcat.wocat.net/en/wocat/ SLM approaches database, n=234
**Decision Support Framework for mainstreaming and scaling out**

**Evidence-based decision-making** is a process for making decisions about implementing and scaling-out SLM that is grounded in the best available research evidence, experiential evidence from the field, and relevant contextual evidence. Making informed decisions in a complex context like land management is difficult when knowledge and evidence are dispersed, disconnected and/or simply lacking.

The **Decision Support Framework (DSF) for mainstreaming and scaling-out**, developed in the GEF-funded FAO project (DS-SLM), guides countries in the process of evidence-based decision-making for SLM, from the national to the local level, following seven modules with proposed tools and methods. It supports on-the-ground implementation and scaling-out of SLM practices.

The DSF contains the following **features**, it:

- is **flexible**, and can be tailored to countries’ needs and contexts;
- offers, through its **modular format**, different entry points depending on countries’ previous activities, existing data, available resources and gaps;
- is applicable at, and links, **different scales**;
- supports **multi-sectoral and multi-disciplinary processes**, breaking silos between sectors;
- encourages and facilitates **networking, dialogue, and partnerships**;
- considers use and **management of knowledge** as an intrinsic part of the process.

For the seven modules, **specific tools** are suggested though countries may substitute them with other tools if they serve the main purpose better in the particular context.

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**DS-SLM project and the Decision Support Framework**

The FAO/GEF project "Decision Support for Mainstreaming and Scaling-up of Sustainable Land Management (DS-SLM)" emerged from the situation where, even though tools and methods for assessment of land degradation and SLM were available, widely accepted and used in different projects and programs, the challenge remained: how to make use of evidence to support mainstreaming and scaling-out SLM practices and remove local, national and regional barriers? To address this challenge, the Decision Support Framework (DSF) was developed in a two-step approach:

- a) DSF tested and validated by countries as guidance for their activities within the DS-SLM project; and
- b) consolidation of country experiences resulting in the final DSF for wide application by other countries aiming at mainstreaming and scaling-out SLM.

For more information see also: www.wocat.net/en/projects-and-countries/projects/ds-slm

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**Decision Support Framework** for SLM mainstreaming and scaling-out

**MODULE 1**

**SLM mainstreaming and scaling-out strategy**

Mainstreaming SLM into decision-making processes with policies, strategies and programmes, finance and incentives, education and awareness-raising, land use and territorial planning and local initiatives.

**Phase A** Review key decision-making processes and design of the strategy

**MODULE 2**

**National / Subnational Level Assessment**

Drivers, pressures and impacts of LD & SLM; mapping ‘red spots’ of LD and ‘green spots’ of SLM

**MODULE 3**

**Selection of Priority Regions and Landscapes**

Establishment of selection criteria

**MODULE 4**

**Landscape / Local Level Assessment**

Drivers, pressures and impacts of LD & SLM; mapping ‘red spots’ and ‘green spots’; biophysical and livelihoods assessment; documentation of SLM practices

**MODULE 5**

**Territorial Planning**

Action plan agreed with stakeholders for SLM implementation

**MODULE 6**

**SLM Implementation and scaling-out**

Demonstration sites; implementation of SLM practices in single sites or in landscapes

**MODULE 7**

**Knowledge management for evidence-based decision-making**

Compilation of knowledge in standardized way; knowledge sharing and dissemination through different open access platforms and dialogue

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**Phase B** Partnerships and capacity development

**Phase C** Consolidation and implementation of mainstreaming and scaling-out strategy
SLM Mainstreaming Strategies

The innovation of the DSF is to identify key decision-making processes that represent opportunities for promoting SLM despite complex, and at times adverse, institutional, financial and legal settings – and the fact that priority is devoted to other development issues (production, infrastructure). SLM mainstreaming starts from addressing existing barriers to SLM implementation and scaling-out, and focuses on the integration and institutionalization of SLM into the prevailing thinking and decision-making processes.

The DSF supports countries in the design and implementation of mainstreaming and scaling-out strategies (Module 1) and related activities needed to promote the integration of SLM. A mainstreaming tool was developed to guide the process of formulation, planning, and monitoring of mainstreaming strategies and activities (Bastidas Fegan, S. 2019. The Sustainable Land Management Mainstreaming Tool. FAO).

The key features of a SLM Mainstreaming Strategy are:

- can be developed at national, subnational and local levels;
- simple and proactive: focus on a few viable strategic objectives and activities that a project/expert team and its partners can undertake;
- objectives build on identifying key decision-making processes in which SLM should be integrated, including policies, financing mechanisms, land use planning and local decisions to enhance SLM implementation and scaling-out at long-term; and
- flexible and can be adapted over time depending on upcoming opportunities and needs.

Highlights from DS-SLM countries

**Argentina**

Subsecretaría de Política Ambiental de la Secretaría de Ambiente y Desarrollo Sustentable de la República Argentina

Results from the national LD assessment were used to inform the LDN process and a web-application tool developed for online participatory expert evaluation of the national Land use System map (LUS), the LD mapping (following LADA-WOCAT QM) and for the LDN validation. The web-application has the potential to be used in other contexts and countries, to make expert consultation simpler and cheaper, to collect data in a systematic and objective way, and to facilitate the interpretation and analysis of results.
**Bangladesh**

Department of Environment, Ministry of Environment, Forest and Climate Change

A national web-platform for land degradation monitoring is operationalized which provides information about land degradation at national level and helps to identify SLM practices to be considered for scaling-up for achieving LDN and other national and international objectives. In a nation-wide exercise, over 50 SLM solutions were identified, validated and approved by the MoEFCC, representing feasible and innovative practices with high potential for adoption and wide scaling out.

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**Bosnia and Herzegovina**

Federal Ministry of Agriculture, Water Management and Forestry and the University of Sarajevo (Federation of BiH)

The Participatory Land Use Development (PLUD) process was followed, supported by land capability maps and ecological-economic and agro-ecological zoning, to identify priority areas for SLM interventions to prevent and reduce land degradation and rehabilitate degraded land. Dialogue on SLM was facilitated with municipalities, including SLM into relevant planning documents.

Ministry of Agriculture, Forestry and Water Management and the University of Banja Luka (Republika Srpska)

Demonstration sites and landscapes for testing and disseminating SLM practices for forest restoration and agriculture irrigation were established in three municipalities. The demonstration sites are used for measuring and monitoring effects and impacts of the technologies applied and are a good basis for scaling out SLM technologies.

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**China**

State Forestry Administration

Different projects cooperate and use synergies to combat land degradation in dryland ecosystems. As a result of this collaboration SLM knowledge is jointly produced and disseminated: the third volume of “Best Practices for Sustainable and Climate-Resilient Land Management in the Western Regions of China” was published showcasing innovative SLM technology solutions.
**Colombia**

*Unidad de Planificación Rural Agropecuaria, Ministerio de Agricultura*

The mapping of LD at the municipal level in collaboration with local institutions was carried out to understand causes and impacts of land degradation and draw recommendations for improving land management in collaboration with local experts and land users. They identified in which land use system which type of intervention is suggested: prevention (yellow); mitigation (orange); rehabilitation (red); and no intervention (green).

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**Ecuador**

*Ministerio de Ambiente, MAE*

Supported by the Cuba Tropical Institute of Geography (http://www.geotech.cu/) through a process of south-south cooperation, a national LUS map was created building the baseline for the first national degradation assessment involving all the country territory. The national assessment led by MAE generated the establishment of an inter-institutional technical core group which guided the process.

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**Lesotho**

*Ministry of Forestry and Land Reclamation*

Successful scaling out activities were conducted in one catchment representing the highlands and in one representing the lowlands of the country. Extension workers were trained to then provide training to land users on demonstration sites. A change in attitude of farmers was evidenced, including the adaptation of their current technology, e.g. brush layering, to trap silt and reduce erosion.

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**Morocco**

*Haut Commissariat aux Eaux et Forêts et à la Lutte Contre la Désertification*

The land use systems maps produced for the region of Souss-Massa, following the LADA-WOCAT methodology, provided the basis for developing a participatory land use plan called “Territorial Pact”. The Territorial Pact involves key stakeholders at community level and facilitates inter-institutional coordination for the implementation of a 3-year action plan in several community territories across the region (6 in Amskroud, 10 in Tamri, 7 in Aziar).
Panama
Ministerio de Ambiente
The Ministry of Environment Panama and the Ministry of Science, Technology and Environment (CITMA) of the Republic of Cuba signed a cooperation agreement for scientific, technical and academic cooperation in environmental matters which facilitated: training and capacity building on mapping LD and SLM following the FAO-WOCAT QM methodology; learning routes in Cuba with SLM experts from Argentina, Colombia and Panama; technical exchange on SLM demonstration sites; and technical assistance by Cuban experts on SLM technologies implementation.

Philippines
Bureau of Soils and Water Management, Department of Agriculture
The Philippine Conservation Approaches and Technologies (PHILCAT - www.bswm.da.gov.ph/philcat-slm/), formally organized in 1999 through a Special Order issued by the Secretary of Agriculture, is a nationwide SLM initiative which provides a platform for knowledge management and decision support in SLM. It ensures sustainability of and synergies between all SLM activities in the country, lead by the Bureau of Soils and Water Management and a consortium of over ten, mainly governmental institutions, including academia, applying FAO-WOCAT tools and tailoring them to the national context since almost 20 years.

Thailand
Land Development Department, Ministry of Agriculture and Cooperatives
Based on the national assessment, producing LD maps showing rate and degree of land degradation in Thailand, four regions for mainstreaming and scaling out SLM were prioritized, with particular focus on salt-affected, acid sulphate and erosion-prone soils. SLM technology solutions were documented in each region, based on their relevance to cope with LD, replicability and transferability to a wide range of land users, effectiveness in preventing, reducing or adapting to LD, benefits to livelihoods, sustainability and other criteria.
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Tunisia
Direction Générale de L’Aménagement et de la Conservation des Terres Agricoles, Ministère de l’Agriculture

Based on the national land degradation map developed under the GEF/FAO LADA project and the main types of land degradation, namely erosion by water, reduction of vegetation cover, salinization and fertility reduction, four SLM technology groups were prioritized for mainstreaming and scaling out in priority landscapes and regions. Conservation agriculture, agroforestry, organic soil management and composting and sandy amendment are promoted at regional and local level with the support of different governmental and non-governmental institutions.

Turkey
General Directorate of Combating Desertification and Erosion (ÇEM), Ministry of Agriculture and Forestry

Restoration practices implemented in the Karapinar watershed showcase how to cope with salinization of agricultural land. Also with the involvement of private sector investments, large central pivot irrigation systems are used to reclaim salinized agricultural land, depleted of water and vegetation and affected by wind erosion. Proper water management (to leach out the salt from the top soil), rotational cropping with species coping with saline subsoils (cereals / fodder legumes), and integrated crop-livestock systems are currently in place.

Uzbekistan
UZGIP Institute, Ministry of Agriculture and Water Resources

Based on a systematization of available information and outputs from SLM projects at all levels, 60 SLM Technologies and 5 Approaches were selected. These were screened and evaluated with target groups, and 39 Technologies and Approaches selected which were prioritized by sub-national and national experts and organizations.

As part of participatory land use planning, in a participatory assessment with experts, these different SLM options were mapped for different areas. The exercise included a technology needs assessment and a zoning of project areas in relation to SLM; a cost estimation of SLM options; and a GIS mapping of suitable SLM options for each soil unit.

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