



Ministry of Agriculture (Natural Resources Sector)
A guideline on
Documentation of Sustainable Land Management
Best Practices in Ethiopia



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Acronyms

AED-MoA	Agricultural Extension Department of the Ministry of Agriculture
BoA	Bureau of Agriculture
BoARD	Bureau of Agriculture and Rural Development
CBPWD	Community-based Participatory Watershed Development
DA	Development Agent
DNRM	Department of Natural Resource Management
EIAR	Ethiopian Institute of Agricultural Research
EthioCAT	Ethiopian Overview of Conservation Approaches and Technologies
GEF	Global Environment Facility
GFA	Gesellschaft für Agrarentwicklung GmbH
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
LLPPA	Local Level Participatory Planning Approach
MERET	Managing Environmental Resources to Enable Transition to more Sustainable Livelihood
MoA	Ministry of Agriculture
MoARD	Ministry of Agriculture and Rural Development
NPSU	National Project Support Unit
NRMD	Natural Resources Management Directorate
NTC	National Technical Committee
PPA	Participatory Planning Approach
PRA	Participatory Rural Appraisal
PWDP	Participatory Watershed Development Programme
SLM	Sustainable Land Management
SLMP	Sustainable Land Management Programme
SLM-TC	Sustainable Land Management Technical Committee
SWC	Soil and Water Conservation
TC	Technical Committee
TF	Task Force
UNDP	United Nations Development Programme
WB	World Bank
WFP	World Food Programme

The Government of Ethiopia, with the support of the international development partners, embarked on a large Sustainable Land Management (SLM) programme in the end of the 1970s and early 1980s, in degraded and food-insecure parts of the country, in recognition of the far-reaching consequences of land degradation. Since that time a huge range of SLM practices have been introduced, tested, developed and implemented on a large scale. Numerous local and international NGOs have been involved in the execution of sustainable land-management practices, and most importantly, communities have been applying sustainable land management practices for centuries.

Despite the enormous efforts made on the part of the government, in collaboration with development partners and land users, degradation remains a major challenge confronting development endeavours in Ethiopia. Although this suggests a need to intensify the efforts of expanding SLM best practices, much is said about SLM best practices without any criteria and systematic mechanisms for asserting whether a given SLM practice is actually 'best' or not. Thus far some practices have been expressed as 'best' based on perceptions and observations of their impact. The result of this has been a lack of systematic evaluation and documentation of the SLM practices, until recent years when the process has begun to change.

In response the Natural Resources Sector of the MoA has designed multiple strategies to help with realising the aspirations of the Ethiopian Strategic Investment Framework (ESIF) for Sustainable Land Management. One of these action plans has been the establishment of an SLM Best Practices Task Force under the Sustainable Land Management Technical Committee (SLM TC). This Task Force has been assigned with the duty of facilitating the identification, documentation and knowledge-base management of SLM best practices.

Since its establishment in early 2012 the Task Force has undertaken a variety of activities, including the development of 'A Guideline and Criteria' for the selection and documentation of SLM best practices. I am optimistic that both this guideline and the criteria will be used and applied, contributing to the effective selection and documentation of SLM best practices, for eventual scale up across the country. Nevertheless, while the endeavour of the Task Force is worth benefiting from and emulating, nothing is ultimate, final or perfect: there is always room for improvement.

Sileshi Getahun

State Minister, Ministry of Agriculture

Preface

The Government of Ethiopia has supported sustainable land management (SLM) for decades, and some of the practices have been collected and partly documented in different sources. The SLM Best Practices Task Force has been established under the SLM Technical Committee of the Ministry of Agriculture, with members from relevant government organisations, research institutes and development partners providing guidance and support in the screening, documentation, dissemination and expansion of SLM best practices. The Task Force has produced this guideline with technical support from GIZ and GFA Consulting Group to try and enhance this process of identifying, screening, documenting and scaling up.

The guideline is structured in seven sections. Section 1 presents the background, objectives, methodology, users and structure of the guideline, while Section 2 defines common terms used in the guideline (and in SLM in general). Sections 3 and 4, the core of the guideline, describe the procedures of identifying, analysing, screening and documenting both existing and new SLM practices, and how to approve them. Section 5 explores how approved best practices are publicised and scaled up as a result of information sharing, agricultural extension work, and media channels such as websites. Section 6 discusses the bodies responsible for the implementation of the guideline at various levels, while Section 7 explores strategies for capacity development.

The guideline concludes with annexes numbered 1 to 8. Annex 1 summarises all SLM practices listed in the six principal sources relevant to Ethiopia, as an easy reference for those trying to identify new practices. Annex 2 lists SLM technologies, as prioritised by the SLM Best Practice Task Force. Annex 3 presents a standard description form for documenting SLM best practices, while Annex 4 guides the documentation and submission of new SLM practices. Annex 5 proposes an action plan for the implementation of this guideline, and Annex 6 touches on the need for an incentive system for experts and development agents to identify and document new SLM best practices which demonstrate potential. Annex 7 gives a training plan and materials required for SLM best-practice training, while Annex 8 clarifies the responsibilities of the SLM Best Practice Task Force in acquiring the resources necessary to invest in the program.

Appendix 1 is a case study document produced by the SLM Best Practice Task Force while testing the screening criteria and its applications. The appendix consists of the main findings of the field mission and annexes of detail field activities.

SLM Best Practice Task Force

This Sustainable Land Management (SLM) Best Practices Documentation Guideline is the first of its kind in the country. It is a product of the combined efforts of multiple groups, organisations and individuals, all brought together by the coordination efforts of the SLM Best Practices Task Force.

The Task Force extends its gratitude and thanks to all individuals, organizations and groups who have contributed individually or collaboratively to the realisation of this document. The Task Force also extends thanks to the GIZ-SLM Program Coordination Office in Addis Ababa for its provision of financial and logistical support in field missions, the national consultative workshop and publication of the guideline. Thanks also go to the World Food Program (WFP) for its logistical support and contribution to the success of the field missions.

The Task Force is also grateful to heads and senior experts of Amhara, Tigray, Oromia, SNNP and Somali Regional Bureaus of Agriculture, as well as to Dire Dawa Administrative Council for their active participation during the field missions and at the consultative workshop. Special thanks go to the Universities of Haramaya, Hawassa, Arbaminch, Mekele, Bahir Dar and Wondo Genet Forestry College & Natural Resources, and to the Regional Research Institutes of Amhara, Tigray, Oromia and Southern Nations, Nationalities and Peoples (SNNP) Regional States for providing comprehensive and valuable information during field missions, as well as participation and contribution to the workshops. The research institutes of Areka, Melkassa and DebreZeit also deserve thanks for their informative contributions to field missions and their participation in the workshops.

The Task Force is extremely indebted to H.E. Ato Silesh Getahun, State Minister of the Ministry of Agriculture, and to Dr. Johannes Schoeneberger, GIZ-SLM Program Manager. Their guidance, support and encouragement throughout the assignment have greatly boosted the commitment and dedication of the Task Force in producing the guideline.

Finally, special thanks go to the key informants and model farmers from Atsibi and Kilte Awlalo Woredas in Tigray Region and from Damot Gale and Lemo Woredas of SNNPR, who gave their time and input to tirelessly and carefully evaluate ample technologies. Without their crucial input the testing of the applicability of SLM best-practice selection criteria would not have been possible.

SLM Best Practice Task Force

1. Introduction

1.1 Background

Sustainable land management (SLM) is widely approved as an effective means of increasing productivity, reducing seasonal fluctuations in yields, underpinning diversified production, and ultimately raising incomes and quality of livelihoods. In its essence SLM equips people to better look after the land both for the present and the future by integrating their coexistence with nature so that the services which support and regulate ecosystems are ensured for the longer term. In order to achieve this goal, SLM activities must foster increased productivity of agro ecosystems. At the same time, however, they must adapt to their socio-economic context, improve resilience to environmental variability, and prevent degradation of natural resources.

Land degradation (especially soil erosion) and its far-reaching consequences have long been recognised as the main inhibitors to drought and famine resilience in Ethiopia. The Government, with the support of the international development partners, embarked on large scale SLM program at the end of 1970s which was focused in degraded, moisture-deficient parts of the country. Consequently, a huge number of SLM practices and technologies have been introduced, developed, tested and implemented on the ground. Many local and international NGOs have also been involved in the execution of SLM practices since this time. The communities themselves, meanwhile, have been managing their land for millenia, trying to maximise retention of soil moisture, nutrient preservation and thereby increased land productivity.

A number of inspiring SLM and land-use policies and strategies endorsed by the Government of Ethiopia do contribute to the stated benefits of SLM interventions – namely increased agricultural productivity, food security and poverty alleviation. In spite of the government's special attention to SLM and strong moves

towards its successful realisation, practical challenges remain in enforcing it and backing it up legally. Weak capacity among research and advisory-support service providers at various levels has presented an ongoing constraint to the efficient and effective application or scaling-up of appropriate existing local SLM technologies. Poor coordination and collaboration among stakeholders often results in duplicated effort or conflicting approaches.

The lack of systematic screening or documentation of best practices has been another area of constraint to the promotion and scaling up SLM in Ethiopia. With no standardised documentation system or criteria for selection of best practices, documentation efforts undertaken so far have been inconsistent. As a result there has been a lack of systematic documentation and evaluation of the diverse SLM practices that have proven themselves to be effective on the ground. Some exceptions to this disappointing trend are as follows:

- The Guideline for Community-Based Participatory Watershed Development (MoARD, 2005), presenting ‘technical information kits’ for 59 SLM technologies.
- The presentation of 34 selected SLM technologies and 6 approaches (not counting duplications) featured on the SLM website of the Ministry of Agriculture under the umbrella of the Ethiopian Overview of Conservation Approaches and Technologies (EthioCAT).
- The publication of Sustainable Land Management Technologies and Approaches in Ethiopia (MoARD, 2010), presenting 35 SLM technologies and 7 SLM approaches.
- A further 147 SLM technologies and 23 SLM approaches from a variety of sources.

Some of the SLM technologies and approaches presented in the above sources overlap somewhat. They are collated and summarised in the table in Annex 1.

It has typically been difficult to judge which of the SLM practices listed is most appropriate for application and scale-up at a given site. It was therefore decided to develop a more systematic mechanism for the identification, analysis, screening, documentation and dissemination of SLM 'best practices'. The SLM Best Practices Task Force comprises representatives from the Sustainable Land Management Program (SLMP), the Extension Directorate of the MoA (AED-MoA), the National Project Support Unit (NPSU-MoA), World Bank (WB), World Food Program (WFP), the Ethiopian Institute of Agricultural Research (EIAR), GIZ and GFA. The Task Force was established to assist the natural-resources sector of MoA in documentation and guidelines surrounding best practices of SLM. The new systematic mechanism aids the identification, screening and documentation of SLM best practices by technical staff and responsible bodies at various levels.

1.2 Objective

The objective of this guideline is to facilitate the identification, analysis, screening, documentation and approval of SLM best practices for dissemination and up-scaling, with the ultimate aim of contributing to more sustainable land management in Ethiopia.

1.3 Methodology

The development of the guideline involved a series of consultation meetings between technical staff and other stakeholders who conducted a field assessment, review and refinement of a first draft. The SLM Best Practices Task Force then produced a final version, incorporating field findings with feedback from technical staff at different levels.

1.4 Users of the Guideline

The intended user groups of this guideline include any actor responsible for the identification, screening, documentation and/or approval of SLM 'best practices' such as:

- The SLM Best Practices Task Force, who spearhead initial steps and build the capacity of SLM-implementing staff members. When the Task Force eventually comes to disband, the natural-resources sector of the MoA will be expected to designate responsible units or staff members to continue the process of identifying and documenting SLM best practices, in accordance with this guideline;
- Second, woreda- and regional-level experts, together with Development Agents (DAs), will be responsible for identifying and documenting new SLM practices throughout their geographical area of jurisdiction;
- Any actor, local, national or international, aiming to research or apply sustainable land management anywhere in Ethiopia, will be expected to follow the same procedures as defined in this SLM best-practices guideline and to use the same criteria for proposing and defining 'best practices'.

This guideline has been written in as user-friendly, simple and understandable way as possible in order to be relevant to less technically minded users, as well as field staff, researchers and experts. Woreda- and regional-level SLM experts will also be trained and coached by the SLM Best Practices Task Force or by a designated unit of the MoA's natural-resources sector.

1.5 Structure of the Guideline

The guideline defines 'best practices' based on transparent criteria (Part 2 below), a process for screening, prioritisation, documentation and final approval of existing SLM practices (Part 3), procedures and structures for identifying and documenting new SLM practices (Part 4), and procedures for the efficient dissemination and application of SLM best practices for policy decision making and implementation (Part 5).

Annexes 5-7 present the capacity-development measures and structures (including a training plan and training materials) necessary for planning the implementation and documentation

of SLM best practices, in accordance with the guideline. It is intended that all SLM stakeholders (government, non-government, development partners) in Ethiopia should follow these procedures when identifying, analysing and documenting SLM practices. In the medium term all SLM stakeholders are likely to build up a list of SLM best practices for the different agro-ecological zones on hand, from which they will select the most appropriate practices for the planning and implementation of SLM measures. In the long term, meanwhile, it is expected that the systematic up-scaling of best practices in target areas will directly address the problems of land degradation.

2. Terms and Definitions

Natural-Resource Management (NRM) refers to the management of land, water, soil, plants and animals, with a particular focus on how management of them affects the quality of life for both present and future generations. NRM brings together land-use planning, water management, biodiversity conservation and the sustainability of industries like agriculture, mining, tourism, fisheries and forestry. NRM recognises that people and their livelihood rely on the health and productivity of our landscapes, and their interactions as stewards of the land play a critical role in maintaining this health and productivity. NRM is also congruent with the concept of sustainable development, a scientific principle that forms a basis for sustainable global land management and environmental governance to conserve and preserve natural resources (Pender et al., 2001).

Land degradation results in the long-term loss of natural vegetation, soil erosion, and deterioration of the physical, chemical and biological properties of soil, as a consequence of human activity, specifically habitation and farming patterns (Van Lynden, 1999). In turn, biological and/or economic productivity are negatively affected.

Sustainable Land Management (SLM) is defined as the use of resources such as soil, water, animals and plants for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions (Pieri, 1997; Hurni, 2000).

SLM technologies comprise one or more conservation measures belonging to the following categories: agronomic (intercropping, contour cultivation, mulching), fertility management (crop-residue management, composting, green manure), vegetative (tree planting, hedge barriers, grass strips), structural (graded banks, bunds or level bench terraces). An SLM technology can originate from research or from indigenous farmers' practices (MoARD, 2010).

SLM approaches are the ways and means used to promote and implement SLM technologies in order that optimally sustainable soil and water usage are achieved. An SLM approach consists of the stakeholders (policy makers, administrators, experts, technicians, land users, and other actors), inputs and means (financial, material, legislative, etc.), and know-how (technical, scientific, practical). An approach may include several levels of intervention, from an individual farm to a community, an extension or advisory system, a regional or national administration or an international framework (MoARD, 2010).

An **SLM practice** is any SLM technology or approach in operation and upheld by end users or local communities (WOCAT, 2002).

An **SLM best practice** is an SLM technology or approach that is considered the most effective in delivering a particular outcome when applied to a particular location and for a particular purpose. In other words, a best practice is the most efficient and effective way of accomplishing a task, based on repeatable procedures that have proven successful over time (GEF/UNDP, 2011). Best practices related to Sustainable Land Management in Ethiopia mainly focus on:

- Combating land degradation by reducing soil erosion, increasing soil fertility, impeding/retaining/ trapping runoff water, increasing vegetation cover and reducing soil evaporation losses;
- Increasing people's living standards by increasing/maintaining productivity of food, fodder, fibre and fuel, improving food security and providing other goods and services which generate short-term revenue and/or increase income in the long term .

Indigenous knowledge (IK) is acquired experience or expertise that is particular to a given community, society or culture. Indigenous knowledge contrasts with the international knowledge systems generated by universities, research institutions and private firms. It is the basis for local-level decision making in agriculture, health care, food preparation, education, natural-resource management, and a host of other activities in rural communities (Warren 1991).

3. Screening and documentation of SLM best practices

Screening the list of documented SLM practices in search of best practices requires that first-hand research be collected in communities in which SLM practices have been established and sustained. Researchers hold discussions with community members or beneficiaries, documenting their views and ideas and analysing and synthesising the results before writing them up. The SLM practices that qualify as model practices are documented based on the standard description format established for this purpose. This process of screening and documentation takes time and care to complete, requiring that lists of SLM practices be listed and ranked in order of their relevance and effectiveness.

3.1 Categorising ‘best practices’

An SLM method or technique that has consistently shown results superior to those achieved by others is labelled a best practice. Examples are model agricultural or laboratory practices. It should be noted that a best practice can evolve and be enhanced as new discoveries emerge.

Section 3.2 presents a methodology for initial prioritisation and validation of existing SLM practices as a first stage in the screening and documenting of SLM best practices. This involves focusing first upon the documentation, dissemination and up-scaling of existing SLM practices (Section 3) before identifying SLM practices (Section 4). The logic for this is to begin by up-scaling existing practices which have been proven successful and are already documented.

3.2 Prioritising and validating existing SLM practices

The SLM Best Practices Task Force has identified both set of categories and sub-categories for SLM technologies and approaches, as well as 105 SLM technologies to be shortlisted as potential SLM best practices. The following criteria have been established in order to categorise this long list as an order of priority 1, priority 2 and priority 3:

- The practice has been in implementation for not less than 10 years;
- The practice has been implemented in more than one region, or in different agro-ecologies within a region;
- The practice has demonstrated irrefutable positive impact for the watershed or for the land upon which it has been applied;
- The practice is popular with the community and with practitioners.

An SLM practice or technology that meets all of these criteria completely is designated as priority 1; if the practice or technology partially fulfils the criteria it is designated as priority 2, and less so as priority 3. In this way the Task Force categorised all 105 of the shortlisted practices, by consensus, into priorities 1, 2 and 3 respectively. 27 technologies were categorised as priority 1, 31 technologies as priority 2 and the remaining 47 as priority 3 – see also Annex 2 of this document.

3.3 Criteria for screening SLM best practices

There exist many documented and undocumented SLM best practices (technologies and approaches) which have not been systematically screened against well-defined criteria such as those listed above. This situation has necessitated the establishment of clear screening and documentation criteria which allow the responsible bodies to identify worthy best practices. The SLM Best Practices Task Force established the following criteria (Table 1) for the purpose.

Table 1: Criteria for screening SLM best practices

	Criteria	Score	Weight
1	<p>Acceptance: To what extent is the SLM practice accepted by the community/individuals where it is practised?</p> <ul style="list-style-type: none"> • High: ≥75% of the farmers to whom the technology has been introduced continue to use/apply it; • Medium: 50-74% of the farmers continue to use/apply the practice; • Low: 25-49% of the farmers continue to use/apply the practice. 		0.22 (22%)
2	<p>Effectiveness: To what extent does the SLM practice achieve its intended results in terms of land rehabilitation and/or increased productivity?</p> <ul style="list-style-type: none"> • High: ≥75% of the interviewed farmers respond that the practice is effective with regard to its immediate objective; • Medium: 50-74 % of the interviewed farmers respond that the practice is effective; • Low: 25-49 % of the interviewed farmers respond that the practice is effective. 		0.22 (22%)

	Criteria	Score	Weight
3	<p>Efficiency: To what extent farmers perceive investing in this technology is worthy?</p> <ul style="list-style-type: none"> • High: ≥75% of the interviewed farmers perceived that investing in this technology is worthwhile; • Medium: 50-74% of the interviewed farmers' perceived that investing in this technology is worthwhile; • Low: 25-49% of the interviewed farmers perceived that investing in this technology is worthwhile. 		0.14 (14%)
4	<p>Relevance: To what extent is the SLM practice suitable for tackling land degradation and/or generating increased productivity ?</p> <ul style="list-style-type: none"> • High: ≥75% of the interviewed farmers agree that the technology is relevant with regard to its immediate objective; • Medium: 50-74% of the interviewed farmers agree that the technology is relevant with regard to its immediate objective; • Low: 25-49% of the interviewed farmers agree that the technology is relevant with regard to its immediate objective. 		0.14 (14%)
5	<p>Sustainability: To what extent is the SLM practice (or physical infrastructure) with locally available resource ?</p> <ul style="list-style-type: none"> • High: ≥75% of the interviewed farmers confirm that individuals or the community are applying the technology without external support; • Medium: 50-74% of the interviewed farmers confirm that individuals or the community are applying the technology without external support; • Low: 25-49% of the interviewed farmers confirm that individuals or the community are applying the technology without external support. 		0.14 (14%)
6	<p>Replication for scaling-up: To what extent is the SLM practice, as it is currently carried out, replicated elsewhere under similar conditions?</p> <ul style="list-style-type: none"> • High: ≥75% of the interviewed farmers confirm that the technology is replicated in adjacent areas; • Medium: 50-74% of the interviewed farmers confirm that the technology is replicated in adjacent areas; • Low: 25-49% of the interviewed farmers confirm that the technology is replicated in adjacent areas. 		0.14 (14%)
	Total		1 (100%)

Key: Each criterion is considered High, Medium or Low based on the following parameters:

High: if the criterion attained a score point of 3; i.e. $\geq 75\%$
Medium: if the criterion attained a score point of 2; i.e. $50-74\%$
Low: if the criterion attained a score point of 1; i.e. $25-49\%$

A practice must satisfy a minimum requirement of **weighted average point 1.72** to be considered and documented as an SLM best practice.

3.4 Applying the SLM best-practice screening criteria

The screening process for SLM best practices includes the criteria of acceptance, effectiveness, efficiency, relevance, sustainability and scalability to be applied as measurements. A weighted value is given to each criterion based on its importance in determining the performance or value of a given practice. While acceptance and effectiveness are considered to be the most important criteria in determining the performance of a given practice, each has been given a weighted value of 22% or 0.22. The remaining four criteria (efficiency, relevance, sustainability and scalability) are considered to have similar importance in measuring the value of a given practice, and are given a weighted value of 14% or 0.14. An SLM practice is labelled a best practice if it earns a minimum weighted average of 1.72 from the screening process.

The process of screening requires that the experienced farmers (see Annex:9 methodology) of a given watershed present and discuss their thoughts and opinions in semi-structured interviews. Each criterion is given a score point of 1 to 3 based on the percentage of respondents who support it. For instance, if the percentage of respondents agreeing that a given SLM practice is efficient is 75% or more, then the score gained is 3. However, if 50-74% of the interviewees consider the SLM practice to be efficient, the point given is 2; if the percentage is 25-49%, the point given is 1, and if it is less than 25%, zero points are given for the SLM practice.

In order to exemplify this method, calculation of the weighted average value of a sediment storage dam is illustrated below in Table 2.

Table 2: Calculating the weighted average value of a sediment-storage dam

No	SLM Practice	Criteria	Weight (wt)	Respondents 'vote & corresponding score % Score (sc)		Product (wt x sc)
1	Sediment-storage dam	• Acceptance	0.22	80	3	0.66
		• Effectiveness	0.22	90	3	0.66
		• Efficiency	0.14	78	3	0.42
		• Relevance	0.14	60	2	0.28
		• Sustainability	0.14	55	2	0.28
		• Scalability	0.14	30	1	0.14
Total			1.00			2.44

As can be seen, the weighted average value of each of the six criteria is obtained by adding up the total of the weighted scores (each of which is calculated by multiplying weight by score. In this case the weighted average value is **2.44**.

Since the minimum weighted average required for an SLM practice to be considered as a best practice is 1.72, the sediment-storage dam in this case comfortably qualifies, with its value of **2.44**.

3.5 Approval of SLM best practices at national level

Each practice which has been correctly screened and classified as SLM best practices – see Sections, 3.1, 3.2 and 3.3 – is presented to the National Technical Committee (NTC) during their quarterly meeting, explaining why it has been classified as a best practice. Each proposed best practice is then further discussed amongst committee members and either accepted or rejected. The SLM practices approved are then documented in the standard description format developed for this purpose (Annex 3), and are officially endorsed as SLM best practices for promotion and scaling up in Ethiopia. It is hoped that best-practice status motivates groups and individuals to implement, promote and develop SLM technologies and approaches that are relevant to them.

4. Incorporating new Sustainable Land Management (SLM) practices

This section examines how new SLM practices can be identified and initially documented. It also emphasises that the identification of new practices should take second priority to existing SLM practices which have proved themselves from long experience and rigorous screening (see Section 3), and can thus be applied and scaled up for effectively and quickly than new practices which have yet to stand the test of time.

4.1 Identifying new SLM practices from within Ethiopia

In spite of the high number of existing SLM practices (see Annex 1, Table 3), widespread SLM efforts in Ethiopia these days do generate noteworthy lessons learned resulting from new technologies and approaches. The continuous collection of promising practices contributes to improved effectiveness of SLM efforts around the country, allowing less effective existing practices to be replaced by newer ones as they prove themselves to be better.

The groups best placed for the identification of promising new SLM practices are regional-, zonal- and woreda-level experts and development agents who have the ability, expertise and willingness to carefully watch what is ‘happening’ on the ground. The following three procedures should help them in this task:

1. Observe carefully any SLM practice which looks new, and discuss with the users how and why they developed it. What are its advantages over other practices?
2. Compare the SLM practice with the list of documented SLM practices given Annex 1, Table 3 on page 27. If you do not find the practice listed, discuss it with your woreda supervisor. Again, check together with your supervisor whether the practice has already been documented.

3. If you have found no record of this practice documented, ask your supervisor to assist you in documenting fully the newly identified practice as per the agreed structure in Annex 4(p.36). Agree on a schedule and a division of responsibilities for the task, if necessary.

Steps for the identification of new SLM practices

- Each woreda, zonal and regional expert is encouraged to closely observe whether target communities, as well as the development agents (DAs) under their supervision, are applying sustainable land-management approaches and/or technologies which are not currently documented. Similarly, discussions should also be held with the kebele administration.
- If a promising new practice is observed, the relevant expert, together with their DAs and the kebele administration, should clarify and then evaluate how the practice works ‘on the ground’, which element(s) of it seem most promising, and how the community respond to or benefit from the practice.
- If the DA and the woreda/zonal/regional expert(s) have the feeling that the practice has high potential for improving sustainable land management, they should then examine the list of existing practices (Annex 1, Table 3) to double-check whether the practice is already documented or not.
- If not documented, the DA and the experts should describe what they have observed being implemented, filling in the ‘form for documenting a new SLM practice’ (Annex 4). The completed form is then submitted to the woreda SLM Technical Committee (TC) for further analysis and initial documentation.
- The woreda SLM TC recheck whether the proposed SLM practice is already documented elsewhere.
- If it is not, the woreda SLM TC visits the site of the new SLM practice, making their own observations and holding discussions with community members to verify information. All of this is conducted in accordance with the aforementioned form shown in Annex 4.

- The completed form is submitted to the regional SLM TC for cross checking, after which it is sent to the Best Practices Task Force (or any other designated unit within the natural resources sector of the MoA).
- The SLM Best Practices Task Force pre-screen all proposed new SLM practices as potential best practices, based on the defined criteria laid out above (see Part 3, Table 1). The practices which emerge with the highest scores from the full and rigorous screening process are those that are officially approved as best practices by the Technical Committee.

4.2 Identifying new SLM practices from other countries

It is imperative to consider SLM practices from other countries as possibly relevant to the context of Ethiopia. The following three procedures should guide this process:

- The SLM Best Practices Task Force (or the relevant national level institution – see Annex 6) should tap into existing research (by institutions such as the EIAR) to learn more about tried-and-tested new SLM practices.
- The Task Force or designated unit will monitor all literature and research relating to SLM, tracking developments on the relevant websites and journals.
- As promising new SLM practices are documented and reported around the world, the SLM Best Practices Task Force (or the designated body) should examine them and analyze their adaptability to Ethiopian circumstances, initiating field research or adaptability testing where necessary, in cooperation with research institutions and in accordance with the field structure of the MoA.

Where a newly identified practice from another country does prove suitable for the Ethiopian context, it should then be put through the screening and documentation process described in Section 3.

4.3 Screening and documenting newly identified SLM practices

The following procedures are foreseen for screening and documenting newly identified SLM practices from the field in Ethiopia (Section 4.1):

- The regional SLM TC examines the proposal from the woreda (according to the procedures and criteria described for existing practices in Section 3), and accepts or rejects it.
- The regional SLM TC submits the SLM practice to be accepted as a potential SLM practice to the national TC of the MoA for further approval.
- The practice is subjected to further screening to assess whether it qualifies as an SLM best practice or not.
- If the practice does qualify and is approved as an SLM best practice by the national SLM TC, it is then documented and officially endorsed for scaling up at the relevant locations of agro-economic zones.

5. Disseminating SLM best practices for the purposes of scaling up

In principle there exist three approaches for the dissemination and up-scaling of SLM best practices to reach wider numbers of people: these are dissemination through mass mobilisation and media (Section 5.1), dissemination through regular extension services (Section 5.1.1) and dissemination through via website(s) (Section 5.1.2). These three approaches are of course not independent of each other: they overlap and build on each other (just as, for example, extension services draw knowledge from the internet). For the purposes of understanding, however, the approaches are treated separately herein.

5.1 Dissemination of information on best practices

As soon as a number of SLM best practices are ready for dissemination, the following dissemination activities are implemented:

- A concept note is developed in which the principles for SLM best-practice identification, development and dissemination are described. The concept note has a ‘binding character’ for all SLM stakeholders (in the form of government, non-government and development partners).
- A national inauguration workshop is held, and in which all SLM stakeholders at national (and some regional) levels will participate. The workshop is organised by the MoA and the concepts of SLM best practice dissemination are presented and discussed.
- Regional workshops are held, in which all SLM stakeholders at regional level participate. These workshops are organised by the BoAs, and the concepts of SLM best-practice dissemination are presented and discussed.
- A system for newspaper publication is developed and implemented.
- Media communication spots on SLM best practices are developed and broadcast.

5.1.1 Dissemination through the extension services

By far the most important channel for up-scaling SLM best practices in the field are the agricultural extension services of the MoA at regional, zonal, woreda and kebele levels. It is the mandate of these services to advice households and communities at kebele and watershed levels in the planning and implementation of SLM measures.

Steps required for the effective dissemination of SLM best practices

1. A training package must be developed for each SLM best practice. The package includes a detailed description of extension methods, as well as materials to aid development agents with their regular extension work at watershed, kebele and household levels. Each package should also include simple visual materials like leaflets, booklets, flyers and posters (written in the local language) which are

- handed out to target groups to inform and guide them.
2. Training courses in the new SLM best practice(s) are necessary for woreda and regional SLM experts and extension workers / development agents.
 3. Lastly, existing extension services should implement the new SLM best practice(s) on the ground, both directly and through experience-sharing platforms such as display days, meetings, farmer field schools, and so on.

The SLM Extension Support Team has begun to develop packages for selected SLM practices, with additional packages to be developed as new SLM best practices are approved - see also Section 3.3.

5.1.2 Dissemination through the website

The Ministry of Agriculture website presents 46 selected SLM technologies and 7 SLM approaches under the umbrella of the Ethiopian Overview of Conservation Approaches and Technologies (EthioCAT). Level 1 of the website presents an overview of these practices in a very short form, while Level 2 of the site presents specific features for each technology. While the descriptions of each SLM approach in Level 1 are useful for the purposes of dissemination at the time of writing, the descriptions given in Level 2 are not.

i. SLM practices on the MoA website:

Level 1 should be kept as it is: it serves as a good overview of various SLM practices.

It is recommended that Level 2 (for SLM technologies) be completely re-structured. Level 2 should contain all of the best SLM technologies (as laid out in Annex 3 of this document).

Similarly, a new Level 3 should be developed which avails the training package for each SLM best practice. Alternatively to being Level 3, the training packages could be presented in a different website which is linked to the main website.

ii. Improvements to the website:

Discussions should be held and decisions taken by the MoA (with advice and support from an IT specialist) about whether the present structure of the website can accommodate all requirements. If the decision is taken to maintain the present website, the IT specialist should reprogram it to include full details of all new SLM best practices, features which allow the site to be updated and new practices added easily, and accessible provision of the training package for each SLM best practice to be availed and downloaded at will.

6. Structures and responsibilities for SLM best practices

The implementation of SLM best practices needs a clear structure and assigned responsibilities within the MoA at federal, regional, zonal, woreda and kebele levels – see Annex 5: Implementation Plan. At the time of writing no such structures exist, and the following paragraphs lay out the initial steps in the process. Ideas must be discussed thoroughly within the MoA and consensus decisions taken accordingly.

While the SLM Best Practices Task Force, in collaboration with various other bodies, has initiated the identification, screening and documentation, it should be clear that the main responsibility of implementing and scaling up SLM best-practice (in accordance with this documentation guideline) lies within the MoA at the federal, regional, zonal, woreda and kebele levels. The MoA therefore needs to assume strong ownership of the process from the outset. The structures proposed below are strongly recommended for successful implementation of SLM best-practice documentation and dissemination, with GIZ staff, as well as the Best Practices Task Force, providing only a supporting role for a limited period of time.

6.1 Implementing SLM best-practice documentation at the federal level

The national SLM Technical Committee (SLM TC) of the MoA, with the Secretary of the National Resource Management Directorate(NRMD), will assume overall responsibility for steering and managing the implementation of SLM best-practice documentation at the federal level, including:

- Approving or rejecting SLM practices which have been screened and proposed by a commissioned mission as best practices;
- Approving the annual work plan and budget for SLM best practices;
- Evaluating the performance of SLM best-practice implementation;
- Taking corrective action in the case of deviations or major problems.

For the day-to-day management and coordination of SLM best-practice documentation at the federal level, the NRMD has two options: either to organise an additional coordination unit, or to establish a case team for documenting best practices. Whichever option the NRMD chooses, responsibilities of the collective body (including the SLM TC) will include:

- Developing regional-level capacity in overseeing SLM best-practice documentation;
- Completing the implementation plan for the SLM best-practice documentation (Annex 5), and calling annual planning meetings;
- Designing an appropriate monitoring and reporting system for tracking the implementation of the documentation;
- ongoing monitoring, including periodic visits to the regions and an annual reflection workshop at federal level;

6.2 Implementing SLM best-practice documentation at the regional level

The main responsibilities at regional level are to encourage the woreda- and kebele-level development agents to identify promising new SLM practices that have not yet been documented (see Section 4). Screening of existing SLM practices (Section 3) is not a responsibility at regional level. Meanwhile, the regional Bureau of Agriculture (BoA) has two structural options (similar to the federal level): either to create an additional coordination unit, or to establish a case team for best practices.

- Training woreda experts in best-practice documentation;
- Dividing the national implementation plan into regional sub-plans for SLM best-practice documentation;

Responsibilities with regard to SLM best-practice documentation:

- Closely monitoring documentation activities by collating data from the woreda level, cross-checking it, and reporting to federal superiors;
- Supervising woreda experts when they advise and collaborate with development agents in identifying new SLM practices, and following up on the woreda experts' activities;
- Pre-screening the identified new SLM practices using the established criteria, and forwarding approved practices to the federal-level structures.

6.3 Implementing SLM best-practice documentation at woreda (district) level

Responsibilities:

- Encouraging and supporting development agents to identify and document new SLM practices which are not yet documented and which hold the potential for being SLM best practices;
- Cross-checking these newly identified practices against the list of existing practices;

- Submitting the newly identified SLM practices to the relevant unit at zonal and/or regional level for further analysis.

The main responsibility of development agents at kebele level is to be alert and to properly record newly emerging SLM practices which have yet to be documented and which represent potential best practices. It is also suggested that some form of reward structure be established for development agents and woreda experts as a small incentive for them to seek out each and every undocumented SLM best practice that demonstrates potential.

6.4 Responsibilities of the SLM Best Practices Task Force

The SLM Best Practices Task Force was established in August 2011 with a view to expediting the process of screening, documenting, dissemination and expanding SLM best practices across the country. The Task Force comprises members from government organisations and development partners whose expertise relates to sustainable land management (SLM). Since its establishment it has achieved impressive results, identifying 105 SLM technologies and 9 SLM approaches with best-practice potential as well as screening criteria to help categorise and prioritise this long list – see again Section 3.2.

The SLM Best Practices Task Force has the following responsibilities:

- To provide initial training to national and regional experts (as outlined in the training plan). After the SLM Best Practices Task Force is eventually dissolved, the national-level structure (such as the case team or coordination unit of the Natural Resource Management Directorate) must take over the responsibility of both continuing an effective system of best-practice documentation and building capacity of staff and other stakeholders;
- To pre-screen the list of existing SLM practices against the established criteria;

- To validate the list of pre-screened existing practices with SLM experts (in a validation workshop);
- To submit screened and approved SLM practices to the SLM TC for approval;
- To oversee the documentation of each screened SLM best practice as per the description form provided.

6.5 Responsibilities of GIZ

With respect to the documentation of SLM best practices, GIZ has the following responsibilities:

- To support the screening and documentation of SLM best practices;
- To document as SLM best practices those approved by the Technical Committee;
- To re-structure or update the website and assist the MoA in publishing the updated list of SLM best practices therein;
- To support the SLM Best Practices Task Force in all of its duties described above, particularly building the capacity of national, regional and woreda-level SLM experts;
- To support all relevant MoA structures with their responsibilities (listed above in Section 6.1) in accordance with the implementation plan (see Annex 5, advisory functions to the MoA at all levels).

7. Capacity development for SLM ‘best practices’

The implementation of the strategy delineated in Sections 3-5 of this guideline for the identification, screening and documentation of SLM best practices demands a solid understanding of the guideline and the strategy and procedures involved in the process. This may require training of relevant staff or other stakeholders, and the following training strategy is therefore outlined.

7.1 The SLM Best Practices Task Force: building capacity

The Task Force members will organise training for those implementers of the SLM best-practice documentation strategy, as outlined in the guideline. GIZ in collaboration with SLM best practice members shall develop training modules and uses the training module and materials that they have developed to train all of the experts concerned at various levels. Similarly, during the initial stages of implementation, members of the Task Force will be available to support and guide the regional, zonal and woreda experts at work.

i. Regional SLM experts shall be trained by the Task Force directly. Following a similar training outline, they themselves will then train the relevant woreda experts in SLM best-practice documentation.

ii. Woreda experts will sensitise the development agents under their supervision on the SLM best-practice strategy. The woreda and regional SLM experts will then coach and support the development agents under their supervision in the identification and documentation of potential new SLM best practices.

iii. Development Agents will be coached and guided by the woreda experts on how to identify and document promising new SLM practices.

8. References

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9. Annexes

Annex 1: Lists of existing SLM practices

A number of publications and unpublished papers document SLM technologies and approaches in Ethiopia. For the purposes of this guideline, six of these have been considered the most important and relevant are listed here, and their coverage of SLM technologies tracked in Tables 3 and 4 below.

- 1 The GFA Extension Support Team is developing training packages for a number of SLM technologies and approaches, as listed in column 1.
- 2 Community-Based Participatory Watershed Development (MoARD, 2005) – column 2.
- 3 GIZ Ethiopia: Lessons and Experiences in Sustainable Land Management – column 3.
- 4 Technologies identified by the Best Practices Task Force as potential best practices – column 4; this list is also on the MoA website (first and second levels).
- 5 MoA website – column 5.
- 6 Sustainable Land Management Technologies and Approaches in Ethiopia (MoARD, 2010) – column 6.

Table 3: Existing SLM technologies in Ethiopia, as covered in the six principal sources.

Name of Sustainable Land-Management Technology		(1)	(2)	(3)	(4)	(5)	(6)
Agronomic practices							
1	Intercropping		✓		✓		
2	Mixed cropping				✓		
3	Strip cropping		✓		✓		
4	Relaying (double cropping)		✓	✓	✓		
5	Crop rotation		✓		✓		
6	Ridge-and furrow sweet potato			✓			
7	Multiple cropping			✓		✓	✓
8	Sorghum terracing					✓	✓
9	Integration of food / fodder		✓				
10	Ley cropping		✓		✓		
11	Cover cropping				✓		
12	Improved fallow				✓		
13	Triticale			✓			
14	Contour cultivation/farming				✓		
15	Vegetable production			✓			
16	Enset			✓			
17	Cactus			✓			
18	Phalaris hedges			✓			
19	Spate irrigation			✓	✓		
20	Apples			✓			
Soil-management practices							
21	Fertilisers (organic and / or non-organic)		✓		✓		
22	Bio-fertiliser (nitrogen fixing)				✓		
23	Composting		✓	✓	✓		
24	<i>Ohura</i> /night corralling				✓		
25	Vermin composting				✓		
26	Farmyard manure		✓		✓		
27	Composted bio-slurry management				✓		
28	Green manuring			✓	✓		

Name of Sustainable Land-Management Technology		(1)	(2)	(3)	(4)	(5)	(6)
29	Mulching and crop-residue management		✓	✓	✓		
30	Conservation tillage				✓		
31	Acidic-soil management				✓		
32	Eye BAR/BBM				✓		
33	Trash lines				✓	✓	✓
34	Vetiver hedges			✓		✓	✓
35	Tenkara Kind plough technology			✓			
Vegetative-conservation practices							
36	Grass strips (level or graded)		✓		✓		
37	Grass hedges (level or graded)				✓		
38	Contour shrub hedges				✓		
39	Re-vegetation				✓		
40	Structural stabilisation with vegetation		✓		✓		
41	Chat strips and / or rectangular bunds					✓	✓
42	Enhancement of biomass production				✓		
43	Vegetated <i>Faynajuu</i>					✓	✓
44	<i>Deshosoil</i> -bund strips					✓	✓
Agro-forestry practices							
45	Windbreaks/shelter belts				✓		
46	Home gardening/ multi-storeyfarming		✓			✓	
47	Seed collection		✓				
48	Private nurseries			✓			
49	Vegetative (live) fencing		✓		✓		
50	Alley cropping			✓	✓		
51	Scattered trees				✓		
52	Borderline trees				✓		
53	Trees/shrubs along roads/paths				✓		
54	Trees/ shrubs along waterways				✓		
55	Multipurpose trees(Moringa,Acacia, Bam-boo, Gravilia)	✓					
56	Trees/shrubs around houses				✓		
Livelihood-improvement practices							
57	Horticulture development				✓		
58	Poultry farming				✓		

Name of Sustainable Land-Management Technology		(1)	(2)	(3)	(4)	(5)	(6)
59	Dairy farming				✓		
60	Small-scale animal fattening				✓		
61	Beekeeping				✓		
62	Pond fish breeding				✓		
63	Cultivation of spices				✓		
64	Fruit Trees(avocado, mango, orange, apple)	✓		✓			
Sustainable grazing/ rangeland-management practices							
65	Stall feeding (zero grazing)				✓		
66	Over sowing grazing land / rangeland			✓	✓	✓	✓
67	Strip planting				✓		
68	Cultivation and manuring				✓		
69	Construction of contour furrows				✓		
70	Destocking to balance stocking rate (SR) with carrying capacity (CC)				✓		
71	Partitioning paddocks				✓		
72	Resting grazing land				✓		
73	Rotational grazing	✓		✓			
Sustainable degraded-hillside management practices							
74	Enrichment plantation						
75	Exclusion of livestock interference						
Sustainable forest-management practices							
76	Participatory forest management			✓	✓		
77	Forest beekeeping			✓	✓		
78	Woodlot plantation			✓	✓		
79	Energy-saving stoves			✓	✓		
Drainage systems							
80	Grassed waterways		✓		✓	✓	✓
81	Stone-paved waterways		✓		✓	✓	✓
82	Cement-lined waterways				✓		
83	Cut-off drains	✓	✓	✓	✓	✓	
84	Diversion ditches			✓	✓		
Gully rehabilitation							
85	Stone check dams		✓		✓	✓	✓

Name of Sustainable Land-Management Technology		(1)	(2)	(3)	(4)	(5)	(6)
86	Loose-stone check dams	✓		✓		✓	
87	Gabion check dams	✓		✓	✓		✓
88	Sandbag check dams	✓		✓	✓		
89	Brushwood check dams	✓	✓		✓	✓	✓
90	Live check dams		✓	✓	✓		
91	Bamboo-mat check dams	✓					
92	Sediment storage dams		✓		✓		
93	Gully reshaping and planting	✓	✓	✓	✓		
94	Earth check dams					✓	✓
95	Soil-filled sack check dams			✓			
Farmland terraces							
96	Stone bunds (level and graded)	✓	✓		✓	✓	✓
97	Stone-faced soil bunds (level and graded) with trenches	✓	✓		✓	✓	✓
98	Double stone-faced soil bunds				✓		
99	Soil bunds (level and graded), with ridge bunds	✓	✓		✓	✓	✓
100	Fanyajuuterracing(level and graded) with vegetation	✓	✓		✓	✓	✓
101	Tied ridges				✓		
102	Bench terraces		✓		✓		
103	Contour stone bunds						✓
104	Organic gabions		✓				
105	Ridge basins					✓	✓
106	Broad basins and ridges						✓
107	Ridges and furrows				✓		
Hillside terraces							
108	Hillside terraces (level or graded)	✓	✓		✓	✓	✓
109	Hillside terraces with trenches		✓		✓		✓
110	Cut-off drains	✓			✓	✓	✓
111	Semi-circular or 'half-moon' terraces	✓			✓		
112	Terraces with trenches		✓	✓	✓		
113	Deep trenches				✓		
114	Percolation pits	✓	✓		✓		

Name of Sustainable Land-Management Technology		(1)	(2)	(3)	(4)	(5)	(6)
115	Stone-faced trenches		✓		✓		✓
116	Eye-brow basins	✓	✓		✓	✓	✓
117	Stone-faced bunds	✓	✓			✓	✓
118	Soil-and-stone bunds					✓	✓
Water harvesting							
119	Household ponds				✓		
120	Community (farm) ponds / micro ponds				✓	✓	✓
121	Cisterns (normal well)	✓			✓		
122	Percolation ponds				✓		
123	Roof-water harvesting	✓			✓		
124	Rock-catchment water harvesting	✓			✓		
125	Floodwater harvesting (spate irrigation)				✓	✓	✓
126	Infiltration ditches				✓		
127	Check-dam ponds				✓		
128	Herring bone				✓		
Small and medium scale irrigation							
129	River ponding (reservoir)				✓		
130	Stream diversion			✓	✓		
131	Spring development		✓	✓	✓		
132	Tube wells		✓	✓	✓		
133	Drip irrigation		✓		✓		
134	Sprinkler irrigation				✓		
135	Farm-dam construction		✓		✓		
136	Zaipits		✓		✓		
137	Water lifting		✓		✓		
138	Low-cost micro ponds	✓	✓				✓
139	Underground cisterns		✓				
140	Hand-dug wells		✓	✓	✓		
141	Sediment (sand) traps				✓		
142	Silt traps (daldal or irob)				✓		
143	Infiltration ditches				✓		

Table 4: Existing SLM Approaches in Ethiopia, as covered in the six principal sources.

Name of Sustainable Land Management Approaches		<i>GFA extension pack (1)</i>	<i>CBP WD (2)</i>	<i>GIZ-SLM (3)</i>	<i>TF SLM Practices (4)</i>	<i>MoA website (5)</i>	<i>EthioCAT SLM Bk. (6)</i>
1	Community contracting			✓			
2	Integrated community-based watershed management				✓		
3	Participatory forest management				✓		
4	Participatory area-closure management				✓		
5	Integrated homestead development				✓		
6	Participatory community mobilisation / self-help schemes				✓		✓
7	Incentive-based community participation				✓		
8	User groups				✓		
9	Community by-laws				✓		
10	Farm planning				✓		
11	Road maps			✓			
12	Shared labour and assistance						✓
13	Community mobilisation						✓
14	Extension approaches /enhancement	✓					✓
15	Integrated watershed management						✓
16	Local-level participatory planning					✓	
17	Community social labour groups (debo/wenfel)					✓	
18	Incentive-based local-level participatory planning and implementation					✓	
19	Social infrastructure for social conservation					✓	
20	Local-level participatory planning approach (PPA) and participatory rural appraisal (PRA)					✓	

Name of Sustainable Land Management Approaches		<i>GFA extension pack (1)</i>	<i>CBP WD (2)</i>	<i>GIZ-SLM (3)</i>	<i>TF SLM Practices (4)</i>	<i>MoA website (5)</i>	<i>EthioCAT SLM Bk. (6)</i>
21	Establishment of legal associations			✓			
22	Food-for-work schemes					✓	✓

Annex 2: SLM technologies identified and prioritized by the SLM Best Practices Task Force

The 105 SLM practices identified by the Task Force as potential best practices have been categorized into priority order below – see Sections 3.2 and 3.3 – with priority 1 practices being screened first.

Priority 1 practices

- | | | | |
|-----|---------------------------------------|-----|--|
| 1. | Soil bunds (level/graded) | 14. | Re-vegetation |
| 2. | Stone bunds (level/graded) | 15. | Beekeeping |
| 3. | Stone-faced soil bunds (level/graded) | 16. | Horticulture development |
| 4. | Fanyajuuterraces (level/graded) | 17. | Small-scale animal fattening |
| 5. | Hillside terraces (level/graded) | 18. | Crop rotation |
| 6. | Cut-off drains | 19. | Intercropping |
| 7. | Deep trenches | 20. | Fertilisation (organic and non-organic) |
| 8. | Terraces with trenches | 21. | Compost (farmyard manure) |
| 9. | Percolation pits (ponds) | 22. | Structural stabilisation with vegetation |
| 10. | Stone-check dams | 23. | Vegetative (live) fencing |
| 11. | Gully reshaping and planting | 24. | Enhancement of biomass production |
| 12. | Sediment storage dams (SS dams) | 25. | Hand-dug wells (shallow wells) |
| 13. | Enrichment plantation | 26. | Spring development |
| | | 27. | Rotational grazing |

Priority 2 practices

- | | | | |
|----|--|-----|-------------------------------------|
| 1. | Double stone-faced soil bunds | 9. | Sediment (sand) traps |
| 2. | Tied ridges | 10. | Stream diversion |
| 3. | Eye-brow basins | 11. | Diversion ditches |
| 4. | Gabion check dams | 12. | Grassed or stone-paved waterways |
| 5. | Small and large half-moon terraces | 13. | Home gardens (multi-storey farming) |
| 6. | Household ponds | 14. | Intercropping |
| 7. | Community (farm) ponds | 15. | Mixed cropping |
| 8. | Floodwater harvesting (spate irrigation) | 16. | Mulching (crop-residue management) |

Priority 2 practices

17. Woodlot plantations
18. Vegetative (live) fencing
19. Contour-shrub hedges
20. Trees and shrubs around buildings
21. Scattered trees on farm or pasture land
22. Trees and shrubs along roads and paths
23. Poultry farming
24. Pond fish breeding
25. Relaying (double cropping)
26. Ley cropping (improved fallow)
27. Contour cultivation (farming)
28. Grass strips (level/graded)
29. Stall feeding (zero grazing)
30. Resting grazing lands
31. Brushwood check dams

Priority 3 practices

1. Bench terraces
2. Ridge-and-furrow terraces
3. Herringbone terraces
4. Zai method
5. Grass hedges (level/graded)
6. Semicircular terraces
7. Check-dam ponds
8. River ponding (reservoirs)
9. Cultivation of spices
10. Roof-water harvesting
11. Water uplifting
12. Rock-catchment water harvesting
13. Drip irrigation
14. Sprinkler irrigation
15. Dairy farming
16. Live check dams
17. Sand- or soil-filled sack check dams
18. Cement-lined waterways
19. Vermin composting
20. Ohura/night corralling
21. Fuel-saving stoves
22. Bio-fertiliser (rhizobial nitrogen fixing)
23. Compost bio-slurry management
24. Green manuring
25. Conservation tillage
26. Acid-soil management
27. Eye/BAR/BBM
28. Strip cropping
29. Alley cropping
30. Cover cropping
31. Scattered trees on farm pasturelands
32. Border trees and shrubs
33. Wind breaks and shelter belts
34. Trees on road sides and paths
35. Trees around houses and public places
36. Trees and shrubs along waterways
37. Cultivation and manuring on grazing land
38. Contour furrows on grazing land
39. Over-sowing grassland
40. Strip planting
41. Rotational grazing
42. Destocking to balance SR=CC
43. Tube wells
44. Earth-dam construction
45. Infiltration ditches
46. Silt traps
47. Cisterns (normal wells)

Annex 3: Description form for documenting identified SLM best practices

1. Name of the practice (include local name if appropriate) _____

2. Category of the practice (SLM technology or approach?) _____

3. Definition / description _____

4. What is the history of the practice? How did it originate and / or evolve?

5. Weighted average value gained in screening process _____

6. If the SLM practice is a technology, what are it's specifications?

7. Describe the agro-ecology and climate of the area, and the practice's distribution and potential adaptability for scaling up? _____

8. What potential benefits can be brought about by the technology? _____

9. Does the practice complement or synergise with any other SLM practice(s)?
If yes, how? _____

10. How can the practice be guaranteed to be made sustainable? _____

11. Additional remarks _____

Annex 4: Form for documenting and submitting a new SLM practice

1 General

1.1 Name of the SLM practice: _____

1.2 Contributor of the identified practice (in case of a team, name the coordinator):

Name: _____

Position: _____

Email: _____ Tel: _____ Organization of the contributor: _____

1.3 Location:

Kebele: _____ Woreda: _____ Zone: _____

Region: _____

Geographical coordinates: _____

Altitude (m): _____

1.4 Features of the surrounding area:

Natural environment

Land form: _____

Dominant topography: _____

Land use types in the area: _____

Climate : _____

Annual rainfall: _____

Rainfall Pattern: _____

Daily average temperature (°C): _____

- Description of the SLM technology/approach**, providing all the information that the reader needs to understand how the practice works. Include photos and / or drawings which illustrate the practice in action, as well as its impact during and / or after implementation. What are the main problems addressed by the technology/approach? Why was the practice developed in the first place and how has it evolved? (Write on a separate sheet.)
- Agro-ecological zone and socio-economic situations:** where does the practice seem most suitable, adaptable and effective? What makes it superior to other technologies or approaches?

4. **Purposes and benefits of the practice:** How the benefits of the practice compare with costs incurred? Describe in detail the purpose of the practice and its socio-economic and ecological benefits. Also list the estimated costs involved in establishing the practice on a certain unit of land, gullies, etc., exercising through one cycle and the estimated costs required for its maintenance. What resources are needed from the target group (such as labour, materials, and cash)?

5. **Sustainability and potential for scaling up:** How do different community groups respond to the technology/approach in terms of acceptance, ownership, protection against damage and maintenance? To what extent can the technology/approach be replicated elsewhere?

6. **Conclusions and recommendations:** summarise your impressions of the potential of this technology/approach for sustainable land management, and make recommendations for the next steps to be taken.

Annex 5: Action Plan for the implementation of the SLM best-practice documentation guideline

	Activity	Responsible body
1	Finalisation of the SLM BP's documentation guideline	SLM BP Task Force
1.1	Clearly define screening criteria (see Section 3, Table 1)	SLM BP Task Force
1.2	Define screening procedures (3 of 5 categories?)	SLM BP Task Force
1.3	Prepare implementation plan (action plan) for each year	SLM BP Task Force
1.4	Develop work plans, + responsibilities, for each quarter	SLM BP Task Force
1.5	Establish a budget plan	SLM BP Task Force
1.6	Facilitate the documentation of best practices	SLM BP Task Force

	Activity	Responsible body
1.7	Present the guideline to the MoA and seek for official approval	SLM BP Task Force
1.8	Lobby with the government and the relevant institutional body	Task Force, GIZ
1.9	Discuss and clarify responsibilities at all levels	SLM BP Task Force
2. Best-practice consideration of existing SLM practices (Section 3)		
2.1	Agree on a useful categorisation of SLM practices	SLM BP Task Force
2.2	Pre-screen the list of proposed practices as per the criteria	SLM BP Task Force
2.3	Validate categories / list of pre-screened practices (workshop)	SLM BP Task Force
2.4	Prioritise existing SLM practices as priority 1, 2 or 3	SLM BP Task Force
2.5	Screen SLM best practices as per the criteria	Tasked mission
2.6	Designate approved SLM practices as best practices	National TC
2.7	Document SLM best practices as per the standard form	Tasked mission
3. Develop capacity for new SLM practices		
3	Train relevant regional experts as trainers	GIZ/SLM BP Task Force
3.1	Train woreda and zonal experts	Regional trainers
3.2	Train development agents in best-practice identification	Woreda/zonal experts
3.3	Coach development agents in best-practice identification	Woreda experts
3.4	Initially supervise and support the process	GIZ/SLM BP Task Force

Annex 6: Incentive system for identification of new SLM best practices

The identification and initial documentation of new SLM practices is expected to be considered by many as an additional work burden for both development agents and woreda and regional experts. An incentive system is therefore proposed by which each team to submit a new SLM practice that is ultimately approved by the federal SLM steering committee shall receive an appropriate reward. This incentive system must be discussed, agreed upon, and transparent from the beginning, in order to encourage officers to submit new SLM practices.

Annex 7: Training plan and materials for SLM practices with potential to be 'best practices'

The following one-day training plan is relevant for the identification and documentation of new SLM best practices by the regional and woreda experts.

The training plan serves as a structure for training regional and woreda SLM experts in the procedures and formats for the identification and documentation of new SLM practices. It is expected that trained regional and woreda experts will then sensitise development agents about their role in the process.

Training plan for the identification and documentation of new SLM practices

Time	Content	Method	Materials
09:00 - 10:00 Module 1	Introduction to the concept of SLM Best Practices	Presentation of the concept, discussion	Set of prepared flip-charts (see below); empty flipcharts, markers
10:00 - 10:30	Coffee Break		
10:30 - 12:30 Module 2	How to identify new SLM practices? Responsibilities	Buzz groups on list; discussion of observation sheet	Existing SLM practices; observation sheet (below); criteria; responsibilities

Time	Content	Method	Materials
12:30 - 13:30	Lunch Break		
13:30 - 15:00 Module 3	How to document newly identified SLM practices? Responsibilities	Presentation and discussion	Document structure; good exemple documentation; responsabilités
15:00 - 15:30	Coffee Break		
15:30 - 17:30 Module 4	Clarification of open questions	Question and answer session	Empty flipcharts for documenting open questions

Training materials

Flipcharts containing all relevant information are recommended. The following pages present a list of flipcharts and other training materials for the regional and woreda experts in each module. All experts should be given a paper with the flipcharts presented in a small form, as with print-outs of Power point slides. The experts can then use the same materials when working with the development agents in the field.

Materials for Module 1: Introduction of the SLM best practices documentation guideline

Flipchart 1: Introduction to the SLM best practices documentation guideline

SLM best-practice documentation guideline

- Government policy to use SLM best practices for up-scaling;
- SLM best practices task force formed to develop documentation guideline;
- Many SLM practices already documented, but not yet best practices (reference to the list of SLM practices, Annex 1);

- The Task Force will facilitate the selection of SLM best practices;
- The Task Force has developed a method for identifying promising new SLM practices.

Flipchart 2: Purpose and users of the SLM best-practice documentation guideline

Purpose of the guideline

- To guide the Task Force and / or the NRMD of the MoA in how to prioritise, screen and approve new SLM best practices;
- To guide regional and woreda experts in how to identify and document new SLM practices.

Users of the guideline

- SLM Best Practices Task Force - to prioritise, screen and approve existing SLM practices;
- Regional and woreda experts and development agents, to identify new SLM practices;
- Research and public interested in SLM best practices.

Flipchart 3: Pre-screening, prioritising and documenting existing SLM best practices

- Pre-screen all SLM practices from the list of SLM practices identified by the Task Force;
- Validate the list with other stakeholders in a validation workshop;
- Group all validated practices as either 1st, 2nd or 3rd priority;
- Complete documentation for 1st (and later 2nd and 3rd) priority practices.

Flipchart 4: Identification and initial documentation of new SLM practices

- Development agent(s) discover(s) a new practice through observation;

- The woreda expert and DA observe what looks promising and decide whether it is new;
- If yes, the woreda expert and the DA document the new practice (see Annex 3);
- Regional-SLM Technical Committee crosschecks and verifies the documented practices;
- A verified new practice is sent to the SLM Best Practices Task Force for crosschecking.

Flipchart 5: Screening and approval of new SLM practices

- A tasked mission fully screens documented practices, and the SLM Best Practices Task Force preliminarily approves or rejects them as best practices;
- Preliminary approved best practices (by the Task Force) are then sent to the National Steering Committee for formal approval;
- National Steering Committee approves or rejects SLM practices as best practices.

Flipchart 6: Dissemination of SLM best practices and scaling up

SLM best practices approved by the NTC:

- will be properly documented by a tasked mission as per the standard format;
- will be used for dissemination of SLM best-practice information (MoA concept note, sensitisation workshops, newspapers, radio/television spots, and so on.)
- will be used as a basis for training packages, put together and disseminated by Agricultural Extension Services;
- will be posted on the MoA SLM best practices website for easy access to all interested persons and institutions.

Material for Module 2: How to identify new SLM practices?

Observation sheet for identifying new SLM practices (for development agents or DAs)

The stakeholders responsible for the identification of promising new SLM practices which have not yet been documented are regional experts, woreda experts and DAs, who are best placed to regularly monitor what is ‘happening’ at the most local level.

Step 1: The following set of questions can help these experts and DAs to identify newly identified SLM practices:

- a. Observe any practice which seems new to you. Discuss with people why they developed this practice and why they use it. What are the advantages over other practices?
- b. Compare the SLM practice with the list of documented SLM practices (Annex 1). If you find the practice in the list, skip the idea. If not, discuss with your woreda supervisor your observation. Check again together whether the practice is yet documented or not.
- c. If not, ask your woreda supervisor to assist you in the documentation of the newly identified practice along the agreed structure (Annex 3). Agree on a schedule and divide work responsibilities for this task.

Step 2: For practical purposes the trainees are asked to re-think and identify potentially new SLM practices and name those which they think are genuinely new.

Step 3: Trainees then compare these supposedly new practices with the list in Annex 1 – each trainee should get a copy of Annex 1 of the manual for this purpose. Step 3 has another consequence: trainees get an overview of the magnitude and variety of SLM practices being documented.

Material for Module 3: How to document newly identified SLM practices?

Step 1: Annex 3 of this guideline presents the agreed structure for documenting SLM practices. This structure will be used for training purposes as well. Trainees will get a copy of Annex 3 each and the trainers will thoroughly discuss with the trainees how to

document newly identified SLM practices along that structure.

Step 2: A known and widespread example of an SLM practice (such as a gabion check dam) is given to the trainees and they are supposed to write something for each of the chapters and sections in the structure (Annex 3). The trainees then present their findings and discuss with the trainers whether or not the required content of the different chapters and sections is fully understood and understandable.

Annex 8: Resources needed for the implementation of an action plan

Disseminating the concept of SLM best practices to stakeholders and empowering them to identify, screen and document new practices, as well as updating the MoA website and other tasks, requires and investment of resources.

The SLM Best Practices Task Force is expected to flag up the necessary resources in order to achieve the following:

- Validation workshop for potential best practices, starting with a long un prioritised list of identified practices (compiled by the Task Force);
- Pre-screening of SLM practices and categorising the list into priority groups (by the Task Force)
- Screening the SLM best practices as per the criteria (by a tasked mission);
- Documentation of SLM best practices, according to the standard form (Annex 3);
- Capacity building given by the relevant bodies (see Section 7);
- National and regional workshops on SLM best practices (see Section 5.1);
- Publications (see Section 5.1);
- Website (Section 5.1.2);
- Incentives for successful identification and documentation of SLM best practices (see Annex

Appendix 1: SLM Best Practices Selection Criteria and their Application:

A Case study from Tigray and SNNP Regions

1. Background and Justification

The need for documenting and scaling up of SLM best practices have become beyond doubt, but much is said about SLM best practices without any systematic methods (mechanisms) for asserting whether the given SLM practices are best or not. Thus far, some practices are expressed as best just from the perceptions and observations about their impacts. Therefore, it has been difficult to assert either a given practice is really best or not. For this it has been necessary to establish criteria through which SLM practice pass to assert whether they are best or not. Thus, the SLM best practices task force has established criteria with the support of GIZ/GFA that have been refined in a more objective oriented way by the task force. Thus, the SLM best practices task force established the following criteria (Table 1) for systematic screening and documentation of SLM best practices.

Table 1: Criteria for screening the SLM best practices

No	Criteria	Score	Weight
1	<p>Acceptance: To what extent is the SLM practice accepted by the community/individuals where it is practiced?</p> <ul style="list-style-type: none">• High: $\geq 75\%$ of the farmers to whom the technology has been introduced continued using/applying it.• Medium: 50-74% of the farmers continued using it.• Low: 25-49% of the farmers continued using it.		0.22

No	Criteria	Score	Weight
2	<p>Effectiveness: To what extent does the SLM practice achieve the intended results in terms of land rehabilitation and/or productivity increase?</p> <ul style="list-style-type: none"> • High: ≥75% of the interviewed farmers responded that the practice is effective with regard to its immediate objective ; • Medium: 50-74 % of the interviewed farmers responded that it is effective; • Low: 25-49 % of the interviewed farmers responded that it is effective. 		0.22
3	<p>Efficiency: To what extent farmers perceive investing in this technology is worthy?</p> <ul style="list-style-type: none"> • High: ≥75% of the interviewed farmers perceived that investing in this technology is worthwhile; • Medium: 50-74% of the interviewed farmers' perceived that investing in this technology is worthwhile; • Low: 25-49% of the interviewed farmers perceived that investing in this technology is worthwhile. 		0.14
4	<p>Relevance: To what extent farmers perceive investing in this technology is worthy?</p> <ul style="list-style-type: none"> • High: ≥75% of the interviewed farmers agree that the technology is relevant with regard to its immediate objective; • Medium: 50-74% of the interviewed farmers agree that the technology is relevant with regard to its immediate objective; • Low: 25-49% of the interviewed farmers agree that the technology is relevant with regard to its immediate objective. 		0.14

No	Criteria	Score	Weight
5	<p>Sustainability: To what extent is the SLM practice durable (esp. SLM structures) with local resources?</p> <ul style="list-style-type: none"> • High: $\geq 75\%$ of the interviewed farmers confirmed that individuals or community are applying the technology without external support; • Medium: 50-74% of the interviewed farmers confirmed that individuals or community are applying the technology without external support; • Low: 25-49% of the interviewed farmers confirmed that individuals or community are applying the technology without external support. 		0.14
6	<p>Replication for scaling-up: To what extent is the practice, as carried out, replicable elsewhere under similar conditions?</p> <ul style="list-style-type: none"> • High: $\geq 75\%$ of the interviewed farmers confirmed that the technology is replicated in the adjacent areas; • Medium: 50-74% of the interviewed farmers confirmed that the technology is replicated in the adjacent areas; • Low: 25-49% of the interviewed farmers confirmed that the technology is replicated in the adjacent areas. 		0.14
	Total		1

Key: - The criterion is considered High, Medium or Low based on the following parameters

High:-if the criterion attained a score point of 3; i.e. $\geq 75\%$

Medium:-if the criterion attained a score point of 2; i.e. **50-74%**

Low: -if the criterion attained a score point of 1; i.e. **25-49%**

*A practice must satisfy a minimum requirement of weighted average point of **1.72** to be considered and documented as SLM best practice.*

Although the establishment of the criteria has been one step forward towards addressing the limitations in systematically screening and designating the SLM practices as best when they meet the requirements, there was no clear evidence about their appropriateness and applicability at the field level without having tested them. So it has been necessary to test the applicability of the criteria practically at field level. Thus, in order to make sure that these criteria are applicable and user friendly, the task force tested their applicability at field *level before endorsing them for official use.*

2. Objective

The main objective of testing the applicability of the criteria at field level was to make sure that the criteria can be easily used in screening the SLM best practices in the future. As the process of testing the applicability of the criteria at the field level is expected to have similarity with the future screening process of the SLM best practices, the exercise is also considered to be useful for acquiring experiences for designing methodologies for screening SLM best practices and for determining the resources required for screening the SLM best practices.

3. Scope

Taking into account that the response from only one region and limited number of watersheds cannot give reliable and representative results about the actual performance of the given practices, the testing of the criteria was carried out in four watersheds selected from two regions (Tigray and SNNP) with different geographical location and socio-cultural background. The selected watersheds in each region represent sites where intensive water harvesting and soil and water conservation

interventions have been going on for many years (≥ 10 years) and the performance and impacts of the various SLM practices on the environment and socioeconomic conditions of the communities well perceived by the community members so that they could be easily evaluated during the process of testing the criteria.

4. Methodology

Ten (10) sample technologies (soil bund, stone bund, hillside terrace, sediment storage (SS) dam, community pond, composting, vegetative structural stabilization, vegetable production, fruit production and small scale fattening) were identified to test the applicability of the criteria at field level. The respondents were selected from identified watersheds, and they were from different parts of the watersheds (kebeles) so that they are actual representatives of the watersheds (Kebeles). The number of sample watersheds and respondents are illustrated below (Table 2).

Table 2: The number of sample watersheds and respondents (interviewees)

No	Particular	Unit	Oty	Total
1	Sample watershed	No	2/region	4
2	Respondents	No	25/site	25x4=100

Key: Respondents =key informants plus focused groups

- Key informants (7)=Kebele leader, model farmers, planning committee members, community leaders, etc. who are very knowledgeable about the kebele, especially about development interventions
- Focused groups (18)=Better off farmers, medium farmers and poor farmers (include both men and women in equal proportion where applicable)
- Total number of respondents per site were 25

4.1 Site level information collection

Two groups, each consisting of 2 experts from SLM BPs TF travelled to the two regions, one group to each region, for about 10 days each and collected the required information. The collection of the information was through a semi structured interview where the target groups at the meeting discussed and eventually responded in the form of motion.

The respondents were assembled at a suitable venue selected by regional/woreda responsible bodies. The group of experts from the SLM BPs task force played active role in facilitating the discussion and responses of the participants. The respondents were allowed to thoroughly discuss about each technology one by one before giving their responses. That means, thorough discussion was carried out on each technology first. After the essence of the technology was well digested and grasped by the participants, then the respondents collectively responded in the form of motion for each criterion for a given technology. The responses were collected for each technology one by one for every criterion starting with the first technology and the process continued with the 2nd technology, then the 3rd, etc. until all the sample technologies were evaluated through the application of the criteria as per the indicators.

Indicators were also developed for each criterion to clearly indicate what a given technology should fulfill to be in line with each criterion. The indicators are phrases or statements articulating what a technology should fulfill to be in line with the criteria. In another words, it is a statement articulating the conditions the technology should meet to be in line with each criterion. For instance, the indicators developed for the criterion (acceptance) for soil bund are: firstly soil bund should be popular among the beneficiary famers; secondly it should be properly maintained and protected against any damage by land users. If these conditions are met for soil bund, then the soil bund is regarded as accepted by the land users. The respondents (interviewees) who agree that the soil bund is popular among the beneficiary famers and it is properly maintained and protected

against damage vote in favor of the criterion (acceptance) and others who do not agree with this notion reject it. Consequently, indicators were developed for each criterion for all sample technologies used for testing the criteria (Annex 5).

5. Main Findings

5.1 Testing of the applicability of the SLM best practices selection criteria

The SLM best practices selection criteria that have been established for screening SLM best practices were tested at the field level and the field assessment verified the practical applicability of the criteria. The testing of the criteria was carried out at four sites; that is, Guder of Lemmoand Sabore of Damaote Gale woredas of the Southern Nation Nationalities and Peoples' Region (SNNPR), and Ruba of Atsbi-wonberta and Abreha-Atsibeha of Kilde-Awlaelo woredas of Tigray region.

The testing of the applicability of the criteria was done on selected sample technologies where the beneficiary farmers who have been familiar with the technologies for many years and evaluated the performance of each technology by using the established criteria. The respondents were Kebele key informants, which included Kebele leaders, model farmers, planning committee members, community leaders who are knowledgeable about the kebeles, especially about development interventions; and focused group farmers, which consists of better off farmers, medium and low income group farmers.

The respondents used their many years of experience and knowledge in evaluating the technologies using the criteria. It is clear from Table 3 and Table 4 that the respondents were critical in evaluating the technologies against the criteria as a result of which the two regions evaluated eight out of ten technologies with which they were familiar and have in-depth knowledge. Two technologies: stone bund and hillside terrace were not

evaluated as technologies in the Southern Nation, Nationalities and Peoples' region sample watersheds as the site doesn't have stones to construct the technologies. Although stones are available in sample watersheds of Tigray region, stone bund and hillside technologies were not applied alone without supporting trenches. Therefore, stone bund and hillside terraces were not considered in the present evaluation (Table 3).

Also, it is clear from Table 3 and annexes 1-4 that the respondents are knowledgeable about the sample technologies and evaluated them with reasonable variability. As indicated in Table 4, seven technologies received the highest weighted average of 3 points each and one technology, namely; SS dam 2.8 points. Although the respondents appreciated the value of SS dam, but justified its challenges regarding its replication by households or even small group of farmers due to its demand of expertise, huge labor and resources. Indeed, the respondents also spelled out some limitations of the community pond and vegetable production. Their justification has been the high initial cost for community pond development, which cannot be easily met by the community without external support. Regarding vegetable production, though the technology is their long standing practice, they are solely dependent on seeds from outside sources and they cannot produce the seeds themselves due to the nature of the technology. Thus, though the value of the technology is highly appreciated this particular aspect is found to affecting sustainability and scalability of the technology.

As indicated above, from the technologies evaluated by the respondents, SS dam received relatively low score point because of the factors limiting its scalability. In the case of fruit production the respondents elaborated that it is very important for income generation and nutritional supplement, but it takes relatively long time before maturity; and requires intensive care, soil fertility management and water for sustainable production. According to them, the technology is very much governed by climate change and locations that limit scalability of the technology.

In general, as illustrated in Table 3 and 4:- soil bund, community

pond, composting, vegetable production, small scale animal fattening, fruit production and vegetative structure stabilization, each received the high score point of 3 for each criterion; as the vote of respondent with respect to each criterion was > 75%; on the other hand, SS dam received a high score point of 3 for each criterion from 1 to 5 and medium score point of 2 for the last criterion (scalability); as the vote of the respondents for the sixth criterion (scalability) falls between 50% and 74%. The weighted average point of the former technologies is 3 and the later is 2.86 respectively (table 4); that is, $3/1=3$ and $2.86/1=1$, the result is confirming that they are all SLM best practices as the minimum requirement to be SLM best practice is a weighted average score point of 1.72.

Table 3: Summary of the responses of all respondents from all sample watersheds of SNNP and Tigray region regarding the performance of each technology with respect to the criteria

No	Sample technology	Criteria and response (%) of respondents					
		Acceptance	Effectiveness	Efficiency	Relevance	Sustainability	Scalability
		% score	% score	% score	% score	% score	% score
1	Soil Bund	78 3	78 3	78 3	78 3	78 3	78 3
2	Stone Bund	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
3	Community pond/WH	100 3	99.2 3	99.2 3	99.2 3	99.2 3	99.2 3
4	Hillside terrace	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
5	SS-dam	100 3	98.5 3	96.9 3	100 3	99.2 3	68.9 2
6	Compost use	99.3 3	99.3 3	99.3 3	99.3 3	99.3 3	94.4 3
7	Vegetable production	100 3	100 3	100 3	100 3	97.2 3	97.7 3
8	Fruit production	91.2 3	86.2 3	91.2 3	86.2 3	90.4 3	89.6 3
9	Small scale animal fattening	100 3	100 3	100 3	100 3	100 3	99.2 3
10	Vegetative/s/s	100 3	100 3	100 3	100 3	99.2 3	99.2 3

Key:

NA- denotes the technology is not available in the sample watershed

Table 4: Summary of the weighted average of the criteria from all water sheds of SNNP and Tigray regions for each technology

No	Sample technology	Criteria, product and weighted average						
		Acceptance	Effectiveness	Efficiency	Relevance	Sustainability	Scalability	WA=sum of product/sum of wt
		Prod (Wtx sc)	Prod (Wtx sc)	Prod (Wtx sc)	Prod (Wtx sc)	Prod (Wtx sc)	Prod (Wtx sc)	
1	Soil Bund	0.66	0.66	0.42	0.42	0.42	0.42	3/1=3
2	Stone Bund	NA	NA	NA	NA	NA	NA	NA NA
3	Community pond/WH	0.66	0.66	0.42	0.42	0.42	3/1=3	99.2 3
4	Hillside terrace	NA	NA	NA	NA	NA	NA	NA NA
5	SS-dam	0.66	0.66	0.42	0.42	0.42	0.28	2.86/1=2.86
6	Compost use	0.66	0.66	0.42	0.42	0.42	0.42	3/1=3
7	Vegetable production	0.66	0.66	0.42	0.42	0.42	0.42	3/1=3
8	Fruit production	0.66	0.66	0.42	0.42	0.42	0.42	3/1=3
9	Small scale/A/F	0.66	0.66	0.42	0.42	0.42	0.42	3/1=3
10	Vegetative/s/s	0.66	0.66	0.42	0.42	0.42	0.42	3/1=3

Key: Prod=Product; WA=weighted average; s/s=structural stabilization
NA- denotes the technology is not available in the sample watershed

5.2 Respondents perception about the sample technologies

This exercise has proven that the respondents were knowledgeable about sample technologies used for testing the criteria. The many years of experience with the environment and development interventions including the sample technologies made them proficient to precisely answer enquiries. They had their own way of interpreting and evaluating the technologies; for instance, they consider soil bund as the life of the soil because it protects the detachment of soil from its original places. They are well aware that it controls runoff and soil erosion and conserves primarily in-situ moisture. Also, they are well conscious about its role in preventing the loss of seeds and fertilizers from a washout. They plainly elaborate that the vegetative measures

introduced to stabilize the structures provide fodder for livestock, firewood as a source of energy to households and serve as a source of materials for mulching and compost preparation that are essential for replenishing soil fertility.

As far as vegetable and fruit production is concerned, respondents like them because they generate income at the household level. The byproducts are supplementary feed sources of livestock. Particularly with small scale irrigation it is well understood that vegetable production can be undertaken all the year round with a consequence of households' economic transformation. Regarding fruit trees, although they take years before harvesting the fruits, respondents consider the technology as "money in bank" because once they reach the harvest stage they become a constant and reliable source of income as they are less vulnerable to various shocks compared to other agricultural practices. Both vegetable and fruit production encourage the use of compost, which basically replenishes soil fertility and hence enhances improved production and productivity. However, these technologies are localized in areas where water is available and the availability of water is regarded as the major factor limiting their scalability. The sustainability of vegetable production is also challenged by the fact that producers are dependent on seeds purchased from outside.

According to the reflection of the respondents, small scale animal fattening is among the long standing traditional practice that goes with the culture and tradition of the community. Different religious and cultural ceremonies are celebrated by the community where meat is an inseparable component of the recipe in a variety of dishes. The respondents confirmed that fattening is one of the most acceptable technologies recognized as indigenous knowledge among the community. It is witnessed by the community that it can be easily implemented and managed at household level, generates good amount of income, replicable everywhere and it is also considered as a good source of manure for improving soil fertility.

The respondents have also confirmed that SS dam is among the most acceptable and effective technologies in rehabilitating deep gullies and in regaining lost farmlands. It allows the deposition of fertile soil and accumulation of water that is otherwise lost in the form of flood. SS dam also plays important role in re-establishing communication gap created between communities a result of big gullies. It also minimizes the damages caused to the downstream areas by floods while availing water for small scale irrigation and domestic uses.

The respondents evidently demonstrated that they have profound and practical knowledge of compost making and its use to improve soil fertility and productivity. They explained that compost technology has been functioning since the beginning of agriculture (crop and livestock) production. Compost making is very much related to the culture of livestock production, which in turn is a deep rooted culture of the community. The respondents witnessed that crops grown with compost mature gradually and the stock remains green for several days and very much palatable to livestock. The technology doesn't need expenditure for obtaining the material required for compost making as long as the culture of livestock rearing is in place. It is practiced almost by the majority of the community understanding that the technology is practically feasible. The technology is sustainable and effective in replenishing soil fertility, in improving water holding and moisture retention capacity of the soil.

5.3 Application of the criteria

SLM practices to be considered as best practices, they should pass through the screening process where the SLM best practices selection criteria (acceptance, effectiveness, efficiency, relevance, sustainability and scalability) are applied as a measuring tool. A weighted value is given to each criterion based on its importance in determining the performance or value of a given practice in the process of screening the best practices.

While acceptance and effectiveness are considered to be the most important criteria in determining the performance of a given practice, each has been given a weighted value of 22% or 0.22. The remaining four criteria are considered to have similar importance in measuring the value of a given practice and given a weighted value of 14% or 0.14. Therefore, a best SLM practice is a practice that has passed through the screening process where each criterion is applied to measure the value (importance) of the given practice and the practice gained a minimum weighted average of **1.72** or above.

In the process of screening the practices, the beneficiary farmers and key informants in the given watershed who have been familiar with the practices for many years and have sufficient knowledge about them evaluate the practices in a semi-structured interview where they are fully empowered to freely discuss and genuinely evaluate them. Each criterion is given a score point of 1 to 3 based on the number (%) of respondents who supported the criteria for a given practice. For instance, if the number (%) of respondents who supported the criterion (acceptance) is $\geq 75\%$ then the score point gained is 3, but if the number (%) of the respondents who supported the criterion is 50-74% the score point gained would be 2. If the number (%) of respondents who supported the criterion is 25-49%, the score point gained is 1. However, If the number of respondents who supported the criterion is less than 25%, the practice will not gain any score point.

Based on the above justification and principles the method for calculating the weighted average value of sediment storage dam (SS-dam) is illustrated in Table 5 bellow.

Table 5: Major parameters used in computing the weighted average value of SS dam

No	Practice	Criteria	Weight (wt)	Response of respondents		Product (WT x SC)
1	SS-dam	. Acceptance	0.22	80	3	0.66
		. Effectiveness	0.22	90	3	0.66
		. Efficiency	0.14	78	3	0.42
		. Relevance	0.14	60	2	0.28
		. Sustainability	0.14	55	2	0.28
		. Replicability	0.14	30	1	0.14
	Total		1.00			2.44

Thus, the weighted average value of the criteria is obtained by dividing the sum of total products (i.e. weight x score) of the criteria by the total wt of the criteria. i.e Weighted average value= $2.44/1=2.44$

5.4 Lessons learned

The deliberate and careful arrangement of the semi-structured interview empowered the respondents for free and transparent discussion in the four micro-watersheds. The approach has been a very practical tool for building confidence of the respondents to precisely evaluate the sample technologies. The process proved that local communities, if genuinely empowered for decision making, have indispensable knowledge and are well aware about their environment, development interventions and practices being implemented in their areas. They are very competent and knowledgeable in providing reliable and fact-based information about the various practices, their benefits and impacts. Surprisingly, they have in-depth knowledge and know how about the different land management practices; specifically, they had dependable knowledge about the impacts of soil and biomass improvement, resilience to climate variability, risk

management and resilience building, hydrological stability, livelihood changes, productivity improvement, socioeconomic and ecosystem balances and livestock development.

5.5 Conclusion and Recommendations

Dividing the respondents first into two groups to thoroughly discuss about the technologies enabled them to review and analyze the overall performance, benefits and impacts, of the sample technologies. The methodology, indeed, has been effective in refreshing their knowledge and experiences about the technologies. It made the discussion in plenary session more rigorous and analytical about the technologies. At the end, each respondent was very clear and was in a position to correctly judge about each technology.

All the respondents were very analytical and knowledgeable about the technologies; their decisions and evaluations about the technologies were very precise and practical. They obviously demonstrated that they are authentic and precise sources of information about their environment and practices. They had their own way of expression about the technologies; their knowledge and experiences were very fascinating and precise. Their evaluations of the technologies were consistent and based on many years of experiences, accumulated knowledge and insightful perception about the technologies. Their evaluation was free from biases because they have thoroughly discussed and debated over each technology against the proposed criteria ahead of voting. Thus, the outcome of the evaluation confirmed that the established SLM best practices selection criteria are effective in screening the best practices and are easily applicable at the field level.

Regarding the replication of sites during the evaluation of the technologies, the mission discovered that having replication may or may not be valid to judge the performance of technologies. For instance, stone pond and hillside terraces in the absence of trench were not common in the sampled watersheds of Tigray

region, whereas, as a result of limitation of stones in the sample watersheds of SNNPR the technologies are not available. Thus, in this particular case, it is recommended that technologies should be evaluated based on their performance and suitability to a particular area instead of depending on a number of replications.

6. Annexes

Annex 1: Number and percentage of respondents, out of 25, who voted in support of the criteria for each technology at Damot Gale Woreda, Sabore watershed of SNNP region

No		Criteria and response of the respondents (Number and %)											
		Acceptance		Effectiveness		Efficiency		Relevance		Sustainability		Scalability	
		No	%	No	%	No	%	No	%	No	%	No	%
1	Soil Bund	25	100	25	100	25	100	25	100	25	100	25	100
2	Stone Bund	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	Community pond/WH	25	100	25	100	25	100	25	100	24	97	24	97
4	Hillside terrace	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	SS-dam	25	100	24	97	24	97	25	100	25	100	8	27
6	Compost use	24	97	24	97	24	97	24	97	24	97	24	97
7	Vegetable production	25	100	25	100	25	100	25	100	22	90	24	97
8	Fruit production	24	97	24	97	24	97	24	97	24	97	24	97
9	Small scale AF	25	100	25	100	25	100	25	100	25	100	25	100
10	Vegetative S/S	25	100	25	100	25	100	25	100	25	100	25	100

Key: AF=animal fattening; S/S=structural stabilization

N.B. NA: denotes the technology is no available in the sample watershed

Annex 2: Number and percentage of respondents, out of 25, who voted in support of the criteria for each technology at Lemmo woreda, Guder water shed of SNNP region

No	Selected sample technology	Criteria and response of the respondents (Number and %)											
		Acceptance		Effectiveness		Efficiency		Relevance		Sustainability		Scalability	
		No	%	No	%	No	%	No	%	No	%	No	%
1	Soil Bund	25	100	25	100	25	100	25	100	25	100	25	100
2	Stone Bund	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	Community pond/WH	25	100	25	100	24	97	24	97	24	97	22	87
4	Hillside terrace	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	SS-dam	25	100	24	97	23	90.3	25	100	24	97	15	48
6	Compost use	25	100	25	100	25	100	25	100	25	100	20	65
7	Vegetable production	25	100	25	100	25	100	25	100	24	97	24	97
8	Fruit production	21	67.7	15	48.4	13	41.9	21	67.7	20	65	19	61
9	Small scale AF	25	100	25	100	25	100	25	100	25	100	24	97
10	Vegetative S/S	25	100	25	100	25	100	25	100	24	97	24	97

Key: AF=animal fattening; S/S=structural stabilization

N.B. NA: denotes the technology is no available in the sample watershed

Annex 3: The percentage of respondents, out of 25, who voted in support of the criteria for each technology at Atsbi-Wonberta woreda, Ruba watershed of Tigray Region

No		Criteria and response of the respondents (Number and %)											
		Acceptance		Effectiveness		Efficiency		Relevance		Sustainability		Scalability	
		No	%	No	%	No	%	No	%	No	%	No	%
1	Soil Bund	25	100	25	100	25	100	25	100	25	100	25	100
2	Stone Bund	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	Community pond/WH	25	100	25	100	24	97	24	97	24	97	22	87
4	Hillside terrace	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	SS-dam	25	100	24	97	23	90.3	25	100	24	97	15	48
6	Compost use	25	100	25	100	25	100	25	100	25	100	20	65
7	Vegetable production	25	100	25	100	25	100	25	100	24	97	24	97
8	Fruit production	21	67.7	15	48.4	13	41.9	21	67.7	20	65	19	61
9	Small scale AF	21	67.7	15	48.4	13	41.9	21	67.7	20	65	19	61
10	Vegetative S/S	25	100	25	100	25	100	25	100	24	97	24	97

Key: AF=animal fattening; S/S=structural stabilization

N.B. NA: denotes the technology is no available in the sample watershed

Annex 3: The percentage of respondents, out of 25, who voted in support of the criteria for each technology at Atsbi-Wonberta woreda, Ruba waters of Tigray Region

NO	Selected sample technology	Criteria and response of the respondents (%)					
		Acceptance	Effectiveness	Efficiency	Relevance	Sustainability	Scalability
1	Soil Bund	NA	NA	NA	NA	NA	NA
2	Stone Bund	NA	NA	NA	NA	NA	NA
3	Community pond/WH	100	100	100	100	100	100
4	Hillside terrace	NA	NA	NA	NA	NA	NA
5	SS-dam	100	100	100	100	100	100
6	Compost use	100	100	100	100	100	100
7	Vegetable production	100	100	100	100	100	100
8	Fruit production	100	100	100	100	100	100
9	Small scale AF	100	100	100	100	100	100
10	Vegetative S/S	100	100	100	100	100	100

Key: AF=animal fattening; S/S=structural stabilization

N.B. NA: denotes the technology is no available in the sample watershed

Annex 4: The percentage of respondents, out of 25, who voted in support of the criteria for each technology at KildeAwlaelo woreda, Abreha-Atsibeha of Tigray Region

No	Selected sample technology	Criteria and response of the respondents (%)					
		Acceptance	Effectiveness	Efficiency	Relevance	Sustainability	Scalability
1	Soil Bund	50	50	50	50	50	50
2	Stone Bund	NA	NA	NA	NA	NA	NA
3	Community pond/WH	100	100	100	100	100	100
4	Hillside terrace	NA	NA	NA	NA	NA	NA
5	SS-dam	100	100	100	100	100	100
6	Compost use	100	100	100	100	100	100
7	Vegetable production	100	100	100	100	100	100
8	Fruit production	100	100	100	100	100	100
9	Small scale AF	100	100	100	100	100	100
10	Vegetative S/S	100	100	100	100	100	100

Key: AF=animal fattening; S/S=structural stabilization

N.B. NA: denotes the technology is no available in the sample watershed

Annex 5: Indicators illustrating the performance that should be manifeste by each technology to be in line with the given criterion

No	Sample Technology	Criteria	Indicators
1	Soil Bund	Acceptance	. Popular among farmers . Properly maintained/protected
		Effectiveness	Effective in controlling erosion & moisture conservation
		Relevance	Better option for erosion control & moisture conservation
		Sustainability	Widespread in the field for many years; ≥5 years
		Scalability	Expanded to many other areas
2	Stone bund	Acceptance	. Popular among farmers . Properly maintained/protected
		Effectiveness	Effective in collecting water for domestic use and small scale irrigation
		Efficiency	Benefits are higher than the costs
		Relevance	Better option for erosion control & moisture conservation
		Sustainability	Widespread in the field for many years; ≥5 years
		Scalability	Expanded to many other areas
3	Community pond	Acceptance	. Popular among farmers . Properly maintained/protected
		Effectiveness	Effective in collecting water for domestic use and small scale irrigation
		Efficiency	Benefits are higher than the costs
		Relevance	Better option for collecting water for domestic use and SSI
		Sustainability	. Lasted for many years (≥5years) . The community takes care without external support
		Scalability	Expanded to many other areas
4	Hill side terrace	Acceptance	. Popular among farmers . Properly maintained/protected
		Effectiveness	Effective in controlling erosion & moisture conservation
		Relevance	Better option for erosion control & moisture conservation
		Sustainability	. Lasted for many years (≥5years) . The community takes care without external support
		Scalability	Expanded to many other areas

No	Sample Technology	Criteria	Indicators
5	Sediment Storage (SS) dam	Acceptance	. Popular among farmers . Properly maintained/protected
		Effectiveness	Effective in converting gully to productive land & in collecting water for SSI
		Efficiency	Benefits are higher than the costs
		Relevance	Benefits are higher than the costs
		Sustainability	. Lasted for many years (≥5years) . Maintained/protected
		Scalability	Expanded to many other areas
6	Compost	Acceptance	Used by larger No of farmers
		Effectiveness	Improves soil fertility & productivity
		Efficiency	Benefits are higher than the costs
		Relevance	Better option for Low cost & sustainable SF improvement
		Sustainability	It is in use for many years by many farmers ≥5 years
		Scalability	It's use has expanded to other areas
7	Vegetable production	Acceptance	Grown by many famers and popular among farmers
		Effectiveness	Generates higher income
		Efficiency	Profitable
		Relevance	Profitable
		Relevance	Good for income generation
		Sustainability	It is in use for many years by many farmers ≥5 years
8	Fruit production	Acceptance	Grown by many famers and popular among farmers
		Effectiveness	Generates higher income
		Efficiency	Profitable
		Relevance	Good for income generation
		Sustainability	It is in use for many years by many farmers ≥5 years
		Scalability	It's use has expanded t other areas

No	Sample Technology	Criteria	Indicators
9	Animal Fattening	Acceptance	Grown by many famers and popular among farmers
		Effectiveness	Generates higher income
		Efficiency	Profitable
		Relevance	Good for income generation
		Sustainability	It use continued for many years
		Scalability	Its use has expanded to other areas
10	Vegetative Structural stabilization	Acceptance	Exercised by many farmers and popular among farmers
		Effectiveness	Stabilizes structures and offers additional economic benefits
		Efficiency	Benefits are better than its costs
		Relevance	Preferred for structural stabilization and for generating additional benefits
		Sustainability	Its use continued for many years and popular among farmers
		Scalability	It use has expanded to other areas



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