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## ADOPTION AND DECISION SUPPORT FOR UPSCALING BEST PRACTICES

According to FAOSTAT 2008 it is estimated that less than 3% (5 million ha) of total cropland in SSA are under SLM using low-cost productivity enhancing land management practices (WB, 2010). This involves only about 6 million small-scale land users (Pender, 2008) and shows that adoption of SLM is alarmingly low, obviously excluding indigenous technologies.

### Adoption - uptake and spread

Success in adoption of SLM depends on a number of factors. It depends primarily on the availability and suitability of best SLM practices that increase yields and at the same time reduce land degradation (as discussed in the chapter on 'increasing land productivity').

A study based on the WOCAT database showed that in SSA the single most important factor for adoption of SLM practices was increased short-term land productivity,

followed by short establishment time, and practices that were 'easy to learn' (Stotz, 2009). An IWMI study analysing a number of technology information sheets underlines these findings (Drechsel et al., 2005). In that study, the most important adoption drivers for conservation, water harvesting and rangeland technologies in SSA were yield increase and accessibility to information, followed by secured land tenure. Additional important influential factors were improved nutrient availability on cropland and labour demand on rangeland.

When adapted to suit local contexts, there is potential for the best practices presented in Part 2 of the guidelines to be upscaled and replicated across SSA. However, this is not enough. For upscaling, an enabling environment is of paramount importance; this includes institutional, policy and legal framework, local participation as well as regional planning (landscape or watershed), capacity building, monitoring and evaluation, and research.

### **Institutional, policy and market bottlenecks in the context of SLM adoption**

#### **Institutional:**

- Inappropriate national and local political agendas
- Lack of operational capacity
- Overlapping and unclear demarcation of responsibilities
- Ineffective decentralisation
- Lack of good governance

#### **Policy / Legal framework:**

- Often there are laws in favour of SLM, but they are not followed
- Enforcement is difficult, costly and can create adverse relationships between government and land users

#### **Land tenure and user rights:**

- Inappropriate land tenure policies and inequitable access to land and water
- Insecurity about private and communal rights
- Modern laws and regulations not considering traditional user rights, by-laws and social and cultural norms which may enhance conflicts and insecurity

#### **Market and infrastructure:**

- Insecure prices of agricultural products (crop, animal, timber, fuel / firewood, ...)
- Increasing input prices and costs for the inputs (materials, equipment, labour, ...)
- Access to markets for inputs and output

(Sources: TerrAfrica, 2007 and 2009; Drechsel et al., 2005)

### **Institutional and policy framework**

While natural resources and climatic factors define the possible farming systems, national and international policies and institutional changes will continue to determine the socio-economic factors that underscore the continuation of land degradation or alternatively create an enabling environment for SLM to spread.

Policies in support of SLM are needed to promote and address the complexity of sustainable land use, in particular policies providing incentives for SLM investments at household, community, regional and national level (TerrAfrica, 2008). Policies must address the root causes of land degradation, low productivity and food insecurity and simultaneously establish socially acceptable mechanisms for encouragement or enforcement.

**Improvement of national policy frameworks:** There are clear opportunities to improve national policy frameworks in support of SLM and to overcome bottlenecks that hinder the spread of SLM (see also box left):

Creating an enabling institutional environment:

- strengthening institutional capacity
- clarifying roles and responsibilities
- furthering collaboration and networking between institutions involved in implementation as well as research
- enhancing collaboration with land users
- strengthening and integrating farmer-extension-research linkages
- securing finances (budgetary provision for extension)

Setting-up a conducive legal framework:

- creating acceptance of rules and regulations or setting up mechanisms of control and enforcement
- defining meaningful laws for local land users to support compensation mechanisms
- recognising customary rights in the local setting

Improving land tenure and users' rights is a key entry point:

- providing basic individual and collective security of resource use (mainly for small-scale land users)
- clarifying tenure and user rights to private and communal land, including locally negotiated tenure systems, regulations and land use. Protecting the rights of land under customary tenure
- looking for pragmatic and equitable solutions in cases where land tenure reforms are ongoing
- increasing land title registration and linking this to land use planning through a cadastral system
- promotion of women's land rights in land registration and customary land tenure systems

Improving access to markets for buying inputs and selling agricultural products and other outputs:

- developing and strengthening local informal markets
- securing accessibility by improving infrastructure (especially access roads)
- better understanding of the impact of macroeconomic, liberalisation and trade policies on prices
- facilitating markets for raw and processed products derived from SLM

- exploring and promoting access to regional, national as well as international markets, including niches for SLM products such as fair trade, organic, environmentally-friendly, certification of origin labels as well as ecotourism (see next paragraphs)
- develop favourable and fair international trade regulations

Land users and communities are likely to invest in improving the land and its natural resources given good institutional support, a conducive legal framework, access to markets, and clarity about land tenure and user rights (TerrAfrica 2008 and 2009).

**Trends and new opportunities:** To make SLM and its products, impacts and services more valuable or to connect SLM with emerging global environmental issues, emerging trends and opportunities need to be further explored. These may include:

- Processing of agricultural products: This can reduce post-harvest losses and produce higher value products where the market exists. It also generates additional income and job opportunities.
- Certified agricultural products: Look for opportunities under 'Fair Trade' with its focus on social criteria, equitable and just remuneration of producers; and 'Organic' with a focus on environmental health (production without chemical inputs, namely pesticides, herbicides, inorganic fertilizers). For forest products there exists a certification for sustainably managed forests (FSC – Forest Stewardship Council), with a growing global demand. For 'SLM-grown' produce a certification label could also be introduced ( see case study on 'Organic Cotton').
- Market for bio-energy / fuel: Although heavily debated by the public and scientific communities due to the trade-off with food security and ecosystems, biofuels are gaining increased commercial attention. Driven by factors such as oil price spikes and the need for greater energy security, there are rapidly developing markets for bio-energy products.
- Payments for Ecosystem Services (PES): PES is the mechanism of offering incentives to farmers or land users in exchange for managing their land to provide ecological services. Through PES, those who benefit pay for the services and those who provide, get paid. This

is a relatively new source of funding with considerable potential for expansion. New PES related markets for greenhouse gases, carbon, water and biodiversity are emerging globally (see case study on 'Equitable Payments for Watershed Services').

The most promising PES opportunities are:

- Carbon sequestration and GHG reductions: These offer payment possibilities for mitigating climate change. Many PES-projects ('carbon offsetting') have been started in SSA, paying for carbon storage in forest plantations. Forests-based transactions for the cost of emissions reductions can range between 1 to 15 US\$ per tonne of carbon sequestered (Envirotrade, 2010).
- Payment for biodiversity and protection of natural resources: By environmental interest groups through international support for protection (e.g. establishment of parks, reserves) or through enhancing ecotourism, where local communities are the main beneficiaries. Ecotourism in preserved natural habitats is becoming increasingly popular in parts of SSA. Though agro-ecotourism is poorly developed as yet. Environmental interest groups can solicit considerable funds and goodwill for SLM, and there is a strong consumer demand for ecotourism. However, there can be no ecotourism business without sustainable managed ecosystems and biodiversity.
- Payment by downstream users, watershed management payments for protection and sustainable management of upper catchments resulting in clean water, reduced sedimentation of reservoirs, increased hydro-power generation, and reduced floods (ISRIC, 2010).

PES is not yet widely used in developing countries – and there are various constraints to its implementation, for example to establish fair and trustworthy distribution mechanisms down to the local level. However, it presents a promising and flexible approach to enhancing and recognising the role of land users in sustaining and improving the ecosystem.

New financing mechanisms - such as PES - are emerging especially in relation to sustainable forest management, restriction of deforestation and exploitation of natural forests. Today, almost one-fifth of global carbon emis-

sions come from deforestation. Preventing forest loss is the cheapest method of limiting carbon dioxide emissions. However, since the market lacks a well-functioning system for compensating farmers, it is currently more economically beneficial for farmers to clear forests than to keep them. As far as the developing world is concerned, natural forests are, ironically, more valuable to the international community than to the local inhabitants.

The emergence of these financial mechanisms implies that regional / national and global community are beginning to take responsibility for protecting the world's forests, and are willing to pay / compensate the rural people for putting aside the axe. If there is no global shift in the readiness to pay for services including better climate, clean air, good water, greater biodiversity (etc.), we will continue to lose valuable ecosystems and their services. All possible efforts need to be made to quantify services and to show consequences on global human wellbeing. Local communities need to be recognised as - and renamed as - stewards and custodians of natural forests and their services.

The UN-REDD, a collaborative partnership between FAO, UNDP and UNEP, supports countries in developing capacity to Reduce Emissions from Deforestation and forest Degradation (REDD) and is a first step in taking these responsibilities (UN-REDD, 2009).

### Participation and land use planning

SLM technologies need approaches that enable and empower people to implement, adopt, spread and adapt best practices. Over the last 50 years the involvement and role of local land users has changed, with a swing from top-down, to bottom-up, to a multilevel-multistakeholder (multi-dimensional) approach. In the top-down approaches there was little or no involvement of land users in planning and decision-making. They worked through payments or coercion during the implementation phase. In the 'farmer first', bottom-up approaches local land users were empowered, though this sometimes led to inequalities. This happened typically with river water abstraction where downstream users found themselves deprived of water. Empowerment must be for all, not just favoured groups. Furthermore gender-related aspects need to be taken into account while developing an approach to stimulate SLM.

Rural women have been involved in agricultural production since the invention of agriculture. Their work in 'smallholder agriculture' has become more visible over the last few decades. They continue to increase their involvement in two types of agricultural production, smallholder production and agro-export agriculture - a trend called 'feminisation of agriculture' (Lastarria-Cornhiel, 2006).

As presented in more detail in Part 2, current promising approaches underlie the following principles:

1. People-centred approaches: People and their actions are a central cause of land degradation, and thus need to be at the centre of SLM. There must be genuine involvement of land users throughout all phases.
2. Multi-stakeholder involvement: This includes all actors, with their various interests and needs, with respect to the same resources. It includes local, technical and scientific knowledge and mechanisms to create a negotiation platform.
3. Gender consideration: Gender roles and responsibilities need to be considered seriously, since in smallholder agriculture women are taking over more of the agricultural tasks once done only by men such as land preparation, and they are investing more work in cash crop production.
4. Multi-sectorial approaches: Successful SLM implementation brings together all the available knowledge in different disciplines, institutions and agencies including government, non-governmental and private sectors.
5. Multi-scale integration: This unifies local, community but also the landscape, watershed or transboundary level, and up to the national and international level also. It implies that not only are local on-site interests considered, but off-site concerns and benefits also. This means that the concept of 'freedom of local land users' might be narrowed down in the interest of a larger community. However, it also opens up possibilities for additional markets, as well as compensation or funding mechanisms. While local benefits from investments in SLM already might be a sufficient incentive for land users, off-site concerns and benefits need to be negotiated.

6. Integrated land use planning: This assesses and assigns the use of resources, taking into account demands from different users and uses, including all agricultural sectors - pastoral, crop and forests - as well as industry and other interested parties also.

### Promotion and extension

In order to facilitate the adoption, adaptation and spread of SLM best practices, enhancing incentives are needed: these include awareness raising, promotion, training and financial or material support. In many countries in SSA existing extension and advisory services have been reduced or weakened over the last decades: these need reviving and revitalising due to their vital roles.

**Capacity building and training:** Many actors and stakeholders must be involved and work together towards successful planning, decision making and implementation of SLM. Extension of SLM practices has much to do with empowering land users. And they must be supported better through capacity building, knowledge management and training.

Two forms of extension and training especially need to be strengthened:

- Institutional capacity building: projects, extension services, research initiatives and community based grassroots organisations (e.g. user groups) to access better means for knowledge management, awareness raising and training, but also for advice and decision support towards land users and planners; increased investments in extension services for small-scale land users, with a clear focus on sustainable techniques.
- Land user capacity building and empowerment: people-centred learning and capacity building through training-the-trainers initiatives, Farmer Field Schools, farmer-based extension using local promoters and innovators, from farmer-to-farmer.

There has been a general move to more participation, devolution of powers and less authoritarianism. But empowerment requires enhanced capacity. Investment in training and building up of the capacity of land users and other local and national stakeholders must be a priority. Local



Training of farmers in the layout of contour barriers. (Hanspeter Liniger)

innovation and farmer-to-farmer extension have proven to be widespread, effective and appropriate strategies, but they are not yet sufficiently recognised.

Recent developments in information and communication technologies (ICTs) and the media provide new opportunities in awareness-raising and knowledge dissemination. The use of local radio, TV, video, mobile phones and the internet, has increased the avenues for timely and wider delivery of useful information (AfDB, UNECA, and OECD, 2009) such as weather forecasts, farm inputs, market information and also development of SLM practices.

**Financial and material support** (incentives & subsidies): Incentives for SLM should not exclusively be seen as financial or material support, but as the intangible stimulus (or 'internal incentive') that a land user experiences through higher production, or through saving time and money.

Judicious use of financial and material support implies various considerations:

- The possibilities of removing some of the root causes of land degradation such as an inappropriate land policy framework, land tenure security and market access, should be assessed (WOCAT, 2007).



Monitoring of river flow: Nanyuki River (Mount Kenya region) during the wet season (above) and during the dry season (below). The river started to dry up only as of the 1980s. (Hanspeter Liniger)

- If fertilizers, agro-chemicals, seed or seedlings are subsidised, the support should aim to be one element that helps build up a more integrated approach towards soil fertility, and pest and disease management.

The lower the degree of outside financial or material support, the greater the level of genuine land user self-initiative and participation, and thus the probability that the interventions are sustainable.

Access to credit and financing schemes can be vital help for rural people to start new SLM initiatives. Thus well-functioning financial services and mechanisms (such as micro-credit) need to be established, enabling land users to take the initiative for self-financing SLM interventions.

Financial support needs to be maintained or even enhanced for institutions providing advice, plans and decision support at all levels, to ensure sufficient and effective support to land users.

### Monitoring, assessment and research

#### Monitoring and assessment – improve SLM and justify investments:

Monitoring and assessment (M&A) of SLM practices and their impacts is needed to learn from the wealth of knowledge available including traditional, innovative, project and research experiences and lessons learnt – both successes and failures. M&A can lead to important changes and modifications in approaches and technologies (WOCAT, 2007). SLM is constantly evolving, which means M&A must be ongoing and responsive. Land users have to take an active role as key actors in M&A: their knowledge and judgement of the pros and cons of SLM interventions is crucial. More investment in training and capacity building is needed for M&A generally, and specifically to improve skills in knowledge management and decision support.

Although several countries and regions have prepared land degradation maps, mapping of SLM efforts and areas under SLM has been badly neglected. M&A through such mapping can contribute to raising awareness of what has been achieved, as well as justifying further investments and guiding future decision-making (Schwilch et al. 2009).

- There is often a need for material and financial support in the SLM sector in developing countries. Direct support to land users depends on the amount of investment needed for SLM interventions. In view of this, financial support is more likely to be justifiable in expensive rehabilitation exercises, or SLM requiring heavy initial investments. However support for maintenance should be avoided, as it creates dependency.
- Before considering the use of direct financial and material support for input-intensive measures, alternative approaches should be explored, such as adapting existing technologies, or choosing ‘simple and cheap’ technologies.

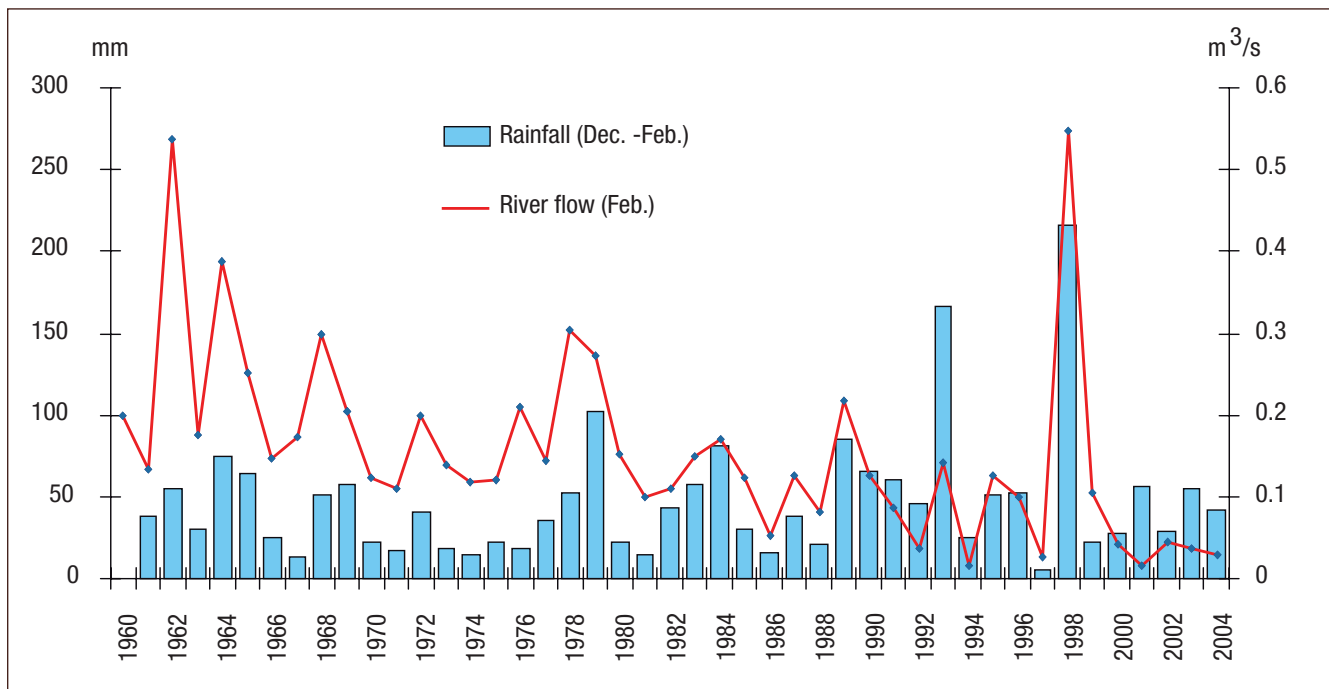


Figure 12: Monitoring of rainfall and river flow in February (dry season) document changes related to climate and impacts of land use. Timau River, Mount Kenya region (Liniger H.P., 2005)

**Complexity and knowledge gaps – the role of**

**research:** The problems of land degradation are complex and so are the answers: there is a real danger of simplification. Blueprint solutions for the implementation of SLM do not take account of this complexity. Effective SLM depends on both suitable technologies and closely matched approaches for their promotion. They need to be flexible and responsive to changing complex ecological and socio-economic environments. An urgent and specific area for further investigations and research is quantification and valuation of the ecological (e.g. Figure 12), social and economic impacts of SLM, both on-site and off-site, including the development of methods for the valuation of ecosystem services. SLM research should seek to incorporate land users, scientists from different disciplines and decision-makers.

The major research challenges are:

- M&A of the local impacts of SLM and land degradation (ecological, economic and social);
- proper cost and benefit analysis of SLM intervention measures;
- M&A of regional impacts at watershed and landscape levels (including off-site and transboundary effects);

- mapping and monitoring of land degradation and the extent and effectiveness of SLM practices; and
- use of knowledge about SLM for improved decision-making at all levels (developing tools and methods for improved knowledge management and decision support).

The above challenges imply that further research and capacity building in SLM – as well as spreading and adapting SLM practices and innovations – are urgently needed. This also requires further development of decision support methods and tools for the local and national level (see following chapter).

### Decision support - upscaling SLM

Land users, agricultural advisors and decision makers are faced with the challenge of finding the best land management practices for particular conditions. Thus they have the same questions to answer (see Figure 13):

- Which SLM technology and approach should be chosen?
- Where to apply them?
- How to apply them?
- Who plays what roles?
- What are the costs?
- What are the impacts?
- Do they improve food security, and alleviate poverty?
- Do they combat land degradation / desertification?
- How well are they matched to a changing climate?

Another fundamental question is where and when to invest: prevention before land degradation processes start, or rather mitigation / ‘cure’ after degradation has started - or rehabilitation when degradation is most severe? The costs vary considerably depending on the stage of SLM intervention (Figure 13).

Inputs and achievements depend very much on the stage of degradation at which SLM interventions are made. The best benefit-cost ratio will normally be achieved through measures for prevention, followed by mitigation, and then rehabilitation. In prevention, the ‘benefit’ of maintaining the high level land productivity and ecosystem services has to be measured compared to the potential loss without any intervention. While the impacts of (and measures involved in) rehabilitation efforts can be highly visible, the related achievements need to be critically considered in terms of the cost and associated benefits.

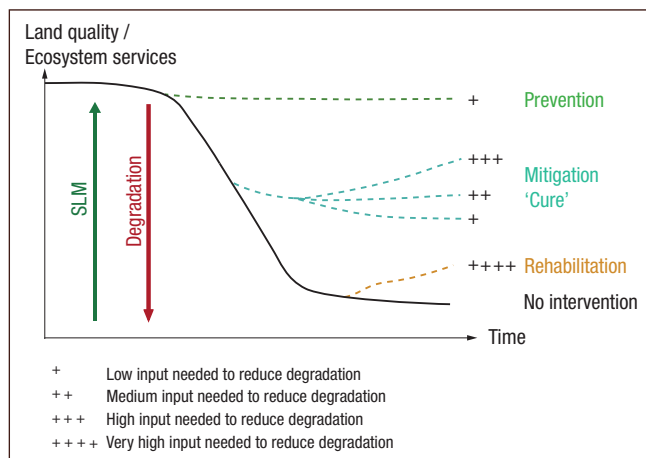


Figure 13: Stage of intervention and related costs.

Questions that need to be addressed for informed decision-making are: Where are the hot spots / priority areas for interventions? Where are the green spots? These require answers in order to make decisions on spreading best SLM practices. In the following, a 3-step decision support method is proposed to help answer these questions based on improved knowledge management and a selection mechanism involving relevant stakeholders at different levels (Schwilch et al. 2009).

### Knowledge management: building the basis

**Step 1 – Identification of SLM best practices involving all stakeholders:** The first step for better decision support is the initial involvement of all stakeholders in SLM (e.g. through a stakeholder workshop). The aim is to identify existing prevention and mitigation strategies against land degradation and desertification. The methodology brings together scientific and local knowledge while simultaneously supporting a co-learning process oriented towards sustainable development. The objectives are: (1) to reflect on current and potential problems and solutions related to land degradation and desertification; (2) to create a common understanding of problems, potentials and opportunities; (3) to strengthen trust and collaboration among concerned stakeholders; (4) to identify existing and new SLM practices; and (5) to select a set of these identified strategies for further evaluation and documentation in the next step.

**Step 2 – Documentation and assessment of existing SLM practices:** There are many unrecognised SLM practices which constitute a wealth of untapped knowledge. Knowledge related to SLM often remains only a local, individual and institutional resource, unavailable to others. Therefore, existing SLM practices need to be documented and stored in a database using a standardised methodology - for example the WOCAT method and tools (Liniger and Critchley, 2008). The aim of standardised knowledge management is to accumulate, evaluate, share and disseminate experience; not just within countries but across the world. Several attempts to build up a global knowledge base on SLM have been made, but they use different formats which cannot be integrated nor compared, thus a globally accepted methodology is proposed. The main asset of this is to have a common and growing pool of SLM knowledge and with tools to share and access,



and use the knowledge for better decision-making. In Part 2 of the guidelines a standardised format for documenting SLM practices is presented. It is a shortened version of the standardised WOCAT 4 page presentation of SLM Technologies and Approaches (WOCAT, 2007).

A standardised knowledge base allows thorough assessment and evaluation of the impacts and benefits of the various SLM practices. It also facilitates the comparison of different options.

### **Selection and fine tuning of SLM practices**

Once documented, SLM experiences need to be made widely available and accessible in a form that allows all stakeholders to review existing practices, understanding their particular advantages and disadvantages – and thus to make appropriate decisions. New SLM efforts should first try to build on existing knowledge from within a location and region itself or, alternatively, from similar conditions and environments elsewhere.

**Step 3 – Participatory decision-making for selection and implementation of SLM best practices:** After documentation and assessment of existing SLM practices, the challenge is to decide on best practices and where to implement them. This again involves all stakeholders (e.g. in a second stakeholder workshop) and recently developed decision support tools to evaluate the best options and set priorities. These tools allow selection of SLM options, comparison and ranking of them, negotiation and finally a decision regarding which is (or are) the best-bets for specific conditions (Schwilch et al. 2009).

Whether such SLM practices are accepted or not depends on cost-effectiveness, severity of degradation, knowledge, enabling framework conditions (e.g. policies and subsidies) and on other socio-cultural and economic issues.

The key to success lies in a concerted effort by all, where special attention needs to be paid to the participatory process of selecting potential SLM interventions. Otherwise land users will neither accept nor properly implement the practice, and project success will be threatened. Stakeholder involvement is crucial at all stages.

### **Selection of priority areas for interventions**

So far there are only few maps covering land degradation; but there are none covering SLM – nor the impacts either of land degradation or SLM. This makes sound decision-making very difficult, but likewise it is also impossible to demonstrate the needs and benefits of SLM interventions.

There is not only need to assess and monitor the different SLM practices but also the impacts of multiple SLM interventions at the larger scale. This would permit the assessment of off-site impacts and effects of upstream interventions on downstream areas. The design and the costs of downstream interventions can be reduced due to upstream investments. This does not only apply to impacts caused by the flow of water downstream, but also impacts from wind affecting off-site areas (e.g. dust storms). Showing benefits of linking upstream (on-site) with downstream (off-site) would help in setting priorities for intervention and investments.

A mapping methodology jointly developed by WOCAT and FAO-LADA generates information on degradation and SLM, and highlights where to focus investments. The mapping tool focuses on areas with land degradation ('red' spots) and on identifying where existing SLM practices ('green' spots) could be expanded. It further facilitates judgement of whether to rehabilitate, or to prevent land degradation and what the impacts on ecosystem services might be.

For different land use systems the type, extent and degree of land degradation and the causes are assessed. For areas covered with SLM practices, the extent and effectiveness is recorded and for both land degradation and SLM the impacts on ecosystem services are listed. The data is compiled through a participatory expert assessment involving local land users, supported by documents and surveys. Given this information from mapping degradation and conservation, land users, advisors and planners can set priorities for interventions, and judge where the benefits for investments made are likely to be highest or the most needed.

The combined assessment of SLM practices and mapping allows not only the expansion of SLM, but also points towards necessary adjustments and adaptations to local conditions.



Where to intervene and where to spread already well proven SLM technologies. (Hanspeter Liniger)

## Conclusions for adoption and decision support

- All issues discussed under institutional and policy framework, have a strong influence on the implementation of SLM but are difficult / impossible to address at single project or local level. However, through the creation of coalitions of implementing programmes and investment frameworks (e.g. TerrAfrica) changes favourable for SLM can be induced.
- To make an impact SLM needs to be integrated within national and regional priorities through policies, strategies, and action plans (WOCAT, 2007). SLM policies must be mainstreamed into broader sectorial policy frameworks.
- Recognition that different approaches are needed in different contexts is important, and acknowledgement that not all land management problems can be solved by government intervention or donor investments. A greater engagement of civil society and empowering stakeholders at grassroots is required (TerrAfrica, 2008).
- Cutbacks in government extension services and farm credit, as a result of liberalisation policies, have deprived land users of important sources of knowledge and advice. Hence innovative extension and advisory services

options need to be considered such as contracting extension services to NGOs and other third parties.

- Links need to be drawn between local and regional implications (e.g. off-site effects, highland /lowland, mountains).
- Regional / national and global communities must take responsibilities for protecting the world's forests and should be willing to pay / compensate local rural people, otherwise valuable ecosystems and services such as better climate, clean air, good water, and improved biodiversity will be lost. All possible efforts need to be made to quantify the valuable services and to show the consequences on global human wellbeing if we fail. Local communities need to be acknowledged as stewards and custodians of natural forests and their services.
- M&A and research is key for improved decision support and upscaling.
- Capacity building is needed at all levels for land users, extension workers, planners and decision-makers. Major efforts are needed for knowledge management and decision support for local selection and fine-tuning of best SLM practices but also for regional priority setting within a watershed or landscape.

Future interventions need to promote the development of joint or 'hybrid' innovation that ensures making the best of local and scientific knowledge. In this respect, current farmer experimentation – including the adaptation of traditional technologies – blended with scientific research offers real hope for the future. Local innovation has, after all, been the driving force behind the traditions that have shaped farming, and SLM, over the millennia (Critchley, 2007). However all developments must take into consideration markets, policies and institutional factors that can stimulate widespread smallholder investments.



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## THE WAY FORWARD

Recognising the contribution of SLM to food security, improved livelihood, mitigation of widespread land degradation and climate change adaptation and mitigation, best SLM practices need to be scaled-up and SLM mainstreamed as a priority at all levels.

SLM experiences presented in this book clearly show the need for major shifts in emphasis to overcome bottlenecks and barriers for spreading SLM in SSA. These shifts concern various aspects at different levels including technologies and approaches, institutional, policy, governance, economy, knowledge management and capacity building.

General shifts	
<b>From</b> simplicity	<b>To</b> complexity (ecosystem)
<b>From</b> narrow and single sector views	<b>To</b> holistic, multi-level, multi-stakeholder views

Technology shifts	
<b>From</b> providing rigid 'blueprint' or 'silver bullet' technologies	<b>To</b> offering a basket of options of best practices, flexible to be adapted to local conditions and needs
<b>From</b> individual single measures	<b>To</b> integrated / combined measures
<b>From</b> focus on structural and expensive practices	<b>To</b> focus first on cheap and easy agronomic, vegetative and management measures
<b>From</b> introducing new 'exotic' SLM technologies	<b>To</b> identifying and building on existing practices and local innovations - if needed supplemented with new elements derived from experiences elsewhere with similar conditions
<b>From</b> high losses of water through runoff and evaporation	<b>To</b> improved water use efficiency in rainfed and irrigated agriculture and improved water harvesting
<b>From</b> 'old' green revolution	<b>To</b> 'new' green revolution: reduced reliance on external inputs (fertilizers and pesticides), pro-poor, women

<b>Policy, Institutional, Governance shifts</b>	
<b>From</b> looking at impacts of land degradation, treating symptoms	<b>To</b> looking at root causes of land degradation, curing
<b>From</b> focus on rehabilitation of degraded land	<b>To</b> focus on preventing and mitigating land degradation and enhancing ecosystem services
<b>From</b> isolated successful SLM technologies and approaches	<b>To</b> scaling-up best practices (technologies and approaches)
<b>From</b> local planning and interventions	<b>To</b> multi-stakeholder planning and treatment at landscape or watershed level
<b>From</b> top-down transfer of technology	<b>To</b> people-centered learning approach
<b>From</b> limited consideration for the concerns of women, youth and marginal groups	<b>To</b> adoption of approaches sensitive to cultural aspects, gender, youth and marginal groups
<b>From</b> contradictory or uncoordinated policies that address symptoms	<b>To</b> effective cross-sector policies that address cures
<b>From</b> insecure land and water user rights (hindering SLM investments)	<b>To</b> locally negotiated tenure systems, regulations, land use plans, and user rights
<b>From</b> inadequate laws, regulations and control mechanisms to implement SLM and land degradation control	<b>To</b> an incentive-oriented legislation which recognises ecological problems and opportunities, supports effective land and ecosystem management, and establishes socially acceptable mechanisms for their enforcement

<b>Knowledge management and capacity building shifts</b>	
<b>From</b> focus on land degradation and desertification	<b>To</b> focus on SLM
<b>From</b> scattered and poorly documented SLM traditions and innovations as well as project experiences	<b>To</b> building common, easily accessible and standardised knowledge platforms to share and use information for decision-making
<b>From</b> poor knowledge on impacts of land management	<b>To</b> concerted action for monitoring and assessment of land degradation and SLM, and on-/offsite impacts on ecosystem services
<b>From</b> weakened advisory services	<b>To</b> major reinvestments in rebuilding rural advisory services
<b>From</b> poor awareness raising and capacity building related to SLM	<b>To</b> major efforts in awareness raising, training, education and capacity building
<b>From</b> poor use of SLM knowledge	<b>To</b> informed decision support at local and landscape / watershed level

<b>Investment shifts</b>	
<b>From</b> inadequate or contradictory economic and pricing policies that discourage investment in SLM	<b>To</b> the development of financial and market incentives that facilitate and encourage private investment in SLM
<b>From</b> inadequately monitored national and private sector budgets on SLM related issues	<b>To</b> traceable budgets on well defined SLM activities built within dedicated investment frameworks
<b>From</b> few / scattered project funding coming from poorly coordinated development partners	<b>To</b> specific budgets pooled around SLM programmes, according to Paris Declaration principles (budget support, basket funding etc.)

(Source: Elaborated by authors and based on TerrAfrica, 2009)

The final conclusions are that investment in spreading SLM practices in Sub-Saharan Africa has great scope and can deliver multiple benefits not only locally, but also regionally (e.g. in watersheds), nationally as well as globally. SLM concerns all, at all levels, and pays in many more ways than recognised. Many of the global issues such as food security, poverty, water scarcity, desertification, climate change mitigation and adaptation, and biodiversity are closely related to SLM.

Additionally consolidated efforts are needed for knowledge management concerning SLM technologies and approaches and their spreading, not only to document and monitor valuable experiences for their own sake, but for dissemination and use in improved decision-making at the field and planning level. Given rapid changes, many adaptations and innovations concerning SLM will continue but will be untapped and unused. Consolidated action towards better use of valuable local, regional and global knowledge is needed and will be greatly beneficial in the future, as it can be anticipated that change will be even more pronounced (global markets, climate change, demands on ecosystem services, biofuel, etc.). Investment in SLM and knowledge management pays.