



Part 1

Guiding Principles



INTRODUCTION

Setting the frame

Land degradation, resulting from unsustainable land management practices, is a threat to the environment in Sub-Saharan Africa (SSA), as well as to livelihoods, where the majority of people directly depend on agricultural production. There is a potentially devastating downward spiral of overexploitation and degradation, enhanced by the negative impacts of climate change - leading in turn to reduced availability of natural resources and declining productivity: this jeopardises food security and increases poverty. Sustainable land management (SLM) is the antidote, helping to increase average productivity, reducing seasonal fluctuations in yields, and underpinning diversified production and improved incomes.

Sustainable land management is simply about people looking after the land – for the present and for the future. The main objective of SLM is thus to integrate people's coexistence with nature over the long-term, so that the provisioning, regulating, cultural and supporting services of ecosystems are ensured. In SSA, this means SLM has

to focus on increasing productivity of agro-ecosystems while adapting to the socio-economic context, improving resilience to environmental variability, including climate change and at the same time preventing degradation of natural resources.

These guidelines provide important guidance to assist countries to design and implement SLM technologies and approaches to scale up sustainable land and water management, at either the national program level or at the level of projects on the ground. The guidelines are one of a suite of products that falls under the TerrAfrica Country Support Tool, which offers a customisable approach for task teams and clients to build land management programs, either within investment operations or as stand-alone technical assistance. The guidelines build up on the experiences of the book 'where the land is greener' and have drawn from the expertise within the global WOCAT programme. They have been financed by the World Bank's Development Grant Facility 2008 as part of the 2009-2010 TerrAfrica Work Programs and co-funded by the Swiss Agency for Development and Cooperation (SDC).

TerrAfrica involves many Sub-Saharan countries and is led by the Planning and Coordination Agency (NPCA) of the African Union's New Partnership for Africa's Development (AU-NEPAD). TerrAfrica is a global partnership to mainstream and upscale sustainable land management (SLM) in SSA by strengthening enabling environments for mainstreaming and financing effective nationally-driven SLM strategies (www.terrafrica.org). Learning from past experiences, it endorses the principles of partnership, knowledge management and harmonised, aligned and scaled-up investment at the country level. The guidelines were developed in coordination with another TerrAfrica resource guide publication on 'Using sustainable land management practices to adapt to and mitigate climate change in Sub-Saharan Africa' (Woodfine, 2009).

These guidelines do not pretend to be exhaustive in terms of data and information collection, or to cover all aspects of SLM. A deliberate and strategic choice was made to show the potential of SLM in the context of SSA. A further function of these guidelines is to act as a prototype for national and regional compilations of SLM practices: thus showing how field knowledge can be made available in a way that can be followed by future publications covering other aspects of SLM. The focus here is on SLM practices in SSA which draw directly on WOCAT's extensive database, and take into account the experience of TerrAfrica's partners: in a rapidly changing environment every effort has been made to review and assimilate the latest trends, threats and opportunities (Crepin, et al., 2008; Woodfine, 2009).

Aims and audience

The overall aim of these guidelines is to identify, describe, analyse, discuss, and present for dissemination SLM practices, both technologies and approaches that are appropriate to Sub-Saharan Africa – and based in solid science. Materials are drawn from experience and representative case studies; these focus in particular on those practices with rapid paybacks and profitability and / or other factors likely to drive adoption. The direct objectives thus are:

- Knowledge synthesis and dissemination of 'best' SLM practices;
- Alignment of stakeholders for improved decision support in SSA;
- Promotion of standardised documentation, evaluation, sharing and use of SLM knowledge for decision-making.

The target group of this document constitutes key stakeholders in SLM programmes and projects, involved at the design and implementation stages. These thus include policy-makers, planners, programme managers together with practitioners, international financial and technical institutions, as well as other donors. The guidelines are intended also to raise further awareness and understanding among a broader public interested in poverty alleviation, protection of the environment and mitigation of land degradation.

Structure and sources

These guidelines build on WOCAT's book 'where the land is greener' (WOCAT, 2007), and are divided into two main parts.

Part 1 highlights the main principles behind SLM, and what considerations are important for technologies and approaches to qualify as 'best practices' suitable for upscaling. Information is based on literature and WOCAT's expertise.

Part 2 presents twelve groups of SLM technologies and a section on SLM approaches, supported by specific case studies. This section is based on the WOCAT global database, the TerrAfrica Knowledge Base, a literature review (publications, papers, project documents and manuals) and interactive contact with SLM specialists in SSA. The compilation of SLM groups and case studies focuses first on SLM interventions in order to identify factors of success / failure, good practices and lessons learnt. It determines the effectiveness and cost-efficiency of the various SLM interventions used to-date with the aim of identifying the best practices for scaling-up.

The best practices that are presented:

- cover major land use systems;
- represent solutions to various degradation types in different agro-ecological zones;
- cover a broad variety of technologies and approaches;
- have potential for upscaling, in terms of both production and conservation;
- capture local innovation and recent developments as well as long-term project experience;
- strike a balance between prevention, mitigation and rehabilitation of land degradation.

All groups and case studies are presented according to the familiar and standardised WOCAT format for documenting and disseminating SLM.

Particular efforts were made to show impacts of SLM and their potential to address current global issues such as desertification, climate change, water scarcity, and food security. Key resource persons and experts on SLM in SSA were asked to review and assist in finalising the SLM groups on technologies and approaches, to provide figures on costs and benefits, and to describe specific case studies. This is thus a product that brings together all the available, important information about SLM in SSA: it strives to be a 'state of the art' product. Thus, the guidelines are founded on a body of solid practical experience - and underpin the benefits of investing in SLM and the potential for building on success.

Focus on Sub-Saharan Africa

Sub-Saharan Africa is particularly vulnerable to the twin threats of natural resource degradation and poverty owing to the following factors:

- High population growth and pressure;
- Dependency of livelihoods on agriculture, with 65-70% of the population depending directly on rainfed agriculture and natural resources. Industry and the service sector also depend heavily on land management (Eswaran et al., 1997);
- Agriculture is highly sensitive to variability and change in climate, and markets / prices;
- Multiple severe impacts are likely to result from climate change (IPCC, 2007; Stern, 2007): these include higher temperatures, water scarcity, unpredictable precipitation, higher rainfall intensities and environmental stresses;
- The phenomenon of El Niño Southern Oscillation (ENSO) exerting a strong influence on climate variability, particularly in Eastern and Southern Africa;
- Abundance of fragile natural resources and ecosystems including drylands, mountains, rainforests, and wetlands;
- High rates of land degradation (erosion and declining soil fertility, increasing water scarcity and loss of biodiversity) and sensitivity to climate variability and change;
- Low yields and high post-harvest losses due to poor land management and storage practices and limited availability of, and access to, inputs.

It is clear from the foregoing that Sustainable Land Management (SLM) is crucial for SSA, and that there are special circumstances that pose particular problems and challenges for the successful implementation of SLM.

Focus on Sustainable Land Management

Land degradation is simply defined, within the 'FAO-LADA Approach' as a decline in ecosystem goods and services from the land. Land degradation negatively affects the state and the management of the natural resources - water, soil, plants and animals - and hence reduces agricultural production. Assessments in SSA show the severity of land degradation and the urgency of improving natural resource use through sustainable land management (SLM). Land degradation occurs in different forms on various land use types:

- On cropland: soil erosion by water and wind; chemical degradation - mainly fertility decline - due to nutrient mining and salinisation; physical soil degradation due to compaction, sealing and crusting; biological degradation due to insufficient vegetation cover, decline of local crop varieties and mixed cropping systems; and water degradation mainly caused by increased surface runoff (polluting surface water) and changing water availability as well as high evaporation leading to aridification.
- On grazing land: biological degradation with loss of vegetation cover and valuable species; the increase of alien and 'undesirable' species. The consequences in terms of soil physical degradation, water runoff, erosion are widespread and severe. Low productivity and ecosystem services from degraded grazing lands are widespread and a major challenge to SLM.
- On forest land: biological degradation with deforestation; removal of valuable species through logging; replacement of natural forests with monocrop plantations or other land uses (which do not protect the land) and consequences for biodiversity, and soil and water degradation.

Land uses addressed

Cropland: Land used for cultivation of crops (annual and perennial) e.g. field crops, vegetables, fodder crops, orchards, etc.

Grazing land: Land used for animal production e.g. natural or semi-natural grasslands, open woodlands, improved or planted pastures.

Forests / woodlands: land used mainly for wood production, other forest products, recreation, protection e.g. natural forests, plantations, afforestations, etc. (WOCAT, 2008)

Concerted efforts to deal with land degradation through SLM must address water scarcity, soil fertility, organic matter and biodiversity. Improving the water productivity and water cycle, soil fertility and plant management are important in raising land productivity.

Land degradation is exacerbated by climate change and climate variability. Africa's climate has long been recognised as both varied and varying: varied because it ranges from humid equatorial regimes, through seasonally-arid tropical and hyper-arid regimes, to sub-tropical Mediterranean-type climates; and varying because all these climates exhibit differing degrees of temporal variability, particularly with regard to precipitation (Nkomo et al., 2006). The complexities of African climates are attributable to a number of factors, many of which are unique to the continent, including the size of the tropical land mass, the expanse of arid and semi-arid lands, diverse vegetation, complex hydrology, incidence of dust exported from land surface to the atmosphere – and highly varied terrain including snow-capped mountains on the Equator, extensive low-lying swamp lands, huge inland lakes, rift valleys and two major deserts in the northern and southern sub-tropics (Crepin, et al., 2008; Woodfine, 2009).

Climate change is a major concern for SSA bringing new challenges. However, there is huge potential for SLM in climate change mitigation and adaptation.

SLM best practices and their upscaling in Sub-Saharan Africa is essential for a variety of reasons – but the most basic is to sustain and improve livelihoods while protecting the land's resources and ecosystem functions. SLM thus seeks to increase production including traditional and innovative systems and to improve resilience to food insecurity, land degradation, loss of biodiversity, drought and climate change.

Sustainable Land Management has been defined by TerrAfrica as:

'the adoption of land use systems that, through appropriate management practices, enables land users to maximise the economic and social benefits from the land while maintaining or enhancing the ecological support functions of the land resources'¹.

SLM includes management of soil, water, vegetation and animal resources.



Degradation of vegetation, soils and water along river banks (Hanspeter Liniger).

SLM also includes ecological, economic and socio-cultural dimensions (Hurni, 1997). These three are not separate: in reality they are interconnected (Figure 1). They are also referred to as the '3 Es' of sustainable development - Equality, Economy, and Ecology (UNESCO, 2006).

Ecologically, SLM technologies – in all their diversity – effectively combat land degradation. But a majority of agricultural land is still not sufficiently protected, and SLM needs to spread further.

Socially, SLM helps secure sustainable livelihoods by maintaining or increasing soil productivity, thus improving food security and reducing poverty, both at household and national levels.

Economically, SLM pays back investments made by land users, communities or governments. Agricultural production is safeguarded and enhanced for small-scale subsistence and large-scale commercial farmers alike, as well as for livestock keepers. Furthermore, the considerable off-site benefits from SLM can often be an economic justification in themselves.

¹In TerrAfrica's Background Note 1 SLM's definition is more complex, it is 'the combination of technologies, policies and activities aimed at integrating socio-economic principles with environmental concerns so as to simultaneously maintain or enhance production, reduce the level of production risk, protect the potential of natural resources and prevent soil and water degradation, be economically viable and be socially acceptable' which is drawn originally from Dirk Kloss, Michael Kirk and Max Kasperek. World Bank Africa Region SLM Portfolio Review, Draft 19 Jan 2004.

Best practices are basically the ‘best’ known to us at present: in the view of TerrAfrica ‘best’ implies those practices that increase production and are profitable, cost-efficient with primarily rapid, but also long-term payback, are easy to learn, socially and culturally accepted, effectively adopted and taken up, environmentally friendly and are appropriate for all stakeholders including socially marginalised groups (FAO, 2008a).

Scaling-up of SLM ‘leads to more quality benefits to more people over a wider geographic area more quickly, more equitably and more lastingly’ (ILEIA, 2001). Investments in scaling-up of best SLM practices in SSA are essential to have a significant impact. Too many best practices remain isolated in pockets. The challenge is to gain significant spread, not just to help an increased number of families, but to achieve ecosystem impacts that can only be realised on the large scale. In this context it is important to note that SLM covers all scales from the field to watersheds, landscapes and transboundary levels. Beyond field level, on-site and off-site as well as highland-lowland interactions need special attention. The simultaneous challenge and opportunity is to find best SLM practices which are win-win solutions leading to sustainability at the local, national and global scales.

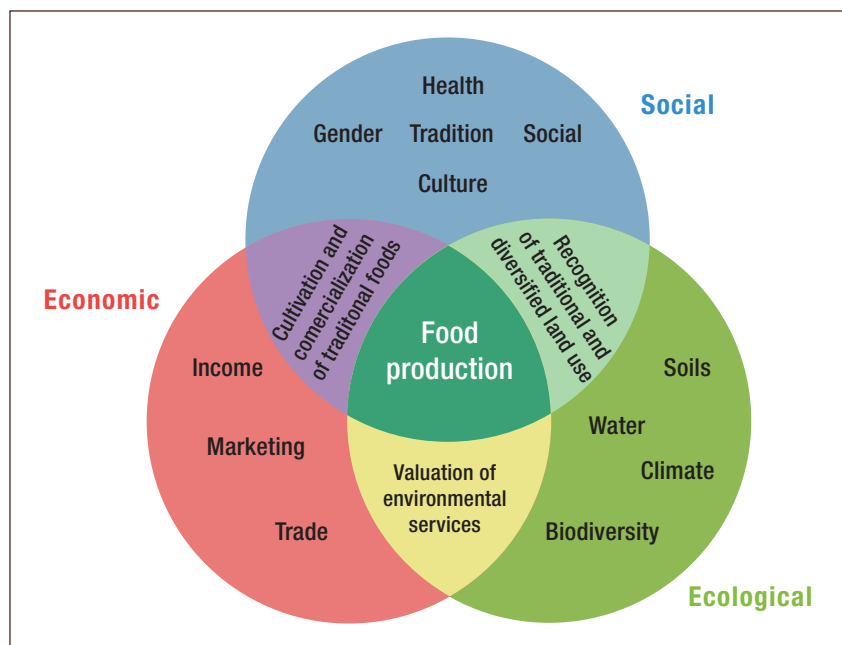


Figure 1: The 3 dimensions of sustainability. (Source: IAASTD, 2009a).