



Scaling up Sustainable Land Management Practices for Improved Agricultural Productivity in Northern Uganda: Agricultural Extension Capacity Needs

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➤ 1.0 Background and Context

One of Government of Uganda's (GoU) development aspirations is to transform the economy from the current peasant status to an upper middle income society by 2040. The National Planning Authority (NPA) has identified agriculture as one of the five sectors critical to propelling Uganda to the desired middle income status (NPA, 2015). In addition, GoU is committed to the 17 sustainable development goals (SDGs) of the United Nations. However, attaining some of the SDGs will be extremely challenging if the agricultural sector is not backed by a farmer-centered agricultural extension system, and if farmers do not adopt appropriate Sustainable Land Management (SLM) technologies and practices for increased productivity and farm incomes. Scaling up of SLM² technologies and practices is a prerequisite for attaining the following SDGs:-

- SDG 1:** End poverty in all forms;
- SDG 2:** End hunger, achieve food security and improve nutrition and promote sustainable agriculture;
- SDG 4:** Take urgent action to combat climate change and its impacts;
- SDG 12:** Ensure sustainable production and consumption patterns; and
- SDG 15:** Protect, restore and promote sustainable use of terrestrial ecosystems, manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Matching GOU development targets linked to global SDGs, the International Fund for Agricultural Development (IFAD) is funding a project on Scaling-up Sustainable Land Management (SLM) practices by smallholder farmers, and is working with agricultural extension services to identify, assess and disseminate SLM practices in Northern Uganda. The project goal is to enhance the resilience of communities and their smallholder farmers to climate change shocks, as well as pressures exerted by population growth, rapid urbanization, and economic expansion and working in close collaboration with another IFAD-supported loan investment in Uganda, entitled Project for Restoration of Livelihoods in Northern Uganda (PRELNOR)

➤ Executive Statement

Agricultural extension is a critical avenue towards facilitating the access of farmers, their organizations, and other value chain actors to knowledge, information, and technologies while brokering interaction with relevant partners in research, education, agribusiness, and building their capacity to improve the management of their agricultural activities. With Agriculture as a core sector of Uganda's economy, Sustainable land management (SLM) emerges a vital component of any attempt to achieve land degradation neutrality (LDN) and Sustainable Development Goals (SDGs) while building resilience to climate change and strengthening ecosystem services at a landscape level, particularly in degradation hot spots that include Northern Uganda. Despite a wide range of SLM practices fragmented across Northern Uganda, only a small percentage are documented and evaluated for scaling-up, at the same time the provision of agricultural extension services is characterised by capacity inefficiencies that undermine SLM scaling. In this policy brief, we trace the evolution of agricultural extension in Uganda that illustrates a robust institutional framework, highlighted the extension needs and recommended strategic interventions that will promote use of SLM technologies and practices. Key strategic interventions include: strengthening the capacity of agricultural extension agents to identify, document and promote use of SLM practices among farmers; mainstreaming SLM in all on-going agricultural projects; tapping into counterpart funding; popularising the catalogue of SLM interventions through use of ICT; developing and enforcing land care ordinances/bylaws; and establishing a network of champions as change agents. The value addition of a building a national SLM database linked to global WOCAT database recommended by UNCCD is underscored.

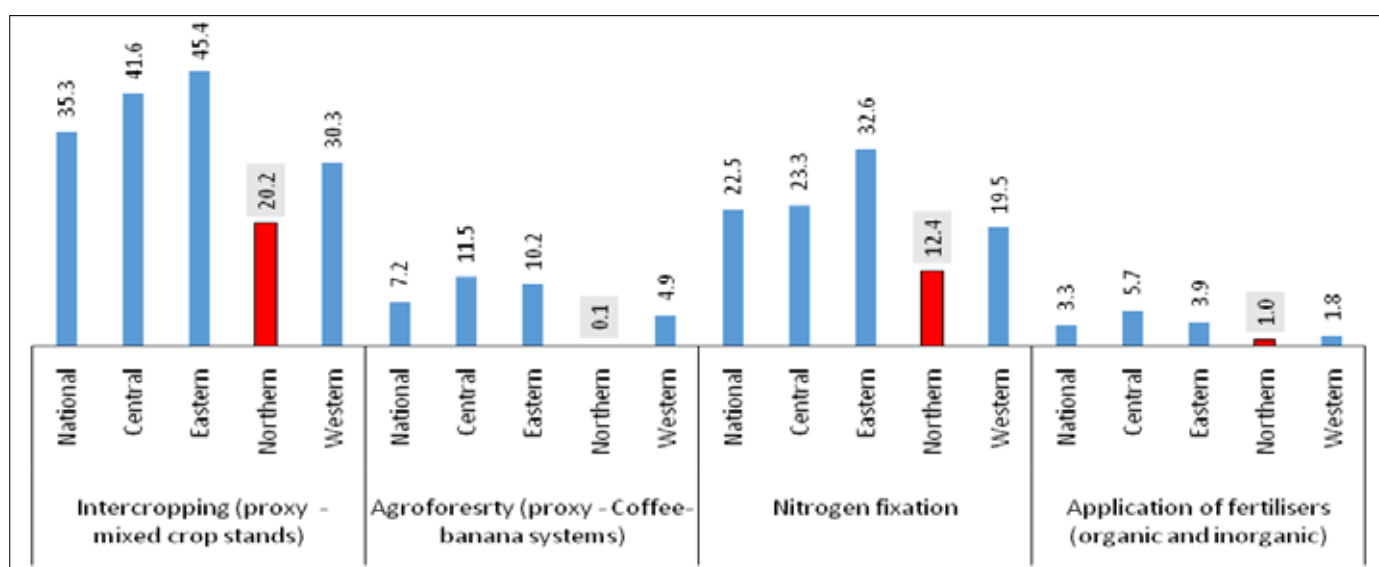
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² Sustainable Land Management (SLM) is the use of land resources, including soils, water, animals and plants, for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and ensuring their environmental functions (Liniger et al. 2011, Liniger and Critchley 2007).

Research reports show that there are wide disparities between what farmers harvest (on-farm yields) and what they can potentially get (on-station yields). Several factors explain this yield gaps, but land degradation is the principal contributor (WFP & NPA, 2017). At least 87 percent of Uganda's land suffers from some form of degradation, induced by humans (Bannada, 2010). Soil erosion is the major type of land degradation (MWE, 2006). It leads to loss of soil nutrients that plants require for proper growth, hence limiting production and productivity. Moyini et al. (2002) estimated the cost of land degradation in Uganda at US\$129.3 million per year.

Most farmers in Uganda have not adopted technologies that would otherwise keep the land resource productive. Figure 1 below shows that Northern Uganda had the least share of cultivated land under SLM practices in the period January to June 2016. Therefore, the region is a priority focus for development interventions including scaling up SLM.

Figure 1: *Percent of cultivated land under SLM technologies and practices. Jan-June 2016*



2016. Source: UNPS 2015/16 data.

➤ 2.0 The Need and Opportunity to Scale-up SLM Technologies and Practices

The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) recognizes land degradation as one of the major constraints to increasing agricultural productivity and production. The National Planning Authority (NPA) has prioritized investment in promoting sustainable land use and soil management (NDPII) as a strategy for improving agricultural productivity.. The World Bank is supporting implementation of the Agricultural Technology and Agribusiness Advisory Services (ATAAS) project, which also has an SLM component. This SLM component aims to enhance environmental resilience and sustainability of agricultural land resources with improved farm yields.

SLM adoption by smallholder farmers implies better food and income security in a sustainable manner. It implies enhanced resilience to climate change and strengthening ecosystem services (see farmers' testimonies in Box 1 below).

Box 1: *Testimonies of Benefits from SLM Technologies/Practices*

Mr. Uhuru Santos:

He is a farmer in Omoro district. He practices natural He indicated increased income and diversification.

Mr. Otto Bosco is also a farmer in Omoro district. He practices coffee agro-forestry. He has integrated shade trees in the coffee plantation. His coffee production has been on the increase over time and has not been affected by higher temperature like for other farmers in Northern Uganda. Shade trees keep the temperatures low on his farm.

Mr. Denis Nyero:

He is a farmer in Nwoya district. He grows a variety of crops including vegetables. He adopted soil and water conservation technologies including small scale irrigation. He is able to harvest throughout the year. According to him, far, productivity has more than doubled over time, thus increasing farm incomes. His farm has become a learning centre for other farmers.

Mr. Omoya Leone:

He is a farmer in Lamwo district. He converted his 1.5 acres courtyard into a botanical garden. He has over 20 tree species, including both fruit and non-fruit trees. He observes that the micro-environment created in Lamwo district are always above 30°C most of the year. He gets income from fruit trees in addition to the trees keeping the temperature lower at his home.

➤ 3.0 SLM Technologies and Practices Recommended for Scaling-up

The Uganda Landcare Network (ULN) has developed a catalogue of SLM technologies and practices recommended for scaling-up; they include the following inter alia: afforestation, agroforestry, woodlots, irrigation, crop rotation, controlled burning, manure application (green manure, animal manure), mulching, intercropping complementary crops, conservation of natural forests through establishment of Byelaws, and enforced no-fire zones. Figure 2 below shows some selected SLM practices.

Figure 2: *Selected SLM Practices for Scaling-up by Smallholder Farmers in Northern Uganda*



Mulching Beans (*Phaseolus vulgaris*)



Extensive fireline (clean slashed)



Intercropping *Zea mays* and *Citrullus lanatus*



Agroforestry *Coffea* and *Musa*



Mulching in *Musa* spp



Gravity Irrigation: *Solanum lycopersicum*

➤ 4.0 Priority Locations for Scaling up SLM Technologies and Practices

Figure 1 reveals that Northern Uganda had the least share of cultivated land under SLM technologies in 2016. This implies that the region should get more support to scale up adoption of SLM technologies and practices. The Scaling-up SLM project will be implemented by the Uganda Landcare Network in partnership with WOCAT in (Acholi sub-region) in 9 districts; namely, Lamwo, Adjumani, Amuru, Gulu, Nwoya, Agago, Kitgum, Pader and Omoro. The landscape approach has been adapted and consequently, 28 catchment areas have been identified for scaling-up SLM practices and technologies (Figure 3).

Figure 3: *The 28 Catchment areas in 9 districts in Northern Uganda*

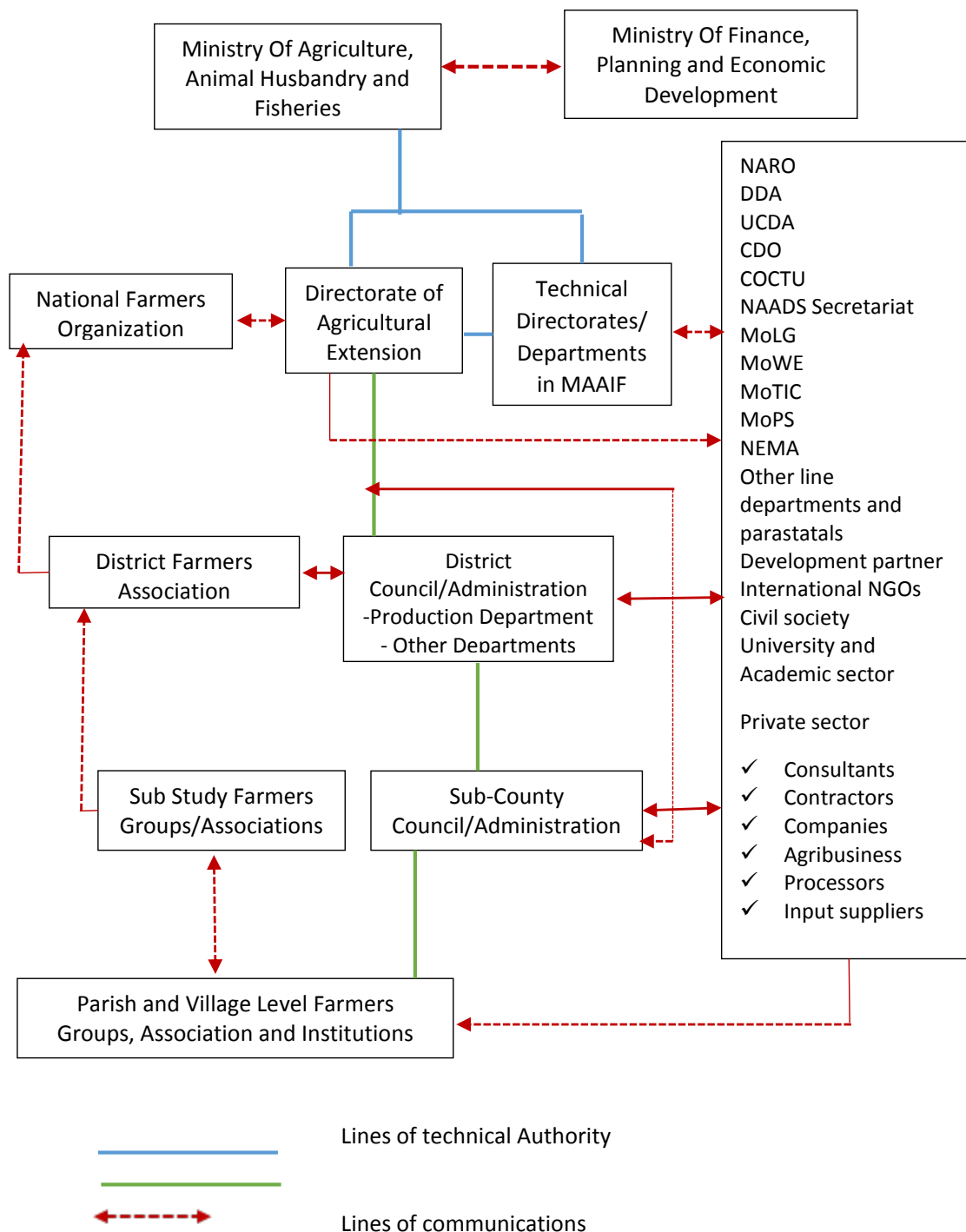
LAMWO <ul style="list-style-type: none"> •Nimur •Kidepo Kapeta I •Kidepo KapetaII 	GULU <ul style="list-style-type: none"> •Upper Tochi •Aguga Moroto •Laminator 	AGAGO <ul style="list-style-type: none"> •Lower Pageya •Upper Achwa •Awero •Aguga
NYWOYA <ul style="list-style-type: none"> •Adibu •Tongi •Lower Albertine Nile 	PADER <ul style="list-style-type: none"> •Lamina Kor • Otaka •Ike 	AMURU <ul style="list-style-type: none"> •Lower Aswa •Ayago •Upper Aswa
OMORO <ul style="list-style-type: none"> •Pope •Lower Coli •Lower Tochi 	ADJUMANI <ul style="list-style-type: none"> •Mid Albert Nile •Ituirikwa •Unyama 	KITGUM <ul style="list-style-type: none"> •Upper Paggeya Dopeth •Kapeta •Mid Pageya

➤ 5.0 The Role of Extension Services in Scaling up SLM Practices/Technologies

Agricultural extension service provision is expected to play an intermediary role between technology development by research institutions and farming communities. An effective agricultural extension systems is expected to address (i) technology transfer, (ii) human capital development among the semi-literate farm-households, (iii) build social capital (getting farmers organised into groups), and (iv) train farmers to manage natural resources in a sustainable manner (Swanson, 2008).

In June 2014, MAAIF developed an integrated, coordinated and harmonised public extension system, called the Single Spine Extension Service Delivery System. This was motivated by the failure of the National Agricultural Advisory Services (NAADS) program to sufficiently address farmers' agricultural extension needs. Figure 5 presents the structure of the single spine system.

Figure 4: *Institutional framework for providing agricultural extension services*



Source: Policy Guide for the National Agricultural Extension Services; MAAIF 2015

Availability of agricultural extension services is considered crucial to scaling up use of sustainable land management technologies and practices. However, access to agricultural extension services by smallholder farmers in Uganda remains low and has declined over the past years. The proportion of female farmers with access to public extension is even far less than that of their male counterparts, yet more women than men are engaged in agricultural production

6.0 Requirements for Agricultural Extension Service to Scale up SLM

The following are the extension service requirements that should be addressed in order to successfully scale-up SLM practices:-

- (1) Sensitization and creation of awareness about SLM among different stakeholders (farmers, policy makers, extension staff, researchers, etc).
- (2) Establishing SLM practices and technologies appropriate for each of the selected catchment areas in Northern Uganda.
- (3) Assessing and documenting whether farmers who currently use the recommended SLM practices and technologies following the established standard operation procedures.
- (4) Building and strengthening capacity of extension staff to improve their knowledge and skills on SLM practices and technologies.
- (5) Generating user friendly extension materials to aid transfer of knowledge to farmers. These could be a trainer's manuals on SLM practices; training materials (e.g. visual aids and ICT-based communication tools); etc. Knowledge on SLM practices and technologies should be translated into local languages/dialects.
- (6) Adequately facilitating extension staff to deliver and demonstrate SLM practices and technologies to farmers using different channels (e.g. radio and TV talk shows, motorcycles, fuel, airtime, etc).

7.0 Emerging Strategic Interventions

The following actions are recommended to support scaling up the use of SLM technologies and practices by farmers:-

- (1) Mainstreaming SLM technologies into already existing core GoU programs (such as the Agriculture Cluster Development Program and Farm Income Enhancement and Forest Conservation) of MAAIF.
- (2) Recruiting more extension staff to fill all the vacant technical positions in the single spine institutional arrangement GoU.
- (3) Exploring various funding options, such as counterpart funding which can be used to supplement funding of SLM priority interventions.
- (4) Lobbying at national, regional and international levels for stakeholders to fund projects that clearly demonstrate how SLM issues implemented to increase funding for scaling up SLM.
- (5) Districts with ordinances/bylaws on land care should be empowered to enforce them; those that lack the ordinances should be facilitated to develop them.
- (6) A platform for exchanging information on SLM and advocating for scaling up SLM technologies should be established, responsible for generating, updating, managing and disseminating information on SLM.

➤ 9.0 SLM Database

Alongside capacity building of extension agents, a national SLM Database www.slm.go.ug (Figure 6) hosted by National Agricultural Research Organization (NARO) linked to the SLM the global Database www.wocat.net on SLM of WOCAT recommended by UNCCD is under development. The purpose is to provide access to the documentation of field-tested SLM data including SLM practices and maps from different places in the world, and enabling practitioners share their own SLM practice or map. The objective of documenting and assessing SLM practices under the database is to share and spread valuable knowledge in land management, support evidence-based decision-making, and scale up identified good practices, thereby contributing to preventing and reducing land degradation and to restoring degraded land.



10.0 Bibliography

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