Towards Nutrient Cycle Optimization through Synergies with Sustainable Land Management Stakeholders in Pilot Zones of the Fertile Grounds Initiative in Uganda

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Abstract

Low and declining soil fertility levels present a real constraint for agricultural production in general and food security in particular. Uganda’s declining soil fertility is largely caused, inter alia, by soil erosion, nutrient removal, inadequate capacity of farmers to replenish soil nutrients, and leaching of soils. The key concern is that most Ugandan farmers do not have the technical capacity and the financial resources to carry out soil sample testing. As a consequence most are unable to detect which nutrients are lacking nor to identify locally available nutrient sources.

In the past there have been many interventions and huge investments to increase soil fertility levels, but they did not solve the problem of disconnected nutrient flows. This is why additional action is required that will enable farmers to improve their low soil fertility levels by optimizing and redistributing locally available resources, supplemented with external inputs. Alterra Wageningen UR, ZOA and Soil & More International have launched the “Fertile Grounds Initiative” (FGI), and developed an multi-stakeholder and multi-level approach aiming at a better nutrient management with the intent to increase soil fertility, and thus enhance food and economic security. FGI-Uganda (FGI-U) will work as a Multi-Stakeholder Project (MSP) with and through partners in Uganda who are implementing projects to improve soil fertility, productivity and economic security of smallholder farmers. This report is an output of the initial stakeholder mapping as part of the preparation phase for piloting the FGI in Uganda.

Keywords: Fertile Grounds Initiative, Uganda, Nutrient management, Soil fertility, Stakeholder alignment, Rural development

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<td>ARIS</td>
<td>Agricultural Research Information Systems</td>
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<td>BN</td>
<td>Biological Nitrogen fixation</td>
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<td>CAADP</td>
<td>Comprehensive Africa Agriculture Development Programme</td>
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<td>CHEHRI</td>
<td>Community Health Environment and Human Rights Interventions</td>
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<td>CSOs</td>
<td>Civil Society Organizations</td>
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<td>CRIST</td>
<td>Church Role In Socio Economic Transformation</td>
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<td>DETREC</td>
<td>Development Training and Research Centre</td>
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<td>FGI</td>
<td>Fertile Grounds Initiative</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>Ha</td>
<td>Hectare</td>
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<td>ISFM</td>
<td>Integrated Soil Fertility Management (ISFM)</td>
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<td>KDFA</td>
<td>Kyenjojo District Farmers Association</td>
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<tr>
<td>Kg</td>
<td>Kilogram</td>
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<tr>
<td>IFDC</td>
<td>International Fertilizer Development Centre</td>
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<td>IFPRI</td>
<td>International Food and Policy Research Institute</td>
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<td>IITA</td>
<td>International Institute Tropical Agriculture</td>
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<td>NAADS</td>
<td>National Agricultural Advisory Services</td>
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<td>NaRL</td>
<td>National Research Laboratories</td>
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<td>NARLab</td>
<td>National Agricultural Research Laboratories</td>
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<td>NDP</td>
<td>National Development Plan</td>
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<td>NFS</td>
<td>National Fertilizer Sub-Sector Development Strategy and Investment Plan</td>
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<td>NGOs</td>
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<td>PASIC</td>
<td>Policy Action for Sustainable Intensification of Ugandan Cropping Systems</td>
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<td>RPOs</td>
<td>Rural Producer’s Organizations</td>
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<td>TOR</td>
<td>Terms of Reference</td>
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<td>UBOS</td>
<td>Uganda Bureau of Statics</td>
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<td>UIC</td>
<td>Uganda Investment Company</td>
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<td>UIRI</td>
<td>Uganda Industrial Research Institute</td>
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<td>UNFA</td>
<td>Uganda National Farmers’ Association</td>
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<td>UNFFE</td>
<td>Uganda National Farmers Federation</td>
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<td>URA</td>
<td>Uganda Revenue Authority</td>
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<td>USIF-SLM</td>
<td>Uganda Strategic Investment Framework for Sustainable Land Management</td>
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<td>WUR</td>
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Executive summary

Presented in this report are the findings of the stakeholder mapping study of key actors in the sustainable land management sub-sector with a specific focus on nutrient recycling potential among farmers in selected agro-ecological zones of Uganda. This stakeholder mapping study is based on the study commissioned by the Fertile Grounds Initiative (FGI) and conducted during the month of May 2015 by an independent Ugandan consultancy (Winsor Consult Ltd.) and a fact finding mission in the same month.

The objectives of the study included: i) Capturing relevant details of the main stakeholders involved in sustainable agriculture development and land management, initiatives and policies at national level in Uganda and in the FGI pilot zones, ii) Identifying major constraints and current needs of stakeholders; iii) Identifying critical partnerships for cooperation, together with operations that could contribute to synergies with FGI; and iv) Identifying possible quick wins for restoring and maintaining land productivity through FGI activities in each of the FGI pilot zones.

The main stakeholders for FGI in Uganda are Government Ministries notably the Ministry of Agriculture Animal Industry and Fisheries (MAAIF); Ministry of Lands Housing and Urban Development (MoLHUD), and Ministry of Trade, Industry and Cooperatives (MoTIC), and district local governments and urban authorities including Kampala Capital City Authority (KCCA). Other stakeholders are government bodies established by statutory instruments including the Uganda National Bureau of Standards (UNBS) and the National Agriculture Advisory Services (NAADS); Non-Government Organizations (NGOs) and Civil Society Organizations (CSOs). National and international level research institutions, private soil science and farm extension service providers, financial institutions, importers, whole sale traders, and stockists complement the stakeholder spectrum surrounding farmers, producers and farmer organizations.

At a more technical level, FGI-U takes note of interventions linked to its strategic focus including: the current initiatives by government and development partners to finalize and operationalise the national fertilizer sub-sector development strategy and investment plan; the process to undertake a meta-evaluation/assessment on organic-based fertilizer use and application of these findings; the work being done by the Ministry of Trade to provide guidance on the legal framework for fertilizer trade. Other important developments include the work done by PASIC where key potential partners: MAAIF, National Agriculture Research Organization (NARO), IFPRI, Microfinance Support Center (MSC); Economic Policy Research Centre (EPRC), National Agricultural Research Laboratories (NARL) - Kawanda, and IFDC are working to update Agricultural Research Information Systems, soil resource maps and a soil database; and to develop partnerships in disseminating soil research findings and nutrient deficiency information. The FGI-U will work with and through partners in Uganda who are implementing projects to improve soil fertility, productivity and economic security of smallholder farmers, and focuses on the following core areas:

i. Provide knowledge and training on ISFM and develop integrated fertilizer recommendations (capacity building);
ii. Facilitate processing of good quality integrated fertilizer products, and upscaling of this knowledge;

iii. Bringing together supply and demand of nutrients and developing arrangements for trade (a Nutrient and Agricultural Input Platform);

iv. Strengthening networks and knowledge management that provide sufficient input along the entire value chain linking various stakeholders through which awareness is further increased.

v. Provide support to policy making that leads to more government investments in the above areas.
1. Introduction

1.1 The Fertile Grounds Initiative

The Fertile Grounds Initiative (FGI) was initiated by Alterra Wageningen UR following the reporting on main soil fertility issues in sub-Saharan Africa upon request from the Dutch Ministry of Foreign Affairs and the Ministry of Economic Affairs (van Beek et al., 2014).

FGI developed an approach based on 8 components (Fig. 1) aiming at a better nutrient management with the intent to increase soil fertility and thus to enhance food and economic security. This approach needs to be adapted to local conditions and single components will be executed simultaneously.

Figure 1: The eight components of the FGI approach.

The first two components including the inventory of nutrient requirements (demand of farmers) and the inventory of nutrient availability (supply at different scales) form what can be called the nutrient gap analysis. Together with the verification of the capacity of institutional willingness these aspects are fundamental to close the nutrient cycle more efficiently. This requires the concerted alignment of a variety of actors and stakeholders at various levels of scale. While component III focuses on facilitating the production of integrated fertilizer products (Product formulation and processing), component IV is bringing together supply and demand of nutrients and developing arrangements for trade (brokering). Component V deals with optimization of nutrient trade and transport to ensure a well-organized nutrient supply (Trade logistics). In addition to component VI, i.e. capacity building, component VII
(Institutionalization) promotes institutional arrangements regarding cooperatives, nutrient banks, legal and institutional embedding. FGI also recognizes the importance of an enabling environment (component VIII) that should mobilise support for market access, micro-credits, insurances, etc. for smallholder and other farmers. As a concept FGI also aims to facilitate upscaling of results obtained and provide support to policy making.

The idea of the FGI is to bring together the supply and demand sides of nutrients within a specific geographical area, to make optimum use of site-specific interventions and available nutrients, supplemented with external inputs.

FGI-U started its activities in November 2014 with a Theory of Change (ToC) workshop in Kampala (see section 1.2). Since then it is coordinated by a voluntary Task Force, facilitated in Uganda by ZOA, and has its secretariat currently at IFDC Uganda.

The focus of the initiative is empowering communities with sustainable agricultural livelihoods based on farmer-centred, applicable, proven, and reliable ISFM practices. FGI-U is in its planning phase of mapping out its potential collaborating stakeholder network and designing its key priority intervention areas. This report is one of the outputs of this phase.

1.2 Main results of Theory of Change workshop

A Theory of Change (ToC) is a planning model presenting all building blocks required to bring about a given long-term goal (the vision to be realized). These blocks, also referred to as outcomes, preconditions or breakthroughs that are depicted on a map: the change pathways. The ToC consists of 5 steps: (i) Formulate the ‘dream’ or ‘vision of success’ at the goal or impact level, (ii) Develop pathways of breakthroughs (outcomes), (iii) Articulate assumptions, (iv) Make explicit the role of stakeholders and factors in the given context and how to deal with these, and (v) Test the logic and relevance of the theory and consult (more) stakeholders. As a consequence, the ToC is an important first step for a project or program because it creates a commonly understood vision of the long-term goals, how they will be reached, and what will be used to measure progress along the way.

In the workshop the following main vision elements were formulated:

1. Secured land tenure as prerequisite to adoption of ISFM practices;
2. Farmers profitably improve soil fertility;
3. Sustainable soil management for improving production and productivity of Ugandan farmers;
4. Farmers aware & able to manage the soils in a sustainable way;
5. Efficient extension and information dissemination (public and private);
6. Development of a clear soil map for the various zones of Uganda.
These built the foundation of a single group vision for FGI in Uganda:

**Empowered Communities with sustainable agricultural livelihoods based on ISFM approach.**

![Figure 2. Visualized vision for 2025.](image)

![Figure 3. Potential roles of the various actors identified (blue blocks) and additional suggested ones (yellow blocks).](image)

The mapping includes various actors in the fertiliser sub-sector, their relationships, and potentiality for collaborative linkages with FGI-U. The mapping provides information that
enables the FGI Theory of Change\(^1\) to respond to interests, abilities and framework conditions of ISLM stakeholders.

2. Overview of the fertilizer sub-sector

2.1 Uganda’s agricultural sector in brief

About 73% of Ugandans are employed in an agriculture sector blessed with rainfall received for most of the year. While progress in the agro-processing sector has been slow, it has boosted agriculture to contribute about 24% to Uganda’s gross domestic product (MoFPED 2013). Coffee, tea and cotton are Uganda’s leading cash crops. However, as the number of commercial farmers has increased over the last decade, food crops like maize, rice and beans are now both food and cash crops. This is partly due to their high demand in neighbouring South Sudan and Kenya. Other food crops include bananas, cassava, sorghum, millet, potatoes, sweet potatoes, yams, simsim, cow peas and a range of other fruits and vegetables. Uganda has also made progress in growing cocoa, vanilla, sunflowers, soya and tobacco in response to global market demand. There are three types of farmers in Uganda: Subsistence farmers (comprising about 70% of the farming population); Semi-commercial farmers who also participate in agri-business (25% of the total); and Commercial farmers (about 5% of the total). Of the 5.13 million hectares of land that is owned, 86% of the land is cultivable but only 58% is cultivated (MoFPED 2010). Over 80% of Ugandans reside in the rural countryside and are dependent on land for their livelihood. Uganda’s second national development plan (NDP II) emphasizes commercialization of agriculture to increase production and productivity along the value chains. The prosperity of this sector is heavily dependent on the productivity of Uganda’s soils. After centuries of mining, majority of Uganda’s soils have lost their fertility. This is at a time when Uganda’s population is growing very rapidly, at a rate of 3.4% per annum. However, low and declining soil fertility levels present a real constraint for agricultural production in general and food security in particular. Uganda’s declining soil fertility is largely caused, inter alia, by soil erosion, nutrient removal, inadequate capacity of farmers to replenish soil nutrients, and leaching of soils. The key concern is that most Ugandan farmers do not have the technical capacity and the financial resources to carry out soil sample testing neither to purchase commercial inputs at the volume to compensate all negative nutrient balances. As a consequence most are unable to detect which nutrients are lacking and unaware about local nutrient sources.

\(^1\) The FGI Theory of Change presents a road map and guide towards causal modelling. It articulates the assumptions used by FGI to explain the change process thereby indicating interventions that bring about outcomes and impact with respect to ISFM.
2.2 Fertilizer availability

Uganda’s economy is heavily dependent on agriculture with 70% of the population directly deriving their livelihood from agriculture or its related enterprises. The sector contributes to 23% of the Gross Domestic Product (GDP) and 48% of the country’s exports (UBOS 2012). Uganda vision 2040 positions the agricultural sector as a lead sector that should lift millions out of poverty by that year. Uganda has 14 distinct agro-ecological zones (AEZ) as shown in Figure 4.

![Figure 4. Mapped agro-ecological zones in Uganda.](image)

The areas above have a diversity in soil health with richest soils in the river and Lake Victoria crescent and volcanic belts. Soil fertility studies show a gradual decline in potassium in most parts of Uganda. As a whole, Uganda falls short of the target set at the Abuja Declaration (African Union, 2006) that tasked all African Countries to raise their inorganic fertilizer application to 50 kg/ha by 2015 as shown in Figure 5.

The use of inorganic fertilizer in Uganda averages 1 kg/ha (Pender et al., 2004) and is below the sub-Saharan Africa average which is between 5 and 10 kg/ha (Wanzala 2011). Uganda’s
The inorganic fertilizer market is liberalized, but small, with associated high prices (subsidies are non-existent). As a consequence, all AEZs have negative nutrient balances, as illustrated for some of them in Figure 6.

Figure 5. Fertilizer use in Africa (Source: The Africa Fertiliser Summit, 2011).

Figure 6. Nutrient balances in farmlands for selected agro-ecological zones (adapted from Kaizzi et al. 2004).

The national statistics hardly account for the inorganic fertilizer, and mostly, present data on trade and use of imported Urea, Diammonium Phosphate (DAP), Calcium Ammonium Nitrate (CAN), or Muriate of Potash (KCl). However, organic-based fertilizer is processed and applied on-farm, and clearly influences yield in farmers’ fields. As shown in Figure 7 below, fertiliser imports between 1994 and 1996 were already insufficient but declined further to about 2,500 t in 1996. Between 1998 and 2004 the import of fertilizer stagnated averaging 8,000 t until 2005 where it peaked at 20,000 t. Afterwards fertilizer imports declined up to around 14,000 t and did not recover until 2008. They later increased to 47,000 t in 2009, but declined again in the year 2010 due to a number of factors including: global economic depression of the time and
low demand at the level of farmers (linked to drop in coffee, tea and cotton prices on the
global market).

![Figure 7](image)

*Figure 7. Uganda’s fertilizer imports in the period 1994-2010 (Source: Uganda Revenue Authority import database).*

Most of the fertiliser (mainly inorganic) used in Uganda is imported from Kenya and mainly manufactured from Europe, the United Arab Emirates, and South Africa. The players in the supply-distribution chain for inorganic fertilizer in Uganda include few importers, large-scale farmers, commercial importers, wholesalers, retailers, and farmers. A few agricultural focused NGOs also link farmers to importers and distributors of fertilizer mainly based in Kampala and Mbale. In some towns, district branches of the Uganda National Farmers’ Association (UNFA) sell fertilizer often at subsidised rates to their members.

Currently, it is difficult to distinguish chain actors because trade in organic fertilizer does not transit beyond farm level. Most farmers are seeking to practicing: mulching, grass strips, soil bunds, fallowing, submersion of crop residues, use of animal manure and compost in fields. A small number around the greater Kampala use processed liquid fertilizer (by mixing and fermenting molasses, animal droppings and plant tissues) and apply it on orchards, banana plantations, horticulture crops and even in home flower gardens. A selection of on-farm initiatives related to processing and applying organic-based fertilizer were identified during the FGI fact finding mission around greater Kampala and in the districts of Mbale, Kyenjojo, Kiruhura, Kabale, Kanungu and some parts of Kumi.

During interviews with agricultural officers and farmers in the FGI pilot zones, the stakeholder mapping study found the following core factors were responsible for low fertiliser use:

i. **Narrow range of fertilizer products on the market** - Urea, TSP, DAP, NPK, CAN are the most common types of fertilizer on the market shown by results of recent research (Kaizzi et al 2011), and indicate that crop response to application of NPK fertilizer is still below the breeders yield potential of most crop varieties currently being used by smallholder farmers. There is a need for more fertilizer products such as Mavuno,
Minjingu Rock Phosphate, (which supply additional nutrients e.g. micro-nutrients, trace elements).

ii. **High fertilizer prices** - linked to high transaction costs of fertilizer trade arising from transportation costs. Interviews with fertilizer suppliers in Kampala revealed heavy reliance on fertilizer imported from USA, Europe, China and India. They also indicated that fertilizer were priced highly because of the low turnover.

iii. **Lack of information** - Farmers in the FGI pilot zones lack information on availability and cost of fertilizer, including return on investment. The District Production and Marketing Offer in Kyenjojo indicated that stockists take advantage of farmers’ ignorance, to negotiate prices, which further discourages farmers from purchasing and using fertilizer.

iv. **Lack of capital to purchase fertilizer** - Farmers in the FGI pilot zones lack capital for investing in fertilizer trade. The existing credit/financing institutions charge relatively high interest rates. This study, however, found that there is an opportunity presented by the Uganda Micro Finance Support Centre (a government company established in 2001 with a high rural outreach to provide whole sale credit to SACCOs, micro finance institutions, and small and medium scale enterprises) that need to be harnessed. This is one of the key stakeholders that need to be engaged by FGI in order to stimulate demand and promote affordability of fertilizer by farmers in the pilot zones.

v. **Inability of farmers to purchase fertilizer in bulk** - During key informant interviews with farmers in all the study districts, the stakeholder mapping established that farmers were unable to purchase fertilizer in bulk due to lack of financial resources, and other related factors such as access issues inducing distance to nearest stockists. When farmers get more organized through their farmers associations and cooperatives, and gain access to credit facilities plus other enabling services (such as crop insurance, opportunity to buy fertilizer in bulk) purchases will be enhanced.

vi. **Low farm gate prices for agricultural products** - Interviews with farmers in Kiruhura revealed that the uncertainty of the price at which they finally sell their agricultural produce discourages them from investing in (commercial) mineral fertilizer, hence relying on animal manure. In Kyenjojo farmers indicated that information given to them on existing local FM radio stations through an initiative funded by HIVOS (an international Charity supporting Twaweza and Uganda Radio network partner radio stations) enabled farmers to resist low farm gate prices.

In the table below the SWOT analysis (strengths, weaknesses, opportunities and threats) is presented.
Table 1. Swot analysis of the fertilizer sub-sector.

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<tr>
<th>STRENGTHS</th>
<th>OPPORTUNITIES</th>
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<tr>
<td>• Most farmers organized through district farmers’ Associations, Unions, SACCOs hence presenting entry points for FGI to reach smallholder farmers.</td>
<td>• Fertilizer trade liberalizations offer an opportunity for building a private sector-led fertilizer sub-sector.</td>
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<td>• Field practitioners and NGOs in the agriculture sector with long standing working knowledge of the farming context in rural areas. These provide a potential for collaborative research, information as well as prospective building farmer engagement frameworks/platforms.</td>
<td>• Markets are available for most agricultural products, more so considering that the demand for fertilizer is directly related to the profit margins generated from output sales.</td>
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<td>• Plenty of organic/compost material is generated from crops and livestock residues in pilot zones most already with farmers, schools, prisons, hospitals, markets that could be used.</td>
<td>• The AFMU (Agribusiness and Farm Management Unit) has been established by MAAIF at national level to share knowledge and information relating to agribusiness, strengthening market business, and value chain analysis.</td>
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<td>• Expertise is available in the country for undertaking agricultural research on soil fertility management e.g. NARO, IFDC, IITA, ASARECA, IFPRI, etc. A wide knowledge base has been created in agricultural research, training and extension by these and by academic institutions such as EPRC in Makerere University.</td>
<td>• Research centres exist with infrastructure for soil analysis, on-farm trails, demonstration arrangements are in place for field days and knowledge sharing by farmers.</td>
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<td>• The SLM framework program has been established in Uganda with an inter-sector ministerial committee that brings together: agriculture, trade, energy, finance, lands, housing and urban development.</td>
<td>• Small and large farmer organizations have been set up to mobilize inputs, players and other facilities along production and market chains.</td>
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<td>• The NAADS has developed a business development model for small and large scale farmers that can be used by FGI to develop a business case for organic fertilizer.</td>
<td>• Government provides tax incentives for agribusiness in Uganda, including: i) income tax exception on agro-processing investment especially for new plants and machinery, ii) value added tax exemptions on civil works related to agriculture, etc.</td>
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<tr>
<td>• A lot of credit facilities are available for farmers including publically availed resources (Youth livelihood scheme, NAADS, NUSA, PRDP, Micro Finance Support Centre, Private Sector Foundation of Uganda etc.).</td>
<td>• The Uganda Micro Finance Support Centre (Government of Uganda Company limited by guarantee) offers wholesale lending to SACCOS which are farmer focused.</td>
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### WEAKNESSES

- Limited capacity by NARO and other agricultural research service providers to package and disseminate research findings leading to low knowledge diffusion, esp. to smallholder farmers.
- Weak agriculture research diffusion - agricultural research knowledge fail to reach smallholder farmers.
- Inadequate information on profitability and return on investment for applying fertilizer.
- Limited financial inclusiveness among smallholder farmers (large number of unbanked farmers - this limits their capacities to access formal financing mechanism for agro-business loans; yet 74% of the rural population in Uganda relies on informal financial services (Finscope study 2013).
- Inadequate enforcement of fertilizer grades and standards by Uganda Bureau of Standards - it is worsened by alienation of local government directorates for production and marketing.
- Limited farmers' knowledge on fertilizer trade, pricing, application of inorganic and organic fertilizer.
- Limited research undertaken by agricultural institutions on the applicability of different forms of organic fertilizer.
- Inadequate coordination on fertilizer production, use and application between agricultural focused CSOs, Government of Uganda relevant Ministry Departments and agencies and development partners.
- Inability of local government to sustainably support agricultural extension work due to understaffing.
- Weak policy framework on import commodities.

### THREATS

- Increased climate variability, creating more uncertainty on investment returns.
- Competition for organic resources by bio-gas initiatives.
- Pricing of agricultural inputs in Kenya.
- Fake fertilizer supply on the market, which is originating from beyond national borders, yet there has a weak fertilizer quality assurance system (benchmark for fertilizer quality).
- High prices of other agricultural inputs (worsened by a tax level on some products during the 2014/15 national budget).
- Volatile exchange rate affecting purchasing power.
- Declining public investments in the agriculture sector, signalling lack of commitment by government to the Maputo Declaration (Uganda has spent about 4% on the sector on average over the last decade in contrast to the 10% commitment).
- Misinformation about excessive negative side effects by artificial agro-inputs which is spread by poorly informed organic campaigners.
2.3 The guiding sector policy framework

Uganda depends heavily on its soils for the production of food, cash crops and fodder for both domestic consumption and to export products. Cognizant of the low use of fertilizer (Fig. 5), there are now various efforts on the policy side to improve the fertilizer sub-sector and include the following policies:

1. **The National Fertilizer Sub-sector Development Strategy and Investment Plan**
   The government initiated the process of developing the fertilizer policy and regulations. Once in place, they will be operationalized by the national fertilizer strategy, which goal is to ‘increase farm level fertilizer utilisation and application rates from the current national average of 1 to 50 kg/ha per year by 2020’ (MAAIF, 2016). Under the NFS-DSIP the following four priority actions were identified: (i) creating conducive fertilizer business environment; (ii) increasing demand and use of fertilizer; (iii) enhancing the supply and distribution of quality fertilizer; and (iv) generating and appropriately managing fertilizer knowledge. Furthermore, the NFS-DSIP recommends waiving of withholding tax on fertilizer.

2. **Ugandan Strategic Investment Framework for Sustainable Land Management**
   The U-SIF-SLM is an integral element of National Development Plan and specific Development Strategy Investment Plans (DSIPs) – 2015-2019 for five sectors, including agriculture, water and environment, energy, lands and trade. The purpose of the U-SIF is to upscale SLM practices across sectors, and to avoid duplication across stakeholders and sectors. Among other elements, the U-SIF focuses on supporting on-the-ground activities that will upscale SLM, thereby promoting key sector co-operation in improving natural resource based livelihoods and other ecosystem services.

3. **Liberalization policy**
   In the mid-1980s’ Uganda adopted a liberalization approach in trade and service delivery. The liberalization policy opened up the economy for the private sector to freely trade with minimum interference from government. The fertilizer trade has positively benefited from liberalization as evidenced by trade volumes, which have expanded since the early 1990s. The government, by removing taxes on fertilizer except 6% withholding tax, has accelerated smallholder farmer fertilizer demand and utilization.

4. **Regulatory framework**
   The most outstanding regulatory framework for fertilizer in Uganda is the Control of Agricultural Chemicals Statute dated 1989. However, the existing Agricultural Chemicals Regulations (1993) do not specifically explain how fertilizer shall be regulated. As a result, fertilizer import has to go through the whole range of certification training on safe use and handling of a wide array of agrochemicals, in order to acquire an import permit and license.
3. Key actors in sustainable agriculture development

The application of fertilizer stands out as a key strategy for increasing crop production, in addition to using other complementary inputs such as improved seeds and supportive services (credit, insurance, and extension). The reality is that a considerable proportion of soils in Uganda are weathered, and cannot release sufficient phosphorus, potassium, calcium, magnesium or sulphur (Bekunda et al. 2002) required for sustaining on-farm productivity. Most actors in sustainable agriculture development understand the magnitude of the problem of insufficient agricultural inputs and handling, and have intervened in various ways ranging from policy, business or capacity building and other development support perspectives. It is under these various perspectives that we categorized various actors in the sustainable agriculture development in this section and their potential for engagement under the FGI.

3.1 Governmental and national institutions

3.1.1 SLM FRAMEWORK

The FGI-U will work within the U-SIF SLM and will anchor its programme within the ministry policy direction for the purpose of alignment with the government framework.

3.1.2 MTIC

The Ministry of Trade Industry and Cooperatives will be a potential key partner in the lobbying efforts by FGI-U to address the issue of taxation on agricultural inputs. On the other hand, bulk purchase of fertilizer through cooperatives has tremendous potential in reducing the unit cost a farmer eventually pays and reducing the transaction costs related to transport borne by each individual farmer without cooperatives. In this regard working with cooperatives will be critical. Already FGI-U is in consultation with a dairy cooperative in western Uganda for the potential use of cow dung to process liquid manure on a fairly large scale as well as linking the cooperative to a pasteurizer producer to process milk into high value yoghurt.

3.1.3 UNBS

Uganda National Bureau of Standards (UNBS) has the mandate to ensure enforcement of standards for all products produced and consumed in the country whether domestically produced or imported from outside. For the interest of the FGI-U, UNBS will be a partner for ensuring that imported fertilizer into Uganda is authentic and that end-point sellers do not adulterate the content to the detriment of user farmers.

3.1.4 NARO

The National Agricultural Research Organization (NARO) is an apex body that guides and coordinates agricultural research activities in Uganda’s National Agricultural Research System.
(NARS). The National Agricultural Research Laboratories (NARL) is one of the six public Agricultural Research Institutes (PARIs), under the NARO. The NARL conducts client oriented, demand driven research for generating information within six impact areas that comprise: (i) enhanced utilization of research outputs; (ii) improved farmers access to markets; (iii) enhanced productivity; and (iv) improved management and sustainable use of the natural resource base. The NARL operates a Soils Agro-Meteorology and Environment Unit (SAMEU) at Kawanda. The SAMEU has the national mandate for conducting client-oriented research and disseminating to uptake pathways, land resource management information, and technologies, which improve and sustain agricultural production. Specific activities at SAMEU include: developing techniques for better soil and water management practices for agricultural systems including wetlands; developing appropriate methods and management practices for proper utilization of organic residues to improve and sustain soil productivity; developing methods and practices for improving soil fertility in various cropping systems; increasing agricultural production through efficient use of fertilizer and biological nutrient sources; and agro-meteorology and adaptation to climate change.

The researchers at SAMEU have conducted studies on crop responses under a wide range of ISFM alternatives - they have also carried out on-station demonstrations in different regions of the country. Furthermore, NARL is collaborating with national and international universities, agencies, CGIARs, and other institutions, alongside the mandate of NARO. The NARL also backstops other NARO Institutes, local governments and NGOs, which are involved in the dissemination of ISFM technologies. The above services fit within the knowledge generation component of FGI-U.

3.1.5 PASIC

Policy Action for Sustainable Intensification of Ugandan Cropping Systems (PASIC) is implemented by International Institute of Tropical Agriculture (IITA); Ministry of Agriculture, Animal Industry and Fisheries (MAAIF); Economic Policy Research Center (EPRC) and International Food Policy Research Institute (IFPRI) and is funded by the Embassy of the Kingdom of the Netherlands. Its specific objective is to stimulate action in selected policies or programs, relevant for agricultural intensification of smallholder production systems, through evidence-based research and strengthening capacities of relevant institutions. PASIC is working to ensure that quality, price, availability & knowledge of use of fertilizer is improved across the country.

3.1.6 NAADS

The National Agriculture Advisory Services (NAADS) support farmers to transform from subsistence to commercial agriculture through a value chain approach. The core service areas include, reinforcing business and market linkages, particularly at farm level, and supporting collective action and alliance building. The beneficiaries access NAADS services through farmer groups. The secondary service areas of NAADS include value chain analysis and investment appraisal, especially at farm level. Most of these services are implemented through private
sector service providers. The NAADS uses a business model, which is intended to uplift farmers from poverty and food insecurity, and transform them to commercial farmers. In pursuance of the business model the NAADS supports the procurement and distribution of agricultural inputs (including organic and inorganic fertilizer) to pre-selected farmers, free of charge, as part of the Government Programme “Prosperity for All”.

3.1.7 EPRC

The Economic Policy Research Centre (EPRC) based at Makerere University in Kampala has been at the forefront of publishing research information on various themes including agriculture development in Uganda.

3.1.8 UNADA

The Uganda Agro-Input Dealers Association (UNADA) represents networks, and empowers agro-input dealers in Uganda to operate sustainable and profitable business, as they provide quality agro-inputs and related services to farmers. The aims of UNADA include: representing all agro-input dealers in the country and acting as a negotiating body; providing professional support to members; establishing and enforcing a code of fair business conduct; and contributing to the modernization of Uganda’s agriculture. UNADA members are organized under district level branches/associations which are completely autonomous.

3.1.9 NOGAMU

The National Organic Agriculture Movement of Uganda (NOGAMU) promotes the use of organic resources, certifying organic farmers, linking farmers to markets of organic produce. It also trains farmers in production and use of organic fertilizer.

3.1.10 UNFFE

The Uganda National Farmers’ Federation (UNFFE) organizes farmers, markets their produce and links them to markets. It also links farmers to quality inputs including fertilizer.

3.1.11 PELUM

The Participatory Ecological Land Use Management Association (PELUM) is a national and regional network of CSOS that promotes and supports ecological land use practices with a focus on smallholder farmers.

3.2 International institutions

3.2.1 IFDC

The International Fertilizer Development Center (IFDC) collaborates with national research institutions, governmental and non-governmental agencies, and the private sector to advance, improve and promote food and nutritional security, agricultural sustainability and economic development. The IFDC interventions in Uganda aim at improving access to fertilizer through
linkages with farmers. The beneficiaries (farmers) aggregate their demand for fertilizer, raise requisite funds through their leaders/committees, and subsequently submit the lists to IFDC through credible agro-input dealers. IFDC works with agro-input dealers who have been certified by UNADA. Through its nationwide program, the IFDC has carried out several soil analysis studies - the results will significantly inform the FGI interventions by characterising demand for fertilizer in Uganda. IFDC is already providing logistical support to the FGI-U Task Force.

3.2.2 ZOA INTERNATIONAL

ZOA Uganda is an international relief and rehabilitation NGO characterised by strong field presence in remote communities in Northern Uganda. It has distinguished itself in providing agricultural extension services to smallholder farmers in complement to its support to (vocational and civic) education, WASH and land security interventions. Its training curricula are based on academic farming system analysis and several practical action research initiatives on modern conservation farming with herbicide use. The organization has a presence mainly in West Nile, Acholi and Karamoja sub-regions and is already supporting the FGI-U as host to the FGI-U Task Force.

3.2.3 FAO

The Food and Agriculture Organization (FAO) has a long standing reputation in Uganda in supporting the advancement of modern farming practices beginning with on-farm productivity, to post-harvest loss reduction and food market systems. Over the years, FAO has provided technical assistance on soil health while encouraging an integrated approach with environmental, social and economic considerations for sustainable food production. FAO is also lobbying governments to accelerate interventions beginning with policy designs to bring about appropriate programs to meet the on-farm needs including soil health.

3.2.4 USAID

The United States Agency for International Development (USAID) and the Feed the Future Program have supported various projects in sub-Saharan Africa geared towards on-farm productivity, reduction in acute food shortage and increasing food systems overall as a global initiative to prioritize country ownership of efforts to sustainably reduce poverty and hunger. Over the next few years, the Feed the Future Program in Uganda will focus on helping estimated 700,000 farmer households to escape hunger and poverty.

3.2.5 NCBA CLUSA INTERNATIONAL

Since 1945, NCBA CLUSA has supported international communities and aims to improve food security for smallholder farmers through implementing the Uganda Conservation Farming Initiative (UCFI) funded by the American people through the United States Department of Agriculture (USDA). One of the key interventions under the Uganda program is improving soil health systems. Thus, NCBA CLUSA is a potential partner for FGI-U on this process.
3.2.6 UNDP

The United Nations Development Programme (UNDP) Uganda is aiming at expanding market opportunities for farmers through value addition. Through its local development and social cohesion program in Northern Uganda, farmers are being supported through cooperatives in collective market systems and incentives to increase production (both in quality and quantity). The funding for this initiative is from UNDP Bureau for Crisis Prevention and Recovery and will focus on Northern Uganda which over the last 30 years has suffered disruption from a civil conflict that displaced over 1.8 million people.

3.2.7 AGRA

The Alliance for a Green Revolution in Africa (AGRA) acknowledges that Africa has some of the world’s most degraded soils. Most of Africa’s soils need to be transformed into ones that are healthy, fertile and able to retain water, nutrients and essential organisms that support crop and livestock farming. It is from this standpoint that AGRA is bent on restoration of soil health in Africa through the implementation of the Soil Health Initiative. The Soil Health Program focuses on rapid dissemination of locally adapted and environmentally sound integrated soil fertility management practices and water management. It funds and collaborates on a continent-wide project to map Africa’s soils using advanced satellite and other technologies; develops fertilizer supply chains; funds training and extension programs; and advocates for soil health regulation.

3.2.8 WORLD BANK

The World Bank has over 50 years’ experience of working in Uganda and has funded landmark projects to address challenges for Uganda’s agriculture sector including the National Agriculture Advisory Services (NAADS). The focus for the Bank is to contribute significantly to the revitalization of an agricultural sector that delivers food security and poverty reduction. The Bank has been supporting many projects one of which is solid waste management in urban areas including Kabale, which was noted with keen interest by the FGI-U specifically on sorting the waste to extract garden manure. This particular project is being done with Uganda’s National Environment Management Authority (NEMA).

The Municipal Councils in Uganda are implementing the CDM small-scale program on Municipal Waste Composting. The initiative is supported by the World Bank, the Government of Netherlands, and the Government of Uganda through NEMA. The programme started in 2007 and will last until 2028. It involves collection of municipal waste, which is transported to composite facilities and aerobically composted. The program uses a phased approach. At the time of compiling results of this scoping study the scheme was in its second phase in Masindi, Busia, Hoima, Mityana, Entebbe, Kabale, Arua, Gulu and Tororo.
municipalities. The successes of this project are varied, with some Municipalities such as Fort portal producing fertilizer, while others, such as Mityana moving at a much slower rate.

### 3.2.9 IFPRI

The International Food and Policy Research Institute (IFPRI) is a global powerhouse in food related research in a rapidly changing food policy landscape. In Uganda IFPRI has already undertaken research on application of fertilizer in rice and Irish potatoes and has tremendous technical capacity to undertake similar other studies that would inform planned FGI-U interventions. IFPRI notes that the success of its research strategy will rely mainly on building the capacity for policy research within developing nations like Uganda, and being able to clearly communicate IFPRI research results in a manner that would trigger more effective agriculture policies that deliver results.

### 3.2.10 IITA

The International Institute of Tropical Agriculture (IITA) has a vision to enhance food security and improve livelihoods in Africa through research for development (R4D) as model in setting Africa on a path that addresses major problems than simply providing scientific research and results. IITA works with research and development partners to deliver research output that aim at helping attainment of outcomes including broadening access to opportunities and technologies by broadening the participation of communities and farmers.

### 3.3 Small & medium-sized enterprises

There are rather few business players in the fertilizer sub-sector with a reputation of having sustainably carried out the fertilizer supply on a commercial scale for over 20 years. The few identified are shown below:

Table 2. Key business players in the fertilizer sub-sector.

<table>
<thead>
<tr>
<th>Name of Entity</th>
<th>Address</th>
<th>Key Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Allied Chemicals Ltd</td>
<td>Plot 78/84, 6th Street, Industrial Area Kampala, Uganda, P.O. Box 2566 Kampala</td>
<td>Distribution of fertilizer</td>
</tr>
<tr>
<td>2. Evergreen International (U) Ltd</td>
<td>Plot 21 Entebbe Road, P.O. Box 33991, Kampala</td>
<td>Major Supplier of Agro-inputs in Uganda</td>
</tr>
<tr>
<td>3. Cooper Uganda Ltd</td>
<td>Plot 41/43, Nasser Road, MTK Building, P.O. Box 929 Kampala Tel: 041-4231177, 041-4255389/0772410150</td>
<td>Procurement and distribution of fertilizer</td>
</tr>
<tr>
<td>4. FICA Seeds Uganda Ltd</td>
<td>Plot 167, Bombo Road, P.O. Box 34095, Kampala Tel: 041456631</td>
<td>Procurement and distribution of fertilizer</td>
</tr>
<tr>
<td>5. TWIGA Chemicals</td>
<td>Plot 71, 7th Street industrial area, Twiga House, P.O. BOX 4800, Kampala Tel:041-4257050</td>
<td>Procurement and distribution of fertilizer</td>
</tr>
</tbody>
</table>
6. Organic chemicals (U) Ltd, Plot 30A Kibira Road, Industrial area, P.O. Box 589 Kampala  
Procurement and distribution of fertilizer

7. Uap Chemicals Ltd  Plot 4 Entebbe Road, KamuKamu Plaza, P.O. Box 7351, Kampala Uganda Tel: 0414233591  
Procurement and distribution of fertilizer

8. ETG Export Trading Co. Ltd P.O Box 33336 Kampala Uganda Email: fertilizer@exporttradinggroup.com  
Procurement and distribution of fertilizer

4. Setting FGI priorities

4.1 Geographical scope

FGI-U will focus on the cattle corridor that stretches from Mount Elegon sub-region below the Lake Kyoga across to the middle-western rangelands above Lake Victoria crescent and to the mid-western Uganda areas below the Albertine region down to Ankole and Kigezi regions in south-western Uganda. We believe that these areas have potential for agriculture, have vast lands that remain not fully utilized and receive stable rains for the most parts of the year. There is a particular interest for FGI-U in cattle farming since a lot of manure potential remains untapped. The table below expounds on the features of this agro-ecological scope.

Table 3: Agro-ecological zones of the potential FGI pilot districts.

<table>
<thead>
<tr>
<th>Agro-Ecological Zone</th>
<th>District</th>
<th>Agricultural highlights in the zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Range Lands</td>
<td>Kiruhura, Kanungu down to Kabale</td>
<td>Rain fed, with predominant cattle rearing, supplemented with banana growing. Rainfall is about 1200 mm. Fertile soils and in some places moderately poor. These areas have flat and isolated hills.</td>
</tr>
<tr>
<td>Northern Savannah</td>
<td>Nwoya and Lira</td>
<td>This is a rain fed crop cultivation area. Sorghum, millet, cassava, sesame are grown. Cattle-rearing is also undertaken. The area has fairly fertile soils. Rainfall ranges</td>
</tr>
</tbody>
</table>

...
<table>
<thead>
<tr>
<th>Agro-Ecological Zone</th>
<th>District</th>
<th>Agricultural highlights in the zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Savannah</td>
<td>Kumi</td>
<td>This is a rain fed crop cultivation area. Rainfall ranges between 800-1500 mm. Soils are moderately fertile. Mainly grows are cereals, oil crops, paddy rice in drained swamps. Also moderate livestock rearing.</td>
</tr>
<tr>
<td>Lake Victoria Crescent</td>
<td>Greater Kampala-Mukono, Wakiso, Kampala and Mpiigi</td>
<td>Rain fed with soils ranging from very fertile to moderate. Situated around lake Victoria with rainfall ranging between 1200-1450 mm. The zone has mixed cropping of banana, robusta coffee, vegetables, maize, and moderate dairy farming. Areas close to Kampala City and Entebbe Airport are engaged in floriculture and horticulture.</td>
</tr>
<tr>
<td>Lake Albert Crescent</td>
<td>Kyenjojo</td>
<td>Rain fed with mixed farming of maize, root crops, coffee, livestock and large-scale tea growers. Rainfall ranges between 800-1400 mm. Soils range from fertile to moderate.</td>
</tr>
</tbody>
</table>


4.2 The Fertile Grounds Initiative’s planned interventions

This sub-section presents a description of key FGI interventions that are planned and include 5 main actions.

4.2.1 Inventory of fertilizer demand

Currently, northern Uganda has the lowest percentage of households using fertilizer. Central and western Uganda have the highest percentage of households using organic fertilizer but overall the level of use is very low standing at an average 8.2% for inorganic fertilizer and 24.9% for organic fertilizer (Table 4). While the use of fertilizer remains low, the demand for both organic and inorganic fertilizer is on the rise. The demand for inorganic fertilizer is projected by FAO to be rising by about 5-8% per annum in the developing world hence producing an environment conducive for the FGI-U interventions.

FGI-U will focus on the quality of sustainable organic fertilizer products, increased confidence in use of and access to good quality organic waste-based fertilizer in particular and organic resources in general, thus increases the demand for these resources.
4.2.2 Inventory of potential supply

The supply inventory component will define sources of organic matter within an economically viable sphere around the pilot zones. Most of Uganda organic fertilizer is largely ‘home grown’ although much difference is observed in the quality of the matter produced. Due to limited extension service reach in the rural areas, most farmers are unaware of the techniques to produce the most effective types and formats. Inorganic fertilizer remains costly and not readily available.

The mapping exercise shows that organic resources are available both at household level (from crop stovers, manure and processing waste) and in urban and sub-urban areas from deposits of solid waste matter mainly at food markets. The challenges are the lack of redistribution within the farm unit in the most effective way and weak supply mechanisms to have this matter from solid waste sites and landfills processed into potential fertilizer products.

Bringing together supply and demand of nutrients and developing arrangements for trade, FGI-U will work to set up so called Nutrient and Agricultural Input Platforms. Beyond that FGI-U will work with existing initiatives in municipalities or agro-industrial areas already collecting organic waste and producing compost or organic waste-based fertilizer and possibilities of recycling these nutrients back to the agriculture. The technical knowledge base on optimal nutrient allocation patterns will be expanded through regional on farm experiments and

Table 4: Household fertiliser use by region in percentage.

<table>
<thead>
<tr>
<th>Regions</th>
<th>Organic</th>
<th>Inorganic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central region</td>
<td>34.2</td>
<td>11.7</td>
</tr>
<tr>
<td>Kampala</td>
<td>23.0</td>
<td>5.5</td>
</tr>
<tr>
<td>Central 1</td>
<td>41.5</td>
<td>14.7</td>
</tr>
<tr>
<td>Central 2</td>
<td>27.6</td>
<td>9.2</td>
</tr>
<tr>
<td>Eastern region</td>
<td>21.9</td>
<td>10.4</td>
</tr>
<tr>
<td>East Central</td>
<td>15.4</td>
<td>5.2</td>
</tr>
<tr>
<td>Eastern</td>
<td>25.9</td>
<td>13.6</td>
</tr>
<tr>
<td>Northern region</td>
<td>9.6</td>
<td>4.4</td>
</tr>
<tr>
<td>Mid-North</td>
<td>6.7</td>
<td>3.6</td>
</tr>
<tr>
<td>North East</td>
<td>2.1</td>
<td>2.0</td>
</tr>
<tr>
<td>West Nile</td>
<td>16.0</td>
<td>6.2</td>
</tr>
<tr>
<td>Western region</td>
<td>33.9</td>
<td>6.5</td>
</tr>
<tr>
<td>Mid-West</td>
<td>15.9</td>
<td>5.9</td>
</tr>
<tr>
<td>South-Western</td>
<td>49.0</td>
<td>7.1</td>
</tr>
</tbody>
</table>

4.2.3 Product formulation and processing

The product formulation and processing will entail a transformation of the sources of organic nutrients and supplemented with single or multiple compound mineral fertilizer to produce optimal compositions of nutrients as integrated fertilizer products.

FGI-U’s focus will be on facilitating the processing of good quality integrated fertilizer products, create and spread knowledge and lift the awareness of farmers to appreciate, demand, and utilize such products. Further, upscaling of this knowledge is intended.

The study tour done by FGI leadership was excited to note that there are farmers already who are able to manipulate various organisms to produce liquid fertilizer, spray to fight pests and diseases and realize a transformation in their produce within one season.

4.2.4 Brokerage, trade and logistics

Key constraints of increasing fertilizer uptake are largely linked to limitations of farmers’ knowledge on the use of organic and inorganic fertiliser, low household income and the absence of fertiliser agro-dealers and suppliers who can offer various forms of fertiliser at affordable rates for smallholder farmers. Agro-input dealers who would be interested in fertilizer business lack capital and requisite information on the application of both organic and inorganic fertilizer. It will be critical in years ahead to match supply and demand of nutrients under a brokerage arrangement that is feasible to make the fertilizer available and affordable while making a commercial sense for agribusiness.

FGI-U will develop a business case design for nutrient trade, brokerage and logistics (including storage and distribution). With the reality that there are few locally available certified fertilizer suppliers and agro-dealers (for both organic and inorganic) more work will be required to partner with other organisation dealing with this topic, and work with agro-dealers already established (but mainly based in Kampala) to deepen their outreach in districts in an attempt to reach more farmers. This also includes capacity building for suppliers and agro-dealers on what are the needs to increase crop productivity and sustainable manage Uganda’s soils.

4.2.5 Strengthening institutional linkages and capacity building

While improvements have been made over the last two decades, agricultural extension service delivery in the Uganda remains weak mainly due to financial and human resources, coordination, and constraints at the national and district levels. As a consequence, the level of farmers’ knowledge on the use of organic and inorganic fertiliser is limited. While the challenge may not be necessary absence or weak institutional capacity, there are gaps especially at the district level that need to be closed to lift the profile of the district department of production
and marketing to more on fertilizer user awareness. Cooperating with existing farmers’ organizations like farmers’ cooperatives is also critical.

FGI-U will focus in the interim on building capacity of existing extension workers, brokers and salesmen through training in best practices for optimal nutrient management and how to set up a local nutrient bank. This will be an entry-point on future collaborative partnerships between fertiliser suppliers and farmer-based organisations, at national and district level.

Institutional strengthening and capacity building will be done in the following ways:

A. Policy influence interventions
   - Supporting the on-going work to operationalize the National Fertilizer Sub-Sector Development Strategy and Investment Plan (NFS) especially in districts where FGI-U will be operating.
   - Supporting outreach programs of district departments of production and marketing to reach farmers through farmer groups and cooperatives and using this outreach work to inform policy change at national level.
   - Using results to support evidence based advocacy work, at national, local government and community levels, for promoting organic fertilizer application; identifying advocacy gaps at each of the above levels and using them as a basis for launching an effective advocacy campaign for organic fertilizers in Uganda.

B. Institutional based interventions
   - Engaging MAAIF (through PASIC), to identify priority areas that FGI could potentially support towards realizing the vision to transform grassroots farming.
   - Collaborating with National Agricultural Research Laboratories (NARL) - Kawanda, to update Agricultural Research Information Systems, soils resource maps and soil database.
   - Collaborating with IFDC to disseminate soil analysis findings and nutrient deficiency information to farmers. This can be done through district farmers associations in each of the FGI-U districts.

C. Farmers level interventions
   - Undertaking awareness raising activities and training events on soil status assessment and fertilizer application through district farmers associations.
   - Determining the rate of return of nutrients in form of organic and inorganic fertilizer and disseminating this information to farmers.
   - Increasing the quality and types of fertilizers on the market – making fertilizer available and affordable.
4.3 Partnerships

FGI-U will work with and through other players in the fertilizer sub-sector, guided by formal Memoranda. FGI-U will partner with the public sector institutions, international and local NGOs, agro-dealers and stockists of agricultural inputs, research organizations, financial institutions and farmers in program districts.

The initiative will focus on awareness creation, individual farm planning, local government support and rallying of national stakeholders to support this process. FGI recognizes that this will entail mobilising support for market access, micro credits, and insurance for smallholder farmers as well as a substantial mind-set change among stakeholders (especially farmers most of who do not have individually elaborated strategic plans). There will be use of the media, academia and social media platforms to advance this initiative. We appreciate that there are other initiatives that are already operating in this sphere of sustainable land management. Rather than duplicate, the FGI will work with these efforts to widen and deepen the impact. FGI-U will invest in strong collaborations with key stakeholders and their commitment to implement joined defined goals aiming at increased agricultural productivity, food and economic security in the pilot regions, widening and deepening the joint impact on sustainable land management, and enhancing the achievement of the SDGs.

5. Going forward

5.1 Affirming our presence in Uganda

FGI-U increase its clout in Uganda by working with government prominent international and local organizations to reach smallholder farmers and their need to increase the productivity of their soils. This mapping survey exposed knowledge gaps in the role fertilizer can play in farm productivity and a lack of strategic planning at the household level as key impediments to soil health and SLM at the grassroots. The immediate focus therefore will be gathering, processing and dissemination of proven best-practices with a keen focus on local technologies that farmers can relate to and updating it with modern farming techniques and practices.

5.2 Making use of currently available organic resources

In Kampala, alone, about 28,000 tons of waste is collected and delivered to landfill every month most of which is simply dumped. For most cattle keepers, there is no protracted effort to gather manure to larger scale for re-distribution among crop farmers. To make optimal use of existing organic resources in urban and agro-industrial areas and farming systems, FGI will focus on the supply- and demand-side in terms of processing, quality, impact on nutrient status, productivity and farm income, perception, economic viability, balance trade-offs, and enabling policy environment for upscaling.
5.3 **Institutional support for SLM**

The study affirmed that factors responsible for the low fertilizer use include, *inter alia*, inadequate information on fertilizer application among farmers, lack of capital among smallholder farmers who form majority of Ugandan farmers, poor attitudes and perceptions towards fertilizer use, inadequate capital among distributors and stockists, poorly structured fertilizer marketing systems, poor quality fertilizers on the market, and a weak fertilizer policy framework. While there are a number of actors within the fertilizer sub-sector in Uganda, that include government agencies, development actors, research institutions, NGOs, private sector and local farmer associations, cooperatives, unions and groups at district level, their interventions are poorly coordinated—this offers a *niche* for FGI to bring and hold together various players in the fertilizer sub-sector, and provide the needed cohesion in the sector within the framework of promoting SLM.

5.4 **Working through and with other actors in the sector**

FGI-U will not work in isolation but through government frameworks, international and local agencies in a collaborative framework to advance the fertile grounds approach. ZOA and IFDC are commended for the initial support being provided. The initiative will work with other institutions on the technical, policy and farmer-centred aspects to make this goal a reality - More Food from Fertile Grounds!
References


