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POWER SCAN OF FOOD SYSTEMS IN UGANDA

A PILOT PROJECT

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Cordaid BUILDING FLOURISHING COMMUNITIES

POWER SCAN OF THE FOOD SYSTEMS IN ABIM, SOROTI AND LIRA DISTRICT IN UGANDA

A PILOT PROJECT

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Civic Engagement Alliance was a Joint collaboration between Dutch and southern civil society organisations that advocated for inclusive development. Started in 2016 and ending in 2020, CEA operated in thirteen countries around the world. Its members were ICCO (integrated with Cordaid as of 1 January 2021), CNV Internationaal, Edukans, Kerk in Actie, Prisma, Wilde Ganzen Foundation and Woord en Daad.

Ministry of Foreign Affairs of the Netherlands

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ACDP	Agriculture Cluster Development Project
AEOS	Agriculture Extension Officers
ASSP	Agriculture Sector Strategic Plan
BMAU	Budget Monitoring and Accountability Unit
BTVET	Business, Technical, Vocational Education and Training
DAES	Directorate of Agricultural extension Services
DAO	District Agricultural Officer
DFI	District Farm Institutes
CEA	Civic Engagement Alliance
CSO	Civil Society Organizations
FSA	Food System Approach
GDP	Gross Domestic Product
INDC	Indicative National Determined Contributions
LDC	Least Developed Country
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MSP	Multi-stakeholder platforms
MoES	Ministry of Education and Sports
MWE	Ministry of Water and Environment
NAADS	National Agricultural Advisory Services
NAP	National Agricultural Policy
NARO	National Agricultural Research Organization
NGO	Non-Governmental Organization
OWC	Operation Wealth Creation
PWD	Person with disabilities
UCDA	Uganda Coffee Development Authority
UFAAS	Uganda Forum for Agricultural Advisory Services
UGX	Ugandan Shilling
UNBS	Uganda National Bureau of Standards
UNDP	United Nations Development Project
VNA	Value Network Analysis

EXECUTIVE SUMMARY

The Civic Engagement Alliance, in collaboration with Wageningen University and Research, conducted a pilot to understand how power dynamics play a role in the food systems in Abim, Soroti and Lira districts in Uganda, and to identify strategies (leverage points) to deal with power relations in food systems transitions. In doing this, we also assessed the applicability of a food systems power tool developed by Wageningen University and Research. This tool combines a food system approach with a power scan, which can also assist in increasing the understanding of how power dynamics play a role in preserving inequalities and the status quo within food systems. It furthermore helps identify which forms of power can be influenced to improve the situation of marginalized groups within the system.

The pilot consisted of two steps. A characterisation of the food system was first conducted in the three districts to comprehend the main challenges affecting the food systems, leading to a particular focus on the provision of inputs and extension services. Secondly, the power scan was used to study power within the food systems to gain further insights. Data for the research was obtained through a desk study, 40 semi-structured interviews, focus groups and interactive meetings with stakeholders.

This research found that even though in accordance with Uganda Vision 2040, farmers in Uganda are supposed to transition from subsistence farming to commercial farming, farmers in Abim, Lira and Soroti still suffer low productivity and yield poor quality produce. This prevents them from satisfying market demands in terms of quantity and quality and puts them at risk of food insecurity. Deeper issues that underlie these problems were identified, namely farmers' fear and risk aversion, a lack of trust, weak planning, corruption at different levels, farmers' illiteracy, and poor-quality control and weak regulation in the provision of agricultural inputs. The findings revealed that, even though there are important differences in power within stakeholder groups, farmers have little power in the food system, especially if they do not belong to any farmer group. Local district governments and extension workers hold formal power through their positions, but lack material power due to resource limitations. Understanding this can be crucial for generating a space where those with immaterial power can be connected to those with material power, such as the Ministry of Agriculture, Animal Industry and Fisheries and the private sector, creating important new avenues for cooperation.

Building on these findings, three leverage points were identified and developed into action plans, namely

1. the development of a multi-stakeholder platform to coordinate agriculture development;
2. the creation of a multi-stakeholder coalition working for counterfeit seed and quality control for agricultural inputs; and
3. lobbying for the harmonization and the updating of the extension workers' curricula with an inclusive approach to extension service delivery.

This pilot showed that a power lens is an important tool that allows us to address underlying problems rather than only the effects of these problems. This in turn can improve how we shape interventions – for example by including in the early stages the identification of potential obstacles and risks – while preventing these interventions from accentuating power differentials. Still, power is a complex issue that is often difficult or uncomfortable to discuss. Creating an environment conducive to trust where sensitive issues can be discussed and which fosters local conditions and capacities to implement such a tool is considered paramount.

1. INTRODUCTION

1.1 Background of the study

This pilot project is developed as part of the Civic Engagement Alliance (CEA) programme. CEA was a joint initiative (2016 - 2020) between 11 Dutch Non-Governmental Organizations (NGOs) working together with Civil Society Organizations (CSOs) in the South. The CEA programme was funded by the Ministry of Foreign Affairs of the Kingdom of The Netherlands. The Alliance advocated for inclusive development and aimed to strengthen the position of excluded groups. In this light, the CEA, in collaboration with Wageningen University and Research, worked to assess the applicability of a new tool developed by them, which combines a food system approach (FSA) with a power scan. The tool will assist in the understanding of how power dynamics play a role in food systems' transformation to more sustainable and inclusive paths in the districts of Abim, Lira and Soroti in Uganda.

The Ugandan government aims to transition from a low to a middle income country, which will also require a shift from "subsistence farming to commercial agriculture". We would like to strengthen the position of smallholder farmers in the food system, so that they do not become losers in this transition and can instead enhance their contribution in the value chains and livelihood activities that they are engaged in, fulfill their food security needs and improve their living conditions.

1.2 Contextual background

Uganda is a land-locked developing country located in Africa, bordering South Sudan (in the North), Kenya (in the East), Tanzania (South), Rwanda (Southwest) and Democratic Republic of the Congo (West). Uganda is considered a low-income, least developed country (LDC), with a per-capita Gross Domestic Product (GDP) of US$ 776 (World Bank, 2020b). Its population is about 44 million people as of 2019 (World Bank, 2020c), with an average growth rate of 3.5% per annum, which is the fourth highest growth rate in the world (World Bank 2020b). Uganda is also one of the largest recipients of refugees in the world (first one in Africa and third in the world), with a refugee population of 1.4 million people (World Bank, 2020d).

According to World Bank data, "While about 700,000 young people reach working age every year in Uganda, only 75,000 jobs are created each year. This leaves more than 70% of Ugandans employed in agriculture, mainly on a subsistence basis." (World Bank, 2020d, Economic Overview para. 3) About 75% of the population live in rural areas (World Bank, 2020b). Smallholder farmers generate 80% of national annual agricultural production, with an average of one hectare farm per household. Agricultural production contributes to about one quarter of Uganda's GDP (FAO, 2018). The agriculture sector has had an important role in past efforts to reduce poverty, though it continues to operate at subsistence level, with limited production for commercialization and income generation (FAO, 2018; World Bank 2020d). Farming continues to be labour intensive, based on rudimentary methods, with important challenges in terms of access to quality agricultural inputs, limited use of fertilisers and of improved practices for enhancing soil fertility or water harvesting, limited skills, information and financing, and being highly vulnerable to climate change; all of this together leads to low productivity and poor quality yields (FAO, 2018; FAO, 2019).

Malnutrition constitutes a problem in Uganda for children as well as for adults (Development Initiatives Poverty Research, 2019). Uganda still faces challenges to achieve food security. Northern Uganda in particular has high rates of food insecurity (UBOS, 2013). This has been associated with the region's poor agroecological conditions and poorer market access, due to weaker road infrastructure and the absence of large urban markets (Wichern et al., 2017). At the same time, in accordance with World Bank data, "Uganda is entering a dietary transition towards higher priced animal-sourced calories as incomes increase, and [...] these changes are widespread across both urban and rural areas, and even across income groups" (World Bank, 2018, p. 30).

Forest cover in the country has been steadily decreasing. While according to official data, forest cover was 24% in 1990, by 2015 forest cover was only 9% (MWE, 2016). Significant decrease occurred in privately owned forests, which went from 3,331,090 hectares in 1990 to 697,986 hectares in 2015; in protected areas, meanwhile, it went from 1,549,394 hectares to 1,131,793 hectares in the

same period. Uganda lost a total of 62% of its forests in 25 years. Significant forest losses date back to the 1970s, when forests were cut down by the government to prevent State "enemies" from hiding, and also to increase areas dedicated to crop production (MWE, 2016). Over the years, forest encroachment and degradation continued to happen, due to population increase, insufficient land for agricultural production, greater profit from converting to agriculture, incentives provided by private sector to farmers (for instance, tractors and seeds for sugarcane production), and energy production (charcoal burning and firewood) (MWE, 2016).

Current COVID-19 pandemic and response measures (e.g. movement restrictions during lockdown, trade disruptions) have accentuated health challenges and affected and slowed down the economy, having an impact at different levels of the food system (World Bank, 2020d). Many farmers are seeing their food security and incomes seriously affected (FEWS Net Uganda, 2020).

Uganda aims to transition "from a Peasant to a Modern and Prosperous Country within 30 years", as decided by the government in 2007 and as operationalized in Uganda's Vision 2040. Uganda aims at becoming a middle income country, leaving behind its low income and Least Developed Country (LDC) status. Part of this transition requires the agriculture sector, which is responsible for almost one quarter of the GDP[1] and employing about 72% of the economically active population, to also transition from "subsistence farming to commercial agriculture", as stated in Uganda's Agriculture Sector Strategic Plan (ASSP).

This research project takes place in three districts in the northern and eastern sides of the country:

Abim: Formerly part of Kotido district, Abim district became functional on 1 July 2006. Abim is located in the Karamoja sub-region of Northern Uganda, approximately 366 kilometres, by road, northeast of Kampala city (Abim District Local Government, 2020). The national census in 2014 estimated the population of the district at 107,966 with 52,456 men and 55,510 women (UBOS, 2017a) (see Table 1.1.).

Lira: Located in the Lango sub-region of Northern Uganda, Lira district was formed in 1974 from the then Lango district. It was elevated to city status in July 2020 (Government of Uganda, Lira District, 2018). The 2014 National Population and Housing Census estimated the total population of the district at 408,043, with men numbering 196,663, and women 211,380 (UBOS, 2017b) (see Table 1.1.).

Soroti: The district has a population density of 151 persons per km2, higher than the national average of 124 persons per km2 and is among the most densely populated districts of the Teso sub-region, Eastern Uganda. The total population of the district was estimated at 296,833 in 2014, comprising 144,976 men and 151,857 women (UBOS, 2017c) (see Table 1.1.).

Table 1.1. Male and female population per district

	MALE	FEMALE	TOTAL
Abim	52,456	55,510	107,966
Lira	196,663	211,380	408,043
Soroti	144,976	151,857	296,833

Source: Population Census 2014

1.3 Research objective

While different studies address certain parts of the food system (for instance, value chain, value addition, policies), and tend to identify challenges and opportunities for improvement (e.g. Barriga & Fiala 2020, FAO 2018, FEWS Net Uganda 2020), few go deeper in trying to understand how different forms of power have played a role in perpetuating current inequalities and the status quo within the food system. At the same time, the understanding of how power plays a role can shed some light on certain types of power, which can be channelled or influenced to combat those inequalities and improve the position of marginalized groups in the food system, such as smallholder farmers or women.

[1] Though it represented almost 75% in the 1970s

This research aims to understand how power dynamics play a role in the food systems in Abim, Soroti and Lira districts in Uganda, and to identify strategies (leverage points) to deal with power relations in food system transitions.

This research is being undertaken within a 4-5-month time frame. It also assesses the applicability of a food system analysis using power lenses in a short period, to ascertain the extent to which the tool can provide important insights for practitioners and policy makers, and support better targeting of future interventions by identifying opportunities, risks, barriers or potential negative unintended consequences (for instance, by reinforcing existing inequalities instead of addressing them). While a food systems approach considers all the elements and interconnections among them (see next section), due to time and resources limitation, we apply the power tool to only a couple of pressing challenges that emerge from the food system analysis, and see how strategic changes (leverage or entry points, see next section) can benefit and create a positive chain effect in the food system.

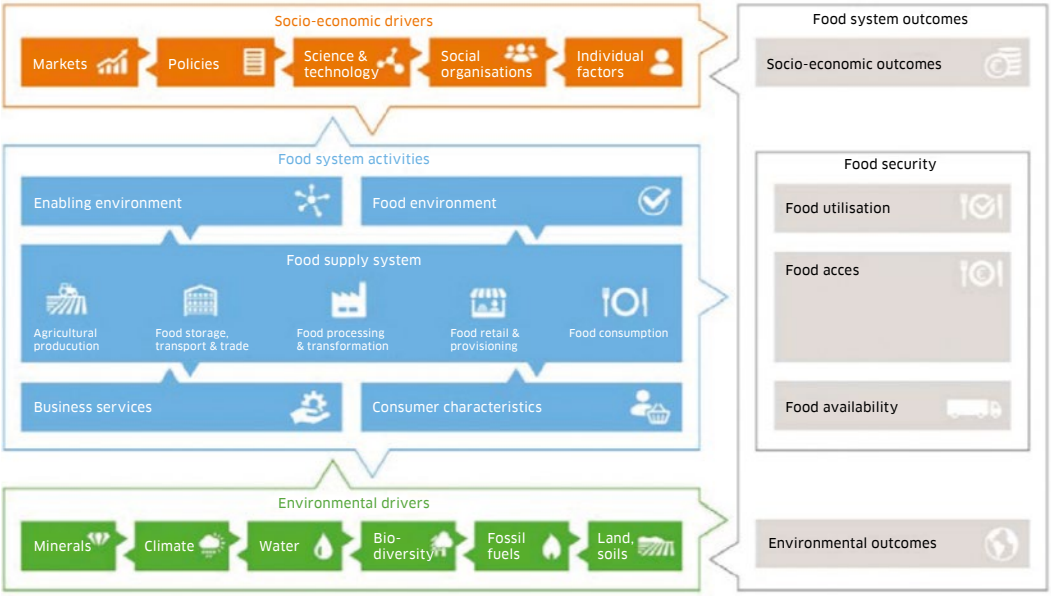
2. CONCEPTUAL FRAMEWORK

This research is grounded in two frameworks: the Food System Approach (FSA) (van Berkum, Dengerink, & Ruben, 2018) and the power tool analytical framework (Elzen et al., 2020). Our analysis consists of two steps: as a first step, we characterized the food system in Abim, Lira and Soroti. This gave us an initial understanding of where the main challenges in the food system were and where our pilot could provide more insights using power as an analytical framework, which was the second step. The two frameworks are further explained in the following two subsections.

2.1 The food systems approach

Food systems are defined as "all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the outputs of these activities, including socio-economic and environmental outcomes" (HLPE, 2017, p. 11).

Figure 2.1 Food systems model (van Berkum et al. 2018: 10)



Van Berkhum et al. 2018 describe the food system using four different components that include food system activities, outcomes of the food system, environmental drivers and socio economic drivers. The relations between these components determine the operation and efficiency of the food system.

Food systems activities

Refer to activities that are conducted in the process of food production at different levels.
The food system activities comprise of:

The food supply system which consists of agricultural production as conducted by farmers, food storage, transport and trade, food processing and transformation, food retail and provision and food consumption. The enabling environment of the food system activities includes: transport networks, research infrastructure, regulations and institutional arrangements. The food environment includes: food labelling, quality assurance, and food promotion. Consumer characteristics consider knowledge, purchasing power and preferences. The business services of food system activities include extension services, financial services and technological support and agro chemical providers.

Outcomes of the food system: socio and economic outcomes

The impacts of the activities conducted in the food system are divided into three categories. Socio economic outcomes include income levels of people, wealth, employment, social and political capital, human capital and livelihoods of people. Food security outcomes comprise *food utilization*, which is looked at in terms of nutritional value, food safety and social value; *food access*, which includes affordability, allocation and preference; and *food availability*, which is defined through aspects of production, distribution and exchange. Lastly, the environmental outcomes include the effect of food system activities on land, soils, fossil fuels, minerals, biodiversity, water and climate.

Environmental drivers

The environmental drivers consider the availability of land, state of soils, fuels, minerals, water and climate, and how they influence the activities in the food system, for instance, fertile soils enhance farm land production and increased yields for higher profits. Access to water and irrigation will also determine the type, quantity and quality of yields.

Socio-economic drivers

These include markets, policies, science and technology, social organizations and individual factors. Good and well-organized markets that offer good prices for farmers' products encourage the food system activities. Policies concerning some factors or inputs of production e.g. land, water use, seed and markets will determine farmers' willingness to engage in crop production. Individual factors refer to attributes of people within the food system, e.g. their culture, and how these influence their decisions. Science and technology include activities that enhance development of new and improved inputs of production – e.g. seed, pesticides etc. – that enhance good yields and promote good production practices among farmers. Social organizations include services that enhance the operation of the food systems – for instance, media serves to transmit information and knowledge. Social movements are also among the socio-economic drivers of the food system.

2.2 The power tool

The use of the power tool (Elzen et al., 2020) widens our knowledge of the influence of power on the food systems of Abim, Lira and Soroti districts. Using a power dimension can assist us in understanding how different forms of power have played a role in perpetuating current inequalities and the status quo (Pettit, 2013), in this case, specifically within the food system. It also helps us to understand which actors are more powerful in influencing the functioning of the food system and how their influence can be channeled to support food systems' transformation to more sustainable and inclusive paths. Through prevailing power structures, certain groups are excluded or marginalized. By enhancing our understanding of these unequal power relations, we can manage to include the less powerful, yet critical actors, within the food system. The definition of power that we will use is: "the (in)capacity of actors to mobilise resources and institutions to achieve a goal" (Avelino, 2017, p. 507). In line with Elzen et al. (2020), we distinguish three forms of power: "*power with* (cooperation and learning), power to (resistance and empowerment) and *power over* (coercion and manipulation)" (Elzen et al., 2020: 12)

The power tool entails the following elements:

Boundaries of the system

Determining the boundaries of the system entails understanding the intended (broad) transition, its time frame, the level that shall be attained, prevailing discourses within this transition, and the unit of analysis.

Structures and norms

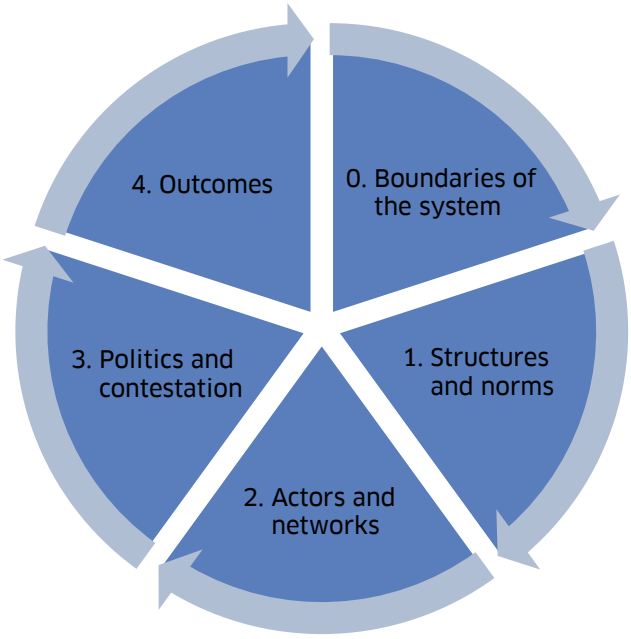
This element "focuses on structures, trends, and path-dependencies in the current situation which may hamper or facilitate (change in) power relations." (Elzen et al., 2020: 15). It also takes special consideration of the prevailing local structures and (customary) rules, for instance, in terms of gender, land tenure, as well as culture and other socially set or constructed rules that may support or hinder the occurrence of intended transitions depending on how they channel power in the system. It also assesses perceptions of power, how power is put into practice and possible cultural entry points for changing the power relations.

Actors and networks
Here each actor is characterized in terms of their role and position in the food system, their relation to other actors, and the power they have in relation to the desired transitions. The actor roles and their degree of power or influence include the resources they have to either generate change or to block it.

Politics and contestation
Looks at how politics influence power relations in the food system e.g. in allocation of resources that support activities of the food system. The focus is on how power dynamics influence the governance of the food system, the representation of different actors and how they deal with conflicts in the system.

Outcomes
This aspect builds on the feedback provided by the previous elements (structures and norms, actors and networks and politics and contestation). It involves establishing entry or leverage points and hindrances to the desired changes. A leverage point is understood as an action or intervention by one or multiple stakeholders that may trigger multiple changes within the food system. This may lead to a 'waterfall effect or ripple effect', which may in turn eventually lead to a food system transition.

Figure 2.2 Elements of power dynamics in food system transitions (Elzen et al., 2020)



3. METHODOLOGY

This pilot was undertaken between August and December 2020. Data collection included a combination of primary and secondary sources, which were obtained through a desk study, 40 semi-structured interviews and interactive meetings with key stakeholders.

3.1 Desk study

This pilot started with a desk study to understand how the food systems in the three districts of Abim, Lira and Soroti function. It also provided insights into the national level context. Different local stakeholders active in the area, as well as development partners, were contacted in order to gain access to relevant reports and documentation related to the study area and the thematic, as well as to gather their views on the most pressing problems in the food system. For this, a half-day partner meeting was convened in Lira, which also served the purpose of introducing the project, objectives, and timeline (see subsection 3.3.1). The desk study was complemented with a keyword search on the world wide web. Documents analysed included government policies and reports (e.g. Uganda Vision 2040, ASSP Plan 2015-2020, National Development Plan 2015-2020, Population Census for the three districts 2014, statistical data, Indicative National Determined Contributions (INDCs) to the United Nations Framework Convention on Climate Change); peer reviewed articles; and grey literature (e.g. project reports, reports published by FAO, UNDP, World Bank). In order to bridge existing gaps, increase understanding of how the extension service and agri-input provision operate (since these two topics emerged as highly problematic), as well as for desk study validation purposes, 12 semi-structured interviews were undertaken with, among others, development partners in the field, researchers/ academia, local governments, farmers, and input dealers.

3.2 Interview analysis

Once the main challenges in the food systems were identified, 28 semi-structured interviews were conducted to assess the role of power in the food systems in Abim, Lira and Soroti, with particular emphasis on extension service delivery and access to quality seeds and other key agricultural inputs. See Table 3.1 for further details:

Table 3.1 Interviews per topic

POWER INTERVIEW WITH A FOCUS ON:	NUMBER OF INTERVIEWS
Seeds and agricultural inputs	13
Extension services	14
Combined interview (to a national actor)	1
Total	**28**

The interview questions were formulated in such a manner that data could be gathered in terms of the power tool elements listed in the previous section (specifically, structures and norms, politics and contestation, and actors and networks), see Annex 1. for the interview questionnaires. Interviewees included a combination of farmer groups, extension workers from the local district governments, community development officers, NGOs, private sector, agricultural input dealers, politicians, commercial officers, researchers/academia and a national government representative of the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) (see Annex 2.). They were selected through a strategic snowball sampling approach[2], ensuring a balanced representation among the districts, gender, and the sectors they represented. Interviews were conducted in person or via video conference. Interview reports were made for each interview for further analysis. Interviewees were asked at the end of the interview if they wanted to remain anonymous.

[2] Snowball sampling is "the process of selecting a sample using networks" (Kumar, 2014, p. 244)

For interview content analysis, a combination of top-down coding ("from the general to the specific" (Kawulich, 2017, p. 771) was used, complemented with bottom up coding ("from the specific to the general" (Kawulich, 2017, p. 771). Data was categorized under the following headings:

General challenges
- Specific challenges related to extension services and skills
- Specific challenges related to seeds and other key inputs
- Achievements/ What has worked well
- Cultural factors
- Stakeholders opposing change/ supporting status quo
- Stakeholders supporting change
- Conflict
- Groups/ people affected by exclusion
- Groups/ people benefiting from status quo
- Envisioned changes/ suggestions/ solutions/ opportunities

3.3 Interactive meetings

3.3.1 Meeting with CEA partners

In order to complement the desk study, involve local stakeholders, and benefit from their knowledge and networks, a CEA partner meeting was convened very early in the process on September 24th, 2020. A total of nine representatives from six NGOs active in the three districts attended the meeting, which started with a brief online presentation of the project and its objectives, as well as its timeline[3]. This was followed by a group discussion per district about the challenges identified across the food systems in each district, facilitated by local CEA staff. Each group presented their outcomes in plenary. A summary report was drafted.

3.3.2 Focus Group Discussions

In order to collect information about the different stakeholders, their goals and relations, and their degree of influence on the extension services and the provision of key quality inputs, three focus groups discussions were held, one in each district, on October 20th (in Abim with 14 participants), October 21st (in Lira with 11 participants), October 22nd (in Soroti with 11 participants). Participants included farmer networks/ cooperatives, local government officers/ extension workers, NGOs, and agri-dealers. This was done by a combination of two methods, namely:
- Stakeholder inventory
- NetMapping

Participants were asked to create a network map as a group. They identified the stakeholders in the extension services and key input provision in Abim, Lira and Soroti, what they thought their role in these services was, and what their interests were. Then participants were asked how the different stakeholders relate to each other using arrows. To determine how much influence the different stakeholders have on the food system, a table ranking the influence as high, medium and low was used (alternatively, influence towers can also be used).

Participants discussed what challenges they encountered among the stakeholders' linkages and identified elements that needed to change for the system to work in a more effective way. Focus group discussions' outcomes were then used in the next stage, where leverage points were identified, in order to assess the influence relevant actors would have in the proposed change (by supporting or resisting change).

[3] This was done by CEA pilot project coordinators from The Netherlands

3.3.3 Workshop and identification of leverage points

Finally, on November 20th, 2020, a stakeholder workshop was convened. The objective of the workshop was twofold:

1. To validate the findings of the pilot in terms of core and underlying problems for the food system, and more especially for extension services and provision of seeds and other key agricultural inputs
2. To identify leverage points[4] to change the current food system for the benefit of smallholders.

The workshop was attended by 18 participants, representing farmer groups, agri-dealers, national government, extension workers, and NGOs. A Value Network Analysis (VNA) was proposed to validate the findings of the research. VNA is a methodology used for analysing and understanding value networks and complex systems (Biem & Caswell, 2018; Peppard & Rylander, 2006). Through a VNA approach, participants themselves can envisage the relations among stakeholders active in a complex system, such as a food system. The VNA provides a description of the current system around the provision of quality seeds and other inputs in Abim, Lira and Soroti, the stakeholders within the extension services and input provision, and their relations. The VNA would also identify root causes of the problems within the provision of extension services and quality inputs and determine how stakeholders and structures are linked to these root causes. Handouts that summarized key elements for each session and provided a glossary of key terms were facilitated to participants (see Annex 3.)

The participants of the workshop were divided into three groups: one group with actors addressing input provision, one group with actors addressing the provision of extension services, and one group of farmers. The VNA was conducted in three sessions. In the first session, participants were provided with information about the pilot and its key findings. Afterwards, each group was asked to make a Value Network Map charting the current situation around the provision of inputs and extension services, with a focus on stakeholders and the current relations between stakeholders. In the second session, participants were presented with the main bottlenecks identified by the pilot and asked to include within their maps the problems in the provision of inputs and extension services and the causes of these problems. Any additional stakeholders related to the root causes were also included within the map. The participants were then asked to identify which problems were root causes and which stakeholders were linked to these root causes. To conclude, participants worked in the identification of possible solutions.

After the workshop, the set of proposed solutions were clustered into common topics (e.g., enhancing links among stakeholders; skills and curricula development, etc). A mindmap about problems and underlying problems (root causes) was developed, based on the different inputs gathered from interviews, workshop results, focus group discussions (see Annex 4.). Proposed solutions were further incorporated in it to determine the leverage effect they had (i.e. how they manage to generate a cascade of further changes in the food system, for instance, solutions that addressed underlying problems and hence had a “cascade” effect on other subproblems as well). This exercise was further complemented with an analytical table, which considered the following elements for assessing and transforming the solutions into strategic leverage points to stimulate change:

Potential direct impact of the change: to what extent does it strengthen the position (income, working conditions) of smallholder farmers and/or their direct (social) environment.
Leverage potential: could it start, stimulate or contribute to a cascade of further changes
Feasibility to realise it. This is a combination of 1) are there stakeholders to really make it work (changers) and 2) are there stakeholders that will resist making this change (resisters or opponents). Do these stakeholders have the resources (the power) either to realize or block this change? The answer to this was based on information gathered from the interviews and interactive meetings.

[4] As defined in the Conceptual framework, a leverage point is understood as an action or intervention by one or more stakeholders that may trigger multiple changes within the food system

Table 3.2 Example of analytical table

	DIRECT IMPACT / ++ OR - / - -	LEVERAGE POTENTIAL / ++ OR -/ - -	FEASIBILITY / ++ OR - / - -	
	Direct impact:	**Leverage potential:**	**Feasibility:**	
Topic A -			Changers	Resisters
Measure 1				

This rendered a table of four topics and eight potential leverage points (see summary table in annex 5.). The potential leverage points were further discussed via video conference with local actors for validation and further fine-tuning purposes. After these discussions, the "top 3" were selected, based on their highest impact, leverage potential and "reasonable" feasibility. We further elaborated these points into suggestions for concrete action plans.

4. OVERVIEW OF THE FOOD SYSTEM

4.1 Characterization of the food system in Abim, Lira and Soroti

Understanding the food system is the first step towards applying the power scan tool. This section will briefly address the main elements of the agro-food system of the districts of Abim, Lira and Soroti. This will serve as a background for further analysis elaborated in section 5.

The three districts are home to a bit more than 800,000 people (as of 2014)[5] (UBOS 2017a; UBOS 2017b; UBOS 2017c), who highly depend on subsistence (family) farming:

Table 4.1 Urban and rural population in Abim, Lira and Soroti and subsistence farming

	ABIM	LIRA	SOROTI	TOTAL	% OF THE TOTAL
Population	107,966	408,043	296,833	812,842	
- urban	17,168	101,155	49,685	168,008	21%
- rural	90,798	306,888	247,148	644,834	79%
% Households depending on subsistence farming as their main source of livelihood	87%	64%	68%	69%	

Source: Population Census 2014

As shown by the table, there are some differences among the districts, in particular, Abim shows a higher number of households depending on subsistence farming. Abim is more rural than Lira and Soroti and it is not directly connected to the highway /tarmacked road like the other two districts. Difficult mobility due to poor roads or transport networks has not favoured the establishment of many businesses in Abim. The high level of insecurity faced by people in Abim caused by the "karamajongs"[6] that regularly raid their property discourages many people from establishing businesses. They end up living on subsistence farming.

Agriculture activities in the districts involve a combination of crops, livestock and poultry, though crops constitute the main agricultural activity:

Table 4.2 Agriculture activities in Abim, Lira and Soroti

	ABIM	LIRA	SOROTI
% Households engaged in crop growing	93%	72%	76%
% Households engaged livestock farming	65%	77%	69%
Households engaged in either crop growing or livestock farming[7]	95%	77%	81%

Source: Population Census 2014

In the north part of the country, some foreign large-scale commercial farms have been settled. They produce grains and pulse crops (leguminous plants), to sell to the World Food Programme and for other neighbouring countries[8] (FAO, 2019). Apart from these large farms, on average, farms' size is about three acres (about 1.2 hectares) (informal communication with stakeholders during the stakeholder workshop, November 2020), which is relatively small to be able to scale up productivity and diversify, or to share with youth and adult children. Large-scale farmers are normally more exposed to better trainings and knowledge, sometimes they hire private extension providers to advise them on some farming practices. Some of the large-scale farmers have well-established markets and produce crops that are highly demanded for. Some of them export their crops to other countries. On the other hand small-scale farmers use little land for production e.g. between one to three acres - or less - and sell little harvests as compared to large-scale

[5] By 2020 these numbers have naturally become higher
[6] Ethnic group who lives in the north-east of Uganda
[7] This includes cattle, goat, sheep, pigs and poultry
[8] World Food Program usually buys food from farmer groups and keeps it for distribution to people in need, for example, refugees and people in areas of famine and insecurity. An example is food supplied in South Sudan.

farmers. The small-scale farmers normally attend only trainings organized locally and rarely seek help/advice from paid private extension service providers. Transitioning from small scale to big scale farming takes having enough capital whether borrowed or owned for purchasing inputs. Food security is also affected by limited access to land and to quality seeds and agricultural inputs (FAPAD, 2016a; FAPAD, 2016b).

In the three districts, land owned by smallholder farmers is considered to be insufficient to produce more than for subsistence and some extra produce for selling and generating extra income (FAPAD, 2016a; FAPAD, 2016b). Land access for youth is also limited as they get a small portion of land from their parents, or they inherit it from them (FAPAD 2016a; FAPAD, 2016b). Women also encounter significant challenges as they do not usually inherit land nor are allowed to own it. Under customary land tenure[9] - which is what prevails in rural areas to pass on land ownership (FAPAD, 2016b; Ministry of Lands, Housing and Urban Development, 2010, p. 16)- it is assumed that women/ girls will get married and leave, moving into their husbands' farms. Clan elders are the ones who allocate land and distribute inheritance among male children, and resolve disputes as well (FAPAD, 2016b; Yami & van Asten, 2018). However, according to a study carried out by Yami and van Asten (2018) in Uganda "...transfer of land through inheritance is limited to right of use and does not involve transfer of land titles..." (Yami & van Asten, 2018, p. 144). In other words, customary tenure enables access, but not tenure rights, leaving farmers in a very vulnerable position. As farmers do not own the title, they cannot use their lands as collateral for a credit. Due to the insecurity of land tenure, or temporary rental agreements of land for farming, farmers are not incentivized to invest in their farms, for instance by enhancing soil fertility or improving their farming practices (Yami & van Asten, 2018).

Specific crops vary among districts, but in general, main crops include: maize, beans, millet, sweet potatoes, cassava, groundnuts and sorghum (Advance Africa, 2017; UBOS, 2017a; UBOS, 2017b; UBOS, 2017c; UBOS, 2019). While these crops are used mainly for self consumption (75% or more according to interviewees), some have functioned as cash crops (Advance Africa, 2017). The little that is sold, is sold at local markets, to middlemen or to private companies.

In general, farmers use rudimentary farming methods, for instance oxen for cultivation (FAPAD, 2016b; FAO, 2018). According to a study of the three districts by Advance Africa, in the case of maize, millet and cassava, most farmers use simple tools like hoes, machetes and rakes for land clearance and preparations (Advance Africa, 2017). This has affected the capacity to cultivate land, including for farmers owning larger pieces of land and who would be in a position to practice extensive farming. The same tools are usually used during harvesting. There was no mechanized farming recorded with any of the small-scale farmers that Advance Africa reached in their study.

Food loss represents a challenge in the area. Many crops owned by smallholder farmers are affected by pest, disease, and vermin, which leads to loss of crops and livelihoods, affecting food security and incomes (Department of Relief, Disaster Preparedness and Management & UNDP, 2014a; Department of Relief, Disaster Preparedness and Management & UNDP, 2014b; Department of Relief, Disaster Preparedness and Management & UNDP, 2016). In accordance with Advance Africa, in the case of cassava, maize and millet, "crop losses remained high due to limited access to agro-chemicals, conflicts among different farmers and limited knowledge of crop protection strategies" (Advance Africa, 2017, p. 21). It is estimated that approximately "22% of the possible harvests would be lost before harvesting" (Advance Africa, 2017, p. 9). Maize is considered the most vulnerable, with cassava, millet and groundnuts following. Postharvest losses are attributed to weevil attacks, rodents, rotting of the harvested crops due to lack of proper drying surfaces and storage (Advance Africa, 2017).

In general, in East Africa, markets can be either formal, informal or non-monetary (eg. exchange of goods) (Muhanji, Roothaert, Webo, & Mwangi, 2011). In accordance with Muhanji et al. (2011, p. 198) "Formal markets are large, organized markets such as supermarkets, wholesale, retail groceries, as well as free markets in rural and urban centres". On the other hand, "Informal markets are either undesignated areas near farming communities or in peri-urban areas where door-to-door and roadside markets do exist [...] Informal markets are characterized by several market players lacking market information and formal market institutions" (Muhanji et al., 2011, p. 198). As for commercialization of produce, sometimes high transportation costs are

[9] There are four types of land tenure systems in the country: customary, freehold, mailo; and leasehold (Ministry of Lands, Housing and Urban Development 2010)

involved, markets and storage facilities are limited, and, coupled with low quality products, these factors represent an important challenge. Physical and visual appearance seem to be the indicator used by traders and consumers to determine product quality (Advance Africa, 2017). While there are different development and agricultural policies promoting value addition as a means to increase the produce's lifespan and incomes, value addition is hardly practised in part due to lack of knowledge, capacity or skills on behalf of those who would otherwise be willing to add value to their produce (Advance Africa, 2017).

As for environmental conditions, the area is vulnerable to water and wind erosion, and farmers lack the resources or skills to prevent or address this (Advance Africa, 2017). Declines in productivity are attributed to soil fertility loss and climate change. Measures to improve this are limited. Few farmers use crop or animal manure to enhance soil fertility. The area is also affected by drought, which leads in many occasions to crop losses. Farmers seem to be highly dependent on rainfall, and few harvest water or use drip irrigation, which makes them highly vulnerable in the current changing climate (Advance Africa, 2017).

Specifically, a wet and dry woodland savanna climate prevails in *Abim*, marked by an intensely hot dry season from December to February and a rainy season between March and November. The characteristic torrential rains and strong winds have aggravated soil erosion, undermining the fertility of soils (Department of Relief, Disaster Preparedness and Management & UNDP, 2014a; Department of Relief, Disaster Preparedness and Management & UNDP, 2014b; Department of Relief, Disaster Preparedness and Management & UNDP, 2016). Lira district experiences a bimodal rainfall pattern characterised by one peak during April-May and the other between August-October. According to a risk assessment report (Department of Relief, Disaster Preparedness and Management & UNDP, 2016), the wetland cover in Lira had reduced from 11% to 8.9% by November 2013. The report states that the degradation of wetlands "continues to undermine the availability of surface and underground water, caused flooding and destruction of roads, crops, reduced fish stock, biodiversity loss, habitat loss leading to poor ecosystem services and balance" (Department of Relief, Disaster Preparedness and Management & UNDP, 2016, p. 17). The assessment found that Lira municipality has more pronounced cases of wetland destruction due to the pressure of urbanization (Department of Relief, Disaster Preparedness and Management & UNDP, 2016). As for Soroti, recently, rainfall has been unreliable and unpredictable, affecting the economic activities in the district, including crop farming and livestock rearing. The distribution of rain is such that areas bordering the northeastern region experience earlier dry seasons. This is also a common occurrence at the lakeshore areas, which sometimes experience very severe spells of drought (Department of Relief, Disaster Preparedness and Management & UNDP, 2014b).

Climate change poses an important challenge in the area. Changing weather conditions are affecting the country, particularly the regions highly dependent on rainfall (FAPAD, 2016b). The changing patterns make seasons more unpredictable, particularly the availability of water. The presence of more extreme weather events also represents a challenge (MWE, 2015). The Ugandan government aims to reverse current deforestation rates and improve forest cover as a mitigation measure, which is a challenge, considering that energy provision is from charcoal and firewood (MWE, 2015).

Socio-economic, food security and environmental outcomes

In 2017, the mean monthly income generated in the three districts by the sale of agricultural produce was 200,000 Ugandan Shillings (UGX) (approximately 54 USD) (Advance Africa, 2017). Crop production supports food security at a subsistence level, limited in part by small farmers owning very little land. The inability to commercialize and add value to their products prevents smallholder farmers from prospering (FAO, 2018). Wichern et al. (2017) stated that the majority of households in Uganda are not food self-sufficient. Those households that are not food self-sufficient are unable to reach this sufficiency partly because they need to sell some of their harvest to pay for non-food expenses (school fees, medical bills, etc.). Food self-sufficiency in the northern region is less than in other regions.

Reduced food productivity at the farm level has led some farmers to depend on local markets to acquire food. However, this is limited by low incomes and purchasing capacity, and in consequence affects food security. The situation varies for farmers who have larger farms, and who are better equipped to improve soil conditions and conserve water. In their case, the surplus can be

sold in the markets and their food security is enhanced (Advance Africa, 2017). Large-scale farmers operate bigger farms than small-scale farmers, e.g. between 10 to 20 acres of land or less in some cases.

Malnutrition and food insecurity seems to be more prominent in Abim:

Table 4.3 Percentage of households with less than two meals a day

	ABIM	LIRA	SOROTI
% Households where (members aged 5 years and above) consume less than two meals per day	55%	12%	8%

Census: Population Census 2014

In accordance with USAID (2017, p. 1), Karamoja region, where Abim district is located "...suffers from endemic malnutrition and food insecurity. An inter-agency food security and nutrition assessment during the lean season in 2016 found that half (50 per cent) of households were moderately or severely food insecure according to the Food Security Index." Food insecurity is also a concern in the regions where our other two districts are based, in some cases, associated with land tenure issues, including for women and youth; pest and disease affecting crops and animals; lack of quality seeds; and lack of skills (Department of Relief, Disaster Preparedness and Management & UNDP, 2014b; Department of Relief, Disaster Preparedness and Management & UNDP, 2016; FAPAD, 2016a; FAPAD, 2016b).

With Nyakwae sub-county most affected, food insecurity in *Abim* due to drought is looming. Indicators range from extremely vulnerable households; poor food quality in the market for extremely high prices; daily household consumption of the same kind of food; dependence on food hand-outs in schools and health institutions, among others (Department of Relief, Disaster Preparedness and Management & UNDP, 2014a)

Drought and floods have also affected Soroti, negatively impacting food production (Department of Relief, Disaster Preparedness and Management & UNDP, 2014b). Cases of floods are reported in the extensive wetlands and low-lying areas of Soroti that are characterized by poor farming practices. Due to increasing population, land fragmentation is evident and has affected agricultural productivity Department of Relief, Disaster Preparedness and Management & UNDP, 2014b).

Due to rudimentary production and harvesting methods, as well as low processing and commercialization capacity, low mechanization and technology use, the effect on natural resources and the environment is more limited than with industrial agriculture; however, it is still relevant. For instance, some farmers use fire to clear their parcels, which can have implications for soil erosion (Department of Relief, Disaster Preparedness and Management & UNDP, 2014a). In general, there is a lack of knowledge regarding what practices generate soil erosion (or just unwillingness to prevent it), and regarding the use of soil fertility conservation measures (such as fallowing) (Advance Africa, 2017). In Soroti, the conversion of land for rice cultivation is the main source of environmental degradation (Department of Relief, Disaster Preparedness and Management & UNDP, 2014b). Due to decreased soil fertility, as well as population growth, the wetlands in Lira are being converted to human settlements and used for agricultural activities (Department of Relief, Disaster Preparedness and Management & UNDP, 2016). In Abim, unsustainable agricultural practices such as monoculture, deficient crop rotation, as well as tillage, have all led to soil erosion (Department of Relief, Disaster Preparedness and Management & UNDP, 2014a).

Governance structure of the system

The institutions governing food systems are a combination of (formal and informal) norms and rules taking place at the international, national, and local levels. Sometimes these rules reinforce or build on each other, whereas at other times they conflict and pose coherence challenges, preventing their effectiveness in achieving their policy objectives. The international norms and rules addressing issues that directly or indirectly affect food systems in Uganda are quite broad. This ranges from legally binding agreements (e.g. in the area of trade, food safety, regional cooperation, genetic resources or environment); resolutions, decisions and voluntary instruments of international organizations (e.g. Codex Alimentarius, voluntary guidelines, SDGs);

regional policy frameworks (e.g. Comprehensive Africa Agriculture Development Programme; policies of large economies, which have an impact in the production or consumption in and/or from Uganda; and voluntary private mechanisms on different activities of the value chain (e.g. certification standards, ecolabelling, etc.)[10].

At the national level, a varied set of norms, rules and policy frameworks simultaneously govern different elements of the food systems. The Ugandan Constitution (1995) "provides a number of principles which can generally be accepted as laying the constitutional foundation for the development of the country's agri-food system policies and strategies" (Naluwairo, 2011, p.21). In its preambular section, it recognizes the State's role in agriculture development, protecting the natural resource base, and its role in ensuring food security as a means to achieve social justice and economic development. Other frameworks include the National Development Plan II, which prioritizes investment in, i.a. agriculture and human capital and aims, among others, to raise agricultural incomes, productivity and added value. The Plan considers agriculture as key in the transition to becoming a middle income country; the ASSP 2015/2016 - 2019/2020, which operationalizes the National Agricultural Policy (NAP) recognizes 12 priority commodities and 4 strategic commodities11 (MAAIF, 2020) and aims at 'Transforming the sector from subsistence farming to commercial agriculture' (MAAIF, 2016a, p. 25). The National Seed Policy, National Environment Act (2019), the Markets Act, National Agricultural Services Act and the National Climate Change Policy represent important frameworks that also address or impact the governance of food systems in Uganda. Locally, due to decentralization efforts that started at the end of the 1990s, the districts play an important role in passing bills and making them ordinances - as long as they do not contradict the Constitution or parliamentarian laws; one example is Lira's Ordinance on the Prohibition of Trade, Distribution, Use and Possession of Counterfeit Agricultural Inputs (2017). Customary law, local customs and traditions represent another important element to take into account when it comes to food systems' governance, e.g. in terms of land rights. While it is not prohibited by law, many villages have a standing rule that women are not allowed to own or inherit land. Cultural and clan leaders play a role in solving disputes related to land access and distribution, though women, youth and persons with disabilities (PWDs) continue to be disadvantaged (FAPAD, 2016b; Yami & van Asten, 2018). In accordance with the World Bank (2018): "Institutional weaknesses and a lack of coordination among agriculture-related ministries and agencies have been important bottlenecks for translating policy plans into effective action." (World Bank, 2018, p. 45)

There is clearly a deficit in ordinances and by-laws related to access to improved agricultural inputs, including quality seeds, as well as a lack of implementation of policies related to quality seeds and land access (FAPAD, 2016). The new Seed Law (MAAIF, 2018), however, can now provide a good framework in terms of enhancing access to quality seeds. Naluwairo (2011, p.8) argues that "in general, the Government of Uganda concedes that Uganda's agri-food system is weak, characterized by weak value chain linkages, few agro-processing industries, uncoordinated institutions, policy inconsistencies, weak standards, poor enforcement of laws and regulations, and poor and inadequate physical infrastructure.

As a result of the different challenges affecting different elements of the food system, local populations in Abim, Lira y Soroti *are affected by undernutrition and food insecurity*. Gender inequality and discrimination constitute a constant problematic feature throughout the food system.

[10] This list built upon Soto Golcher and Visseren-Hammakers (2018) work on norms and rules governing agriculture
[11] Specifically: bananas, beans, maize, rice, cassava, tea, coffee, fruits and vegetables, dairy, fish, livestock (meat), and four strategic commodities, namely, cocoa, cotton, oil seeds, and palm oil

The following Table 4.4 summarizes the main highlights of the food system:

Table 4.4. Highlights of the food system analysis

HIGHLIGHTS			
Food system activities	■ Subsistence farming, crops affected by pests and disease ■ Low productivity and poor quality produce ■ In general, farmers use rudimentary farming methods	■ Insufficient extension workers to address farmers' needs ■ Limited access to land. Small land holding does not allow farmers to grow food in large quantities ■ Limited access to quality seeds and agricultural inputs	■ Limited or no access to financial services ■ Low adoption of technology and mechanization ■ Limited value addition by farmers (due to lack of skills and infrastructure)
Socio-economic Drivers	■ Conflicting policies, poor regulatory framework and weak implementation ■ Customary land tenure system	■ Poor markets and market infrastructure: Lack of organized formal markets for buying food or inputs and selling farm produce ■ Poor road infrastructure to connect to markets. High transportation costs	■ Abusive middlemen offer very low prices to farmers for their crops. Little room for negotiating. ■ Lack of market information (for instance, information about prices, or potential risks)
Environ-mental Drivers	■ Agriculture remains highly dependent on rainfall ■ Land fragmentation, small farms ■ Vulnerability to water and wind erosion and farmers lack the resources or skills to prevent this	■ Soil infertility has also led to low productivity. Few farmers use crop or animal manure to enhance soil fertility ■ High rate of climate variability, unpredictable rainfall patterns. Drought leads to crop losses, yet few farmers harvest water or use drip irrigation	■ Wetland degradation (especially in Lira) leads to flooding, poor ecosystem services ■ Land degradation and encroachment on forests
Food system outcomes	■ Subsistence farming with limited (poor quality) produce for commercialization and income generation ■ Low income from farming activities ■ Livelihoods of many people are dependent on farming activities ■ Majority of households are not food self-sufficient. They sell some of their harvest to pay for non-food expenses (school fees, medical bills)	■ Food insecurity and malnutrition (also from consuming same kind of food) ■ Low food production makes some people dependent on local markets to acquire food yet with limited finances to purchase food ■ Loss of indigenous foods, of food variety and healthy diets	■ Unsustainable farming practices leading to soil erosion (e.g. fire to clear parcels) and environmental degradation ■ Lack of practices that support soil fertility conservation measures

Under a food systems approach, we note that most challenges are interconnected, so it is difficult to separate them into different independent components. For instance, certain conditions can also be both a driver and an outcome; e.g., soil infertility can be a condition prevailing in the area (a driver), but also a result of unsustainable practices (outcome). However, for analytical purposes and because of time constraints, we decided to limit our scope to a couple of challenges in the food system. We would like to understand where power tends to perpetuate inequalities and prevent change, and to identify potential areas where power can influence sustainable transitions. We hereby focus on the challenges related to lack of skills, in particular at the food supply level, especially the production, processing, value addition, and commercialization, with special attention to extension services, as well as low quality and access to seeds and other key agricultural inputs.

4.2 Seeds and other key agricultural inputs

4.2.1 Overview of the provision of seeds and other key agricultural inputs

The level of agricultural input and technology adoption in Uganda is one of the lowest in Sub-Saharan Africa (World Bank, 2018). One of the critical constraints to improving smallholder farmers' incomes is a lack of access to quality seeds and other inputs (Reinker & Gralla, 2018). Only 4% of farmers use what the World Bank calls a package of production-enhancing technologies: a combination of fertilisers, seeds of improved varieties, and supportive extension services. On average, Ugandan farmers only apply 1.2 kg inorganic fertiliser per hectare. This use of fertilisers remains concentrated on a few farms, which are mostly larger and more commercially oriented (World Bank, 2018). Many farmers do not want to or cannot pay the higher prices for quality seeds, do not understand their value or simply do not have access to quality seeds (Reinker & Gralla, 2018). As a consequence, yields remain low. It is estimated that only 20-33% of the potential yield for rain-fed agriculture is reached. This percentage is even lower for irrigated agriculture (World Bank, 2018).

Through its Operation Wealth Creation (OWC) programme, the government has been facilitating access to agricultural inputs, such as seeds, seedlings, and tractors (World Bank, 2018). According to some interviewees, farmers can apply for these inputs through their cooperatives. Since the launch of the programme in 2013, the National Agricultural Advisory Services (NAADS) has moved away from its original mandate of farmer advisory towards the provision of agricultural inputs (World Bank, 2018). OWC was created by His Excellency the President of Uganda to heal the inefficiencies of NAADS (Robert & Mesharch, 2018). It is not directly under MAAIF but being an agency conducting agricultural activities, in particular input distribution, works in correlation with MAAIF/ NAADS. OWC is mostly managed and operated by soldiers who work with the NAADS secretariat to purchase inputs supplied to farmers. OWC and NAADS secretariat work in collaboration during purchase of inputs that are distributed to farmers through the agricultural delivery system of the local government.

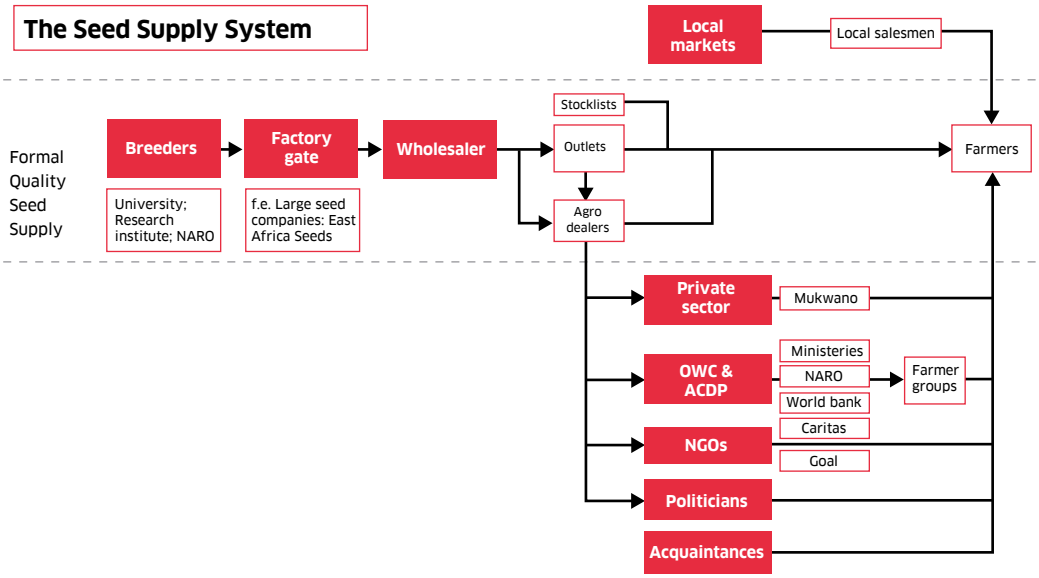
The government has, together with the World Bank, also rolled out the Agriculture Cluster Development Project (ACDP), which aims to raise on-farm productivity, and marketable volumes of maize, cassava, beans, rice and coffee in certain geographic clusters. This is done by supplying farmers with vouchers for agricultural inputs and an associated training programme (World Bank, 2020a). With the vouchers, farmers only have to pay a portion of the inputs' price, according to interviewees. At the moment of writing, the ACDP is still being piloted (World Bank, 2020a). The government has recently also started promoting drip kits and treadle pumps for smallholder farmers to engage in irrigation (Nakawuka, Langan, Schmitter & Barron, 2018).

The formal seed supply chain consists of four levels, the breeder, factory gate, wholesaler and retailer and the company retail outlet. The breeder is usually a person who is authorised with variety development and release, variety maintenance and production of foundation seeds (Barriga & Fiala, 2020). The breeder is usually located at a university, research institute or the National Agricultural Research Organisation (NARO). The second level is the factory gate which buys from the breeder (Barriga & Fiala, 2020). A number of large companies operate in Uganda, such as East Africa Seed Company, Victoria Seeds and Equator Seeds (Moses Egayu, interview, 23 October 2020). The third level is the wholesaler, which is registered and licensed to bulk and sell commercial seed classes from seed growers (Barriga & Fiala, 2020). The fourth level is the company retail outlet, which are the seed company shops. They are categorized as seed vendors or seed growers and are authorized to sell seed from certain seed companies (Barriga & Fiala, 2020). Agro dealers, those that sell inputs such as fertilisers and seeds, are also located at this level. There are also a few stockists for grain located in the three districts, who get their seeds from their produce of last seasons. They then sell these seeds to the farmers (Hellen Opie, interview, 26 October 2020). The Ugandan government is responsible for the creation of an enabling environment and oversees the regulation of seeds production, processing and marketing (Access to Seeds Index, 2019). MAAIF, through the Directorate of Crop Production is the official focal point mandated to regulate the seed industry, while the National Seed Certification Services is responsible for seed certification (Access to Seeds Index, 2019).

According to some interviewees, many farmers are supplied with improved varieties of seeds by NGOs, such as CARITAS and GOAL. The NGOs host training events where seeds are distributed or select beneficiaries who receive vouchers to access seeds. At the moment of writing, the national

election is coming up, so farmers also receive seeds from politicians. Some farmers that produce for companies, such as Mukwano, receive seeds from these companies. Interviewees noted that the seeds from these organisations or politicians are provided by agro dealers. The organizations write out a bid notice for which agro dealers compete. The winning bidder is then allowed to supply the seeds to the farmers. However, many farmers buy seeds informally at their local market or get their seeds through informal sources of input supply, such as relatives, friends or neighbours. This has caused only 30% of farmers to have access to quality seeds, according to respondents. Figure 4.1. summarizes the seed supply system in Uganda:

Figure 4.1 The seed supply system in Uganda



4.2.2 Challenges related to the provision of seeds and other key agricultural inputs

Based on our desk study, as well as on interviews, the main challenges in the provision of seeds and other key agricultural inputs can be summarized as follows (Table 4.5) (further details can be found in Annex 6.):

Table 4.5 Summary of challenges related to the provision of seeds and other key agricultural inputs

TYPE	CHALLENGES
Market problems	Agro dealers are discouraged from operating near farming communities, as there is little market for inputs; bulk buyers are prioritized; agro shops only stock a few varieties of inputs; seed companies do not have enough seed to supply agro dealers; the chemicals in pesticides have a short shelf life, which causes losses for agro dealers; limited choice and low-quality seeds at the local market.
Market Regulation	Weak regulation of the input sector; poor enforcement due to high corruption; counterfeit agricultural inputs
Costs of inputs	Expensive inputs and irrigation technologies; no capital; lack of credit
Transportation	Problems accessing agro dealers located in urban regions; high transportation costs to visit agro dealers; persons with disabilities (PWDs)/elderly cannot travel to agro dealers/NGO trainings
Logistics of government interventions	Government programmes providing inputs do not always provide the correct inputs on time; they provide low quality seeds in many occasions; only a limited number of farmers benefit from input delivery
Funding	Limited spending by the government on agriculture
Traffic of influence and corruption	Beneficiaries of government programmes are selected based on relationships; enforcement of seed business regulation difficult due to bribes/corruption
Land insecurity	Land tenure insecurity & claims over land hamper investment in improved technologies/inputs
Access to water	Only traditional irrigation systems available; failure of irrigation systems; difficult access to or permission to use water resources

TYPE	CHALLENGES
Lack of knowledge	Not many farmers have the right knowledge about application, planting, management, and suitable soil conditions for seeds; farmers lack knowledge on what seeds are certified or fake; organizations give priority to seeds, so farmers are not adequately being informed about other inputs; there is little guidance on the use and application of pesticides; reduced efficiency of pesticides, as farmers do not know how to apply fertilisers and use the correct amount of pesticides
Low adoption of new technologies or improved seeds	Farmers distrust quality seeds (including those provided by the government); farmers fear that fertilisers are dangerous for their land; they prefer local seeds, they believe that indigenous seeds germinate more easily and can be planted forever; farmers believe that they do not need to use fertiliser, as their ground is fertile enough
COVID-19	Disruption of supply chains for inputs due to covid-19; closure of informal market; agro dealers are unable to visit farmers

4.3 Extension service provision

4.3.1 Overview of extension service provision

Agricultural Extension services are defined as interventions or activities by government and non-state actors that facilitate the access of farmers, their organizations, and other value chain actors to knowledge, information, and new technologies and developments; mediate their interaction with other relevant organizations; and assist them to develop their technical and management capacity in agriculture and family life (Barungi, Guloba, & Adong, 2016; MAAIF, 2016b). An agricultural extension system is also important in enhancing the information flow from farmers to other actors, e.g. information about farmers' challenges and needs.

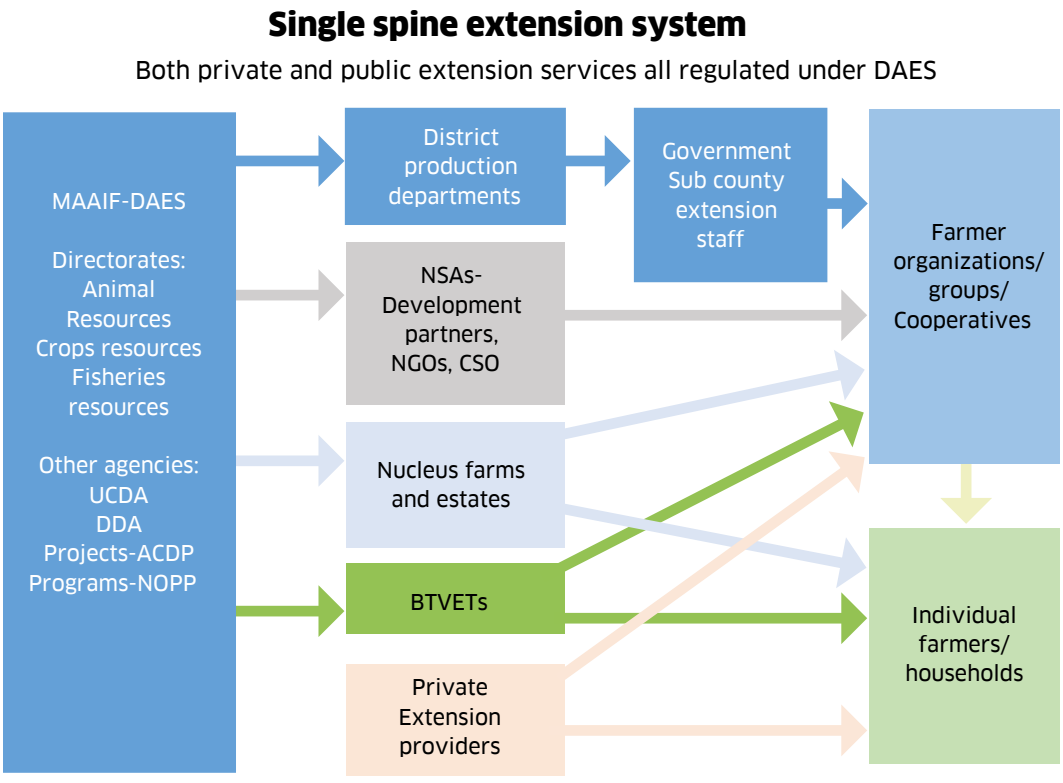
According to the National Agricultural Extension Strategy, extension services are provided by both private and public actors (MAAIF, 2016b). The extension service workers are either para-professionals who hold a diploma and a certificate or professionals with bachelors' degrees, Masters and PhDs. In Lira, Abim and Soroti districts, extension staff are mostly diploma holders, with a few bachelors' degree holders. Diploma holders are mostly trained by Business, Technical, Vocational Education and Training (BTVETs) organizations, which fall under the jurisdiction of the Ministry of Education and Sport (MoES). BTVETs also work with farmers in their communities to enhance learning. For instance, in Abim, the Ardiland Development Programme has a private registered training institution called Achangali Vocational Training Institute.

The agricultural extension system is largely controlled by the government under the MAAIF (Buyinza, Sekatuba, Agaba, Kinuthia, & Kiptot, 2015). The Uganda Forum for Agricultural Advisory Services (UFAAS) is a professional body that was created to operate as an umbrella organization for all agricultural extension workers and agencies. Extension service providers are expected to register themselves and subscribe annually to UFAAS.

In the past years the system operated under a pluralistic approach of extension service provision with many un-coordinated actors, but it was reformed to a single spine extension system delivery in the 2014/15 fiscal year (Budget Monitoring and Accountability Unit & Ministry of Finance Planning and Economic Development, 2019). The introduction of the single spine extension system was accompanied by a transfer of extension service from the NAADS to MAAIF. In the attempt to embrace and operationalize the single spine extension system, the government of Uganda established the Directorate of Agricultural Extension Services (DAES) as one of the departments at MAAIF in the fiscal year 2015/16. The priority of the DAES is to provide overall leadership, management and coordination of the public and private extension delivery systems and regulate all involved actors (MAAIF, 2020). DAES coordinates with other directorates including animal, crops and fisheries resources (Nkonya et al., 2020). These directorates develop technical information which is disseminated by the DAES, which in turn works with district local governments' production departments in extension service provision. Despite this, the coordination of all extension service providers has not been conducted successfully and as a result there are service duplication issues and differing training quality by different providers (Budget Monitoring and Accountability Unit & Ministry of Finance Planning and Economic Development, 2019).

The government employs agricultural extension workers in each sub-county to deliver extension services to farmers. Extension staff is coordinated by the District Agricultural Officer (DAO) at district level. The DAO and District Production and Monitoring Officer report to MAAIF-DAES concerning the operation of extension services in their respective districts (MAAIF, 2016b). MAAIF has other agencies that reach out to farmers, including Uganda Coffee Development Authority (UCDA), Dairy Development Authority and NAADS Secretariat.
There are many non-state actors providing agricultural extension services to farmers. Some NGOs operate only in certain areas, whereas others operate country-wide and have global offices. CSOs also work with some NGOs in extension service provision to farmers in different areas across the country. Development partners provide financial and capacity building support to some of the lower-level organizations, enabling them to reach out more efficiently to farmers. There are also nucleus farms and estates. These are farms that work with and support farmers to produce a certain commodity. Examples include sugar companies like Kakira Sugar, Kinyara Sugar, coffee companies like Kyagalanyi and Mukwano. These farms train some farmers to produce crops for them and then buy the commodities from these farmers. Sometimes they also give inputs (seeds) for production to farmers.
There are also private extension workers that are hired as consultants on people's farms to provide extension services to individual farmers. They offer services like farm planning, provide knowledge on crop production and soil testing services (advice). The provision of extension services can be summarized as follows:

Figure 4.2 Agricultural extension system in Uganda



According to some of our interviewees, training topics in extension programs are supposed to be chosen depending on training gaps as noticed in baseline surveys, informed by farmers according to their needs, and sometimes depending on the projects being carried out in a community. Topics include: group dynamics and conflict resolution; savings and financial management; good agronomic practices of production; management of agricultural enterprises for production of quality products for the market; sustainable agriculture; value addition; post-harvest handling of crops; marketing of crop produce and market linkages; seeds selection and seed bed preparation.
In accordance with some interviewees, missing topics in the extension programmes include: site selection and preparation, storage and choice of quality seed for planting; gender and gender equality. According to them, gender has not been a part of the agenda because it does not normally emerge as a topic that needs intervention during baseline studies conducted, and moreover, agricultural organizations have no or few staff that have been equipped with any sort

of gender studies training. Some people may not be comfortable providing training on gender-related topics, because of the prevailing taboos in society (Echeku William, interview 22 October 2020).

To benefit from extension services provided by the government, farmers need to be organized as a group, and registered as such at the local district government (Acen Sharon , interview, 27 October 2020). In other cases, participants in extension programmes are sometimes determined by projects led by NGOs based on target beneficiaries. For example, some target only pig farmers. Farmers who attend the training sessions are mostly perceived to be common farmers; some are innovative, and dare to make changes in their farming practices that are then followed by other farmers.

As was mentioned by several interviewees, women have the potential to benefit more from extension programmes because they are active and committed when they decide to participate. One interviewee argued: "Female-led farmer organizations outshine male groups due to being more trustworthy in their operations" (Alip Patrick, interview, 21 October 2020). Women participation has been promoted by the Village Savings and Loan Association. Women have shown their willingness, readiness and availability to participate in training (Echeku William, interview, 22 October 2020). Another interviewee stated that women put what they learned into practice faster than men do (Orone Moses, interview, 22 October 2020). Some projects advocate for 80% women participation in farmer organizations that get support or aid from them (Echeku William, interview, 22 October 2020). At the local district government level, groups are required to include 30% women in the leadership of their groups in order to be registered (Acen Sharon, interview, 27 October 2020).

4.3.2 Challenges related to agricultural extension system

Based on our desk study as well as interviews, the main challenges in the agricultural extension system can be summarized as follows (further details can be found in Annex 7.):

Table 4.6. Summary of challenges in the agricultural extension system

Few extension staff	Extension trainers are few as compared to the total number of farmers and this limits the effectiveness of training programmes.
Limited funding	Funds released by the central government to lower governments for operating their extension programmes are insufficient. Some activities for outreach and training are not carried out due to limited finances to facilitate travel of extension staff and purchase required materials for training.
High levels of illiteracy	There are many illiterate farmers in communities who attend training sessions jointly with the literate farmers. This does not work well because literate farmers tend to understand faster and in some cases dominate training sessions. Illiterate farmers cannot record any notes from the training for further reference.
Limited time	Extension staff have limited interaction time with farmers due to their busy schedules. This limits farmers' understanding since some of them train very fast and have a lot of content to cover in a single meeting.
Limited interest	Some farmers have little or no interest at all in attending training meetings. They prefer being given incentives, or inputs, as opposed to acquiring knowledge.
Weak farmer groups	Some farmer groups have a very small financial and human resource base that would enable them to lobby for extension support from NGOs or the government. Some farmers don't belong to groups, hence miss out on extension services provided.
Poor health of farmers or their families	Some farmers suffer from various diseases, e.g. HIV, high blood pressure, diabetes and ulcers hence are unable to participate in meetings due to their unstable health or that of their relatives (whom they they need to take care of)
Many policy changes and confusing interventions by the government	The government has many projects/programmes being operated currently, for example, OWC, ACDP, UCDA, among others. Some farmers do not clearly understand the different services provided by each of these government agencies.

Poor coordination of extension services	There are many organizations providing extension services to farming communities, and at times, due to poor coordination, they redundantly render the same service to farmers unknowingly.
Lack of skills of extension staff	Some staff do not have practical skills in the delivery of extension services and are not knowledgeable about some aspects that concern farming e.g. gender considerations in agriculture among others. This limits their ability to effectively train farmers. Furthermore, some extension staff are not up-to-date with new technologies and developments in the sector.
Political interference	Some politicians who supply inputs to farmers give them negative advice on attending extension meetings.
Limited extension approaches	Face to face approach is not sufficient given the high ratio of extension staff to farmers.
Late release of funds	Late release of funds affects the timing of training and in turn planting and conducting other farming activities. Together with unpredictable weather, this puts farmers at a high risk of not producing enough, not even for subsistence.
Unequal access	Some women are prohibited by their husbands from attending training programmes, which makes them miss opportunities for skills development.
Scant adoption	Some farmers do not believe that the improved agricultural technologies will bring any benefits, and hence, do not adopt them. Farmers continue getting low yields from farm production.
Poor infrastructure	Poor road connections, conditions and lack of access roads to some communities result in extension staff and other agencies/ programmes/ NGOs failing to reach these communities.
COVID 19	Covid 19 pandemic has limited mobility of extension workers

5. APPLYING THE POWER TOOL

We have applied the power tool to go deeper into understanding the role of power in relation to 1) the lack of skills to enhance productivity and quality produce, ensure food security and scale up to commercial farming, which led us to focus on extension services delivery; and 2) the limited access to (and availability of) high quality agricultural inputs, including quality seeds.

5.1 Identification of core problems and root causes

Besides revealing common challenges related to lack of capital and poor infrastructure, together with low investment in agriculture, the power tool helped us identify core problems and underlying, deeper root causes.

Core problems related to extension service delivery and agricultural inputs include:

- **Insufficient and low coverage of extension services, and important knowledge gaps:** few extension workers to address high demand of farmers; farmers are required to register as a group to benefit from government support and some are unaware or do not want to register; lack of knowledge in the selection, use and application of inputs, discouraging farmers; extension workers are inhibited from doing their job due to lack of financial resources, and also possess limited skills to support farmers in this transition (needing extension workers also to develop new skills themselves).

- **Fake, counterfeit or poor quality inputs and limited access and supply:** a vicious cycle where fake or counterfeit seeds are being sold in the market, as well as poor quality or expired inputs; farmers are not willing or able to buy quality inputs, and when buying, are disappointed in the quality or are taken advantage of; agri-dealers are reducing the supply since they are not making any profit, due to the lifespan of some inputs like pesticides being short; agri-dealers are also limiting selling points (accessibility for farmers) and variety; existence of unregulated markets.

- **Lack of information and communication:** farmers not knowing what is available in the market, and where they can buy quality inputs; not knowing where and how to ask for support (and what to expect from this support); they do not know where to complain or how to do it; no good platform exists for communication between agro-dealers and suppliers of inputs; wrong information is provided to farmers; development partners and local governments are not communicating; and some groups have less access to information.

- **Farmers' attitude and mindset:** farmers seem to be resisting the transition to commercial farming, manifested in part by their lack of interest in trainings; misuse of inputs provided; dependency syndrome (the expectation that the government and NGOs should solve their needs and provide free inputs); a preference for tangible support and not for acquiring new skills.

- **Exclusion of or discrimination against certain groups or actors:** some farmers are not benefiting from district or NGO support, as they do not belong to any organized or registered group; there are also groups that are not registered with the district, hence they also do not benefit from government support; women in general, and widows and single mothers in particular, suffer from extra marginalization; the elderly who have given away their land; youth who do not have access to (sufficient) land and consequently experience difficulties to access inputs and extension services; PWDs; farmers who buy small quantities of inputs can be excluded when larger buyers come and buy (scarce) input supply; and very poor farmers who depend fully on government provision of free inputs. These groups have problems accessing inputs and extension services. For instance, PWDs and the elderly experience mobility difficulties. They cannot easily go to the sessions or trainings, including those where inputs are supplied by NGOs or by the government. They also cannot travel the distances required to get inputs from agro dealers.

In analysing these problems even further, we identified the following underlying causes, which are common in most of the core problems identified:

- **Farmers' fear and risk aversion, as well as lack of trust:** Increasing production requires higher investments, which is considered risky because the existence of pests, disease, and unpredictable or severe weather conditions can destroy crops very easily -- they also lack the resources and knowledge to prevent this. Farmers are not guaranteed a market for their produce. They also fear producing just one crop and then not having enough to feed their families if anything goes wrong with it. Because of the malfunctioning of the food system, at the end the farmer is the one assuming most of the risk. They have little or no incentives to deviate from subsistence farming and try new seed varieties or inputs, invest in new machinery and tools; since they get the same price as yields emanating from low quality inputs, they feel they won't be able to recover their investments. Also, the lack of trust among farmers is sometimes an issue, based in part on bad past experiences in the provision of inputs (frustration from having been taken advantage of, given false promises, or given defective or expired inputs/products). In some cases, there is also mistrust among fellow farmers, preventing them from joining farmer groups and benefiting from it.

- **Weak connections, uncoordinated and dispersed efforts:** Different actors are taking part in the food system, and within it, efforts seem to be uncoordinated and dispersed – particularly as regards the provision of extension services and inputs: MAAIF is not coordinating with extension workers, different government platforms on the ground are confusing farmers and giving different information, NGOs have closer links to farmers than district officials, district officials are unhappy with NGOs' policies in terms of getting farmers to attend their trainings (allowance and provision of food and drinks that district extension workers cannot afford, due to limited district budgets for extension services); linkages between farmers and financial institutions are weak; farmers are not building a cohesive group to be able to negotiate, voice their concerns, and exert pressure for the enactment of by-laws; politicians are getting involved in extension services or input provision, etc.

- **Strong cultural beliefs and traditions:** different cultural beliefs are leading to the exclusion of certain groups of people, in particular, women, youth, and PWDs. Women are considered an asset and subjugated to the husband, with no right to land (only through their husbands). Cultural factors affect nutritional and production choices (for instance, in some clans, pregnant women are not allowed to eat chicken (anonymous extension worker Lira, interview, 27 October 2020). Those farmers who face famine are socially labeled as "lazy", which creates a sense of shame, making them more reluctant to voice their concerns and participate in group trainings. Culture has come across very strongly in influencing farmers' decision to continue using their local seeds varieties, and preserve them in order to not depend on third parties for the provision of seeds. There is a strong belief in the subsistence/ traditional way of farming and the accompanying self-sufficiency (which prevents farmers from transitioning to one -hopefully- cash crop).

- **Weak planning:** funds are not just insufficient; funds and inputs provided by the government arrive sometimes late or off-season for the extension workers to be able to do their job or for farmers to plant on time. Weak planning also affects farmers' morale and willingness to participate in trainings. Sometimes the provision of seeds is inadequate for the soil conditions and climate, or simply does not represent what farmers are interested in planting.

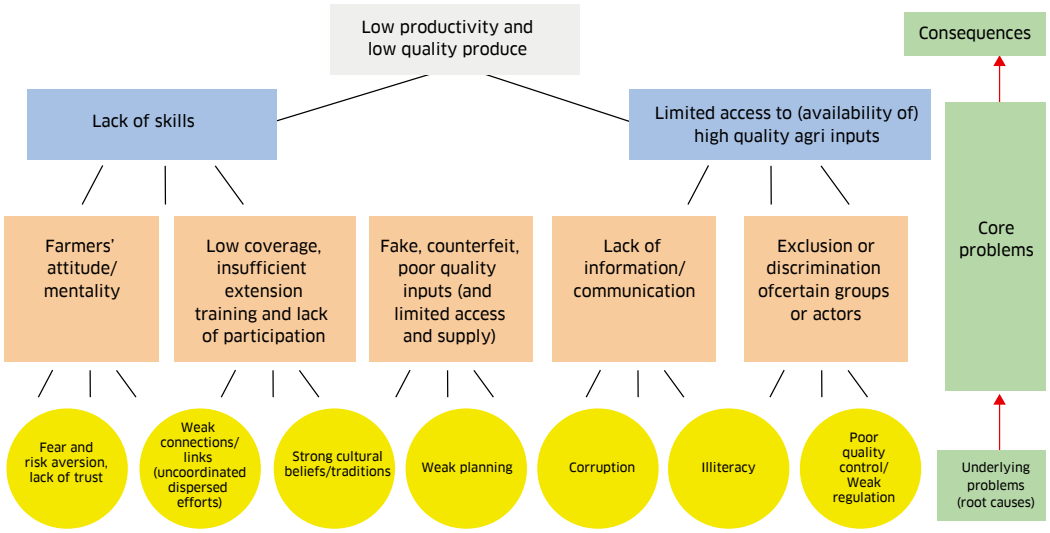
- **Corruption at different levels:** The provision of assistance to farmers is affected by corruption and the need to have family and connections to be able to receive certain benefits. Local leaders, as well as politicians (who sometimes do not receive salary and hence think that they should be paid in kind), benefit from inputs and tractors that are meant for farmers or they channel resources to certain richer farmers or family members. Corruption affects the implementation of policies. Technical people as well as other government staff, responsible for enforcing policies are bribed into letting fake or substandard inputs be sold in the market. There is no capacity (or willingness) to regulate the markets of, for instance, counterfeit seeds.

- **Illiteracy:** High levels of illiteracy among farmers[12] limits them from easily understanding the technical language of farming. The gap between illiterate and literate farmers affects training effectiveness (literate people know more and normally just want practical sessions rather than being taught theory). The sense of inferiority among some farmers for being illiterate due to not attending school becomes prohibitive in that they do not want to participate in group activities nor in trainings, also because sometimes their knowledge of English is limited (groups' constitutions for registration at the local district government are in English and some farmers do not speak English).

- **Poor quality control and weak regulation:** Poor quality control (including lack of certification of quality seeds) in the provision of services and inputs to farmers. Farmers blame agri-dealers for the provision of low-quality inputs, while agri-dealers blame seeds companies and input providers: in short, no one is taking responsibility. Enforcement continues to be a challenge – it is well known that anyone can get anything in the market.

The above list of core problems and underlying problems can be summarized in the following problem tree:

Figure 5.1. Problem tree



5.2 Who is benefiting from the current system

This leads to the question of who is benefiting from the current nonfunctional system. In many ways, **men** are benefiting from having the upper hand at the household level. Women are considered another asset, together with land. Men want to feel superior and maintain the cultural belief of being more powerful than their wives, dominating every decision. Even if women manage to have a more equal relationship with their husbands at the household level[13], when contacting extension workers for support, they find difficulties. Because of this sense of gender inferiority, women cannot easily communicate with the extension workers (who are usually men) (Egwar Daphne, interviewee, 28 October 2020). If she repeatedly calls for support, she will be misjudged by society as being open to having an affair, so she restrains herself and does not insist. Besides this, less than 10% of women have direct access to inputs (Moses Egayu, interview, 23 October 2020). Those who are married do not have decision-making power and have to ask their husbands for permission, as the husband controls the finances. Many women also experience gender-based violence. It is furthermore believed that women are only responsible for the household, so when they get permission to buy seeds it is mostly for food crops and not for cash crops. The fact that agro input dealers are located in the urban centres makes it difficult for women to access quality seeds, even if they gain permission from their husbands.

[12] According to the Census 2014, 40% of adults in Abim are illiterate, 28.9% in Lira, and 28.2% in Soroti. This is more serious in the case of women (51.8% of adult women vs. 26% of adult men in Abim, 40% of adult women versus 15.9% of adult men in Lira, and 38.4% adult women versus 16.2% of adult men in Soroti)

[13] According to a community development officer in Lira: "Families who are sharing ideas, both men and women are doing very well" (Acen Sharon, interviewee, 27 October 2020)

Women are, however, usually the beneficiaries of NGOs. **Agri-dealers** selling counterfeit and expired inputs are also benefiting from the lack of control and enforcement. Some blame seed companies, while seed companies argue that agri-dealers themselves re-pack and distort inputs to gain more. **Middlemen** buy from farmers at very cheap prices (and in some cases discourage farmers from using pesticides to reduce costs, according to some interviewees) and then sell at much higher prices. They are benefiting from farmers' lack of knowledge of market prices, and of their subsistence farming condition, as low quantities reduce farmers' chances of negotiating better prices. In their price they also do not recognize the effort farmers have made in improving the quality of produce or using improved inputs, which in turn discourages farmers' adoption of such inputs as the increased cost is not translated into better prices for farmers. **Those government officials** are being bribed at different levels in order to let fake inputs be sold in the market, betraying the responsibilities entrusted to them. **Politicians**, for their part, are using farmers' dependency on subsidized inputs for political purposes.

At the same time, some actors are also able to benefit in a more moderate way from the current system. To the extent human and financial resources at the district level (or through the NGOs) can service them, **registered or organized farmer groups** can garner some benefits. Then there are also **farmers who already have access to services**, who are already empowered, who take the initiative and show interest, and are as well actively linking with others. Those progressive farmers are also normally chosen to host demonstration sites and benefit from support, though in some cases, as indicated by a district commercial officer, these model farmers belong to the elites in the villages (anonymous, interview, 6 November 2020). These farmers are usually contacted first by the extension workers (also because the "non-elite" farmers do not usually have phones because they can't afford them). These progressive farmers are expected to train and pass knowledge to other farmers, however, this rarely actually takes place.

5.3 Actor analysis

To identify potential leverage points with the aim to distinguish more inclusive and sustainable paths, we need to increase our understanding of the power relations among actors and their networks, their roles, interest, and resources they have to enhance or prevent change with regards to the challenges identified. There are many different stakeholders active within the input provision and extension services in Lira, Abim and Soroti. In Annex 8 the most important stakeholders for respectively the input provision and extension services are listed. These are political, regulatory, services-oriented, knowledge and economical actors that are located at the local, sub-county, district or national level. Some stakeholders are important for both the agri-input provision and extension services, while others are essential for either extension services or input provision and play a smaller role in the other domain.

To address the systemic barriers previously identified, we also need to look at actors beyond the specific domains, who have an influence in the system, due to their material or immaterial resources. For instance, the study identified **cultural or religious leaders** as actors that are highly influential in their communities for their '*power to*'[14] influence farmers' choices. On some occasions, cultural leaders reinforce farmers' beliefs or fears, for instance, to prevent them from using new technologies or growing (cash) crops for sale, instead of growing crops for eating (subsistence). One of our farmer interviewees shared that a cultural leader once told a fellow farmer: "How can you use this very big piece of land to only plant one crop? What will your children eat?" (Okello Alex, interview, 5 November 2020). Engaging cultural leaders in the formulation of and implementation of new programmes by sensitizing them to their operation and functionality would prevent them from discouraging other farmers from joining these activities or using new technologies. Another actor who indirectly plays a key role is the **MoES**, as it has an important role in the training of extension workers, who will be employed by the government, NGOs, private companies or work independently. They have the '*power to*' influence the content of their study curriculum, and assess the quality of the education provided.

In the following analysis, stakeholders are treated as a homogenous group. However, between individuals in a stakeholder group, power relations play an important role, causing some differences in terms of their access to inputs and extension services. More details can be found in Annex 9. This pilot has a focus on **subsistence farmers**. They are beneficiaries of extension services or a customer who buys inputs for their production. When farmers engage with other actors, those actors usually have more power than farmers. Although certain actors try to

[14] The conceptual framework section distinguishes the following three forms of power: power to; power with; power over.

collaborate with farmers, this is from a more powerful position (e.g. more knowledge, more resources). Farmers also do not have a direct relationship with many of the actors in the provision of extension services and inputs, even though these actors do influence farmers' chances of reaching their goals. This is likely to make it difficult for individual farmers to directly influence these actors. Farmers can join **farmer groups**, which are created by farmers themselves, NGOs or extension workers (in particular, community development officers). Through farmer groups, farmers gain access to inputs and advisory services, and are able to host or participate in farm demonstrations. Individual farmers do not easily have access to inputs and advisory services. In Annex 9., one can see that farmer groups are better connected to key stakeholders than individual farmers, though this depends on the specific farmer group. It in any case reveals that farmer groups are less powerful than the other actors in the food system.

The **local government** is tasked with the implementation, supervising and monitoring of policies on the local level, as well as the drafting of ordinances. They also allocate the extension grant it receives from MAAIF, and hire extension workers. Due to the position they hold, they possess material and immaterial resources and tend to have 'power over' many actors. As such, they are an important actor to involve when implementing change. However, especially the more national actors tend to have more power than the local government, for example, MAAIF and the OWC. These actors could be approached as change agents if the local government is resisting change. **Extension workers** offer advisory services and technical support, distribute demonstration kits, and sometimes supply farmers with seeds. Extension workers have an important influence on individual farmers and farmers groups. They have the potential to work with or work for other actors, such as NGOs or private companies, although their influence on them is small.

Agro dealers and middlemen play a crucial role in the system. Agro dealers tend to have '*power over*' farmers and farmer groups, but in many instances when they engage with other stakeholders, such as MAAIF, the local government or the private sector, they are likely to wield less power. Middlemen can engage in their activities independently or are hired by the private sector. Due to their position as the knowledgeable link with the markets, they have more 'power over' than farmer and farmer groups do, but in other relationships they are likely to have less power. For instance, in the case of the private companies that hire middlemen, middlemen have less power. Hence, although both actors are powerful actors in comparison to farmers and farmer groups, they are not always a powerful actor within the whole system. They can be important change actors, as they have a direct impact on farmers. Still, while such actors are resisters to an initiative, it is worth noting that since they are not a homogeneous group, there are likely to be others who counterbalance this opposition; also other actors who willingly collaborate or act as important allies for change.

In this research, **financial institutions** appeared to be little connected to local actors in the provision of inputs and extension services. However, in those connections that were more direct, financial institutions tended to wield more 'power over' others, making them a powerful actor. Hence, once financial institutions collaborate more with, for example, farmer groups, they can be interesting mobilizers (actors) for change.

NGOs bridge gaps by supporting farmers with seeds and inputs, knowledge acquisition, dealing in partnership with private companies and the government, and engaging in lobby activities at local and national levels. In many instances, when NGOs have a relationship with a certain actor, it tends to be collaborative ('*power with*'), making NGOs an important actor for change. Sometimes NGOs have weak links with actors, for example, local district extension staff, which might influence the efficiency of their service delivery.

Other actors that engage in service delivery are **research institutions**, e.g. universities or NARO conduct research on crop and animal resources, develop new technologies, such as improved seed varieties, and test the quality of seeds. They collaborate with many actors at the local and national level and might as such be an important mobilizer of change, as they can foster 'power with' by linking these actors to each other. However, they would need to strengthen some of their linkages with other stakeholders to effectively engage in this connection.

In many relationships, the **private sector** tends to have more 'power over', and as such comprises important actors to consider in strategies for change. They have the capital, the resources and

knowledge. In some instances, the private sector also collaborates with stakeholders and establishes alliances with them. It is important to differentiate between the actors that constitute the private sector, as their size and degrees of influence can vary widely.

MAAIF tends to hold *power over* many of its relationships. Their formal position and their role in the formulation and implementation of policies make it a powerful potential mobilizer or actor for change (with the capacity to change its '*power over*' to '*power to*'). Closely connected to MAAIF, the **OWC** has an important influence on farmers, since many of them depend on their (free) inputs. At the same time, OWC impacts the work of those supporting the farmers. While OWC should work hand in hand with MAAIF as the line ministry, through NAADS, the fact that OWC operates under the authority of the President, and engages soldiers in its implementation, may bring some unequal power relations (*power over*). OWC responds to the President's directives, promoting the distribution of strategic crops (as listed in Section 4). In its relationship with farmer groups and agro dealers, the OWC is likely to wield more '*power over*'.

5.4 Leverage points

In doing this research pilot project, we have seen how power can be manifested in many ways in the food system, through formal and visible ways, as well as through informal and less obvious ways, as it is embedded in society, in the day-to-day interactions and relationships, and as something that is learned and accepted as normal since a very young age. Examples of this include the different roles that are assumed within the household in relation to food system activities at the farm level, where women are subjugated to their husbands, cannot inherit or own land, cannot access agricultural inputs and trainings, or have any say in terms of financial resources, while the man considers that his contribution to the household is the land, hence the wife is expected to contribute through her work. This power asymmetry is strongly embedded and reinforced in the culture.

In the same way, by keeping farmers uninformed, disconnected from markets, and dependent on free inputs, this situation allows some groups or persons to sustain or increase their formal, informal and material power. For instance, some politicians continue to gain (formal) power (in the form of farmers' votes) in exchange for (sometimes poor quality) free agricultural inputs, such as seeds, yet they discourage farmers from attending trainings or using new technologies. Likewise, abusive middlemen offer a low price for farmers' produce most notably (but not limited to) when school fees need to be paid and farmers are urged to sell what they have at whatever price is offered so their children can go to school.

The market-oriented economy discourse is visible in key development or agricultural policy frameworks, where private sector development, trade, productivity increases and value addition are a priority (Naluwairo, 2011). However, due to this focus, there might be some gaps or negative implications, for instance, in terms of promoting more sustainable production approaches, such as organic agriculture; or marginalizing certain crops that are key for local communities' food security due to their lack of "marketability". At the same time, if higher productivity is associated with and highly dependent on agro-chemicals, as is conceived in the NAP, this can have significant impacts on the environment, natural resources, and the livelihoods of local populations in the middle and long term (Naluwairo, 2011).

The focus of the ASSP on twelve priority commodities and four strategic commodities, and consequently, the focus of extension workers on certain crops - as agreed upon with farmer organizations - has meant that certain farmers whose produce is not included in the selected crops, are excluded from receiving these services, having a negative impact on their productivity and food security (Barungi, 2013). For instance, Advance Africa study determined that millet has received little attention in terms of research, extension services, supply and access to quality seeds "Millet is also viewed by farmers more as a food crop to address food security needs but not as a cash crop – which limits acceptability among many farmers." (Advance Africa, 2017. P. 53). Millet is not listed among the 12 priority commodities, nor the four strategic commodities of the NAP, which explains in part the little attention paid to it, not only by the government, but also by NGOs (Advance Africa, 2017). This may lead to shift in production to the prioritized crops, limiting farmers' access to a balanced diet. As indicated by Kuteesa et al. (2018, p. 8) this has resulted in the "scaling down of distribution of food crop seeds, livestock and other inputs". This affects farmers' choices and puts them in a weaker position, as they get inputs they don't want or know how to farm, limiting their food security.

This sub-section builds on data gathered in terms of structures and norms, politics and contestation, and actors and networks, through the interviews, interactive meetings and the desk study itself (see methodology section). Below, we propose a number of leverage points that may trigger several changes within the food system. These leverage points are not exhaustive and many more ideas and suggestions can be derived from the rich collection of data that has been gathered. We identified leverage points which tackle power issues, whether through addressing root causes and core problems or through the inclusion of elements or principles within the leverage point which will contribute to a better distribution of power or the empowerment of some weaker actors. While some of these leverage points may have been suggested and even tried before, they are not operational anymore, which spurred us to understand why those strategies were abandoned or ceased functioning. On several occasions the main reason that some initiatives stopped is that they are tied to projects (funds) from development partners. We thus consider that building on existing structures and increasing ownership of local actors is key for the sustainability of these initiatives.

Three entry points were identified and action plans were further developed (see Annex 10. for more details):

Leverage point 1: Multi-stakeholder platforms (MSPs) to coordinate agriculture development/ roundtables (one per district -Abim, Lira and Soroti- and one at the national level)
The objective of MSPs is to strengthen the links among actors involved in agriculture development and to coordinate efforts at local and national levels in order to enhance synergies and respond to farmers' needs in a sustainable and efficient manner. This leverage point will address root causes or underlying problems related to weak connections and links; uncoordinated and dispersed efforts; and lack of trust; lack of communication or information (subproblem).

Leverage point 2: District multi-stakeholder coalition working for counterfeit seed and quality control for agricultural inputs
The objective of such coalitions is to strengthen the links among actors involved in input provision and certification within a district to enhance the monitoring, control and regulation of the quality of seeds. This leverage point will address root causes or underlying problems related to, in particular, weak connections and links; poor quality control of agricultural inputs; and subproblems related to lack of communication or information.

Leverage point 3: Lobby for harmonization and update of extension workers curricula, with an inclusive approach to extension service delivery
The objective of these actions is to harmonize and enhance the knowledge (on a continuous basis) of extension workers, supporting their skills and professional development so that they can provide a better service to farmers, as well as to promote the inclusion of more female extension workers and more inclusive approaches. This leverage point will address subproblems related in particular to extension workers' lack of skills, as well as the exclusion of certain groups.

Table 5.1. Summary of leverage points and their assessment

	LEVERAGE POINT 1	LEVERAGE POINT 2	LEVERAGE POINT 3
Direct impact:	++	++	+
Leverage potential:	++	+	+
Feasibility:	++	+	+

As explained in the methodological section, the direct impact of change refers to what extent it strengthens the position (income, working conditions) of smallholder farmers and/or their direct (social) environment; leverage potential addresses the capacity to stimulate or contribute to a cascade of further changes; finally, feasibility considers the stakeholders who would support such a change, others who would oppose it, and the resources they have to realise or block this change.

6. RECOMMENDATIONS

In the preceding section three leverage points for change in the food systems in Abim, Lira and Soroti were identified. In this section recommendations for putting them into practice are given.

Recommendations for the set-up of interlinked multi-stakeholder platforms to coordinate agricultural development (at district level and national levels)

Weak connections among the different stakeholders related to agricultural development in the districts of Abim, Lira and Soroti and at national level are a problem mentioned by many of our interviewees. Not only are stakeholders not communicating and not trusting each other, but we also see that their efforts are dispersed and uncoordinated. As a consequence, there is inefficiency in the food system and tension and conflict among actors. Weak connections also affect the information that they have about each other and threaten to miss out on potential opportunities for cooperation and synergies. Smallholder farmers in particular pay the price for this lack of coordination.

The proposed multi-stakeholder platforms could be a solution for these problems. In the past, such platforms, linked to certain projects, worked well, but disappeared after the project ended. In this proposal the national platform will be convened by the MAAIF and the district level platforms by the district government. Possible actors that could join at the national level are: NGOs, private sector, financial organizations, Water for Production Department (Ministry of Water and Environment, NAADS (National Agricultural Advisory Services), Uganda National Meteorological Authority, UFAAS (Uganda Forum for Agricultural Advisory Services), Farmers Federation UNFFE, representatives of district multi-stakeholder platforms and UNBS (Uganda National Bureau of Standards). At the district level farmers/ farmers' groups, relevant district employees, including district extension workers, and community development officers, input dealers, traders, SMEs, District Farm Institutes (DFIs), financial sector institutes and private sector actors could be invited to join.

After carrying out an assessment of previous platforms analyzing what worked well and what didn't, CEA partners and other development partners could take the following steps:

- Approach key stakeholders, in particular the MAAIF as the envisaged convener of the national multi-stakeholder platform and the local district governments as conveners of the district platforms, and engage them in the process of setting up the platforms
- With the MAAIF and district governments identify key stakeholders to become part of the respective multi-stakeholder platforms and engage with them
- With the key stakeholders draft an initial strategic plan for the platforms (with mission, vision and objectives) to be able to involve more actors
- Request the MAAIF and local district governments to convene other relevant stakeholders and kick-off the multi-stakeholder platforms

Recommendations for district level multi-stakeholder coalitions working against counterfeit seed and for quality control of agricultural inputs

Many farmers are highly affected by fake and poor-quality seeds and agri-inputs. Because of their lack of trust in agri-inputs and their relatively high cost, farmers are unlikely to adopt these inputs. Due to this, there is little market for agro dealers locally, which has made them reluctant to open up agro shops closer to farmers.

The proposed district level multi-stakeholder coalitions which try to enhance the monitoring, control and regulation of the quality of seeds, might create ownership of the problem, better linkages and more trust between the stakeholders. Furthermore, these coalitions would have a direct impact on the existence of counterfeit inputs and in this way increase farmers' trust in quality inputs. The district level coalitions could then engage in local certification or a championing of trustworthy agro-dealers. This would inform farmers about the importance of certification or which agro dealers are trustworthy. Actors that could join the coalitions include UNBS (Uganda National Bureau of Standards), local government, NGOs/ NGO coalitions, middlemen,

agri-input dealers, farmers, NARO (National Agricultural Research Organisation), Agricultural Police[15], district government, DAOs (District Agricultural Officers), private companies and extension workers.

CEA partners and other development partners wanting to implement these seeds and agricultural inputs coalitions could take the following steps:

- An important first step would be for NGOs to engage the Uganda National Bureau of Standards (UNBS), more specifically its regional offices, to ensure that they are willing to initiate and play their role in the proposed coalition in the district.
- Together with the district government they would be the permanent conveners of the coalitions.
- Once the conveners are on board, these would invite NGOs, agro dealers, seed companies and other relevant stakeholders to participate in the seeds and agricultural inputs coalition and if necessary, organize preliminary meetings with each of them to enhance trust, capacity or knowledge.
- After the coalition has been formed, the conveners can initiate the development of a joint plan of action and a fund-raising plan.

Recommendations concerning harmonization and update of extension workers curricula

Extension staff is trained by different education and training institutes. These organizations fall under the jurisdiction of the Ministry of Education (while some years ago they were under the MAAIF). The extension workers fall under the local district government. There is a need to harmonize the extension workers curriculum with the prevailing learning needs of farmers; adapt curricula with more practical training; improve extension workers' knowledge of new technologies, such as agroforestry, and of how to engage marginalized groups and how to adapt knowledge to their needs. Doing this in a synergistic manner will require that the MAAIF and the Ministry of Education work hand in hand.

CEA partners and other development partners wanting to work on the harmonization and update of extension workers curricula could take the following steps:

- Establish contact with the Ministry of Education and MAAIF at first separately and later together to start a discussion on means and ways to improve the quality of skills necessary for extension service provision, including the government efforts to revive District Farm Institutes, which used to train extension staff
- Suggest the Ministry of Education and MAAIF to include other key actors in the discussion such as NAADS, UFAAS, and NGOs
- After reaching agreement among all actors develop a program on capacity building of Agriculture Extension Officers and mobilize political support so as to ensure budget allocation for its implementation

[15] The Agricultural Police is an agriculture unit within the Ugandan Police, decentralized at the district level, to combat counterfeit seeds and agro-chemicals, as well as other illicit activities related to agriculture.

7. LESSONS LEARNED

In this pilot project, a variety of lessons were gathered in terms of methods, process, data collection, and content. The fact that the pilot was undertaken during an ongoing worldwide health pandemic, which also affected international and national travel, posed an additional challenge. It was, for example, hard to unite the knowledge of research methods in the Netherlands with the Ugandan experts' knowledge of the food systems in the three districts; under normal circumstances, both groups would have met and worked together face-to-face. In Uganda, it was allowed to have workshops, but only with a small number of participants. Under normal circumstances, we would have liked to organize bigger stakeholder workshops.

From the many lessons learned, the following spring to the forefront:

Lesson 1: To allow the power tool to be an iterative process, plan for moments to discuss and reflect on intermediary results

The power scan, including the food system analysis (first phase), is best done as an iterative process in which the analysis and information in one of the phases of the scan is used to tweak and improve the analysis in other phases. This pilot was a multi-method approach which gathered a rich amount of data using a combination of interviews, focus group discussions, desk research, and workshops which were conducted, in some cases, simultaneously, in particular, in the second phase of the pilot (identification of power elements). Due to time constraints and limitations imposed by COVID-19, only at the end did the researchers conduct an assessment and integration of the information gathered in the second phase. This made it difficult to learn from the data and to use the acquired knowledge to shape the analysis of both the previous phases and the next steps. For example, the private sector came out as a potential key leverage point at the end of the pilot, but key information on this sector was missing. To enhance this necessary learning it is recommended for future users to formulate, discuss and reflect jointly after each sub-step on draft results before moving on to the next step.

Lesson 2: The power scan is best done by a diverse team consisting of both national and international experts

When applying the power tool, it is good to be attentive to various local factors and attributes that shape power relations within the food system that is being researched. Power is a complex issue; people sometimes do not feel comfortable discussing it. In the case of this pilot, most experts who had a steering role within the pilot were new to the context of the food system in Uganda. The Ugandan staff member was able to gain valuable insights into the power dynamics, while the Netherlands-based experts experienced difficulties uncovering the power relations. Including more expertise of local researchers or experts who have experience with conducting action research on power/ political economy/ social inclusion is important to capture the underlying dynamics which are difficult to grasp by international experts. This furthermore creates more local ownership and is (in general) less expensive.

Lesson 3: The power tool can be very useful to identify the most important power dimensions at the beginning of a project

During this pilot, it was decided to look at the challenges that subsistence farmers in Uganda faced in their skills development and their access to quality inputs. The power scan allowed for a better understanding of the underlying reasons of these challenges. The deeper issues that the pilot was able to uncover had not been included in the reports and articles that were consulted for the desk study. By using the tool, the project team was able to discover that, among other issues, a lack of trust was prevalent among farmers and between farmers and other actors. This lack of trust is a root cause preventing some farmers from joining farmer groups, which restrains their access to quality inputs and skills development opportunities. This type of information can be especially useful at the start of a project's design and can enable organisations to effectively target the root causes of issues like poverty, skill development, (structural) discrimination, and gender imbalances.

Lesson 4: Invest sufficient time in clarifying and discussing the power scan or specific elements with all researchers, interviewers, facilitators, etc., involved

While video-conferences were held before each key research activity in Uganda to share the proposed methods, obtain feedback and explain the process with staff/ experts or facilitators in charge, the pilot would have benefited from more time dedicated to discuss the background and the intended outcomes of the power scan. This would have helped to come to a shared understanding among all involved in each research activity and a tailor-made elaboration of the research methodologies adapted to the situation in Uganda, in this way enhancing local ownership. In post-COVID-19 times, it would be recommendable to have these discussions (or at least part of them) face-to-face instead of through video-conference.

8. CONCLUSIONS

This research pilot has **aimed** to understand how power dynamics have played a role in the food systems in Abim, Soroti and Lira districts in Uganda, and to identify strategies (leverage points) to deal with power relations in food system transitions, in particular in relation to extension services delivery and access to quality seeds and other key agricultural inputs. Explicit efforts were undertaken, in so far as current COVID-19 pandemic restrictions and rules allowed, to ensure the process was participatory and that primary data could be collected from the districts and then further validated. In accordance with Uganda Vision 2040, farmers in Uganda are supposed to make a transition from subsistence farming to commercial farming. However, farmers currently suffer **low productivity and yield poor quality produce**, preventing them from scaling up to commercial farmers and improving their living conditions. Farmers are not able to satisfy the market demand in terms of quantity and quality, and are at risk of food insecurity themselves. This is only one effect of the many challenges and inefficiencies associated with the food systems. As one of our workshop participants mentioned, "Farmers can't change to getting high yields when they are relying on rain-fed farming".

By mainstreaming power considerations into the food systems, we managed to see power in its different forms and manifestations, including where power is less visible. The power tool has allowed us to increase our understanding of deeper problems within the food systems in the three districts. This includes farmers' fear and risk aversion, together with a lack of trust; weak connections or links among actors in the food system; strong cultural beliefs and traditions; weak planning (for instance, late funds released on behalf of the government to support input provision or extension service delivery); corruption at different levels; farmers' illiteracy; poor quality control and weak regulation in the provision of agricultural inputs. By identifying these deeper issues, we sought to understand, for instance, farmers' lack of participation in training sessions, or their resistance to joining farmer groups to profit from all the benefits this entails (e.g. access to inputs and training). We suggest this cannot be seen only as farmers having a (negative) attitude or lack of interest. There are also other deeper considerations preventing them from joining, such as illiteracy and sense of inferiority; being labeled or framed as "lazy" if they open up and accept there is starvation in their family; a lack of trust because if fellow farmers in the group see one's (rented) farm doing well, the property owner might want their farm back. Unequal and invisible power relations can also be seen in farmers' apparent preference to use local seeds; as well as in the belief that fertilisers damage the soil. This is what emerges at the surface: farmers' resistance to new seed varieties and technologies. But we can also dig deeper to see other elements such as lack of knowledge vis-a-vis the use of fertilisers (e.g. incorrect use in the past which led to damaging the soil); weak regulation and poor quality control; lack of trust; problems related to land ownership and the tenure system (as farmers do not want to invest in enhancing the soil if tenure is insecure); no incentive to make the transition since investments in quality inputs or seeds are not translated into a better price for their produce.

Understanding these deeper issues can help to identify development interventions that address the root causes of problems and not just its symptoms. Some problems manifest themselves as a result of power differences and inequality, while others can become visible through the use of a power analytical lens.

Using this approach increased our understanding of the power relations among actors and their networks, and the resources they have to support or prevent change towards a more sustainable and inclusive transition. The different stakeholder groups are not homogeneous. Within these groups, important differences of power occur (for instance, within smallholder farmers there are wealthier and poorer farmers, women, persons with disabilities, etc. who suffer from further exclusion; or within agri-dealers, there are those who offer quality inputs and others who take advantage of farmers by selling expired or counterfeit products; extension workers who would go the extra mile to support farmers, while others remain within their comfort zone). Despite these differences, we can conclude that *farmers*, especially if they do not belong to any *farmer group*, have little power in the food system. *Local district governments* and their *extension workers* have formal power, due to the position they hold, but limited material power due to resource limitations. Understanding this can assist in generating a platform or a space where those with immaterial power can be connected to those with material power, resulting in new avenues for cooperation.

MAAIF also represents an important actor with both material and immaterial power that can be engaged to generate change. They have the '*power to*' influence the removal of certain barriers affecting extension service delivery and provision of quality inputs, thereby also working together with other government agencies or ministries, such as the *MoES* (as they have a role in the regulation and curriculum development of extension workers). The private sector also represents an important actor to work with, as they have significant influence on the food systems and the resources to incentivize farmers or influence the market. *Middlemen and agri-dealers* have an unequal power relation with farmers, where they have the upper hand (power over) and farmers stand in a very vulnerable position, though they are not so powerful in relation with other actors (such as MAAIF, local government or private sector). *Cultural or religious leaders* also have a significant influence on farmers, affecting or redirecting their choices. Engaging cultural or religious leaders to change unequal power relations can have positive results.

Building on the pilot findings, three leverage points were identified. These were further developed into action plans, considering the potential direct impact of the suggested change (e.g. to what extent does it strengthen farmers' position); leverage potential (can further changes along the food system be stimulated?); and feasibility of the leverage point in terms of actors who would be willing to support change and the resources they have, vis-a-vis those would oppose it. The suggested leverage points included 1) the development of a Multi-Stakeholder Platform/ roundtable at the national level and then one per district- Abim, Lira and Soroti- to coordinate agriculture development; 2) the creation of a district multi-stakeholder coalition working for counterfeit seed and quality control for agricultural inputs; 3) lobby for the harmonization and update of the extension workers' curricula, with an inclusive approach to extension services delivery. We believe that these leverage points can initially be mobilized by CEA partners at the local level, and subsequently further actors may join and start leading the processes.

We see the use of a power lens as an important tool to:

- Address underlying causes instead of only its effects. This can lead to long-lasting and more sustainable solutions;
- Shape cooperation projects or interventions in a better way, in the early stages, including the identification of potential obstacles and risks;
- Prevent development interventions from accentuating those power differentials, where the powerful or elites within the food systems benefit more and strengthen their material and immaterial power, while the least powerful continue to struggle to make a living and are further excluded;
- Identify actors and networks outside the "traditional" policy domain, who (could) have an important influence in the food systems and the (material or immaterial) resources to foster change;
- Generate a space to discuss sensitive issues, by planting the seeds in the minds and agendas of stakeholders (e.g. land tenure issues, discrimination of certain groups).

Although applying the power tool can provide important insights, power continues to be a complex issue that actors sometimes do not feel comfortable addressing. Creating the local conditions and capacities to implement such a tool would facilitate an environment conducive to trust, where sensitive issues can be discussed in an easier way, in combination with researchers who can also see the cultural factors from the outside. Moreover, assessing the role of power in the food systems at the level of depth that we did requires a significant investment of time and resources that practitioners, project implementers, policy makers, do not always have. We believe that they would benefit from a simplified, shorter version.

To conclude, faced by a world where agricultural production and international trade flows of food continue to increase alongside growing hunger and food insecurity, it becomes clear that food systems require significant transformation. Some individuals are currently benefiting more and becoming more powerful, while others are losing or not gaining anything. Hunger and food insecurity are highly connected to poverty and inequality. We hope this pilot can serve as an inspiration for future interventions and actions in the food systems of Uganda and other developing countries, where the position of smallholder farmers within the food systems and society as a whole can - must - be strengthened. Smallholder farmers are key agents of change and development.

9. REFERENCES

Abim District Local Government. (2020). Location and Size. Retrieved September 4, 2020, from https://abim.go.ug/

Access to Seeds Index. (2019). Uganda. Retrieved from https://www.accesstoseeds.org/app/uploads/2018/11/Uganda-1.pdf

Advance Africa. (2017). Promoting skills development and market access for cassava, maize and millet in Karamoja, Lango and Teso sub-regions: The case of small scale farmers in Abim, Lira and Soroti districts. Retrieved from CEA website: https://civicengagementalliance.org/content/2-countries/14-uganda/uganda-skills-development-icco-report-2-1.pdf-1523437463.pdf

Avelino, F. (2017). Power in sustainability transitions: Analysing power and (dis)empowerment in transformative change towards sustainability. *Environmental Policy and Governance*, 27(6), 505-520.

Barriga, A., & Fiala, N. (2020). The supply chain for seed in Uganda: *Where does it go wrong? World Development*, 130, 1-15.

Barungi, J. (2013). Agri-food system governance and service delivery in Uganda: A case study of Tororo district (ACODE Policy Research Paper Series, No.61). Retrieved from ACODE website: https://www.acode-u.org/uploadedFiles/PRS61.pdf

Barungi, M., Guloba, M., & Adong, A. (2016). Uganda's Agricultural Extension Systems: How appropriate is the Single Spine structure? (Research Report No. 16). Retrieved from Economic Policy Research Centre website: https://eprcug.org/research/research-reports/471-uganda-s-agricultural-extension-systems-how-appropriate -is-the-single-spine-structure

Biem, A., & Caswell, N. S. (2008). A Value Network Model for Strategic Analysis.In *Proceedings of the 41st Hawaii International Conference on System Sciences (HICSS 2008)* (pp. 361-367). doi: 10.1109/HICSS.2008.43.

Budget Monitoring and Accountability Unit & Ministry of Finance Planning and Economic Development. (2019). Performance of Agricultural Extension Services: What are the emerging challenges? *BMAU*, 25(19), 1-4.

Buyinza, J., Sekatuba, J., Agaba, H., Kinuthia, R., & Kiptot, E. (2015). *Analysis of extension systems in Uganda for identification of suitable extension approaches for scaling-up "Trees for Food Security" project in Eastern Uganda.* Kampala, Uganda: NaFORRI.

Department of Relief, Disaster Preparedness and Management & UNDP. (2014a). *Karamoja, Abim district: Hazard, risk and vulnerability profile.* Retrieved from UNDP website: https://www.ug.undp.org/content/uganda/en/home/library/crisis_prevention_and_recovery/KARAMOJA_ABIMDistrict_HazardRiskandVulnerabilityProfile.html

Department of Relief, Disaster Preparedness and Management & UNDP. (2014b). *Teso, Soroti district: Hazard, risk and vulnerability profile.* Retrieved from UNDP website: https://www.ug.undp.org/content/uganda/en/home/library/crisis_prevention_and_recovery/TESOSOROTIDistrictHazardRiskandVulnerabilityProfile.html

Department of Relief, Disaster Preparedness and Management & UNDP. (2016). Lira district: Hazard, risk and vulnerability profile. Retrieved from Office of the Prime Minister, National Emergency Coordination and Operation Centre website: https://www.necoc-opm.go.ug/HzNorthern/Lira%20District%20HRV%20Profile.pdf

Development Initiatives Poverty Research. (2019). Uganda: Country overview. Retrieved from Global Nutrition Report website: https://globalnutritionreport.org/media/profiles/v2.1/pdfs/uganda.pdf

Elzen, B., de Roo, N., Bosselaar, J., Bulten, E., Kraan, M., Brouwer, H., Bonand, J., Vernooij, A., & de Steenhuijsen Piters, B. (2020). *PowerPlay - Analytical Framework and tool*. Wageningen, The Netherlands: Wageningen Centre for Development Innovation

FAO. (2018). *FAO's value chain support for Uganda: moving from subsistence to sustainable agricultural livelihoods through technical capacity building and innovation*. Retrieved from http://www.fao.org/3/CA1337EN/ca1337en.pdf

FAO. (2019). *Rural youth employment and agri-food systems in Uganda: A rapid context analysis*. Retrieved from http://www.fao.org/3/ca5739en/ca5739en.pdf

FAPAD. (2016a). *Baseline survey report: Access to land and quality seeds on food security in Lango sub region.* Retrieved from CEA website: https://civicengagementalliance.org/content/2-countries/14-uganda/uganda-baseline_survey_report-lango.pdf

FAPAD. (2016b). *Baseline survey report: Access to land and quality seeds on food security in Teso sub region.* Retrieved from CEA website: https://civicengagementalliance.org/content/2-countries/14-uganda/uganda-baseline_survey_report-teso.pdf-1523437379.pdf

FEWS Net Uganda. (2020). *Uganda Food Security Outlook: June 2020 to January 2021.* Retrieved from website: https://reliefweb.int/sites/reliefweb.int/files/resources/UGANDA_Food_Security_Outlook_June2020_final.pdf

Government of Uganda, Lira District. (2018). Welcome to Lira District. Retrieved September 4, 2020, from https://www.lira.go.ug/

HLPE. (2017). *Nutrition and Food Systems: A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Security.*
Retrieved from FAO website http://www.fao.org/3/a-i7846e.pdf

Kawulich, B. (2017). Coding and Analyzing Qualitative Data. In D. Wyse, N. Selwyn, E. Smith, & L. E. Suter (Eds.), *The BERA/SAGE Handbook of Educational Research: Two Volume Set* (pp. 769-790). London, England: SAGE Publications.

Kumar, R. (2014). *Research methodology: A step-by-step guide for beginners.* Los Angeles, CA: Sage.

Kuteesa, A., Kisaame, E. K., Barungi, J., Ggoobi, R. (2018). *Public expenditure governance in Uganda's agricultural system* (ACODE Policy Research Paper Series No. 84). Retrieved from ACODE website: https://www.acode-u.org/uploadedFiles/PRS84.pdf

MAAIF. (2016a). *Agriculture Sector Strategic Plan: "Draft".* Retrieved from National Planning Authority website: http://npa.go.ug/wp-content/uploads/2016/08/ASSP-Final-Draft.pdf

MAAIF. (2016b). *National Agricultural Extension Strategy 2016/17 - 2020/21: Knowledge driven agricultural revolution.* Retrieved from https://www.agriculture.go.ug/wp-content/uploads/2019/04/National-Agricultural-Extension-Strategy-(NAES).pdf

MAAIF. (2018). *National Seed Policy.* Retrieved from https://www.agriculture.go.ug/wp-content/uploads/2019/05/Ministry-of-Agriculture-Animal-Industry-and-Fisheries-National-Seed-Policy.pdf

MAAIF. (2020). *Agriculture Sector Strategic Plan (ASSP).* Retrieved September 16, 2020, from https://www.agriculture.go.ug/agriculture-sector-strategic-plan-assp/

Ministry of Lands, Housing and Urban Development. (2010). *Statistical abstract vol. 1.* Kampala, Uganda: Ministry of Lands, Housing and Urban Development.

Muhanji, G., Roothaert, R.L., Webo, C., & Mwangi, S. (2011). African indigenous vegetable enterprises and market access for small-scale farmers in East Africa. *International Journal of Agricultural Sustainability*, 9(1), 194-202.

MWE. (2015). *Uganda's intended nationally determined contribution (INDC).* Retrieved September 14, 2020, from the UNFCCC website: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Uganda%20First/INDC%20Uganda%20final%20%2014%20October%20%202015.pdf

MWE. (2016). State of Uganda's forestry 2016. Retrieved from https://www.mwe.go.ug/sites/default/files/State%20of%20Uganda%27s%20Forestry-2015.pdf

Nakawuka, P., Langan, S., Schmitter, P., & Barron, J. (2018). A review of trends, constraints and opportunities of smallholder irrigation in East Africa. *Global Food Security, 17*, 196-212.

Naluwairo, R. (2011). *In quest for an efficient agri-food system: Reflections on Uganda's major agri-food system policies and policy frameworks* (ACODE Policy Research Paper Series No. 49). Retrieved from ACODE website: https://www.acode-u.org/uploadedFiles/PRS49.pdf

Nkonya, E.M., Kwapong, N. A., Kato, E., Rwamigisa, P., Bashaasha, B., & Mangheni, M. N. (2020). Uganda. In K. E. Davis, S. C. Babu, C. Ragasa (Eds.), *Agricultural extension: Global status and performance in selected countries* (pp. 139-183).Washington, WA: IFPRI.

Peppard, J., & Rylander, A. (2006). From value chain to value network: Insights for mobile operators. *European Management Journal*, 24(2), 128-141.

Pettit, J. (2013). *Power analysis: A practical guide.* Retrieved from Sida website: https://publikationer.sida.se/contentassets/83f0232c5404440082c9762ba3107d55/power-analysis-a-practical-guide_3704.pdf

Reinker, M., & Gralla, E. (2018). A system dynamics model of the adoption of improved agricultural inputs in Uganda, with insights for system approaches to development. *Systems, 6*(31). doi:10.3390/systems6030031.

Robert, T., & Mesharch, K.. (2018). Public sector provision of free agricultural inputs in Uganda: The rationale and challenges of Operation Wealth Creation programme. *Journal of Public Administration and Governance,* 8(2), 83- 103. doi:10.5296/jpag.v8i2.13196.

Soto Golcher, C., & Visser-Hamakers, I. (2018). Framing and integration in the global forest, agriculture and climate change nexus. *Environment and Planning C: Politics and Space, 36*(8), 1415-1436. doi:10.1177/2399654418788566.

UBOS. (2017a). *National Population and Housing Census 2014: Area Specific Profiles: Abim District.* Retrieved from https://www.ubos.org/wp-content/uploads/publications/2014CensusProfiles/ABIM.pdf

UBOS. (2017b). *National Population and Housing Census 2014: Area Specific Profiles: Lira District.* Retrieved from https://www.ubos.org/wp-content/uploads/publications/2014CensusProfiles/LIRA.pdf

UBOS. (2017c). *National Population and Housing Census 2014: Area Specific Profiles: Soroti District.* Retrieved from https://www.ubos.org/wp-content/uploads/publications/2014CensusProfiles/SOROTI.pdf

UBOS. (2019). *2019: Statistical abstract.* Retrieved from https://www.ubos.org/wp-content/uploads/publications/01_20202019_Statistical_Abstract_-Final.pdf

USAID. (2017). *USAID Office of Food for Peace food security desk review for Karamoja, Uganda*. Retrieved from https://www.usaid.gov/documents/1866/fanta-food-security-desk-review-karamoja-uganda-2017

van Berkum, S., Dengerink, J., & Ruben, R. (2018). *The food systems approach: Sustainable solutions for a sufficient supply of healthy food.* Wageningen, Netherlands: Wageningen Economic Research. doi:10.18174/451505

Wichern, J., van Wijk, M. T., Descheemaeker, K., Frelat, R., van Asten, P. J. A., & Giller, K. E. (2017). Food availability and livelihood strategies among rural households across Uganda. *Food security*, 9, 1385-1403.

World Bank. (2018). *Uganda economic update (12th ed.): Developing the agri-food system for inclusive economic growth.* Retrieved September 21, 2020, from https://openknowledge.worldbank.org/handle/10986/31003

World Bank (2020a). Agriculture Cluster Development Project. Retrieved September 17, 2020, from https://projects.worldbank.org/en/projects-operations/project-detail/P145037

World Bank. (2020b). GDP per capita (current US$) - Uganda [Graph]. Retrieved September 17, 2020, from https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=UG

World Bank. (2020c). Population, total - Uganda. Retrieved September 17, 2020, from https://data.worldbank.org/indicator/SP.POP.TOTL?locations=UG

World Bank. (2020d). Uganda overview. Retrieved September 24, 2020, from https://www.worldbank.org/en/country/uganda/overview

Yami, M., & van Asten, P. (2018). Relevance of informal institutions for achieving sustainable crop intensification in Uganda. *Food Security*, 10, 141-150.

10. ANNEXES

ANNEX 1. INTERVIEW QUESTIONNAIRES

INTERVIEW QUESTIONS - FOOD SYSTEM

Interviewer:
Date:
Interviewee:

To the interviewer: Start by briefly introducing yourself, where you work, the objective of the project and the aim of the interview.

For example:

> Thank you for agreeing to meet for this interview. I would like to introduce myself first: My name is ___ and work for _____. We are doing this project together with the Civic Engagement Alliance and the aim is to increase our understanding of how power dynamics play a role in the food systems in the districts of Abim, Lira and Soroti. Once we have this understanding, we will be able to refine our lobby and advocacy strategies to support smallholder farmers.
>
> Through this interview, we would like to identify the main challenges or bottlenecks in the value chain of the crops produced in the districts of Abim, Lira and Soroti.
>
> This interview will take about 45 to 60 minutes.
> Do you mind if we record this interview? We need this for further processing.
> At the end of the interview I will ask if you would like to stay anonymous or not.

1. As a first question, would you please introduce yourself and also share in which of the 3 districts do you work?

2. According to you, what are the main challenges/ bottlenecks at the farm level in the production of crops? What could be the underlying reasons for this? Have there been earlier attempts to overcome these bottlenecks? By whom? With what results? Why has this situation not changed before? What is hampering this situation from improving?

3. Are certain groups particularly affected by the way the production system operates or do they experience particular barriers and constraints?

4. Are certain groups privileged in performing their role in the production part of the value chain, including agricultural input providers (of seeds, fertilizers, etc) ? Who are they and how do they benefit?

5. Could you give an estimation of what percentage of the production is for self- consumption and what percentage is for selling? From the latter, which part is sold directly to customers (e.g. local markets) and which part is bought by companies for further processing or distribution.

6. Do these commodities undergo some processing or value addition? If yes, who does this? If not, why not (e.g. lack of interest from farmers, lack of knowledge on how to do it, or lack of (financial) resources)?

7. How are these commodities commercialized? Where are they sold and to whom? What are the main challenges in the commercialization?

8. Who are the consumers of the crops that are sold outside the farm? Can you describe/ characterize them?
9. According to your experience, what are the major challenges/ bottlenecks in the **post-production** side of the value chain?

10. What could be the underlying reasons for this? Have there been earlier attempts to overcome these bottlenecks? By whom? With what results? Why has this situation not changed before? What is hampering this situation from improving?

11. Are certain groups privileged in performing their role in the post-production part of the value chain? Who are they and how do they benefit?

12. Who are the important suppliers of farm inputs, e.g. seeds, fertilizers, pesticides? Are there large or small firms behind this?

13. How does the extension system related to crops function? Who are these advisors (independent, government agencies, representatives from businesses)? What do they advise on? How is the content of the training decided and by whom? What fraction of the farmers are reached by them? Is there a bias in the type of farmer reached (e.g. small vs. larger farms)?

14. If you take a look at the entire value chain (from provision of inputs, via production to consumption), in your view, what underlying bottleneck or bottlenecks are blocking the functioning of the value chain the most? Mention 1-3 of them.

15. What kind of changes would be needed to address this challenge?

16. *If time allows:* Could you tell us a little bit about the cultural background of the local populations in Abim, Lira and Soroti? Are there and strong religious or cultural beliefs that (co-)determine how farmers work, what they do or don't do? Are there any social hierarchies that strongly influence what farmers do (e.g. role of village elders, chiefs)? (--> for interviewer, this question aims to observe if there are any social classification or socio-cultural hierarchies, for instance, in terms of family background, ethnicity, gender, religion, occupation, age)

17. **Finally, do you wish to stay anonymous?**

INTERVIEW QUESTIONS - EXTENSION SERVICES BACKGROUND

Interviewer:
Date:
Interviewee:

To the interviewer: Start by briefly introducing yourself, where you work, the objective of the project and the aim of the interview.

For example:

> Thank you for agreeing to meet for this interview. I would like to introduce myself first: My name is ___ and work for _____. We are doing this project together with the Civic Engagement Alliance and the aim is to increase our understanding of how power dynamics play a role in the food systems in the districts of Abim, Lira and Soroti. Once we have this understanding, we will be able to refine our lobby and advocacy strategies to support smallholder farmers.
>
> Through this interview, we would like to understand how the extension services system works in the districts of Abim, Lira and Soroti. We understand extension services as: knowledge and skills, technical advice and information, support for farmers' organization, and motivation and self-confidence[16].
>
> This interview will take about 60 minutes.
> Do you mind if we record this interview? We need this for further processing.
> At the end of the interview I will ask if you would like to stay anonymous or not.

1. The government has indicated that in accordance with Uganda's vision 2040, farmers should make the transition from subsistence farming to small-scale, commercial farmers. To what extent are farmers equipped to become commercial farmers? If not, what is preventing this? [*Follow up question*: To what extent is this due to farmers' lack of skills or equipment or due to barriers in the wider agro-food system?]

2. What do you think is preventing farmers from acquiring skills to improve their productivity, crops' quality, value addition, and commercialization?

3. How do extension services currently operate? What results have been achieved so far? What works and what does not work?

4. What role do BTVETs (Business, Technical, Vocational Education and Training) play in agricultural knowledge provision and agricultural extension services?

5. Who offers the extension services (national, local governments, NGOs, private sector, farmer based organisations (e.g. coops), and/ or foreign organisations). Who are the extension workers? Professionals? How are they trained?

6. Which of these organisations have the most influence on farmers and why?

7. What topics do they train or advise on? How are the topics chosen? By whom? [in other words, who sets the agenda]

8. Are there topics that you feel are missing in the trainings or extension services in general? If so, why do you think they are not part of the agenda?

9. Do farmers face challenges regarding the production or access to quality seeds and other key inputs (e.g. fertilizers, crop protection substances, water)?

[16] FAO definition http://www.fao.org/3/t0060e/T0060E03.htm

10. Do extension services address skills development, technical knowledge, or information **in relation to seeds and other key agricultural inputs?** If not, why do you think it is not part? If yes, has it been successful or require improvement?]

11. Who participates in the trainings or advice provided by extension workers or by other actors such as NGOs (small farmers? Larger farmers?) Who decides who participates in training events or advice sessions? Who is not able to participate and why?

12. Which share of the farmers is or is not reached (crude ranges, e.g. less than 10%, 10-30%, about half, large majority)? Does this vary between smaller and larger farmers?

13. Are the farmers that participate in training seen as 'common farmers' or as a 'special type' of farmer, e.g. as more advanced or more innovative. Once innovative farmers (or pioneers) have adopted new farming practices, do 'common farmers' tend to follow them in also changing their practices?

14. How successful are the training programmes? To what extent do farmers adopt or not what they are trained in or advised on?

15. Are there specific types of farmers that do or do not adopt what they are trained in or advised on? What are the main reasons for non-adoption? Is there variation on this across the districts? *[and, if so, can this (help) explain differences in how the local farming system functions]?*

16. What kind of changes would be needed to improve extension services?
[*for the interviewer* (use this info if interviewee needs clarification): This could relate to the training methods used by the extensionists, the topics that they teach on, their lack of knowledge on certain topics, the training of the extensionists themselves, working with the wrong type of farmers, not reaching enough farmers, etc.]

Gender

17. Are women benefiting from extension services/ access to seeds? Please explain yourself.

18. Please think of cases where women have had an increased participation in skills' development activities or extension services in general, what conditions enabled this? (Follow up: What hinders their further/ full involvement? Where does this situation come from? What would facilitate their further involvement?)

Others

19. *If time allows:* Could you tell us a little bit about the cultural background of farmer communities in Abim, Lira and Soroti? Are there and strong religious or cultural beliefs that (co-)determine how farmers work, what they do or don't do? Are there any social hierarchies that strongly influence what farmers do (e.g. role of village elders, chiefs)?
(--> for interviewer, this question aims to observe if there are any social classification or socio-cultural hierarchies, for instance, in terms of family background, ethnicity, gender, religion, occupation, age)

20. Finally, do you wish to stay anonymous?

INTERVIEW QUESTIONS - SEEDS BACKGROUND

Interviewer:
Date:
Interviewee:

To the interviewer: Start by briefly introducing yourself, where you work, the objective of the project and the aim of the interview.

For example:

> Thank you for agreeing to meet for this interview. I would like to introduce myself first: My name is ___ and work for _____. We are doing this project together with the Civic Engagement Alliance and the aim is to increase our understanding of how power dynamics play a role in the food systems in the districts of Abim, Lira and Soroti. Once we have this understanding, we will be able to refine our lobby and advocacy strategies to support smallholder farmers.
>
> Through this interview, we would like to understand how the provision of seeds and other agricultural products operate and related challenges in the districts of Abim, Lira and Soroti.
>
> This interview will take about 45 to 60 minutes.
> Do you mind if we record this interview? We need this for further processing.
> At the end of the interview I will ask if you would like to stay anonymous or not.

1. The government has indicated that in accordance with Uganda's vision 2040, farmers should make the transition from subsistence farming to small-scale, commercial farmers. To what extent are farmers equipped to become commercial farmers? If not, what is preventing this? [*Follow up question:* To what extent is this due to farmers' lack of access to quality seeds and to other key agricultural inputs (e.g. fertilizers, pesticides, tools, water, etc), or due to barriers in the wider agro-food system?

2. Where do farmers get their seeds and agricultural inputs from? Who are the suppliers? (farmers themselves, saving seeds from previous harvests (in the case of seeds)? Government? large or small companies? Individuals? Other farmers?) Could you please describe them? Are there several seed providers or just a few?

3. What works and what does not work in the provision of quality seeds and other agricultural inputs? To what extent does this create a barrier to produce a good harvest?

4. Which fraction of the farmers has access to quality seeds and other key agricultural inputs (crude ranges, e.g. less than 10%, 10-30%, about half, large majority)?

5. Do farmers pay or get seeds for free? If they are free, who is paying for them? If they pay, is this a large burden for them?

6. Are farmers able to choose the seeds they need for the specific crops they are interested in? Or are there specific/ limited seeds and crops offered? Is there a higher demand for certain seeds than there is available? If so, what causes the shortage?

7. To what extent do farmers use or not the seeds offered (be it for free or for buying)? If not, what is the reason for their rejection? Do you think there is variation on this across the districts?

8. To what extent do farmers use or not the other key agricultural inputs offered, for instance, fertilizers, pesticides, tools, etc.? If not, what is the reason for their rejection? Do you think there is variation on this across the districts?

9. Do extension services address skills development, technical knowledge, or information **in relation to seeds and other key agricultural inputs?** If not, why do you think it is not part? If yes, has it been successful or require improvement?]

Gender

10. Do women have (direct) access to quality seeds and other key agricultural inputs? Please explain yourself.

11. What hinders their access? Where does this situation come from? What would facilitate their further access?

Others

12. *If time allows:* Could you tell us a little bit about the cultural background of farmer communities in Abim, Lira and Soroti? Are there and strong religious or cultural beliefs that (co-)determine how farmers work, what they do or don't do? Are there any social hierarchies that strongly influence what farmers do (e.g. role of village elders, chiefs)? *(--> for interviewer, this question aims to observe if there are any social classification or socio-cultural hierarchies, for instance, in terms of family background, ethnicity, gender, religion, occupation, age)*

13. **Finally, do you wish to stay anonymous?**

INTERVIEW QUESTIONS - POWER SCAN - EXTENSION SERVICES

Interviewer:
Date:
Interviewee:

To the interviewer: Start by briefly introducing yourself, where you work, the objective of the project and the aim of the interview.

For example:

> Thank you for agreeing to meet for this interview. I would like to introduce myself first: My name is ___ and work for _____. We are doing this project together with the Civic Engagement Alliance and the aim is to increase our understanding of how power dynamics play a role in the food systems in the districts of Abim, Lira and Soroti. Once we have this understanding, we will be able to refine our lobby and advocacy strategies to support smallholder farmers. The focus of this interview will be on farmer skills and extension services. We understand extension services as: knowledge and skills, technical advice and information, support for farmers' organization, and motivation and self-confidence[17].
>
> This interview will take about 45 to 60 minutes.
> Do you mind if we record this interview? We need this for further processing.
> At the end of the interview I will ask if you would like to stay anonymous or not.

1. As a first question, would you please introduce yourself and also share in which of the 3 districts do you work?

2. The government has indicated that in accordance with Uganda's vision 2040, farmers should make the transition from subsistence farming to small-scale, commercial farmers. To what extent are farmers equipped to become commercial farmers? If not, what is preventing this?

Extension services

3. Could you describe how the extension services operate? How does this work on paper? How does this work in reality?

4. Could you describe what the achievements are (or what is going well) of the current extension services?

5. According to you what are the major bottlenecks in farmers' skills development and extension services? What could be the underlying reasons for this? [try to probe until the underlying causes are visible]

6. To what extent does (national or local) government support extension services and farmers' skills development? To what extent does the government create barriers (consciously or unconsciously) for the functioning of extension services? How could these barriers be overcome or removed?

7. What do you think is preventing farmers from acquiring skills to improve their productivity, crops' quality, value addition, and commercialization?

8. Next to the problems associated with the difficulty in acquiring skills (previous question), what other problems do you see on the ground in the delivery of extension services?

[17] FAO definition http://www.fao.org/3/t0060e/T0060E03.htm

9. How are the beneficiaries for extension trainings/events or individual advice supposed to be selected? How does this happen in reality? [If not mentioned by the respondent: Are there specific cultural factors that play a role in this selection (e.g. that privilege certain groups of farmers)?

10. Do certain groups experience barriers/constraints to access extension services? What inequalities do you see in participation in or benefits from the extension services? What could be the underlying reasons for this?

11. Please think of cases where these groups [of question 9] have had an increased participation in skills' development activities or extension services in general, which then was reflected in increased production, what conditions enabled this?

12. What kind of changes in terms of extension services or skills development would be needed to overcome the identified problems?

13. Has this been tried before? Why does/did it not work before?

14. Which factors would create a barrier to achieve this change? *[To Interviewer: If respondent says there are no factors or barriers inhibiting change, then probe: why this has not been done before]*

15. Which stakeholders would oppose these changes (to overcome identified problems)? How are they benefiting from the current situation? What [formal and informal] resources and networks do they have to prevent this?

16. Which factors would stimulate such a change? How could the barriers be removed?

17. What could be done to counterbalance opposing stakeholders? [only mention when people do not come up with suggestions: e.g. by offering them alternatives].

18. Which stakeholders would support such a change? Why? What [formal and informal] resources and networks do they have to achieve this?

19. Please think of areas where progress has been made to enhance farmers' skills, technical knowledge, access to information, resulting in increased production and quality, processing capacity, value addition, or improved food security. What made these interventions successful? Who were involved in these activities?

20. In your district, what specific elements in the dominant culture (e.g. gender, clans, ethnicity, social classes, age) contribute to social hierarchies, power imbalances and inequalities?

21. What norms, beliefs and cultural practices form entry-points for change in power relations? (for instance, addressing cultural leaders to enhance change)

22. **Finally, do you wish to stay anonymous?**

INTERVIEW QUESTIONS - POWER SCAN - SEEDS

Interviewer:
Date:
Interviewee:

To the interviewer: Start by briefly introducing yourself, where you work, the objective of the project and the aim of the interview.

For example:

> Thank you for agreeing to meet for this interview. I would like to introduce myself first: My name is ___ and work for _____. We are doing this project together with the Civic Engagement Alliance and the aim is to increase our understanding of how power dynamics play a role in the food systems in the districts of Abim, Lira and Soroti. Once we have this understanding, we will be able to refine our lobby and advocacy strategies to support smallholder farmers.
>
> This interview will take about 45 to 60 minutes.
> Do you mind if we record this interview? We need this for further processing.
> At the end of the interview I will ask if you would like to stay anonymous or not.

1. As a first question, would you please introduce yourself and also share in which of the 3 districts do you work?

2. The government has indicated that in accordance with Uganda's vision 2040, farmers should make the transition from subsistence farming to small-scale, commercial farmers. To what extent are farmers equipped to become commercial farmers? If not, what is preventing this?

3. Could you describe how the provision of quality seeds and other key agricultural inputs (such as fertilizers, pesticides, water, irrigation, etc) operates? How does this work on paper? How does this work in reality?

4. Could you describe what has gone well in the current seed provision as well as other key agricultural inputs?

5. According to you, what are the major bottlenecks in seeds provision? What could be the underlying reasons for this? [try to probe until the underlying causes are visible]

6. According to you, what are the major bottlenecks in other key agricultural inputs provision, **including water**? What could be the underlying reasons for this? [try to probe until the underlying causes are visible]

7. Do certain groups experience barriers/constraints to get seeds and other key agricultural inputs? What could be the underlying reasons for this?

8. Please think of cases where farmers have had an increased access to quality seeds and other agricultural inputs, **including water**, what conditions enabled this?

9. What kind of changes would be needed to overcome the identified problems?

10. Has this been tried before? Why does/did it not work before?

11. Which factors would create a barrier to achieve this change? *[To Interviewer: If respondent says there are no factors or barriers inhibiting change, then probe: why this has not been done before]*

12. Which stakeholders would oppose these changes? How are they benefiting from the current situation? What [informal and formal] resources and networks do they have to prevent this?

13. Which factors would stimulate such a change? How could the barriers be removed? [if not mentioned by respondent: To what extent does culture play a role?]

14. What could be done to counterbalance opposing stakeholders? [only mention when people do not come up with suggestions: e.g. by offering them alternatives].

15. Which stakeholders would support such a change? Why? What [informal and formal] resources and networks do they have to achieve this?

16. Please think of areas where progress has been made to enhance farmers' access to seeds and other agricultural inputs. What made these interventions successful? Who were involved in these activities?

17. In your district, what specific elements in the dominant culture (e.g. gender, clans, ethnicity, social classes, age) contribute to social hierarchies, power imbalances and inequalities?

18. What norms, beliefs and cultural practices form entry-points for change in power relations? (for instance, addressing cultural leaders to enhance change)

19. **Finally, do you wish to stay anonymous?**

INTERVIEW QUESTIONS - POWER SCAN - SHORT MERGED QUESTIONNAIRE

Interviewer:
Date:
Interviewee:

To the interviewer: Start by briefly introducing yourself, where you work, the objective of the project and the aim of the interview.

For example:

> Thank you for agreeing to meet for this interview. I would like to introduce myself first: My name is ___ and work for _____. We are doing this project together with the Civic Engagement Alliance and the aim is to increase our understanding of how power dynamics play a role in the food systems in the districts of Abim, Lira and Soroti. Once we have this understanding, we will be able to refine our lobby and advocacy strategies to support smallholder farmers. The focus of this interview will be on farmer skills and extension services as well as provision of seeds and other agricultural inputs. We understand extension services as: knowledge and skills, technical advice and information, support for farmers' organization, and motivation and self-confidence[18].
>
> This interview will take about 45 to 60 minutes.
> Do you mind if we record this interview? We need this for further processing.
> At the end of the interview I will ask if you would like to stay anonymous or not.

1. As a first question, would you please introduce yourself (name, where do you work, what do you do, etc.)?

2. The government has indicated that in accordance with Uganda's vision 2040, farmers should make the transition from subsistence farming to small-scale, commercial farmers. To what extent are farmers equipped to become commercial farmers? If not, what is preventing this?

3. Under the the NAP 12 priority commodities and 4 strategic commodities[19] are recognized. How were these commodities selected (selection criteria) and what are the implications for those that were not selected?

4. According to you what are the major bottlenecks in farmers' skills development and extension services? What could be the underlying reasons for this? [try to probe until the underlying causes are visible]

5. What is the government doing to overcome these challenges and what barriers have you faced? Who could be/are your allies for change?

6. According to you what are the major bottlenecks in farmers' access to quality seeds and other key agricultural inputs, including water? What could be the underlying reasons for this? [try to probe until the underlying causes are visible]

7. What is the government doing to overcome these challenges and what barriers have you faced? Who could be/are your allies for change?

8. Which stakeholders could oppose these changes? Why? What [informal and formal] resources and networks do they have to prevent this?

[18] FAO definition http://www.fao.org/3/t0060e/T0060E03.htm

[19] Specifically: bananas, beans, maize, rice, cassava, tea, coffee, fruits and vegetables, dairy, fish, livestock (meat), and four strategic commodities, namely, cocoa, cotton, oil seeds, and oil palm (REF https://www.agriculture.go.ug/agriculture-sector-strategic-plan-assp/)

9. Do certain groups experience barriers/constraints to access to skills and extension services or quality seeds and other key agricultural inputs?

10. Please think of areas where progress has been made to enhance farmers' access to seeds and other agricultural inputs or access to extension services. What made these interventions successful? Who were involved in these activities?

11. What specific elements in the dominant culture (e.g. gender, clans, ethnicity, social classes, age) contribute to social hierarchies, power imbalances and inequalities?

12. What norms, beliefs and cultural practices form entry-points for change in power relations? (for instance, addressing cultural leaders to enhance change)

13. **Finally, do you wish to stay anonymous?**

ANNEX 2. LIST OF INTERVIEWEES

General background interviews

GENERAL BACKGROUND INTERVIEWS				
#	**Name**	**Organization**	**Role in the food system**	**Date interview**
1	Ainemagara Isaiah	Learn4Agribusiness	Implementing project establishing communities of northern Uganda. (e.g. cashew nut value chain, hibiscus, honey, Sheabutter, Chia, etc.)	15/10/20
2	Dr. David Magumba, Busitema	University, Soroti Campus	Academia (senior lecturer agribusiness, Faculty of Agriculture and Animal Science)	13/10/20
3	Julius Onen	ALCODE	Implementing projects promoting food value chain among the communities of northern Uganda. (e.g. cashew nut value chain, hibiscus, honey, Sheabutter, Chia, etc.)	08/10/20
4	Rev. Nelson Owili	Aridland Development Program (ADP)	NGO- Implementing partner of CEA in Abim	08/10/20

Background interviews- Extension services and Seeds and other inputs

BACKGROUND INTERVIEWS- SEEDS AND OTHER AGRI INPUTS				
#	**Name**	**Organization**	**Role in the food system**	**Interviewed by and date**
1	Moses Egayu	COU TEDDO	NGO	23/10/20
2	Hellen Opie	NARO	Research institutions	26/10/20
3	Aringo Florence Otim	Agro input dealer	Agro input dealer	30/10/20
BACKGROUND INTERVIEWS- EXTENSION SERVICES				
	Name	**Organization**	**Role in the food system**	**Interviewed by and date**
1	Orone Moses	Farmer, Soroti district	Coordinates fellow farmers in crop production, access to markets and training	22/10/2020
2	Bobolian Patrick	Farmer leader, Abim	Coordinates fellow farmer's activities	20/10/2020
3	Echeku William	Extension/project officer FINASP-Soroti	Training farmers	22/10/2020
4	Patrick Alip	Assistant District Agricultural Officer, Lira	Coordination of extension trainings	21/10/2020
5	Achen Eunice	Farmer, Lira	Crop production	21/10/2020

List of interviewees- Power interviews

POWER INTERVIEWS- SEEDS AND OTHER AGRI INPUTS				
#	**Name**	**Organization**	**Role in the food system (and district)**	**Interviewed by and date**
1	Geoffrey Turyasingura	Businema University	Academia Lecturer/H.O.D, Crop Production & Management	20/10/20
2	Anonymous	Soroti District Local Government	Political leader	29/10/2020
3	Juliet Ebil	FAPAD	Policy programme coordinator at FAPAD	23/10/2020
4	Reverend Edwany Julius , Abim	Farmer leader	Coordinates fellow farmers access to inputs	2/11/2020
5	Oyweka John Bosco, Abim	Farmer	Crop production and farming	2/11/2020
6	Omara Payes, Abim	Agro dealer	Sells agro inputs to farmers	2/11/2020
7	Anonymous	Chamber of Commerce	Chamber of Commerce Representative and Commercial Farmer	4/11/2020
8	Suwed Adam Musa	Pleth	Input dealer Worker at Pleth Agro	4/11/2020
9	Vincent OLing	Clan leader and farmer	Farmer and clan leader in his community	4/11/2020
10	Ogwal Patrick	Produce dealer and farmer in Lira	Chairman of Lira produce Association	5/11/2020
11	Okiror Ruth	Acila Enterprises Soroti	Agro dealer and supplier of many agro inputs including seed, fertilizers, pesticides etc	6/11/2020
12	Anonymous	Soroti District Local Government	Works for Soroti District Local Government	6/11/2020
13	Anonymous	Elder/farmer, Soroti	Crop production	7/11/2020
POWER INTERVIEWS- EXTENSION SERVICES				
#	**Name**	**Organization**	**Role in the food system (and districts)**	**Interviewed by and date**
1	Daphne Egwar	Advance Afrika	NGO- Project coordinator 3 districts	28/10/2020
2	Sharon Acen	Lira District Local Gov.	Community Development Officer, Lira District Local Government	27/10/2020
3	Emmanuel Sakira	Share An Opportunity	NGO- Implementing partner of CEA in Abim	27/10/20
4	Charles Ever Okwii	Abim District Local Government	Agricultural officer	29/10/2020
5	Anonymous	Lira District Local Government	Works at the Lira District Local Government	27/10/2020
6	Angeo Lucy	District local government	Extension officer, animal production, Abim	2/11/2020
7	Lotoduc Kennedy	Local government Abim	Veterinary officer Advisory service provision to farmers	2/11/2020
8	Okurut Gilbert Moses.	Local government, Abim	Extension Officer Animal Production & Management	2/11/2020
9	Modi Pradeep	Mukwano	Private company working directly with farmers	4/11/2020

10	Okello Alex Lira	Chairperson of farmer group	Farmer	5/11/2020
11	Anonymous	Lira District Local government	Works at the Lira District Local Government	5/11/2020
12	Anonymous	Chairperson of a farmer group, Soroti.	Helps fellow farmers in accessing training and seeds.	7/11/2020
13	Esuju James	Chairperson of the farmers' cooperative Soroti	Helps fellow farmers in accessing training and seeds.	7/11/2020
14	Onangole John	Soroti District Local Government	Trainer of farmers	6/11/2020

INTERVIEWS WITH NATIONAL ACTORS

#	Name	Organization	Role in the food system (and districts)	Interviewed by and date
1	Anonymous	MAAIF	Representative of MAAIF	20/11/2020

ANNEX 3. GLOSSARY OF KEY TERMS

Bottlenecks: underlying challenges, activities or stakeholders that form a barrier to change. Bottlenecks are different from symptoms, as changing a bottleneck usually leads to change. Root causes are often bottlenecks.

Food system: the food system contains all the processes, elements and activities that are part of food production and food consumption. A food system has external drivers which impact the activities, such as climate change, urbanisation, or political stability. Activities in the food system are soil preparation (e.g. ploughing), sowing, growing (including fertilisation, disease treatment, weed management, watering), harvesting, packing, processing, transporting, marketing, consuming and disposing of waste. These activities lead to certain outcomes, for example food security, income or climate related outcomes. Each activity influences the other activities in the system. So, though the focus of the workshop is to benefit smallholder farmers, this can only be done through changing various aspects in the wider food system.

Food system transition: a food system transition is marked by deep and structural changes within the food system. A transition involves changes in technology (adoption), policy, markets, infrastructure, cultural meaning and knowledge. These changes are made by different actors such as businesses, policymakers, politicians, consumers, civil society and researchers. Transitions are complex, take long and involve multiple actors.

Influence: the ability to have an impact on the behaviour of other stakeholders within the food system. Influence is applied by using resources or networks and can be effective if stakeholders are dependent on each other.

Example of a leverage point

In Ethiopia a group of stakeholders wanted to find out how to improve the adoption of livestock technologies among smallholders. Initially the group thought that training of farmers would solve the problem. A thorough analysis of the system and root causes of the problem showed that farmers' awareness was only a symptom. A major systemic root cause was the adverse incentive system among livestock universities. Researchers were not paid or rewarded for developing user-friendly technologies, but for the number of publications they produced. Together they realized that a leverage point for change was to start a dialogue with the Ministry of Education, who determines the career development and incentive structure of (livestock) researchers at universities. They found that they should do this as a collective of universities rather than in isolation, to stand stronger (this is not to say that training farmers is not also important, but in this case another leverage point was chosen to act upon).

Leverage point: a leverage point is an action or intervention by one or multiple stakeholders that may trigger multiple changes within the food system. This may lead to a 'waterfall effect or ripple effect' that may eventually lead to a food system transition. To find leverage points it is important to think about whether a proposed action or intervention has been tried before. If so, why did it or did it not work? If it did not work, try to think about why it did not work and what should be changed to make it work.

A leverage point is not an activity that does not trigger multiple changes in the food system, for example a one-time training of farmers.

Networks: networks are the different relationships between stakeholders and the way stakeholders relate to each other.

Resources: a source of supply, support or aid that a stakeholder can draw upon. Resources can be material, for example money, equipment and tools. They can also be immaterial, for example a social network or knowledge.

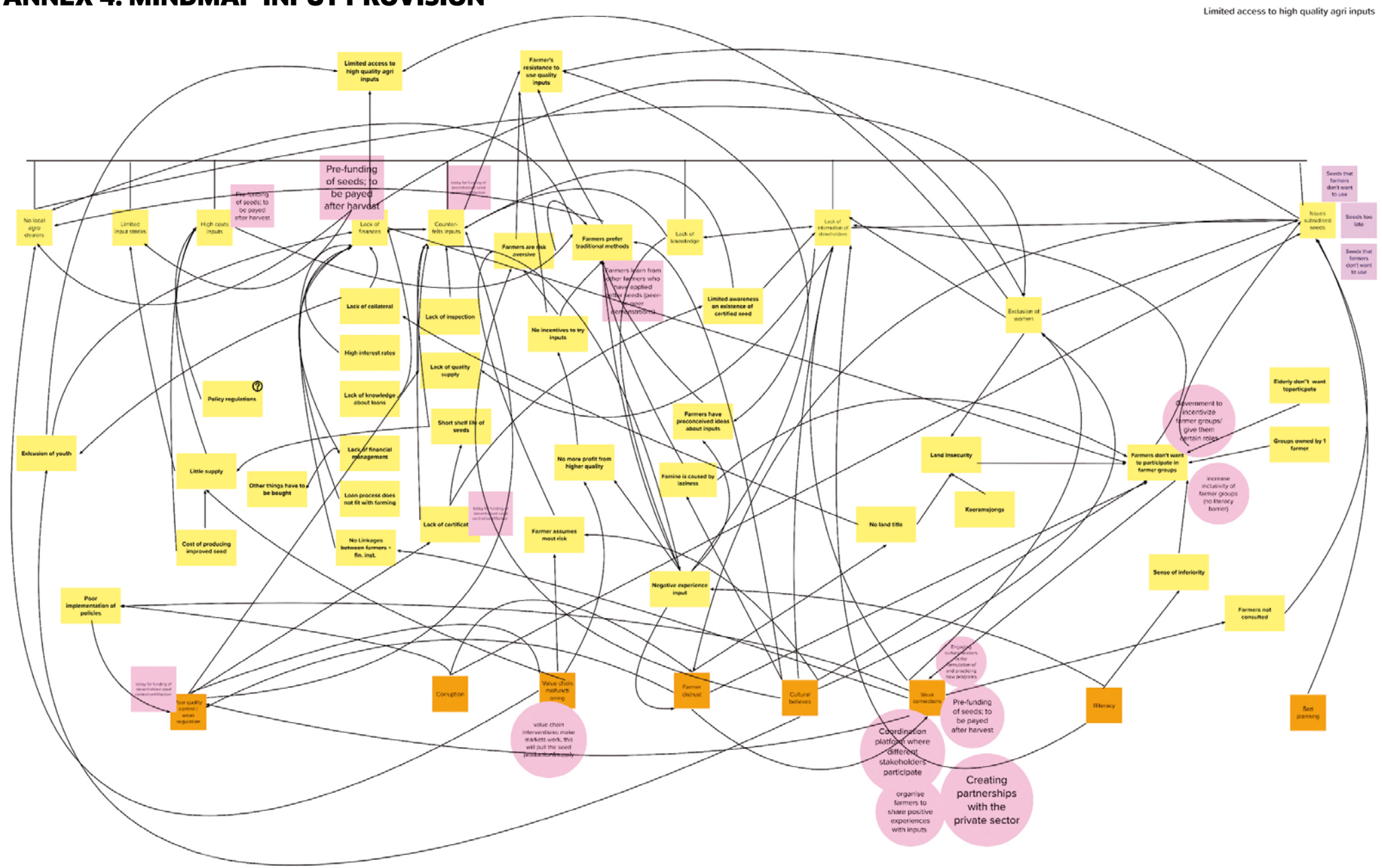
Root causes: the core issue or actual source/beginning of the challenges within the food system. It is usually a problem that is not immediately visible as a challenge or issue, but it does cause the challenge or issue. As such, a root cause is usually an underlying problem that will need to be changed before real change is possible.

Stakeholder: stakeholders are the different groups that have a stake in and/or are affected by a certain situation or issue. In this workshop stakeholders are the different groups involved in and affected by the food system, for example farmers, business owners, food consumers, and politicians.

Sustainable Development Goals: 17 goals that were created by the United Nations to achieve a wealthy and fair society. They cover a range of topics including equality, environment, health, education, environment etc.

Symptoms: observable challenges or activities that form a barrier for change. Only changing the symptoms often does not help to solve the root cause or underlying problem that will need to be changed before real change is possible.

ANNEX 4. MINDMAP INPUT PROVISION



ANNEX 5. SUMMARISING TABLE OF POTENTIAL LEVERAGE POINTS

TOPICS AND MEASURES	DIRECT IMPACT + / ++ OR - / --	LEVERAGE POTENTIAL + / ++ OR -/ - -	FEASIBILITY + / ++ OR - / - -
Topic A - Enhancing links among stakeholders			
Measure 1: Multi-level MSPs to coordinate agriculture development/ roundtables one per district -Abim, Lira and Soroti- and one at the national level	++	++	++
Measure 2 Decentralised multi-stakeholder coalition working for counterfeit seed and quality control for agricultural inputs	++	+	+
Measure 3: Support linking agricultural producers to agricultural markets through private sector partnerships	+	+	To be addressed as part of measure 1
Topic B: Enhancing skills and links among stakeholders			
Measure 4: Peer to peer demonstrations, which consider inclusion of women, youth, people with disabilities, or very poor farmers, as well as coordination with existing structures at the local level	++	++	Is addressed as part of measure 1 and 5
Measure 5: Lobby for harmonization and update of extension workers curricula on an ongoing basis, improve their knowledge of new technologies, life skills, inclusion of marginalized groups, adaptation of curricula with more practical knowledge, and funding proposal development This can be supported by MAAIF and MoES writing a project to submit to the Ministry of finance on capacity building of Agriculture Extension Officers (AEOS).	+	+	+
Topic C- Funding			
Measure 6: Lobby for funding of decentralized multi stakeholder coalition for seed control/ certification	+	+	Is merged with measure 2
Measure 7: Cost-sharing/pre-funding of seeds by agro dealers If input providers expect that farmers will be able to pay them after selling their crops, they could negotiate with banks to pre-finance the inputs. Input providers are bigger players and could be in a better negotiating position with banks than small farmers	+	+	- agri-dealers will not take the risk on behalf of farmers)
Topic D- Inclusion and strengthening of farmer groups			
Measure 8: Increase inclusivity of farmer groups, e.g. no literacy barrier, through differentiated and inclusive approaches and incentives, and support them into forming higher level organizations to enhance their capacity to solve their problems and be able to lobby and advocate for finances from offices e.g. commercial office.	+	+	Is addressed as part of measure 1

- Potential **direct impact** of the change: to what extent does it strengthen the position (income, working conditions) of smallholder farmers and/or their direct (social) environment.
- **Leverage potential:** could it start, stimulate or contribute to a cascade of further changes
- **Feasibility** to realise it. This is a combination of 1) are there stakeholders to really make it work (changers) and 2) are there stakeholders that will resist making this change (resisters or opponents). Do these stakeholders have the resources (the power) either to realise or block this change?

ANNEX 6. CHALLENGES RELATED TO INPUT PROVISION

Many farmers face barriers to access agricultural inputs. Land tenure insecurity and conflicting claims over land in the region hamper the investment in improved technologies and inputs (Nakawuka et al., 2018; World Bank Group, 2018). It was mentioned by one interviewee that farmers fear being killed or raided of their property (Omara Payes, interview, 2 November 2020). Even when farmers want to invest, quality inputs are very expensive. For instance, when farmers use quality seeds, these seeds make up to 50% of the total cost of the crop production (Moses Egayu, interview, 23 October 2020). According to our interviewees, farmers do not have the capital to buy inputs such as seeds, pesticides or hoes. Farmers furthermore face a lack of credit. According to Nakawuka et al. (2018), only 10% of agricultural households in Uganda had access to credit in 2008. This is due to the high interest rates charged by banks and credit unions, farmers' lack of collateral, and a lack of credit facilities in rural communities (Nakawuka et al., 2018). Specifically, the following challenges affect access, adoption and the quality of seeds and other agricultural inputs:

Limited scope of governmental programmes

To provide farmers with free inputs, the government has introduced the OWC programme and the ACDP. The tractors that are supplied by the programme are sent to the districts. It then depends per district whether the tractors are actually provided to the farmers. In accordance with some interviewees, these inputs are sometimes misallocated, for instance, a tractor that was used by a single person, who owned it as his personal property. Furthermore, hiring a tractor from the district is expensive and the tractors are not always available.

Interviewees also noted that only a limited selection of farmers receive inputs through the OWC and the ACDP. According to the interviewees, usually 2 or 3 households within one village are selected. This selection was made, according to one anonymous interviewee, based on farmers' connections to people at the local government. Many farmers distrust the seeds that are being distributed. Due to the fact that many aspects are politicised within the communities, farmers believe politics to be involved in the distribution of seed. Those who do not support the government are believed to get seeds that will not germinate (Geoffrey Turyasingura, interview, 20 October 2020). There seems to be some truth to this, as there are certain political parties that only want their members to benefit from the government's interventions (Oling Vincent, 4 November, 2020). Many of the interviewees also expressed that when farmers apply for specific seeds, they often do not receive the seeds, do not get the quantities that they have applied for, get seeds they do not need or get the seeds too late. This is due to limited funding of these government run programmes and insufficient consultation with the farmers, as well as bad planning. Sometimes, it is caused by agro dealers being paid too late, causing them to delay their distribution to farmers.

Challenges at the agro dealer

Those farmers who can pay for their agricultural inputs are faced with additional burdens. Many of the agro dealers are located in urban places (Hellen Opie, interview, 26 October 2020). This is because at the rural level there are only a few buyers, which discourages agro dealers to operate outlet centres near the farming communities (Oyweka John Bosco, interview, 2 November 2020). Only a few agro dealers manage to go to the local informal market. Hence, at the local market a farmer has not much choice, the seeds are low quality, and the farmer cannot see what variety is being sold. Some agro dealers visit famers, but they sometimes have difficulty accessing the farmers, especially in the rainy season (Aringo Florence Otim, interview, 26 October 2020). Farmers who can afford it, therefore, go to the town to purchase seeds for planting, according to some interview interviewees. The transportation to these cities, however, costs a lot of money. Many agro shops thereby only stock a few varieties of seeds and limited amounts of other inputs. According to one agro dealer, seed companies do not have enough seeds to supply agro dealers. Furthermore, farmers who buy agro inputs in small quantities face the risk of not getting the required inputs. This is because most agro shops prioritize the bulk buyers (Suwed Adam Musa, interview, 4 November 2020).

Counterfeit and low-quality inputs

Another important issue is the existence of counterfeit agricultural inputs. According to the World Bank Group (2018), 30 to 40% of seeds that were purchased through formal channels were

counterfeit. Farmers often only realise that seeds are counterfeit when they fail to germinate (Kawumi, 2017). The World Bank Group (2018) estimates that this leads to up to 22 million USD losses a year for the farmers. This problem is heightened by the fact that the seeds the government provides are also often of low quality. This results in a failure to grow (World Bank Group, 2018), which causes farmers to distrust so-called quality seeds in general. Another issue is that the chemicals in pesticides have a short shelf life, which causes losses for agro dealers. Some agro dealers fear making losses and choose to sell expired chemicals to farmers.

The government has adequate, relevant, and appropriate policies (Juliet Ebil, interview 23 October 2020). Still the application of these policies seems to be an issue. According to some interviewees, enforcement is difficult due to corruption or limited government funds. An example is the recently adopted Seed Policy, which makes DAOs responsible for combating counterfeit seeds (Mukasa, 2020b). Despite its drafting, little has been done to ensure that the policy guidelines are implemented (Mukasa, 2020a). At the moment of writing dissemination sessions organised by MAAIF for DAOs have taken place in some districts (Mukasa, 2020b), but no evidence was found that these have been organised in Lira, Abim or Soroti.

COVID-19

COVID-19 is furthermore a profound current challenge. Due to the disruption of global and national supply chains, it is likely that the supply chains for inputs for the next season are affected (Nwafor, 2020). Furthermore, all the informal markets have closed as part of the regulations against the virus. Hence, farmers who buy their seeds at the local markets experience big problems in getting the necessary seeds for the planting season. These farmers have resorted to borrowing from their neighbours or relatives (Hellen Opie, interview, 26 October 2020). Furthermore, due to COVID-19, suppliers were unable to go to the rural areas, which makes it difficult to supply inputs to farmers on time (Aringo Florence Otim, interview, 30 October 2020).

Lack of knowledge

Many farmers thereby lack knowledge about the agro inputs. For instance, according to one interviewee not many farmers have the right knowledge about what seeds are certified. Furthermore, there is still not enough knowledge provided to farmers about the application, planting, management, and suitable soil conditions of certain seed varieties which leads to low yields, which discourage farmers from using the seeds again (Oling Vincent, interview, 4 November 2020). In the case of fertilizers and chemicals, most of the supporting agents of farmers, such as the government and NGOs, have given priority to seeds over other inputs, such as fertilizers and chemicals. This hinders these inputs' adoption, as farmers are not being sensitised on these inputs (Omara Payes, interview, 2 November 2020). There is furthermore little guidance on the use and application of pesticides. This causes some farmers to not use the correct amount of pesticide, as they do not understand how to use them or do not use the measuring equipment adequately. This also affects the efficiency of the chemicals and discourages farmers from buying more inputs.

Traditional farming practices

Some interviewees also noted that many farmers still subscribe to the traditional way of farming. For instance, according to some interviewees, there is a tension between indigenous seeds and the new seeds of improved varieties. These seeds are being promoted by the government, research institutions, and agro dealers, as they are said to be more resilient to pests and other diseases. However, they need constant purchases, as the yields farmers get from them reduces with the numbers of times the seeds are recycled. Farmers also still believe that indigenous seeds germinate more easily and can be planted forever. There is also a distrust among farmers about the seeds of improved varieties, according to the interviewees. This is due to the existence of counterfeit agricultural products and that the OWC is supposed to provide seeds of improved varieties, but often farmers receive seed of low quality. If a farmer thinks they have bought seeds of improved varieties, which then fail to germinate due to their low quality or being counterfeit, the farmer's trust in these improved varieties is damaged. Furthermore, many farmers believe that they do not need to use fertilizer as their ground is fertile enough. Many also fear that fertilizers are dangerous for their land. This is due to the fact that farmers do not know how to apply the fertilizers. This gives them a negative result, which reinforces their belief that fertilizers are dangerous (Juliet Ebil, interview, 23 October 2020).

Specific irrigation challenges

According to some interviewees, Uganda's agriculture depends on rainfall. Less than 1% of the smallholder farmers in Uganda practice irrigation (Nakawuka, Langan, Schmitter & Barron, 2018). The adoption of irrigation technologies has been low, as they are expensive (Nakawuka et al., 2018). The irrigation systems available are traditional and often fail due to poor designs, use of low-quality construction materials, floods, vandalism, and poor management. Furthermore, water management in these schemes is usually inefficient, as farmers whose plots are downstream often have no water reaching them (Nakawuka et al., 2018). Even though Uganda has large water resources, it is difficult to get permission to use them (Pradeep Modi, interview, 4 November 2020). There are some farmers who farm near swamps and use them to irrigate their land. However, when water levels fall due to seasonality, they are unable to reach the water in the swamp (Suwed Adam Musa, interview 4 November 2020). One interviewee noted that in case of floods, which are occurring more due to climate change, the water is not used and lost. This is because there are no good dams. As irrigation practice is this limited, crops are always at risk of not receiving enough water, which affects farmers' yields (Pradeep Modi, interview, 4 November 2020).

REFERENCES

Kawumi, P. (2017). Ugandan Farmers demand quality agricultural inputs. In CTA (Ed.), *Experience Capitalization: learning from farmer organisations* (pp. 18-22). Retrieved from https://cgspace.cgiar.org/handle/10568/102275

Mukasa, R. (2020a, 31 July). Seed Policy to spur Uganda's agricultural development. New Vision. Retrieved from https://www.newvision.co.ug/news/1523790/seed-policy-spur-uganda-agricultural-development

Mukasa, R. (2020b, 5 August). DAOs urged to promote use of quality seed. New Vision. Retreived from https://www.newvision.co.ug/news/1524103/daos-urged-promote-quality-seed

Nakawuka, P., Langan, S., Schmitter, P., & Barron, J. (2018). A review of trends, constraints and opportunities of smallholder irrigation in East Africa. Global Food Security, 17, 196-212.

Nwafor, A. (2020). Policy Response for Uganda. Retrieved from https://agra.org/wp-content/uploads/2020/06/Uganda-COVID-19-Policy-Response-Package_June2020.pdf

World Bank Group (2018). Uganda economic update (12th ed.): Developing the agri-food system for inclusive economic growth. Retrieved from: https://openknowledge.worldbank.org/handle/10986/31003

ANNEX 7. CHALLENGES RELATED TO EXTENSION SERVICES

Few/inadequate number of Extension Staff

According to the MoFPED-BMAU Policy 2019, the recommended ratio of extension to farmers is 1:500 but the current ratio is 1:1,800. The required number of extension staff is 5000 but so far only 3874 have been recruited by MAAIF. The ratio of extension staff to farmers is very high (Anonymous interview and Ario Mike, interview, 4th November 2020). Recently the government of Uganda increased the number of districts to 126 creating more sub counties, each of which require that they be allocated/appointed with an extension staff to train the farmers (MoFPED, BMAU Policy 2019). Some sub-counties have only animal production trainers who only train farmers on animal production. Farmers in those sub counties do not have extension personnel to train them on crop production (Angeo Lucy, interview, 2nd November 2020). As a result, there is low coverage of extension beneficiaries and inadequate provision of services (Okello Alex, interview, 5th November, 2020). Not all farmers are reached by the trainers since the number of farmers is greater than that can be adequately served by extension service providers (Onangole John, interview, 6th November 2020).

Lack of coordination and collaboration that leads to duplication of services

The many extension services providers in Uganda are currently not well coordinated. This leads to duplication of services by trainers. Different organizations find themselves offering the same service to a particular group of farmers (MoFPED, BMAU Policy 2019). The lack of a holistic approach to extension that brings together all actors has limited the functionality of the extension programmes (Onangole John, interview, 6th November 2020). The extension system is not reaching its full potential due in part to a lack of coordination and collaboration.

Lack of skills on behalf of extension staff

There is the perception that not all extension staff have sufficient (or optimal) qualification in the provision of practical skills to farmers (Ario Mike, interview, 4th November 2020). There is a need for capacity building and refresher training sessions to enhance their knowledge and skills in farming. This means that continuous professional development of the staff is needed to maintain and improve their skills. Given the age gap between extension staff there is also a problem of knowledge transfer and retention in the organisation of extension service skills due to retirement.

High illiteracy rates among farmers

Some farmers have not attended any formal education and this makes it hard for them to easily understand information taught by extension staff/the technical language of farming (Ario Mike, interview, 4th November 2020). Such categories would benefit more if the sessions were more practical rather than theory based. In addition to this, illiterate farmers attend trainings with those who have attained some levels of education e.g. secondary and tertiary grades. Farmers who have attained some levels of education tend to understand what is trained faster than those who have not attended formal education (Mc Cole et al, 2014 and MoFPED, BMAU Policy 2019). Farmers who are illiterate find it hard to train alongside more literate colleagues and fear embarrassment in the trainings and meetings which leads to their reduced contributions to the sessions (Okello Alex, interview, 2020).

Politicians and policy makers have accorded low value to agricultural extension

Policy makers and politicians have given more priority to supplying inputs to farmers instead of equipping them with good and modern farming skills to enhance their productivity (UFAAS-Declaration of Agricultural extension Reforms, 2014). Politicians have assumed a lot of power and give a negative impression to farmers about attending extension programs when they go to supply seeds (Ario Mike, interview, 4th November 2020).

Limited extension approaches

The current approach of face to face extension is not sufficient given the high ratio of farmers to extension staff. Not all farmers can be reached physically. Devising other means of delivering agricultural information is critical to augment knowledge and skill transfer to the farmers' households.

Limited time of interaction between farmers and extension staff affects training efficiency (Esuju James, interview 7th November 2020). Extension staff train very fast and sometimes bring a lot of content in a single training. This limits farmers' understanding and retention since some of extension workers train very fast and have a lot of content to cover in a single meeting.

As opposed to this, some trainings take very long hours making it hard for farmers to concentrate and understand what is being trained. Some of the trainings that take long hours, for example, five hours, are not facilitated with any drink or food. When farmers get hungry, they lose concentration and interest in participating in trainings.

Low/limited funding for agriculture

The agriculture sector has been accorded limited funds to fully operationalize its activities (Okello Alex, interview, 5th November 2020). Reaching out to farmers to conduct trainings is not possible without the required number of motorcycles and fuel/facilitation for transport (Angeo Lucy, interview, 2nd November 2020). Extension service providers have limited funding to travel and train all farmers in the rural communities (Ario Mike, interview, 4th November 2020).

Late release of funds that delays implementation

In cases of late release of funds, extension staff are unable to deliver knowledge and information to farmers on time. Due to the delays associated with late release of funds, farmers receive and plant seeds past the season and are affected by diverse climate changes like drought that eventually leads to low production and yield levels (Angeo Lucy, interview, 2nd November 2020). Late release of funds leads to delay in implementation of government programs that aid farmers' learning for example agro machinery for processing commodities and construction of stores (Esuju James, interview, 7th November 2020)

Unequal access to extension services in some areas

According to the Budget Monitoring and Accountability Unit (BMAU) Brief Policy (2019), there is unequal access to extension services between men and women in some farming communities. Poor gender relations and roles, some men believe that women should not attend these trainings. Men make their wives very busy with a lot of domestic work and some men/husbands refuse to allow their wives to attend (Onangole John, interview, 6th November 2020). Women are unable to attend some trainings partly because of the many roles they play in the household.

Poor adoption of agricultural technologies and best practices

Farmers have not adopted good farming practices regardless of the trainings provided and technology misuse was very rampant (Ilukor et al., 2016). UFAAS (2014) notes that agricultural Extension is accorded low value and policy makers and politicians have given priority to mere distribution of agricultural inputs as opposed to development of farmer capacity for innovation and appropriate use of improved inputs and other technologies. Some farmers do not see any direct tangible benefits to them or their farm. They do not see the point in adopting them (Onangole John, interview, 6th November 2020).

Poor infrastructure

Poor infrastructure e.g. poor road network. McCole *et al* (2014) identified poor infrastructure as a major challenge in the extension system. Some villages/communities that do not have access roads can't easily be reached by trainers. Absence of bridges at some connection points between communities makes it hard for extension programs to reach some farmers.

Multiple government interventions confusing farmers

The many government interventions/programs and abrupt policy changes in government extension programs, for example, NAADs, OWC keep confusing farmers who don't understand their functionality (Ario Mike, interview, 4th November 2020). OWC only gives seeds and does not train farmers on how to plant them.

Non- participation of certain farmers

Some farmers do not belong to farmer groups/associations yet most extension agencies train farmers belonging to groups. Non-affiliated farmers miss extension services rendered by those organizations. Some of the farmer groups are weak and can't easily search for or advocate for their inclusion in extension service support from available NGOs. They are not empowered with finances and knowledge to operate effectively. They have weak leadership and limited resource base for them to develop (Onangole John, interview, 6th November 2020).

Little interest of farmers to participate in extension trainings also affects the program (Lotuduc Kennedy, interview 3rd November 2020). Farmers have prioritized being given money/facilitation instead of knowledge acquisition hence unable to attend trainings (Okurut Gilbert, interview, 3rd November 2020). Some farmers don't want to attend extension programs that don't facilitate them with food and money as done by some NGOs in some communities. This makes it hard for some local district government extension staff to extend knowledge on farming practices to such farmers (Ario Mike, interview 4th November 2020).

Farmers and their families' health

Poor health of farmers limits their participation in extension trainings (Onangole John, interview, 6th November 2020). Most farmers are sick of common diseases e.g. pressure, diabetes, ulcers and HIV and cannot effectively attend trainings. Some of the farmers/parents are care-takers of these sick people and can't effectively attend trainings.

COVID 19

Recent Covid 19 pandemic has restricted mobility of extension workers and limited the number and participation of farmers in training sessions.

REFERENCES

McCole, D., Culbertson, M. J., Suvedi, M., & McNamara, P. E. (2014). Addressing the challenges of extension and advisory services in Uganda: The Grameen foundation's community knowledge worker program. *Journal of International Agricultural and Extension Education*, 21(1), 6-18. https://doi.org/10.5191/jiaee.2014.20101

Ilukor J, Isoto RE, Turinawe A, Muwanika FR (2019). Do Investments in Agricultural Extension Deliver Positive Benefits to Health, Trade and Industry, Water and Environment? International Journal of Agricultural Education and Extension, 5(1): 203-224.

Uganda's agriculture at crossroads: critical issues in the agricultural extension and advisory services. Declaration on Agricultural Extension Advisory Services (AEAS) Reforms. Uganda Forum for Agricultural Advisory Services (UFAAS), 2014.

Ministry of Finance, Planning and Economic Development (MoFPED), Budget Monitoring and Accountability Unit (BMAU) Briefing Paper 25/19 May 2019.

ANNEX 8. KEY STAKEHOLDERS WITHIN INPUT PROVISION AND EXTENSION SERVICES

Key stakeholders within input provision and extension services

ACTOR	LEVEL	ROLE/MANDATE	KEY INTERESTS	RESOURCES
Farmers	Local	■ Farming activities, such as land preparation and weeding ■ Harvesting & primary post-harvest handling ■ Buying inputs for production ■ Internal savings and loans to support production	■ Gaining a profit from their produce ■ Keeping costs of inputs low ■ Getting as high & qualitatively good yield as possible ■ Subsistence	■ Material: sometimes their farm equipment or land; sometimes some saved money ■ Immaterial: Family; social network; experience; (traditional) knowledge
Farmer groups	Local	■ Enhance agricultural productivity ■ Provide labor for production on other farmers ■ Advisory services to farmers in the group ■ Host demonstrations ■ Marketing of produce ■ Bulking of produce ■ Increase uptake of agricultural technologies and knowledge	■ Getting quality inputs and extension services ■ Enable farmers to work together ■ Members gaining a profit	■ Material: farmers' farm equipment; produce ■ Immaterial: easier access to inputs and advisory services than individual farmers; social network; labor credit; marketing; bulking opportunities; advisory services; information; access to NGO services
Extension workers	District or sub county	■ Offer advisory services and technical support ■ Distribute demonstration kits ■ Supply farmers with seeds ■ Support creation of farmer groups	■ Stimulate farmers to become commercial farmers ■ Transfer knowledge and information to farmers ■ Provide as much extension services as possible with limited funds	■ Material: money; sometimes some inputs ■ Immaterial: advisory services; knowledge; information about production; social network
Agro dealers	District	■ Buy and sell inputs ■ Advisory role about inputs sold ■ Sometimes: buy back from farmers	■ Profit accumulation from sale of inputs	■ Material: inputs; money ■ Immaterial: information and knowledge about the use of inputs; social network
Middlemen	Local	■ Aggregating, buying and selling produce ■ Decide on price paid for produce of farmers ■ Facilitate farmers' access to inputs ■ Quality assurance	■ Gain a profit/salary from aggregating, buying and selling produce ■ Want produce to be high-quality	■ Material: inputs; money ■ Immaterial: linkages to markets; market information; information about quality; social network
Financial institu-tions	District & national	■ Provision of resources and credit for inputs, tools, infrastructure, investments, ■ Training on financial literacy	■ Provision of finance to gain profits	■ Material: money ■ Immaterial: Information about loans; human resources; social network
NGOs	District & national	■ Bridge gaps by dealing in partnership with private sector and government actors to provide quality services to farmers ■ Capacity building to farmers through advisory and extension services ■ Support farmers with seeds & inputs, as well as knowledge acquisition ■ Lobby activities	■ Wants to see increase in production & productivity ■ Want to reach target of quality services provision, as they are donor funded ■ Support farmers with quality inputs and extension services	■ Material: inputs, project allocated money; new (piloted) technologies ■ Immaterial: links with the market; extension advisory; social network; lobby possibilities; information and knowledge on usage of inputs and new technology; human resources; linkages with foreign (global) actors

ACTOR	LEVEL	ROLE/MANDATE	KEY INTERESTS	RESOURCES
Research institutes	District	■ Conduct research on crop & animals ■ Develop new seed varieties and test quality seed ■ Generate and promote new technologies ■ Advisory and extension services ■ Improve agricultural practices	■ Formulation of high-quality inputs or seeds ■ Delivery of quality extension services ■ Generate new knowledge on crop & animals	■ Material: project allocated money; inputs ■ Immaterial: knowledge on the use of inputs; human resources; extension service advice
Private companies	District & national	■ Production, processing, aggregation of produce, storage, quality assurance ■ Market linkages ■ Delivery of inputs ■ Advisory service provision	■ Wants to make a profit ■ Wants produce of high quality	■ Material: inputs; money; storage facilities; produce facilities ■ Immaterial: links to markets; knowledge/ information about the market; human resources; social network; risk taking capacity
Local govern-ment	Local, sub county or district	■ Policy implementation, monitoring and supervising ■ Drafting of ordinances ■ By-law implementation ■ Provision or allocation of seeds ■ Avails the extension service grant ■ Community development	■ Implement, monitor, and supervise policies with the funds available ■ Wants to be re-elected	■ Material: money; funding for extension services ■ Immaterial: monitoring; regulation; market linkages enforcement of the input market regulation; social network; possibility to lobby for development partners; implementation and formulation of policies and by-laws; human resources; extension service advice
MAAIF	National	■ Policy formulation and implementation ■ Certification of inputs ■ Monitoring of inputs ■ Management and trainings ■ Facilitates funding for extension workers	■ Farmers make the transition from subsistence farming to commercial farming ■ Gaining enough funding for developing the agriculture sector	■ Material: Money ■ Immaterial: Decision-making power; information; framework for what is (not) counterfeit seeds; human resources; authority; extension service advice; enforcement of the policies instruments; social network and rewards; contracts with input suppliers; information;
OWC	National	■ Distribute farm inputs to peasant farmers ■ Coordinate government ministries, departments, and agencies for improved service and input delivery	■ Facilitate national socio-economic transformation, with a focus on raising household incomes and wealth creation by transforming subsistence farmers into commercial farmers to end poverty ■ Distribution of inputs to farmers	■ Material: funds; inputs ■ Immaterial: social network; contracts with agro dealers; knowledge/ information; contracts with input suppliers; authority

ANNEX 9. RELATIONSHIPS BETWEEN KEY STAKEHOLDERS

Key stakeholders - inputs

HOW DO ACTORS RELATE TO EACH OTHER? X : NO (DIRECT) RELATIONSHIP = : POWER WITH (WORKING TOGETHER) + : POWER OVER (IS DOMINANT OVER) – : IS DOMINATED BY		RELATED TO MAAIF	RELATED TO FARMERS	RELATED TO FARMER GROUPS	RELATED TO NGOS	RELATED TO RESEARCH INSTITUTIONS	RELATED TO LOCAL GOVERNMENT	RELATED TO OWC	RELATED TO AGRO DEALERS	RELATED TO FINANCIAL INSTITUTIONS	RELATED TO MIDDLEMEN	RELATED TO PRIVATE COMPANIES
MAAIF	Describe:		MAAIF influences the policies around farming and input provision. It is furthermore responsible for the certification and monitoring of inputs.	MAAIF influences the policies around farming and input provision. It is furthermore responsible for the certification and monitoring of inputs.	MAAIF is lobbied by NGOs and lobbies with NGOs	One of the research institutions, NARO, is an agency of MAAIF. Others are located at universities, but there is not much information about their relationship with MAAIF	The DAOs are responsible for carrying out MAAIF's policies and they get their salaries from MAAIF	The OWC collaborates with MAAIF. It works together with NAADS (another agency of MAAIF) secretariat during purchase of inputs to be distributed.	MAAIF is responsible for the monitoring of seeds and inputs sold by agro dealers, and the development of relevant policy	No links were mentioned between financial institutions and MAAIF	No links were mentioned between middlemen and MAAIF	MAAIF regulates the seeds that are supplied by private companies. MAAIF is probably also being lobbied by private companies
	Classify:		x, +	X, +	X, +	=, +, (x)	+	=, (-)	+	(x)	(x)	+
Individual farmers	Describe:	MAAIF influences the policies around farming and input provision. It is furthermore responsible for the certification and monitoring of inputs.		Farmers engage in labor sharing through their farmer groups. To gain inputs from NGOs/OWC farmers are dependent on their farmer groups	Farmers mostly have access to NGOs through farmer groups	Farmers visit research institutions and sometimes use the improved varieties created by research institutions	Local government creates policies concerning inputs. They also regulate the implementa-tion of policies and by-laws. Farmers can vote on local government and should share their concerns with them.	The OWC does not have a direct link with farmers, though they have an important influence on them.	Agro dealers are an important source of farmers' access to inputs. Sometimes farmers get inputs on credit from input dealers. They however, do not buy enough to have an influence on agro dealers	There are weak linkages between farmers and financial institutions. Financial institutions are however an important way for farmers to access credits for inputs	For some farmers middlemen are their only connection to the market, due to this middlemen can pay low prices for produce of farmers	Private companies give farmers seeds and trainings on production. They also buy farmers' produce and can influence the prices farmers gain for their produce. They are dependent on farmers to gain access to quality produce.
	Classify:	x, (-)		=, -	x	=, (-)	-	x, -	-	X, (-)	-	-, =
Farmer groups	Describe:	MAAIF influences the policies around farming and input provision. It is furthermore responsible for the certification and monitoring of inputs.	Farmers engage in labor sharing through their farmer groups. However, to gain inputs, farmers are dependent on their farmer groups		Many farmer groups are created by NGOs for inputs supply and extension services. NGOs go to farmer groups to reach farmers	Farmer groups visit research institutions and sometimes use the improved varieties created by research institutions	Local government creates policies concerning inputs. They also regulate the by-laws and policy implementation	Farmer groups are supplied with inputs by OWC. There is little consultation with them concerning the supply of inputs	Agro dealers are an important source of farmers' access to inputs. Sometimes farmers get inputs on credit from input dealers	There are weak linkages between farmers and financial institutions. Farmer groups sometimes engage in saving schemes being an alternative to t financial institutions	For some farmers middlemen are their only connection to the market. If the farmer group engages in bulking they can create a stronger bargaining position.	Private companies give farmers seeds and trainings on production. They also buy farmers' produce. They are dependent on farmers to gain access to quality produce. When farmers engage in farmer groups that do bulking, they can have a more powerful voice
	Classify:	X, (-)	=, +		-, =	=, (-)	-		-	X, (-)	-	-, =
NGOs	Describe:	NGOs lobby MAAIF and lobby with MAAIF for policies concerning inputs	NGOs play a big role at the community level. For those farmers who cannot afford inputs, they are their only source to inputs. However many NGOs only go to farmers through the farmer groups	Farmer groups are created in some cases by NGOs for input supply. NGOs reach farmers through these groups and have an important role at community level.		Research institutions have a weak link with NGOs	NGOs need permission of the local government to work in their district, but can be important contributors to community development	NGOs and OWC both supply inputs, other than that no links have been indicated	NGOs get the inputs that they supply from agro dealers, their contracts are an important source of profit for agro dealers and if the NGO is unhappy with a specific agro dealer they can go to another	NGOs facilitate the links between financial institutions and farmers. To enable this linkage they are dependent on the financial institution's willingness	There was no information found on a link between middlemen and NGOs, however, some NGOs' activities aim to bridge farmers to middlemen and agri-dealers	NGOs facilitate the linkages between farmers and the private sector. There sometimes seems to be a duplication of services (lack of communication) .
	Classify:	-, =	=, +, x	=, +		x	-, =	x	=, +	=, -	x	x, =

Key stakeholders - inputs (continued)

HOW DO ACTORS RELATE TO EACH OTHER? X : NO (DIRECT) RELATIONSHIP = : POWER WITH (WORKING TOGETHER) + : POWER OVER (IS DOMINANT OVER) – : IS DOMINATED BY		RELATED TO MAAIF	RELATED TO FARMERS	RELATED TO FARMER GROUPS	RELATED TO NGOS	RELATED TO RESEARCH INSTITUTIONS	RELATED TO LOCAL GOVERNMENT	RELATED TO OWC	RELATED TO AGRO DEALERS	RELATED TO FINANCIAL INSTITUTIONS	RELATED TO MIDDLEMEN	RELATED TO PRIVATE COMPANIES
Research institutions	Describe:	One of the research institutions, NARO, is an agency of MAAIF. Others are located at universities, but there is not much information about their relationship with MAAIF	Farmers visit research institutions and sometimes use the improved varieties created by research institutions	Farmers visit research institutions and sometimes use the improved varieties created by research institutions	Research institutions have a weak link with NGOs		Research institutions have a weak link with local government	OWC coordinates the effort of one of the research institutions for service delivery (NARO). Research institutions provide the resources for the inputs that are supplied by OWC	Weak linkages between agro dealers and research institutes	There was no information found on a link between research institutions and financial institutions	There was no information found on a link between middlemen and research institutions	The varieties that are created at the research institutions are send to the private sector for multiplication
	Classify:	=,–, x	=, (+)	=, (+)	x		X	=, -	x	x	X	=
Local government	Describe:	They get the extension grant from MAAIF, so some of their officers are supervised by MAAIF	Local government creates policies and ordinances concerning inputs. They also regulate the implementa-tion of policies and by-laws	Local government creates policies and ordinances concerning inputs. They also regulate the implementa-tion of policies and by-laws	NGOs need permission of the local government to work in their district, but can be important contributors to community development	Research institutions have a weak link with local government		OWC sends inputs to the local government (f.e. tractors), though extension workers complain they sometimes have no saying or are consulted. Those who are connected to the local government receive inputs from the OWC	Local government is tasked with regulating agro dealers	Local government creates policies and by-laws that affect financial institutions, but it is unlikely that they have the resources to be more powerful than financial institutions	There was no information found on the connection between local government and middlemen	Weak relationship with local government and private sector
	Classify:	-	+	+	+, =	x		=, -	+	+/-	x	X
OWC	Describe:	The OWC collaborates with MAAIF. It works together with NAADS (another agency of MAAIF) secretariat during purchase of inputs to be distributed.	The OWC does not have a direct link with individual farmers, thought they do have important influence on them	Farmer groups can be supplied by OWC with inputs. There is little consultation of farmers concerning the input supply	NGOs and OWC both supply inputs, other than that no links have been indicated	One of the research institutions is coordinated by the OWC. Research institutions provide the resources for the inputs that are supplied by OWC	OWC sends inputs to the local government (f.e. tractors). Those who are connected to the local government receive inputs from the OWC		The OWC supplies their inputs through agro dealers, their contracts are an important source of profit for agro dealers and if OWC is unhappy with a specific agro dealer they can go to another	There was no information about the connection between OWC and financial institutions found	There was no information found on the connection between OWC and middlemen	Sometimes the OWC also gets the inputs from the private seed companies
	Classify:	=, +	x, +	+	x	+, =	=		+	x	x	=
Agro dealers	Describe:	MAAIF is responsible for the monitoring of seeds and inputs sold by agro dealers, and the development of relevant policy	Agro dealers are an important source of farmers' access to inputs. Sometimes farmers get inputs on credit from them	Agro dealers are an important source of farmers' access to inputs. Sometimes farmers get inputs on credit from them	NGOs get the inputs that they supply from agro dealers. Their contracts are an important source of profit for agro dealers	Given agro dealers interaction with farmers they are critical for research to be relevant, but there are little links between agro dealers and research institutes	Local government is tasked with regulating agro dealers	Some agro dealers supply farmers with the inputs in the OWC programme. The contract of OWC is an important source of profit for agro dealers and if OWC is unhappy with a specific agro dealer they can go to another		There was no information found on the connection between financial institutions and agro dealers. It is however likely that agro dealers would need credit to invest in their businesses	There was no information found on the connection between agro dealers and middlemen.	Agro dealers receive their seeds and inputs from the private companies. Unless they can buy enough quantity, they can't influence the prices and supply. If the companies do not have enough product they do not supply enough inputs to the agro dealers
	Classify:	-	+	+	=, -	x	-	-		X, (-)	x	-

Key stakeholders - inputs (continued)

HOW DO ACTORS RELATE TO EACH OTHER? X : NO (DIRECT) RELATIONSHIP = : POWER WITH (WORKING TOGETHER) + : POWER OVER (IS DOMINANT OVER) – : IS DOMINATED BY		RELATED TO MAAIF	RELATED TO FARMERS	RELATED TO FARMER GROUPS	RELATED TO NGOS	RELATED TO RESEARCH INSTITUTIONS	RELATED TO LOCAL GOVERNMENT	RELATED TO OWC	RELATED TO AGRO DEALERS	RELATED TO FINANCIAL INSTITUTIONS	RELATED TO MIDDLEMEN	RELATED TO PRIVATE COMPANIES
Financial institutions	Describe:	No information was found on the connection between financial institutions and MAAIF	There are weak linkages between farmers and financial institutions. Financial institutions are however an important way for farmers to access credit for inputs	There are weak linkages between farmers and financial institutions. Financial institutions are however an important way for farmers to access credits for inputs	NGOs facilitate the links between financial institutions and farmers. To enable this linkage they are dependent on the financial institution's willingness	No information was found on the link between research institutions and financial institutions	Local government creates policies and by-laws that affect financial institutions, but it is unlikely that they have the resources to be more powerful than financial institutions	No information was found on the connection between OWC and financial institutions	There was no information found on the connection between financial institutions and agro dealers. It is however likely that agro dealers would need credit to invest in their businesses		There was no information found on the connection between middle men and financial institutions. It is however likely that middlemen would need credit to invest in their businesses	Financial institutions support the private sector with money for the purchase of materials and equipment
	Classify:	x	X, (+)	X, (+)	=, (+)	x	-/+	x	X, (+)		x, (+)	+
Middle men	Describe:	No links were mentioned between middle men and MAAIF	For some farmers middlemen are the only connection to the market, due to this middlemen can pay low prices for produce of farmers	For some farmers groups middlemen are the only connection to the market, due to this middlemen can pay low prices for produce of farmers	There seems to be no link between middle men and NGOs. Though sometimes NGOs facilitate platforms among farmers, middlemen and agro dealers	There was no information found on the connection of middlemen and research institutions	There was no discussion of the connection between local government and middlemen.	There was little mention of the connection between OWC and the middlemen	There was little mention of the connection between agro dealers and middlemen.	There was little mention of the connection between middle men and financial institutions. It is however likely that middlemen would need credit to invest in their businesses		Middlemen can work indepen-dently or are hired by the private sector to aggregate produce
	Classify:	x	+	+	x	x	x	x	x	x, (-)		-, x
Private sector	Describe:	MAAIF should regulate the inputs that are supplied by private companies. MAAIF is probably also being lobbied by private companies	Private companies give farmers seeds and trainings on production. They also buy farmers' produce. They are dependent on the farmer to gain access to quality produce.	Private companies give farmers seeds and trainings on production. They also buy farmers' produce. They are dependent on farmers to gain access to quality produce. When farmers engage in farmer groups that do bulking, they can have a more powerful voice	NGOs facilitate the linkages between farmers and the private sector. There sometimes seems to be a duplication of services.	The varieties that are created at the research institutions are send to private companies for multiplication	Weak relationships with local government and private sector	Sometimes the OWC gets inputs from the private seed companies	Agro dealers receive their seeds from the private seed companies. If the seed companies do not have enough seeds they do not supply the agro dealers	Financial institutions support the private sector with money for the purchase of materials and equipment	Middlemen can work indepen-dently or are hired by the private sector to aggregate produce	
	Classify:	-	+	+	X, =	=	x	=	+	-	+, X	

Key stakeholders - extension services

HOW DO ACTORS RELATE TO EACH OTHER? SHORTLY DESCRIBE, AND CLASSIFY: X : NO RELATIONSHIP = : POWER WITH (WORKING TOGETHER) + : POWER OVER (IS DOMINANT OVER) – : IS DOMINATED BY IF NEEDED, CLASSIFICATIONS CAN BE COMBINED		RELATED TO MAAIF	RELATED TO FARMERS	RELATED TO FARMER GROUPS	RELATED TO EXTENSION WORKERS	RELATED TO NGOS	RELATED TO RESEARCH INSTITUTES	RELATED TO LOCAL GOVERNMENT	RELATED TO PRIVATE COMPANIES
MAAIF	Describe:		MAAIF influences the policies around farming and supplies the advisory services through its funding. It is less directly in contact with farmers	MAAIF influences the policies around farming and supplies the advisory services through its funding, seems to be less in direct contact with farmer groups	MAAIF provides the funding for extension workers by supplying this to the local government. MAAIF is responsible for the extension workers, but does not coordinate them directly.	NGOs come to fulfil a gap in implementation of agriculture development (so they are supportive of MAAIF's mission). MAAIF is also lobbied by NGOs for certain policies	One of the research institutions NARO is an agency of MAAIF. Others are located at universities, but there is not much information about their relationship with MAAIF. MAAIF can steer the direction of research, but at the same time, research institutes can also be proactive and bring new approaches and solutions.	MAAIF provides the extension grant to the local government. MAAIF is responsible for the work of some of their officers, f.e. DAOs. MAAIF also creates policies that the local government has to regulate or monitor on	MAAIF should regulate the advisory services that are supplied by the private companies, but this does not happen so much. MAAIF is probably being lobbied by private companies
	Classify:		x, (+)	x ,(+)	x, +	X, +	=, +	+	+
Farmers	Describe:	MAAIF influences the policies around farming and supplies the advisory services through its funding, they are less directly in contact with farmers		Farmers engage in labor sharing through their farmer groups. To have access to extension services, most farmers are dependent on their farmer groups. Farmers can also reach out to extension workers on their own	Government extension workers are supposed to reach out to farmers to supply them with extension services, but do not have the funding necessary for this. Farmer groups can also reach out to extension workers	Many farmers only have access to NGOs through farmer groups	Research institutes sometimes provide extension services to farmers. Farmers can visit them to gain more knowledge about farming. Some research institutes, f.e. NARO are tasked with promoting and sharing knowledge about new technolo-gies with farmers	Local government avails the extension grants through which farmers eventually are able to gain extension services. They also have a regulatory and monitoring task of by-laws and policies. Farmers can vote in local government and should share their concerns with them	Private companies give farmers trainings on production and seeds. They also buy farmers' produce. The private sector is dependent on the farmer to gain access to quality produce, though farmers have little influence on the prices they get.
	Classify:	x, (-)		=, -	X, =	x	=, (-)	-	-, =
Farmer groups	Describe:	MAAIF influences the policies around farming and supplies the advisory services through its funding, seems to be less in direct contact with farmer groups	Farmers engage in labor sharing through their farmer groups. To have access to extension services, most farmers are dependent on their farmer groups. However, farmers can also reach out to extension workers on their own		Farmer groups can call on extension workers for their services. Some farmer groups are set up by extension workers	Farmer groups are sometimes created by NGOs for extension services. Sometimes NGOs are farmers' only source of extension services	Research institutes sometimes provide extension services to farmer groups. Farmer groups can visit them to gain more knowledge about farming.	Local government avails the extension grants through which farmer groups eventually are able to gain extension services. They also have a regulatory and monitoring task of by-laws and policies.	Private companies give farmers trainings on production and seeds. They also buy farmers' produce. They are dependent on the farmer to gain access to quality produce. When farmers engage in farmer groups that do bulking, they can have a more powerful voice
	Classify:	x, (-)	=, +		=, (-)	-, =	=, (-)	-	-, =
Extension workers	Describe:	MAAIF is eventually responsible for the extension workers and provides the fund which pays extension workers' salary. However, MAAIF is not coordinating them. They can apply for capacity strengthening at MAAIF.	Extension workers are supposed to reach out to farmers to supply them with extension services, but do not have the funding necessary for this. Farmers can also reach out to extension workers	Extension workers can set up farmer groups but farmers then expect incentives. Extension workers can be called on by farmer groups as well		Some extension workers work for NGOs and receive a salary from them. The NGO needs their (local) knowledge to train the farmers	Research institutes sometimes provide extension services, probably together with the extension workers or they hire extension workers for this.	Extension workers are supervised by the local government and depend on the government for funding	Some private companies that provide trainings for farmers hire their own extension workers
	Classify:	X, -	X, =	=, (+)		-, =	-, =	-	-

Key stakeholders - extension services (continued)

HOW DO ACTORS RELATE TO EACH OTHER? SHORTLY DESCRIBE, AND CLASSIFY: X : NO RELATIONSHIP = : POWER WITH (WORKING TOGETHER) + : POWER OVER (IS DOMINANT OVER) – : IS DOMINATED BY IF NEEDED, CLASSIFICATIONS CAN BE COMBINED		RELATED TO MAAIF	RELATED TO FARMERS	RELATED TO FARMER GROUPS	RELATED TO EXTENSION WORKERS	RELATED TO NGOS	RELATED TO RESEARCH INSTITUTES	RELATED TO LOCAL GOVERNMENT	RELATED TO PRIVATE COMPANIES
NGOs	Describe:	NGOs come to fulfil a gap in implementation of agriculture development (so they are supportive of MAAIF's mission). NGOs also engage in lobbying of MAAIF and with MAAIF	Many farmers only have access to NGOs through farmer groups, though sometimes NGOs helps them get organized as a group.	NGOs play a big role at the community level. Sometimes they are farmers' only source to extension services. Farmer groups are also sometimes set up by NGOs	Some extension workers work for NGOs and receive a salary from them. The NGOs need their (local) knowledge to train the farmers. Sometimes NGOs work overlaps or creates conflict with that of extension workers.		Research institutions have a weak link with NGOs	NGOs need permission of the local government to work in their district. They sometimes "take over" having closer links to farmers than district officials	NGOs facilitate the linkages between farmers and private companies. There sometimes seems to be a duplication of services.
	Classify:	-. X	x, (+)	=, +	+, =		x	+, -	X, =
Research institutions	Describe:	One of the research institutions NARO is an agency of MAAIF. Others are located at universities, but there is not much information about their relationship with MAAIF	Research institutes sometimes provide extension services to farmers. Farmers can visit them to gain more knowledge about farming. Some research institutes, f.e. NARO are tasked with promoting and sharing knowledge about new technolo-gies to farmers	Research institutes sometimes provide extension services to farmer groups. Farmer groups can visit them to gain more knowledge about farming.	Research institutes sometimes provide extension services, probably together with the extension workers or they hire extension workers for this.	Research institutions have a weak link with NGOs		Research institutions have a weak link with local government	The varieties that are created at the research institutions are send to the private sector for multiplication
	Classify:	=	=, (+)	=, (+)	+, =	x		x	=
Local government	Describe:	The extension grant is provided to the local government by MAAIF. The local government is responsible for carrying out, regulating and monitoring on the policies created by MAAIF. Some of their officers are being paid by MAAIF.	Local government avails the extension grants through which farmers eventually are able to gain extension services. They also have a regulatory and monitoring task of by-laws and policies. Farmers can vote in local government	Local government avails the extension grants through which farmers eventually are able to gain extension services. They also have a regulatory and monitoring task of by-laws and policies	Extension workers are supervised by the local government and depend on the government for funding	NGOs need permission of the local government to work in their district. They sometimes however "take over", having closer links to farmers than district officials	Research institutions have a weak link with local government		Weak relationship with local government and private sector
	Classify:	-	+	+	+	-, +	x		x
Private sector	Describe:	MAAIF should regulate the advisory services that are supplied by the private companies, but this does not happen so much. Private companies probably lobby MAAIF	Private companies give farmers trainings on production and seeds. They also buy farmers' produce. The private sector is dependent on the farmer to gain access to quality produce	Private companies give farmers trainings on production and seeds. They also buy farmers' produce. They are dependent on the farmer to gain access to quality produce. When farmers engage in farmer groups that do bulking, they can have a more powerful voice	Some private companies that provide trainings for farmers hire their own extension workers	NGOs facilitate the linkages between farmers and the private sector. There sometimes seems to be a duplication of services.	The varieties that are created at the research institutions are sent to the private sector for multiplication	Weak relationship with local government and private sector	
	Classify:	-	+	+	+	X, =	=	x	

ANNEX 10. ACTION PLANS LEVERAGE POINTS

LEVERAGE POINT 1

Multi-stakeholder Platforms (MSPs) / roundtables to coordinate agriculture development (one per district -Abim, Lira and Soroti- and one at the national level)

Objective: To strengthen the links among actors involved in agriculture development and to coordinate efforts at local and national level in order to enhance synergies and respond to farmers' needs in a sustainable and efficient manner

Direct impact: ++

Leverage potential: ++

Feasibility: ++

Actor/s taking the initiative: This can be a joint effort where, building on existing government structures, interested NGOs play an important role in facilitating the process and integrating the loose ends.

Suggested participating actors:
Actors to be involved at the district level:
- Farmers
- Relevant district employees, including district extension workers, and community development officers
- Input dealers
- Traders
- Small & Medium Enterprises
- District Farm Institutes (DFIs) (if and when operational)
- Private Sector
- NGOs

Actors to be involved at the national level:
- MAAIF
- NGOs
- Private sector
- Financial organizations
- Water for Production Department (Ministry of Water and Environment)
- NAADS
- Uganda National Meteorological Authority
- UFAAS
- Farmers Federation
- Representative/s of district platforms/ roundtables
- Uganda National Bureau of Standards (UNBS)

Description:
Weak connections among the different stakeholders was an underlying problem identified in the course of this pilot. Not only are they not communicating, but efforts are dispersed and uncoordinated. As a consequence, there is inefficiency in the system and tension and conflict among actors. Weak connections also affect the information that they have about each other, the potential opportunities and synergies (subproblem).

The formation of a multi-stakeholder platform or roundtable (both at the district level as well as at the national level) is proposed to partly address this underlying problem. The impact that such an entry point could have on the food system is considered **very high** since farmers can voice their concerns and needs and have direct contact to stakeholders that can respond to these. At the same time, they can improve the existing trust issues they have vis-a-vis certain actors (another underlying problem preventing farmers from transitioning to commercial farming).

Other stakeholders will also benefit when their links to the other actors are strengthened, as they will be able to perform their jobs in a more effective and efficient way and will be better positioned to achieve their organizational objectives. If certain key actors such as, for instance, the Water for Production Department of the Ministry of Water and Environment are engaged, issues related to lack of irrigation can be addressed within this platform. Currently, most farmers rely on rain, which under current climate change patterns is unpredictable, reinforcing farmers' aversion to investing in improved agri-inputs and taking risks, such as transitioning from subsistence crops to few cash crops. Through such a platform or round table, which would bring stakeholders closer, partnerships and strategic alliances, for instance, between farmers and the private sector, can be established in a more "natural way". Links can also be enhanced with financial institutes, which could lead financial systems to better respond to farmers' needs. Other joint activities which have proved to be successful in the past – such as the organization of platforms by NGOs where they identify genuine agri-dealers and connect them with farmers – would have more fertile soil in which to germinate, while having their sustainability in the longer term ensured.

Based on our field work results, we foresee that an important number of key actors could support such an initiative, generating a space where those with immaterial power can be connected to those with material power. We also foresee some resistance from some middlemen or agri-dealers who currently benefit from the lack of access that farmers have to other key actors, but at the same time, there are other middlemen or agri-dealers who would be willing to engage in such an effort, counterbalancing the opponents.

Some key considerations when analysing this leverage point:

- Such platforms have been tried in the past and have worked well, but they were connected to projects, so when the projects ended, the platforms ended as well. In this regard, sustainability will be highly important, hence the MSPs should be connected to general events, ministry activities and district local government meetings to benefit from these gatherings and also reduce logistical costs.
- Two types of platforms are being suggested: one at the district level, and one at the national level. Local platforms can remain general, and pass certain issues or challenges to the national platform, while the national platform can focus their meetings on one or two specific issues per session. Actors may differ at the local and national level, and when possible, decentralized offices should also join the local platforms.
- It is important to note that depending on the issues that are being discussed, actors might switch from being changers (promoters) to resisters (opponents), or vice versa.
- Such a platform can consider means and ways to support farmer group formation, including higher level organizations, and enhance inclusivity among farmer groups, considering also existing barriers for illiterate farmers, and the exclusion of women, youth, and persons with disabilities. In this regard, it would be valuable to engage cultural leaders in certain meetings, since, as confirmed in our field work, they are important influencers within their communities.

Initial steps to mobilize the process:

- A first step to mobilize this idea would be to gather information about previous platforms and analyse what worked well and what didn't in order to ascertain how these challenges can be overcome; for instance, how sustainability can be guaranteed.
- To best accomplish this, the involvement of key stakeholders should be enhanced from the beginning of the process; for instance, the engagement of the local district governments (to sustain this at the local level) or MAAIF (to sustain this at the national level and support the local level).
- Assess if the platform could be incorporated into existing structures.
- Mapping of other key stakeholders (being as specific as possible: if the private sector should be engaged, name specific companies that could be invited).
- Once a group of key stakeholders have been engaged, draft an initial platform's mission, vision, and objectives (i.e. strategic plan), to be further improved in an inclusive manner when more actors are involved and also for fundraising purposes, if needed.

LEVERAGE POINT 2

District multi-stakeholder coalition working for counterfeit seed and quality control for agricultural inputs

Objective: To strengthen the links among actors involved in input provision and certification within the district in order to enhance the monitoring, control and regulation of the quality of seeds

Direct impact: ++

Leverage potential: +

Feasibility: +

Actor/s taking the initiative: UNBS, local government & coalition of NGOs

Suggested participating actors: UNBS, NGOs, middlemen, agri-input dealers, farmers, NARO, Agricultural Police[20], local governments, including DAOs, private companies and extension workers.

Description:
Many farmers are highly affected by fake and poor-quality seeds, as well as agri-inputs. Due to the poor quality of seeds and the existence of counterfeit seeds, many farmers have had negative experiences. They are promised a better yield, but seeds fail to germinate. This has caused farmers to have little trust in the agri-inputs. Because of this and lack of capital, farmers are unlikely to adopt these inputs. Due to this, there is little market for agro dealers locally, which has made them reluctant to open up agro shops closer to farmers. In this regard, those farmers who do want to use quality inputs have less access to quality seeds due to the money and time it costs to travel to agro dealers, who are located in towns. However, when asked about which stakeholders are culpable, respondents are quick to shift the blame around.

Building a decentralized multi-stakeholder coalition that tries to enhance the monitoring, control and regulation of the quality of seeds might create ownership of the problem, better linkages and more trust among the stakeholders. This coalition would furthermore have a direct impact on the weak regulation and the existence of counterfeit inputs (*underlying and subproblems*). Once there are fewer counterfeit inputs, farmers' trust in quality inputs could increase. Hence, this entry point would have important leverage effects on the underlying problems within the system. The direct impact of the measure would also be high, since farmers are highly affected by counterfeit seeds and agri-inputs.

This decentralized, multi-stakeholder coalition could then engage in local certification or a championing of trustworthy agro-dealers. This would inform farmers about the importance of certification and about which agro dealers are trustworthy.

Important powerful changers include the agro dealers, middle men, farmer organizations, private companies, MAAIF, NGOs and the UNBS. Moderately powerful changers are the local government, if it is engaged from the beginning, farmers, and DAOs. Powerful resistors are all those who are currently benefiting from the non-functional system and corruption. For example, some agro dealers or seed companies that provide fake products, politicians and some monitoring officers. It is hence important to include trustworthy representatives of these stakeholder groups within the coalition, so they feel that the coalition is representative. Local governments might be moderately powerful resistors if they feel the platform is engaging within their jurisdiction. This is why it is important to include them in the coalition from the beginning. An important obstacle to this coalition might be that the different actors do not trust each other enough to work together on this issue. Hence, it is important to assess for each stakeholder group whether preliminary meetings are necessary to enhance trust, capacity or knowledge, before inviting them to the coalition. If so, bi-lateral meetings between the lead actors and the specific stakeholder group or between one lead actor and the stakeholder group can be organized.

[20] The Agricultural Police is an agriculture unit within the Ugandan Police, decentralized at the district level, with the mandate to combat counterfeit seeds and agro-chemicals, as well as other illicit activities related to agriculture.

Initial steps to mobilize the process:

- An important first step would be for NGOs to engage the UNBS. The UNBS should take the lead and responsibility in the proposed coalition. The UNBS has regional offices, which NGOs could approach to motivate them for the idea and stimulate them to initiate the coalition.
- After one or multiple UNBS regional offices have expressed willingness to lead the coalition, conversations between them and other stakeholders can be organized. For instance, there is currently a coalition of NGOs who are working on agricultural issues within the districts.
- The local government is also an important stakeholder, as they have some supervisory and regulatory powers. NGOs working in the district and the local government could be invited to join such conversations.
- Together this group of stakeholders can see where possibilities lie for partnership with the other suggested actors.
- Once important actors are on board, fundraising can start among the ministries, international donors, philanthropic organizations, NGOs, private sector or other funders.

LEVERAGE POINT 3

Lobby for the harmonization and update of the extension workers' curricula, with an inclusive approach to extension services delivery

Objective: to harmonize and enhance knowledge (on a continuous basis) of extension workers, supporting their skills and professional development so that they can provide better service to farmers, as well as to promote more inclusive approaches and the inclusion of more female extension workers

Direct impact: +

Leverage potential: +

Feasibility: +

Actor/s taking the initiative: NGOs, especially those who have interventions around extension services and agriculture, could take the lead and facilitate the process. There are some organizations from the CEA consortium with a relevant background. Their efforts will be initially directed towards MAAIF and the MoES, which are expected to own the process themselves in the medium term.

Suggested participating actors: All those who play an important role in shaping and carrying out extension services in Uganda, such as:

- MAAIF
- MoES
- Local district officers, including extension workers, district agriculture officers, and commercial officers
- Youth
- DFI (when and if operational)
- NAADS
- UFAAS
- NGOs
- Political leaders (local and national, including parliament)
- Farmers
- Training institutes

Description:

Extension staff is trained by different education and training institutes. These organizations fall under the jurisdiction of the MoES (though some years ago they were under MAAIF). Extension staff is coordinated at district level by the DAO, who, along with the District Production and Monitoring Officer, reports to MAAIF. The quality of the education differs among institutes, affecting the quality of the service provided to farmers (subproblem). At the same time, extension workers themselves have certain knowledge gaps (subproblem). There is a need to harmonize the curriculum with the prevailing learning needs of farmers; adapt curricula to include more practical training; improve extension workers' knowledge of new technologies, agroforestry, life skills, and the inclusion of marginalized groups (how to engage them and how to adapt knowledge to their needs); and also funding proposal development (subproblems). To generate some effect on the system, this will need to be done on a continuous basis (refreshing and updating knowledge periodically, as new technologies and developments are constantly emerging). Doing this in a synergistic manner will require that MAAIF and the MoES work hand in hand. At the same time, there is a need to include more female extension workers. Due to prevailing gender relations, female farmers find it difficult to communicate with male extension workers, and do not insist on them visiting their farms due to social misjudgment.

The impact of such an entry point is considered **high**, since farmers in general can benefit from extension workers who are more knowledgeable and up-to-date, as well as more able to share their knowledge and respond to farmers' needs. Female farmers will also benefit, as they will feel more open and comfortable sharing their challenges and concerns with female extension workers. At the same time, funding opportunities can be enhanced, as extension staff learn to develop proposals for funding and identify other sources of financing beside the central

government and enable the creation of projects and partnerships between local governments and national and international development partners (subproblem).

This entry point can be supported by several actors, including MAAIF, local governments, and NGOs. Since the training institutes fall under the umbrella of the MoES, there might be some hesitation and initial resistance, but the focus of the discussion should be on how to work together and benefit from each other's strengths, for instance, MAAIF might have good technical knowledge and is closer to farmers' needs, but the MoES might have more insights into teaching techniques and the regulation of training institutes.

Initial steps to mobilize the process:

- NGOs can become the initiators of such an entry point. As a first step, they can sit together with extension workers and get their feedback.
- Establish initial contact with both ministries separately.
- Bring both ministries to the same table and start a discussion on the means and ways to improve the skills necessary for extension service provision, including the government efforts to revive District Farm Institutes, which used to train extension staff.
- Discussions can lead to the establishment of an inter-ministerial group, which includes other key actors such as NAADS, UFAAS, and NGOs.
- Once both ministries are on the same page, their efforts can be supported by both the MAAIF and the MoES, and can take the form of writing a project to submit to the Ministry of Finance on the capacity building of the AEOS.
- Lobbying with the political wing of the parties from the local to national levels is essential to ensure budget allocation.

ABOUT CORDAID

Cordaid is an internationally operating value-based development and emergency relief organisation, especially working in fragile countries. By supporting local communities, service providers and frontline aid workers in

- creating food security,
- strengthening healthcare and education systems,
- increasing security and justice

Cordaid empowers people economically, facilitates job creation and fosters inclusive economic growth. Wherever disasters strike, we also offer humanitarian assistance.

Cordaid employs over a thousand dedicated professionals working in more than 30 countries. The organisation has an annual turnover of more than € 200 million (2020), and a longstanding track record in development cooperation.

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As of 1 January 2021, Cordaid has joined forces with ICCO.

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