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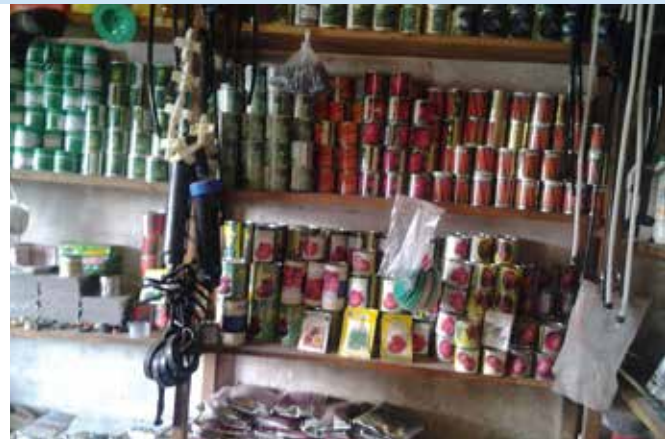
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The role of the public sector in incentivizing the uptake of climate-resilient seeds in Uganda

Executive summary

Access to quality seeds is important in building climate resilient value chains because it promotes improved quantity and quality of agricultural products. The need to invest in climate resilient seed has become critical in Uganda given the increasing demand for food both for consumption and trade, declining per capita food production and land under agriculture, and increased frequency and intensity of climate hazards. Threats posed by climate change call for a focus on more resilient strategies and technologies that can yield more efficient use of the available resources. Incentives directed at supporting climate risk management (CRM) must thus consider the diverse and dynamic nature of roles and needs of the value chain actors by addressing the challenges in the seed sector, mainstreaming climate changes in all relevant policies, exploring and putting in place financial incentives to encourage product development that supports CRM, supporting access to the dissemination and communication of climate information and integrating of the value chain approach.



Introduction

Increased access to farm inputs - quality seed in particular - is one of the major policy interventions pursued by government for the realisation of the National Development Plan objectives for the agricultural sector¹. It is envisaged that the action can contribute to wealth creation and employment along the agricultural value chain by ensuring sustainable and market-oriented production thus adding to food security and household incomes in the country. This comes amidst increased demand for foods such as rice both for consumption and trade. Rice exports constituted 33,323 MT in 2010 versus 57,053 MT in 2014². Moreover per capita food production has been declining since the early 1970s and land under agriculture has reduced by 0.35%³ over the last decade. In addition, crop yields are far below research station yields partly due to the propagation of poor quality seed on the Ugandan market⁴.

The need for increased production of food to feed the growing population mass which is rising at a rate of 3.4% means that the adoption

and investment in more efficient and sustainable production methods must go beyond the use of certified seed but also embrace qualities that are responsive to climate change along the value chains. Quality seed is a prerequisite for sustainable climate resilient value chains. Like many other developing countries, Uganda's economy is vulnerable to climate change given the heavy reliance on the natural resource base. The National Climate Change Policy (2012) cites that average temperature in semi-arid climates in Uganda is rising, especially in the southwest and rainfall has decreased and become less predictable and less evenly distributed. It further notes that floods, landslides, droughts and other extreme weather events are increasing in frequency and intensity- affecting water resources and agriculture.

Threats posed by climate change call for a focus on resilient strategies and technologies from both the public and private sectors in order to use of available resources more efficiently. Such strategies and options must traverse both the formal and informal seed sectors and enable climate risk management by the various actors along

the seed value chain. The Private sector including companies, farmers, traders, agro dealers are the largest investors in the seed value chain. Beyond this are public institutions, breeders, donors and NGOs providing various services to facilitate value chain development. These actors face a variety of challenges such as inadequately certified seed or counterfeit seed; these challenges are compounded upon by the impacts of climate hazards. Incentives directed at supporting climate risk management must thus consider the diverse and dynamic nature of the roles and needs of actors to encourage their sustainable resilience in the value chain.

This brief discusses the potential investments of private sector actors to manage climate risk along the value chain and public sector incentives to assist in the adaptation of the strategies. In this brief, climate risk management is considered as an ongoing process that aims to reduce the negative impacts associated with climate hazards and changes in the rice seed value chain. The discussions are based on the findings of case study research under the Private sector investment in a changing climate: Resilient rice value chain development in Uganda (PSI-Climate) initiative⁵.

The Project

The PSI-Climate initiative explored how domestic private sector investment decisions can enable CRM by different actors along the rice value chain in Uganda. Led by the International Institute for Sustainable Development (IISD), the project was implemented in partnership with the Economic Policy Research Center (EPRC) and the Ministry of Finance, Planning and Economic Development (MoFPED) during the period 2014-2016. The research was conducted through two case studies, of which one focused on domestic private investments in quality rice seeds in Northern Uganda and the second on financial products in Eastern Uganda. The analysis presented in this brief is informed by the findings of the seed case study, which was conducted in collaboration with Equator Seed limited, a domestic seed company that produces and provides rice seeds to farmers and cooperatives in Amuru, Nwoya and Gulu district. The research involved discussions and interviews with farmers, millers, traders, transporters, seed companies, service providers and experts in agricultural finance.

Impact of climate hazards on the rice seed value chain in northern Uganda

The case study findings generally reveal that actors have a relatively limited experience of the impact of climate hazards on their current activities. This is attributed to their recent emergence from the civil conflict that plagued the region for 22 years forcing many into camps. Drought was the most identified climate hazard affecting rice-related activities across all three districts. Actors also identified heavy rains and changes in rainfall patterns as the other climate-hazards affecting their activities. Figure 1 shows the impacts of drought on the various actors in the chain. Climatic impacts due to heavy rains were more severe on the transporters who were affected

by disrupted access to markets, causing delay in services, increasing costs and reducing incomes. Farmers were affected by increases the time it took to dry rice seed while millers and traders were affected by delays in delivery of rice seed and also losses in income.

All actors are vulnerable to climate impacts however farmers face the most risk given that they directly depend on agricultural production for both income and food. In addition they have limited knowledge and experience on quality seeds as well as resources to respond to the negative shocks that result in reduced supplies, quality and incomes. These shocks are transmitted to other actors throughout the chain. Nevertheless, actors manage risk in various ways such as diversification of livelihoods and income activities. Some farmers, input suppliers, millers and traders also keep buffer stocks while transporters shift to other businesses.

Equator Seed is affected in a similar manner as input suppliers shown in figure1 whenever climate hazards occur. The company's participation in the rice seed value chain is mainly at the production level with farmers who multiply the seed and produce rice grain. Adaptation of climate risk management strategies by the farmers can reduce sensitivity to negative climatic shocks. Initiatives being undertaken by the company to help farmers manage risk include; providing quality seeds, encouraging the planting of new varieties that have attributes of climate-resilience (e.g. heat-tolerant, early-maturing) practicing conservation agriculture, facilitating increased linkages between farmers and service providers and offering some flexibility in seed production loan reimbursement whenever hazards occur. The company also engages in the storing of buffer stocks, diversification of income sources and activities to counter any business risks that could arise from impacts of climatic change.

How can investments in better quality seed support climate risk management along value chains?

Efforts to have better quality seed that is resilient to climate stresses on the market are already on going in the country. The National Crop Resources Research Institute (NACRRI), breeds new seed which is multiplied by the private sector seed companies and farmers. Such seed is endowed with characteristics such as early maturing, drought tolerance and pest and disease tolerance which reduce the plant's cycle of development and the potential losses at harvests as a result of the hazards.

According to various actors along the chain, several investment decisions to manage climate risks can be enhanced by actions that lead to the timely supply of new seeds and weather information to reduce the impacts and help in the rapid recovery from climate hazards. Increased access to affordable financing can facilitate more stable supplies of seed from production and seed stocks through the encouragement of increased seed multiplication, processing, storage and transportation. Raising awareness of actors about quality seed and the associated benefits will promote more demand and more investments into the supply of rice by companies. Existing ef-

Figure 1 Impacts of drought on rice seed value chain actors in Northern Uganda

Input suppliers	Farmer cooperatives, commercial farmers	Millers/traders	Transporters	Service providers
<ul style="list-style-type: none"> • Reduced quantity and quality of seed production • Increased income from the sale of pesticides • Reduced income from the sale of rice seeds • Failure of farmers to pay the seed production loans to seed companies • Reduced rice seed production for the next planting season 	<ul style="list-style-type: none"> • Total destruction of rice crops • Reduced yield and quality of rice seed • Increased labor for harvesting • Reduced/no income from rice seed 	<ul style="list-style-type: none"> • Reduced rice quantity and quality • Reduced income from milled/ traded rice seed • Delay in bank loan repayments with negative impacts on access to finance for the next season 	<ul style="list-style-type: none"> • No rice seed available for transportation 	<ul style="list-style-type: none"> • Reduction in the geographical level of services offered • Default on financial loans by farmers

forts are being compromised by traditional norms where farmers use home saved seed. The high costs of new versus home saved seed, the lack of trust on the quality of the seeds available in the market and lack of knowledge and information on the benefits of the quality seeds result in low uptake of improved seed. In addition, investments into conservation practices will also help ensure consistent multiplication and quality of seed.

Greater benefits may be accrued where seed companies invest in wider networks with agro-dealers located closer to rural communities to increase the access and timely supply of climate resilient seeds. These linkages can also help promote the awareness of climate-resilient seed, facilitate needs assessments of clients, act as channels of climate information and help companies adjust their products and services to climate hazards. Engagement in radio programs can offer alternative means of communication through which information on climatic hazards, best agriculture and mitigation practices as well as seed technologies can be communicated. Other methods include; the setting of demonstration plots to promote learning and working with rice seed breeders to enhance the scaling up of seed in the country. While these investments are unique on their own, an effective response may require a combination of activities particularly where benefits overlap. **Public sector incentives for increased uptake of climate resilient seed**

The nature of the investments highlighted offer direction to the type of interventions needed and the responsibility that government should take to foster improvements in the seed value chain. The traditional role of government is to formulate, implement, evaluate and review public policies. As mentioned earlier, government recognizes the importance of affordable quality seeds and supports the uptake of climate-resilient seeds within its policies. Enlisting the effective supply and uptake of quality seeds demands that the challenges affecting the seed sector are addressed. As such, more resources need to be allocated to the relevant ministries and departments i.e. Ministry of Agriculture and Animal Fisheries which oversees the seed sector, and the Ministry of Water and Environment that oversees climate change to facilitate the effective implementation of the rel-

evant strategies and programs. Amongst these is the draft National Seed Policy that is yet to be finalized and passed.

Impacts of climate change cut across different sectors calling for the mainstreaming of climate change in all relevant policies and strategies as well as improving coordination between different ministries. New opportunities exist to support CRM such as the Agricultural Extension Policy which provides an important avenue for mainstreaming climate risk management in extension services (including seed production, processing and marketing). Extension services should inform better decision-making to support CRM including in relation to climate-resilient seeds. While the National Seed Grain Policy under MTIC acknowledges the dangers posed by climate change, there is no proposed activity to directly and specifically mitigate the negative impacts of climate change along the grain value chains.

The need for finance by value chain actors further calls for the exploration of public financial instruments and products that contribute to CRM. Such instruments may involve the development of financial incentives by the Central Bank that encourage the development of products and services that support CRM along agricultural value chains by commercial banks. While financial institutions may already have financial instruments in place (e.g. preferential rates for clients), these could be adapted to support CRM in agriculture. Different financial instruments may be needed to support different value chains actors.

Public support to enhance access to timely weather and climate information requires the provision of tailor-made climate data in formats that are relevant to decision making agents at all levels of the value chain. Local climate change projections can help in building resilience by helping actors plan and obtain the most relevant seed and thereby reduce investment risks. Greater influence may be realized where the activity is combined with awareness-raising campaigns and capacity building initiatives on climate risk management including the development of tools to support decision-making. It is important that investments and capacity building should be

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extended to the National Meteorological Agency (NMA) that is responsible for providing climate and weather information.

Alongside this, there is a need to develop tailor-made communications on climate change aimed at all value chain actors including targeted communications on the relevance of climate-resilient products and services by the Climate Change Department. While policies and strategies to address climate change are in place, their potential is not fully realized partly due to communication barriers. Public support in form of resources is needed to develop popular versions of the Climate Change Policy to better communicate its content to different stakeholder groups. Development of shorter documents and the translation of the policies into different local will make them more accessible and help in the sharing of evidence. Agriculture MSE must understand the benefits of climate-resilient value chains in relation to their own business objectives and government should support private sector groups in communicating about products and services

Finally, any efforts and incentives aimed at integrating climate change in agricultural policy development and implementation should consider a value chain approach. Generally, actors lack an understanding of the interconnection between



and among all actors along the value chains; as a result a lack of trust and competition rather than transparency, exchange of market information and cooperation are common and lead to suboptimal results along entire value chains. This is counter efficient especially in the current context of growing uncertainties (climatic and non-climatic) and limited resources. In several policy strategies, attention is given to the production stage with fewer or no interventions that extend beyond that level. eg Guidelines for Mainstreaming Climate Change Adaptation and Mitigation in Agricultural Sector Policies and Plans (2015) and National Seed Grain Policy whose activities primarily target the production level.

Endnotes

- 1 Government of Uganda. 2015. National Development Plan II 2015/16-2019/20
- 2 Uganda Bureau of Statistics. 2015 Statistical abstract
- 3 The World Bank Development indicators. 2016

- 4 Government of Uganda. 2014. Draft National Seed Policy
- 5 Dazé, A & Dekens, J. (2016). Enabling climate risk management along agricultural value chains: Insights from the rice value chain in Uganda. IISD Climate-resilient value chains and food systems briefing note written by.

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