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**DETERMINANTS OF INORGANIC FERTILISERS AND IMPROVED SEEDS ALONG WITH
EXTENSION SERVICES SUPPORT FOR AGRICULTURAL PRODUCTIVITY IN RWANDA**

**Final
POLICY ISSUES AND RECOMMENDATIONS**

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1. INTRODUCTION

Feed the Future Rwanda HingaWeze Activity (HingaWeze) is a five-year USAID activity implemented by CNFA in Rwanda. The goal of the HingaWeze activity is to sustainably increase smallholder farmers' income, improve the nutritional status of Rwandan women and children, and increase the resilience of the agriculture and food systems to the changing climate. The activity is comprised of the following three interrelated components: 1): Increasing agricultural productivity, 2): Increasing farmers' access to markets, 3): Improving nutritional outcome of agriculture interventions.

HingaWeze project commissioned the Institute of Research and Dialogue for Peace (IRDP) to conduct policies reviews and to develop agriculture policy briefs from policy reviews, survey findings of determinants of the use of inorganic fertilizers and improved seeds along with extension services to support for agricultural productivity in Rwanda (October, 2019) and farmer's satisfaction survey that were conducted by IRDP (December 2017).

This report provides policy recommendations from policy issues identified in the study on the use of inorganic fertilizers and improved seeds along with extension services to support for agricultural productivity in Rwanda.

Among the issues identified include targeting of both beneficiaries and subsidy packages; importing, distribution, communication, standards and extension provision as a support service and sustainability. The report highlights a brief description of the current situation, the Challenges and the proposed policy interventions, as identified in the study on determinants of inorganic fertilizers and improved seeds and extension services support for agricultural productivity in Rwanda, for each of these policy issues.

2. OPPORTUNITIES IDENTIFIED

- ❖ The Government of Rwanda through the Ministry of agriculture (MINAGRI) and Rwanda Agriculture Board (RAB) set clear policies, strategies, which help farmers to access agriculture inputs and other technologies used to boost agriculture activities in Rwanda. The political will and planning are the key determinants of using improved seeds and fertilizers at certain level. Some identified opportunities are:
 - ❖ Introducing 30% or greater 30% of Government Subsidies in price of agriculture inputs (fertilizers and improved seeds) have led to an increase in agriculture productivity,
 - ❖ Introducing farmers' promoters and extension services providers who train the farmers on good agricultural practices including, how to use fertilizers. The study findings show that 1345 out of 1,846 surveyed farmers (72.9%) received the extension services and more than 90% of extension services were provided more than twice in one season.
 - ❖ Leverage on the youth Labor force in agriculture activities. The study findings showed that most of those who practice agriculture are of an average age of 44 years. Farmers within the range of 25 years to 45 years old represent 62.8%.
 - ❖ Agriculture is priority in district imihigo planning, which has enhanced the collaboration between farmers and local authorities. The survey results indicate that the quantity of inorganic fertilizers used per unit area in 10 surveyed districts is 57kgs/ha (Highest being in Musanze and Nyabihu on Irish potatoes) and lower in Gatsibo, Kirehe, Ruhango, and Nyanza.
 - ❖ Introduction of priority crop with rotation in the land consolidated areas; this brings high return in term of yield to the farmers. The predominant crops, grown by the surveyed farmers are Maize (67.1%), Beans (68.1%), The average yield for the various crops are; Maize (3.9T/ha), Beans (2.2T/ha), Irish Potatoes (14T/ha), Soya Bean (1.7T/ha), Wheat (3.5T/ha), Rice (6.2 T/ha), Cassava (25.2T/ha), Banana (24T/ha).

- ❖ Favorable and consistent climate patterns in Rwandan, which are reliable for the crop production.

3. ISSUES IDENTIFIED AND PROPOSED POLICY RECOMMENDATIONS

3.1 TARGETING

3.1.1 Targeting of crops under the subsidy

Current situation in 10 districts and surveyed farmers

Majority of farmers cultivate land that is less than one hectare (82.0%), and the predominant crops grown in 2019 season Bush beans (68.1%) followed by maize (67.2%), Irish potatoes and cassava represent 26.9% and 24.6% respectively. Farmers grow a variety of crops on the same piece of land, either as monocrop or in mixed crops. Most of the farmers own less than a hectare of land, which is very small even to cater for the family household food requirements, since the average family size is five members per family. By growing diverse types of crops, farmers seek to intensify the use of the available land. Among the crops predominantly grown by the farmers, it is only maize, soybean and wheat which are covered by the seed subsidy program. Therefore, farmers are faced with non-availability of improved seeds for those crops not covered under the seed subsidy program.

Challenges identified

Farmers use improved seeds only for those crops under the seed subsidy program (Maize, Soy bean, and wheat). Since farmers grow many crops not included in the seed subsidy program, they prefer to use own selection seeds from previous harvest. Although some farmers would like to use certified seeds for the other crops, these seeds are not easily accessible except for Irish potatoes. The study established that the only amount of improved seeds used by the surveyed farmers is the one supplied under the seed subsidy program.

Proposed policy intervention

The government should promote partnerships with private sector through engagement and support of more private seed multipliers to lower the seed production costs with the aim to enable farmers obtaining seeds on affordable price. This could see the number of priority crops increased under seeds subsidy coverage as it is for fertilizers. The study established that the crops covered under the fertilizer subsidy program have since been expanded, from the eight at its inception in 2008 to the current ten as per the public announcement of the Ministry of Agriculture and Animal Resources regarding subsidy for 2020 agricultural year. The following crops are under subsidy program for fertilizers (Maize, Beans, Wheat, Soya, Rice, Irish potato, cassava, Banana, Fruits and Vegetables). The same thing could be applied to improved seeds as well to increase the number of crops under improved seeds subsidy coverage.

3.1.2 Targeting of beneficiaries

Current situation in 10 districts and surveyed farmers

The CIP subsidy program is known as "NKUNGANIRE". Rwanda Agriculture Board (RAB) in collaboration with BK Tech House Ltd build a platform to digitize Rwanda's Supply Chain management of the national farmers' subsidy program dubbed 'Smart Nkunganire System' (SNS). This program provides a digital database of farmers (Individual & Cooperatives) and all stakeholders through self-registration process via a USSD short code.

The farmers who qualify for the subsidy register for the amount of inputs, which they require, thus providing the supply chain players with the ability to anticipate supply/demand. Therefore, the subsidy programs target at both the poor and the general population.

Challenges identified

- The proportion of farmers who registered on the Smart Nkunganire System developed by RAB and BK TechHouse is 66.8% in CIP sites and 36.5% in Non-CIP sites. The extension agents train farmer on how to register on SNS, highlighting the benefits. Since farmers in CIP are more organized into groups, they access the trainings more easily. Therefore, the need for sensitization and trainings on SNS for the farmers not in CIP sites.
- The prices for agriculture inputs are reasonable. However, the purchasing power of some farmers who belong in CAT1 and CAT2 of ubudehe category is still low compared to the required amount of fertilizers and improved seeds. 55.5% of the surveyed farmers are in CAT1 and CAT2. The low purchasing power is explained by their annual expenditure of 86,213 Rwf (Quantile 1-Poorest) and 139,671 Rwf (Quantile 2-Poor), and their monthly farm wages lie in range of 21,013 and 24,721 Rwf and non-farm wage of 24,985 and 31,233 Rwf. Those farmers have land to cultivate but they do not have the purchasing power to buy a total required amount of fertilizers for their total land.

Proposed policy intervention

- The government should devise reforms in targeting input subsidies to beneficiaries such as integrating a component of inputs subsidy into social protection to enable smallholders with limited resources access to agricultural inputs (seed and fertilizer).
- The Government may categorize the inputs subsidies with reference to the farmers' purchasing power in facilitating people in CAT1 and CAT2.
- In order to facilitate the affordability to fertilizers and seeds, the Government should reset the current subsidies so as to reduce the farmers' contribution.

3.1.3 Targeting of subsidy packages

Current situation in 10 districts and surveyed farmers

The subsidies are limited to inorganic fertilizers and improved seeds, and do not pest and disease control chemicals. However; the farmers need subsidies in pesticides for pest and disease control and on other agrochemicals for optimal use of the seed and fertilizers.

Challenges identified

- Agrodealers do not have direct linkage with the seeds and fertilizer suppliers/importers to allow them to order directly for what they need, based on their specific requirements. Therefore, the farmers buy what the government and certified suppliers avail to the agro-dealers and the farmers' preferences may not be locally available.

Proposed Policy Interventions

- Establish linkages between suppliers or importers of inputs and agro-dealers. This should include facilitating effective working arrangements for agrodealers and importers.
- The subsidy package to include Pesticides, Herbicides and lime.
- Fertilizer procurement based on soil maps for the country such that for each agro ecological region, the nutrient deficiencies are identified and the nutrient requirements are established

3.2 IMPORTATION AND DISTRIBUTION STATUS OF FERTILIZERS AND IMPROVED SEEDS

3.2.1 Importation policy for inorganic fertilizers and improved seeds

Current situation in 10 districts and surveyed farmers

The government issues a tender and allows those who respond and win the bid to import fertilizers. Currently, six companies were awarded the tender; hence they are only six inorganic fertilizers importers in the country. These companies also have to import only the amount advised by RAB, through the contracts once they win the tender bids. RAB establishes the required amount through

consolidation of the orders as submitted by the farmers through the smart Nkunganire system. However, there are delays in communicating this information related quantity to supply and other related requirements to the importers.

Challenges identified

Late payments for the delivered fertilizers and seeds (reported in KIIs by importers). Although districts are the official purchaser of hybrid seed, the districts do not have direct contacts with the inputs suppliers. Instead the inputs suppliers submit their invoices through RAB, as a result, the fertilizers and seed companies are financially exposed for an inordinate length of time and subject to payment withholding if RAB's delivery of the invoices to districts is late as is the case most of the times.

-Rwandan fertilizer and seeds importation policy does not enable them to work efficiently and profitably. For instance Phytosanitary testing by RALIS takes a long time (2-3 weeks), by the time the results are out, it's too late to import on time, at times the rains have already started, and yet these products are already tested at country of origin).The study observed that Sometimes there is delay in planting (4.9%) due to delay in supplying of the improved seeds to agro-dealers, which cause poor performance of the improved seeds.

-Fertilizer importers make shipments to Kigali from the port of Dar-es-Salaam. They present samples of the fertilizers for phytosanitary testing to RALIS, after which they are issued with the import permit. Although this is good for quality control, it takes a lot of time.As a result, the importing companies require additional time and incur additional cost to get the same phytosanitary inspection from Rwanda that they have already obtained from inspectors in exporting countries,

- Unfair playing ground among input importers (For instance where importers are also retailers in some cases); as observed in the operations of One Acre Fund (TUBURA).

Proposed Policy Interventions

- Respecting the phyto-sanitary tests in the country /port of origin considering they are in COMESA. This will reduce the days the fertilizers remain at the port awaiting permission to import into the country.
- RAB should provide data on the fertilizer requirements per region based on aggregated demand and the government to allow interested companies to import the fertilizers, without assurance of import permits.
- Introduce strategies that improve competition among input importers by developing a clear fertilizer strategy with specified private companies' roles and responsibilities in the fertilizer market thereby eliminating unfair playing ground

3.2.2 Distribution policy

Current situation in 10 Districts and surveyed farmers

In 2016, The Cabinet approved a new fertilizer distribution model to replace the old one that was affected by fraud and related malpractices, whereby one distributor — Agro-Processing Trust Corporation Ltd (APTC) was mandated to distribute the inputs from the selected eight importers to district agro-dealers. APTC oversees distribution to agro-dealers and verifies delivery to farmers. However, APTC does not supply the unsubsidized inputs.

Challenges identified

Rwandan fertilizer and seeds distribution policy is not favorable to the importers and agro-dealers. For instance, the study observed that APTC does not have enough staff in each of the importers warehouse to speed up operations and in some cases APTC staff deny agro dealers to pick up inputs from the warehouse even on presentation of the Bank deposit slip on the flimsy reason that the agro dealer did not make a telephone call beforehand.

Proposed policy intervention

The government to come up with a distribution mechanism which opens up to more distributors within the subsidy program, thus making distribution competitive, with favorable terms to both importers and agro dealers.

3.3. EXTENSION SERVICES

Current situation in 10 districts and surveyed farmers

The provision of proximity extension services has played a major role in improving farmers' knowledge in using agriculture inputs (using fertilizers, improved seeds and lime) in Rwanda. Extension services were a key component of the CIP, which have seen the increase in fertilizer and improved seeds usage. At the beginning of the Crop Intensification Programme, (CIP), the Government worked hand-in-hand with service providers to advise farmers on the types, quantities and application methods for various fertilizer applications for the different CIP crops. In 2014, the Government developed an extension model called TWIGIRE MUHINZI, which utilizes a Farmer Field School approach and farmer-to-farmer extension. The advisory services provided by the extension workers play a key role in the farmers' mindset on whether to use or not use inorganic fertilizers and improved seeds.

Challenges identified

The extension services are not customized the farmers specific needs and largely provide blanket information on inorganic fertilizers and improved seeds, which is more of a "one-fit-all" approach. Extension services information should be specific to respective farmers needs in regard to fertilizers and improved seeds, for different farmers have different experiences in the cost and affordability, relevance, reliability availability and accessibility, of inorganic fertilizers and improved seeds.

Proposed policy intervention

Blanket training should be avoided and focus should be on target extension training to a particular geographical area or to a particular crop producer that will help drive the greatest demand for fertilizer. Market creation through extension services

-The Government agencies should work with the private companies to provide extension services to farmers and build model farms that will help drive demand for fertilizer.

3.4 COMMUNICATION AND AWARENESS

Current situation in 10 districts and surveyed farmers

The farmers get news related agriculture from Radio, TV, sometimes in community meeting; these all take short time and don't provide for the farmers to express their ideas.

Challenges identified

- Sometimes, the farmers are not able to fully provide their views, desires and proposal related to agriculture activities especially on the access, availability, affordability and discuss on the quality of inorganic fertilizers and improved seeds.
- The farmers need to understand agriculture policies, rules and regulation, and awareness of the same created in a participatory manner, as opposed to where policies are imposed on farmers, only to follow the instructions without providing their views, asking any question (for instance the farmers were compelled to practice monocropping system through land use consolidation and although they initially resisted, they later on embraced the practice on realization that monocropping is profitable to them).

Proposed policy intervention

There is a need for a consultative platform/space for farmers, agriculture facilitators, and district authorities' dialogues, central level delegates to express their needs and get quick feedback.

3.5 FARMERS' KNOWLEDGE

Current situation in 10 Districts and surveyed farmers

Majority of surveyed farmers (64.9%) in 10 districts have primary level of education and 24.3% did not attend any formal school that is why, the education level of the farmers is critical in terms of knowledge of using improved seeds and inorganic fertilizers. The inorganic fertilizers and improved seeds have compounds/blends; some of the farmers do not have the capacity to differentiate the scientific names.

Challenges identified

Farmers who do not have high level of education use colors and smells to differentiate the types of inputs especially fertilizers (UREA white and DAP Yellow). To measure the quantity of fertilizers per hole, those who cannot read the instructions, for instance use hand, spoon, among others. This causes selection of inappropriate fertilizers or application of inadequate amount.

Proposed policy intervention

Design of appropriate methodologies to train the farmers who didn't attend schools and are not able to read the related instructions of using fertilizers (Quantity) and improved seeds (types and family of seeds) and create the special instructions materials and manuals based on illustrations for them.

3.6 FARMERS' KNOWLEDGE AND ATTITUDES IN USING INORGANIC FERTILIZERS AND IMPROVED SEEDS

Current situation in 10 districts and surveyed farmers

- Few farmers reported that inorganic fertilizers have destroyed their fertile land when inefficiently used, and crops grown using

inorganic fertilizers are the sources of cancer for human beings.

- Inefficient use of inorganic fertilizers have many negative effects to land and crops, when farmers change the quantities of inorganic fertilizers used in seasons A and B, they experience poor yields.
- Some farmers said that they prefer to use organic fertilizers (from livestock or compost made) because it does not have any negative effect to land and humans. Unfortunately the organic fertilizers are not sufficient compared to total requirements.

Challenges identified

- Some farmers have refrained to use inorganic fertilizers due to attitudes and mind-sets.

Proposed policy interventions

- Alleviating all causes, which can encourage the attitudes and mindset of the farmers with regards to repudiate the use of inorganic fertilizers.
- To establish mechanisms of sensitization, developing materials, creating farmers' champions at local level for changing the mind-set and attitudes of the farmers with regards to refusing to use inorganic fertilizers.

3.7 QUALITY AND STANDARD OF FERTILIZERS AND SEED USED

Current situation in 10 districts and surveyed farmers

Some farmers in FGDs (Eastern) reported that, sometimes, the improved seeds supplied do not adapt to their climate, and they experience mixing of different varieties (Maize) in the same package, which cannot grow in the same conditions..

Challenges identified

Farmers' limited trust of improved seeds, especially by those who have experienced low standards and quality of inputs.

Some maize improved seeds supplied by agro dealers are not adapted to the local agriculture seasons (the study observed the case of Kirehe and Burera).

Proposed Policy intervention

- The Government should strengthen and control the standard of seeds and fertilizers to establish if they adapt to Rwanda climate and match to Rwandan seasons.
- Soil inspection and other related survey should take place in determining the type of seeds and fertilizers to be used in specific region in Rwanda.

3.8 SUSTAINABILITY

The government subsidies in agriculture activities are very important in helping farmers to get inputs, but for the subsidies, there is no evidence of when the government plans to phase them out, which make planning for seed and fertilizer companies very difficult and contributes to their unwillingness to invest in the market.

Challenges identified

According to farmers' perceptions, if the government subsidies stopped, majority of farmers will not be able to continue using inorganic fertilizers and can cause a decline in agriculture productivity and have negative impact on food security. A number of farmers suggested that although they clearly understand and have experienced the positive impact of using improved seeds and fertilizers, they felt that they were unable

to afford these inputs without external support. Changing the government subsidies from 50% to 30%, affected the capacity of farmers to buy the inorganic fertilizers and improved seeds.

3.9 LONG-TERM PROPOSED POLICY INTERVENTIONS

- Incorporate into the CIP policy design a potential process of graduation from the subsidies to ensure the exit strategy is not only concerned with termination of the programme such that an exit that leave supported beneficiaries able to pursue sustainable independent livelihoods is put in place.
- The poverty reduction programs should be sustained to increase the purchasing power of the farmers and later help the farmers to have the capacity of buying the agriculture inputs without government subsidies.
- To keep close collaboration and partnership with NGOs, which have interventions in the agriculture sector (CIAT, USAID HingaWeze project, TUBURA (one-Acre fund), to embrace together the challenges related to capacity of buying the agriculture inputs without government subsidies.
- The Government should categorize the inputs subsidies with reference to the farmers' purchasing power (Facilitating people in CAT1 and CAT2).

End.