

UNITED REPUBLIC OF TANZANIA



Economic Impact Assessment Services for Agribusiness Policy Reforms in Tanzania

October 2019







Economic Impact Assessment Services for Agribusiness Policy Reforms in Tanzania

Cover photo: Neema Mlawa, 23, from Iringa in Tanzania, has received training in horticulture farming by a USAID project, part of Feed the Future, thereby increasing productivity and making a much better income. Feed the Future Tanzania Advancing Youth partners with other USAID and Feed the Future projects

to train youth like Neema in new agriculture skills that will enable them to grow more and increase their incomes.

| Photo Credit: Bariki Chambulikasi, DAI Global LLC |

Cover photo: USAID-TAPP-assisted farmer, Huruma Tweve, showing one of three varieties of Irish potatoes he grows in a village close to Iringa, Tanzania.

From April to June 2014, USAID-TAPP saw more than 315,000 kgs of Irish potato linked to markets (making up 42 percent of all produce)

| Photo Credit: USAID/Tanzania |

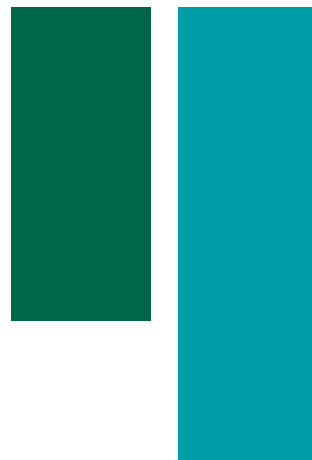
Cover photo: Paprika pepper farmer in Tanzania. A farmer shows off her crop of paprika peppers in Mang'alali village, Iringa region.

USAID helps farmers to improve their yields and get better prices for their crops in Tanzania.

| Photo credit courtesy USAID | Left: Photo credit: Cilia Schubert |

Stall-fed crossbred dairy cattle, Amani, Tanzania

Left: A member of the Amani milk producers union is keeping three cross-bred cows and one female calf for maximising milk output from his stall-fed animals; visited during field day of MilkIT inception workshop. 26 April, 2012 [S 5.096011°, E 38.626022°] (photo credit: ILRI/Nils Teufel).





Correct citation AGRA. (2019). Economic Impact Assessment Services for Agribusiness Policy Reforms in Tanzania.

Copyright ©2019, Alliance for a Green Revolution in Africa (AGRA) All rights reserved.

The publisher encourages fair use of this material provided proper citation is made.

Alliance for a Green Revolution in Africa (AGRA), West End Towers, 4th Floor, Kanjata Road, off Muthangari Drive, Off Waiyaki Way, PO Box 66773, Westlands 00800, Nairobi, Kenya.

The opinions expressed in this publication are those of the authors and do not necessarily reflect the policies or position of Alliance for a Green Revolution in Africa (AGRA) or its employees. Although AGRA has made every effort to ensure accuracy and completeness of information entered into this book, we assume no responsibilities for errors, inaccuracies, omissions or inconsistencies included herein.

The mention of specific companies, manufacturers or their products, whether or not these have been patented, does not imply endorsement or recommendation or approval by AGRA in preference to others of a similar nature that are not mentioned.

The descriptions, charts and maps used do not imply the expression of any opinion whatsoever on the part of AGRA concerning the development, legal or constitutional status of any country.

Authors: Economic and Social Research Foundation (ESRF), Tanzania



TABLE OF CONTENTS

1. INTRODUCTION	1
2. CONTRACT FARMING REFORMS	2
2.1 Background Information	2
2.2 Choice of Crops for analysis	7
2.3 Estimation of costs and benefits for the selected crops	11
2.4 Recommendations	18
3. REGULATIONS GOVERNING AUTHORIZATION AND ACCESS TO BREEDER SEED OF REGISTERED PUBLIC VARIETIES BY PRIVATE SEED COMPANIES	19
3.1 Introduction	19
3.2 Status of Seed Supply in the country	20
3.3 Impact of the reform	21
3.4 Stakeholder Views Based on Interviews in Mbeya and Njombe	23
3.5 Cross cutting matters critical to the growth of improved seeds sector	25
3.6 Proposed Recommendations	30
4. AGRICULTURAL MARKETING: REFORMING THE INSTITUTIONAL ARRANGEMENTS AND REGULATIONS GOVERNING EXPORT PERMITS FOR AGRICULTURAL COMMODITIES	31
4.1 Background and Introduction	31
4.2 Recent events on export permits	33
4.3 Consultations with Exporters	35
4.4 Challenges faced by such exporters	38
4.5 Estimation of Costs to Government for Reforming Export Permits	43
4.6 Impacts of suspending Export permits	45
4.7 Recommendations	46



5. REFORM ON FERTILIZER DELIVERY MECHANISM	48
5.1 Introduction	48
5.2 NAIVS program in Tanzania	48
5.3 Benefits and Bottlenecks of NAIVS	55
5.4 Delayed Payment to Seed and Fertilizer Suppliers	57
5.5 Views of Stakeholders in the Field	58
5.6 Decision to establish E-Voucher Input Subsidy System from 2014/15	62
5.7 Value Cost Ratio (VCR)	64
5.8 Experience of E-Voucher system from other countries	65
5.9 Conclusion	67
6. FERTILIZER REGULATIONS REFORM ON TESTING PERIOD	68
6.1 Introduction	68
6.2 Historical data on fertilizer use in Tanzania	68
6.3 Implications of Restricted Regulations	70
6.4 Implications of relaxed regulatory regimes	72
6.5 Conclusion	75
7 CONCLUSIONS AND POLICY RECOMMENDATIONS	77
REFERENCES	79
ANNEXE	85

INTRODUCTION

This is a report for the implementation of Economic Impact Assessment Services for Agribusiness Reforms in Tanzania in accordance with the contract signed in September 2016 between Economic and Social Research Foundation (ESRF) and Alliance for a Green Revolution in Africa (AGRA). The Department of Policy and Planning in the Ministry of Agriculture, Livestock and Fisheries (MALF) collaborated with ESRF as a Technical Partner institution in the implementation of the project.

This report diverges slightly from the inception report which sought to go beyond the conventional financial costs and benefits analysis (CBA) as suggested in the TOR and attempt to compute the full social costs and benefits analysis (SCBA). We were unable to get relevant data and information from our stakeholders that would have enabled us to analyze the social costs and benefits of some of these reforms. Most of them had a limited knowledge of how their operations related to social costs and benefits and as consultants, we could not make unilateral value judgments to derive either social costs or social benefits.

In this regard, we focus on private costs analysis for each of the analyzed reforms. The report covers five reform areas, with each part being presented as stand-alone set of findings, conclusions and recommendations. This presentation framework is intended to respond to the TOR for each proposed reform. In reality, however, the impact of the proposed reforms taken together would be more substantial/bigger than of each reform considered separately; this is because reforms on seed regulations, fertilizer regulations, efficient input subsidies program, a better contract farming legal and regulatory environment/framework along with an efficient export permit process will benefit agricultural producers and all those in agriculture value chains, and certainly the whole country at large.



*Fodder on a bike, Ubiri village, Lushoto
Photo taken during visits to village dairy innovation
platforms in Lushoto Tanzania as part of the MilkIT
Final Project Workshop, 9-10 December 2014. |
Photo: ILRI/Niels Teufel |*

Contract Farming Reforms

2.1 Background Information

Contract farming is a system where a private sector firm provides farmers with inputs such as credit, fertilizer and seed in exchange for exclusive purchasing rights for the resulting crop (Prowse, 2007). Simmons (2002) also defines contract farming as an attempt by large agribusiness firms to expand their operations with the intension of increasing profit and/or to manage risk by diversifying their sources of agricultural products.

Recently there has been a growing interest in the country towards contract farming with the government considering it as one of the means of solving farmers' production and marketing problems. Farmers have also shown interest in contract farming as a result of the failure of many traditional farmers' cooperatives to address and safeguard their pertinent interests.

Tanzania began practicing contract farming in the 1990s, several years before the enactment of a specific legislation framework was drafted. In response to challenges that arose in practice in contract farming, the government decided to make amendments to the existing crop laws on aspects related to contract farming, including acts for the following sectors: tea, coffee, cotton, tobacco, sesame, and cashews.

In 2009, Tanzania enacted specific legislation to regulate contract farming (Crops Laws (Miscellaneous Amendments) Act, 2009 (No. 20 of 2009)). Prior to 2009, Tanzania relied on the background legal frameworks for contract law, in the form of the Law of Contract Act of 1963, as revised in 2002. Under these amendments, crop boards were given powers to regulate contract farming in their sectors, and they were tasked with promoting the interests of both farmers and buyers. Agreements must meet requirements, and must contain set information about the parties, obligations of the parties, type of facilitation provided for the farmer, and any other conditions as set by the contracting parties. The law requires every contract to be submitted to the crop boards for scrutiny and registration. However, even in the short period since the enactment of changes in 2009, there have been problems with the implementation of contract farming. It has thus been suggested that Tanzania may want to consider contract farming legislation that takes over from the current sector-specific focus, and extend it to all commodities.

A study on "The Effects of Contract Farming on the Efficiency and Productivity of Small-Scale Sunflower Farmers in Tanzania" by Arne Henningsen, et.al. asserted that smallholder farmers in developing countries are characterized by remarkably low levels of productivity and efficiency, which can be attributed to lack of market access, low technical knowledge, underdeveloped insurance and financial markets. Contract farming has the potential to alleviate some of these constraints and could improve the productivity of smallholders, which in turn would increase food-security and incomes. In this study, which used an econometric framework for causal inference on efficiency and productivity, it was found out that participation in contract farming significantly increases the yield potential, but lowers technical efficiency.



The contractor's provision of (additional) extension services and high-yielding seed varieties to the contract farmers explains the positive effects of contract farming on the yield potential and the (average) productivity. The results have two policy implications: (a) as contract farming increases the yield potential and average productivity, contract farming arrangements might be an adequate tool to improve the productivity of sunflower farmers, particularly if the contract arrangement improves the farmers access to (additional) extension service and high-yielding seed varieties; and (b) inefficiency is even more widespread among contract farmers than among non-contract farmers, indicating that not all farmers benefit from their participation in contract farming, which might have been caused by insufficient provision of high-yielding seed varieties and/or extension services among some of the contract farmers. Additionally, Masakure and Henson (2005) argue that contract farming plays a crucial role in the development of better market institutions that foster small-scale agriculture.

2.1.1 Choice of type of crops for analysis

There are probably as many types of contracts as there are contracted smallholders. However, there are common elements that distinguish 'contract farming' from alternatives such as out-grower schemes, plantation farming, share farming and selling through local markets. Contract farming impacts on the marketing of produce and usually at least one of the other three stages that comprise an agricultural micro-system: input supply, production and processing.


The simplest contracts are usually restricted to some type of forward selling. For example, flower producers in Arusha may receive an early season payment in return for assurances that they will deliver the harvest to particular exporters who pay them the balance of the prevailing market price at delivery time. Other contracts are more complex. Smallholders may be tightly controlled in their use of fertilizers and pesticides and other management decisions such as planting density and timing of planting; harvest and the types of companion crops that are allowed. An example is tobacco producers' contract with a multi-national tobacco leaf firm that includes quality and quantity clauses, provision of credit and requiring meetings of the farmers' group with the firm's extension officers to learn about tobacco crop management.

i. Contract Farming Versus Spot Markets and Plantations

Contract farming is an attempt by usually large agribusiness firms to expand their operations to improve profitability or manage risk by diversifying their sources of agricultural products. To understand why expansion may involve contracting with smallholders rather than, say, by accessing spot markets more aggressively or by developing private plantations, 'transaction costs' encountered by large firms wishing to expand their operations need to be considered.

Three factors contribute to transaction costs: bounded rationality, opportunism and asset specificity (Williamson, 1979). In the absence of these factors, contract farming would not occur since agribusiness firms could buy all their produce in spot markets which would be instantly and perfectly responsive to their demands.

- a. Bounded rationality describes differences in information between contracting parties. For example, the firm may have an excellent knowledge of markets while the smallholder may have little knowledge, hence may benefit from a contract.

- 
- b. Opportunism may occur when there are opportunities for taking advantage of situations to the detriment of the other party in an agreement. For example, smallholders may be concerned that the firm could, by virtue of its market domination, offer a very low price in the spot market or, alternatively, the firm may worry that sellers could collude to drive up prices. Writing contracts clearly spelling out obligations may reduce these types of concerns.
 - c. Asset specificity is the third factor contributing to transaction costs. It reflects risks associated with protecting 'sunk costs' in processing plants, logistical systems or market development or, for smallholders, costs of protecting investments in specialized machinery and knowledge. Both the firm and smallholders may protect these investments through contracting (Dorwood, 2001).

The major alternative for the agribusiness firm seeking to expand its activities is to source from the open market. This is the usual arrangement with staples such as cereals and standard livestock products. However, this arrangement is less likely when High Value products are involved. High transaction costs associated with the open market arise from uncertain quality and supply as well as price risk. Food processors usually face tight quality requirements that may be difficult to meet in open markets. These requirements reflect the technical aspects of preserving, packaging, freezing and transporting High Value products and, also, meeting consumer requirements. Consumers expect almost perfect product uniformity for food products. This is particularly so in the United States market where labeling ensures quality and consumers view product uniformity as a quality indicator for both eating experience and safety (Goodman & Watts, 1997).

Open markets, such as those where rice is sold, are high volume and therefore unlikely to have uncertain supply. Quality issues can be dealt with cost effectively through grading. Also, forward and futures markets exist for shifting price risk (Pingali, Hossain & Gerpacio, 1997). Hence, these markets function well on an open basis. However, High Value crops are usually produced in much lower volumes and sold to a relatively small number of purchasers who possess processing capacity to meet consumer demand. This type of market structure, with a high concentration of intermediate buyers, is not conducive to open market selling since farmers would be 'at the mercy' of a few opportunistic agribusiness firms. If farmers avoid these types of crops, agribusiness firms may find spot markets thinly traded and unreliable as sources of supply. Contracts with individual smallholders are necessary to encourage them to undertake production.

Finally, thinly traded markets that have periodic shortages usually also have volatile prices as well. The latter can be costly for processors if they are servicing large downstream contracts written in advance of a season.

Another procurement option for agribusiness firms is to operate their own plantations. This type of sourcing also incurs a number of transaction costs. One of the most important is the cost of supervision, which, because of the likelihood of 'shirking', can be high for some types of crops or livestock enterprises (Hayami & Otsuka, 1993). Shirking problems, also referred to as 'moral hazard' or 'principal agency' problems, reflect the high costs of monitoring labor effort when there is uncertainty about yield. Uncertainty over crop yield means the firm cannot distinguish between production lost through lack of work effort and production lost to weather



and uncontrollable biological factors (Binswanger & Rosenzweig, 1984). In principle, even a very slack work team may, in a good season, produce a crop with a good yield. This type of transaction cost is related to the type of crop technology used and increases with its complexity. For example, large plantations work well for tropical beverage crops where management tasks are clearly defined, usually uniform and do not require judgment or much initiative on the part of workers. Alternatively, High Value crops, such as vegetables for export, are unlikely to be successful in a plantation environment since they are technically more sophisticated and require worker initiative to achieve satisfactory yields and meet quality requirements (Hayami & Otsuka, 1993).


Other high transaction costs in plantation production include costs associated with land and skill acquisition. Land acquisition costs may be reduced through leasing or through subsidized land acquisition from government land reform policies. However, even under these circumstances, sunk costs are incurred in the establishment of infrastructure and 'setting up'. Plantations also depend on a relatively skilled supervisory and management team requiring substantial investment in human capital. These workers are employed on a permanent basis and are costly. Transaction costs on plantations may also result from unionization or politicization of workers resulting in opportunistic behavior (Coulter et al., 1999). Also, governments or individuals with political power may see the relatively illiquid investments associated with plantations as opportunities for either ad hoc taxation or as soft targets for extortion.

In this study, we analyze the economic impact of contract farming to farmers and firms in horticulture and cotton crop production in Tanzania; these represent all high value crops and recommendations made from this analysis should also be relevant to all high value crops (including crops like baby corn/maize).

2.1.2 Experience of Contract Farming in Tanzania

Contract farming was officially re-introduced by the Government of Tanzania in 2010, after the enactment of the Crops Law Act (2009), and its implementation started in 2011/12 financial year with cotton farming (Mwimo et al., 2016). According to Mwimo et al (2016), contract farming was adopted in view of the agricultural policy so as to promote agricultural production and guarantee secure market for agricultural commodities; to promote and protect relationships in the contract farming arrangement between farmers and sponsors; and to provide farmers with access to a wide range of managerial, technical and extension services, farm inputs, credit, appropriate technology, transfer of skills, reliable markets, favorable pricing structures and production services.

Simmons (2002) elaborates that among the reasons why agribusiness firms prefer contract farming for business expansion is the transaction costs that make contract farming the preferred choice over accessing spot markets more aggressively or developing private plantations. Williamson (1979) explains that there are three main factors that contribute to transaction costs: bounded rationality, opportunism and asset specificity. In the absence of these, Simmons (2002) asserts that, contract farming would not occur since agribusiness firms could buy all their produce in spot markets, which would be instantly and perfectly responsive to their demands.



Birthal et al. (2008) also outline three reasons that have contributed towards the expansion of contract farming in developing countries: namely, the reduction of the government's role in service provision, the increase in the number of supermarkets, and the increased attention from donors.

According to the World Development Report (2008), through contract farming, smallholder farmers are able to participate in new high-value product markets and improve quality standards, thus increasing and stabilizing farmers' incomes. In Africa, contract farming has increasingly gained popularity (NAMC, 2009; FAO, 2010). For instance, it is argued that the success of the horticulture industry in Kenya, Zambia and Ethiopia is mainly attributed to contract farming (Okello and Swinton, 2007; Narrod et al., 2009). Swinnen and Maertens (2007) also reveal that 12% of the rural population in Mozambique is involved in contract farming (all cotton is grown through contracts).

In Tanzania, contract farming has largely been practiced in traditional cash crops such as tobacco, tea, sisal and coffee. The recent study by Mwimo et al. (2016) reveal that contract farming has had mixed impact on cotton, sisal, sugarcane and tobacco farmers. The following is a summary of their findings:

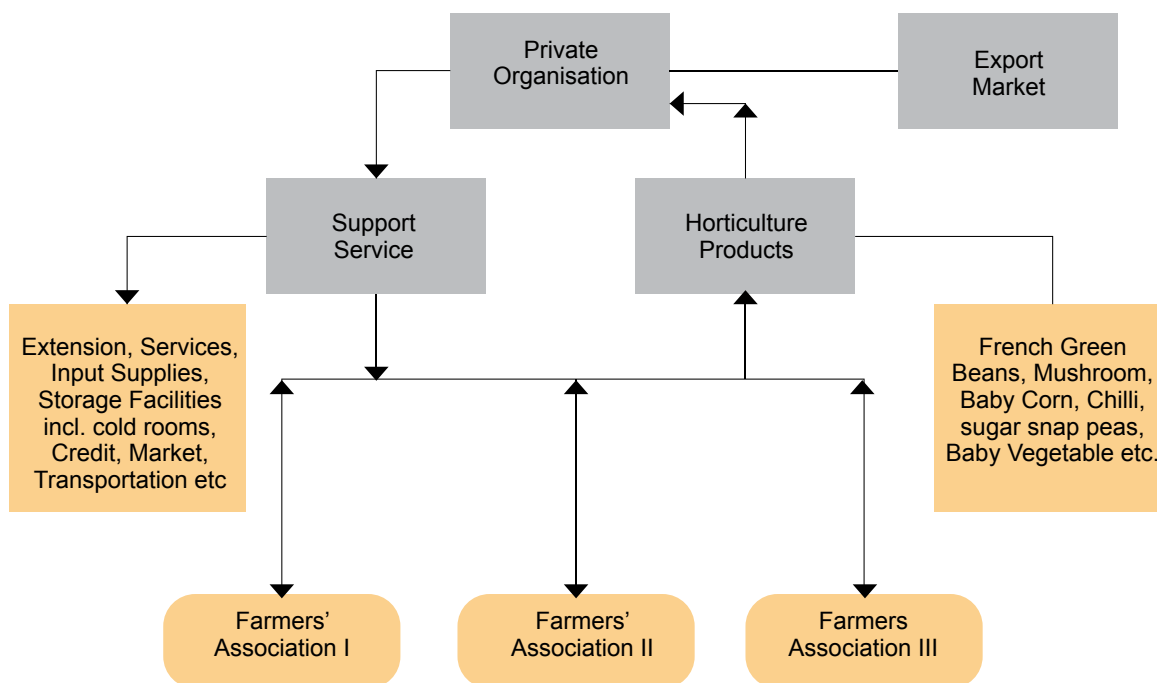
- i. **Production levels and farm size:** It was observed that tobacco and sugarcane farmers experienced an increase in the levels of production and farm size after entering into contract farming. However, delays on inputs delivery and low-quality seeds resulted in insignificant change to cotton farmers' production and farm sizes.
- ii. **Economic and Social welfare:** It was realized that tobacco and sisal growers experienced an increase in their real incomes as well as access to better health services, shelter and education for their children. However, sugarcane farmers recorded a decline in real incomes; and cotton farmers had no significant change in real incomes after joining contract-farming schemes, with an exception of farmers in Simiyu and Mara regions.
- iii. **Market Access:** Farmers are able to access markets easily, although these markets are still characterized by low prices and payment delays, reportedly due to weak contract enforcement mechanisms.
- iv. **Access to credit:** Contract farming has not easily enabled farmers' access to credit from buyers and financial institutions due to the set requirements and high interest rates.

A study by Mashindano et al. (2013) provides a revealing marketing/business model for horticulture crops that operates through contract farming where private organizations enter into contract with farmers' association or groups. The organizations assist the small-scale producers to form groups and provide them with thorough training on group dynamics, farming techniques, preliminary processing, extension services and storage.

This model also requires private organizations to support these groups in terms of input supplies (credit), extension services, storage facilities (including input storage rooms and cold rooms), financial services, markets for their products, transportation, international market standards and food safety requirements. In turn all producers under the contract sell their products to the private organization at a already agreed price.



Figure 2.1: Contract Farming Influenced Market/ Business Model



Source: Modified from Mashindano et al. (2013)

However, this study looks further into the overall economic impact of contract farming as a framework that caters for all crops rather than specific sectors, and proposes legal and institutional framework that would be most appropriate. The framework considers all relevant players that are essential in promoting contract farming in agriculture, and the costs associated with such a framework will be established so as to guide the government in decision-making.

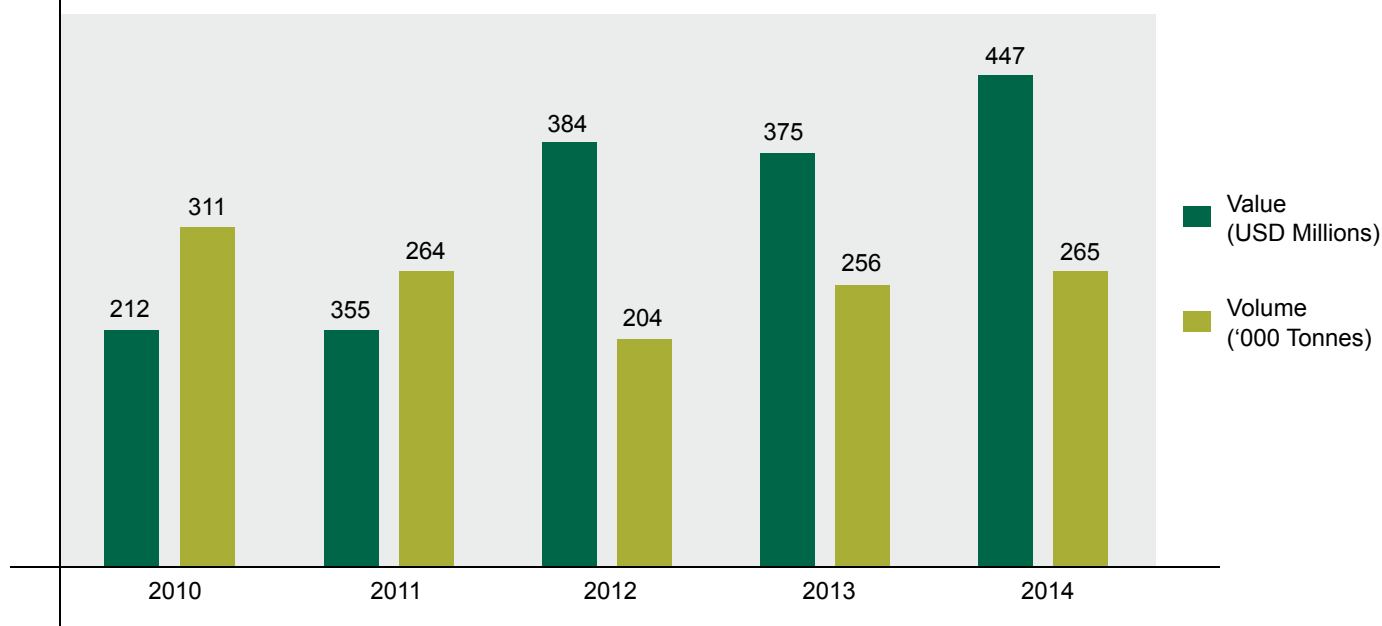
2.2 Choice of Crops for analysis

i. Horticulture Crops

In Tanzania, the horticulture sub-sector constitutes production, processing/packaging and selling/ exporting flowers, fruits, vegetables, spices and roots and tubers. This sub-sector largely depends on smallholder farmers, with the export of fruits and vegetables alone being 70% dependent on farmers who own land measuring that is less than 2ha (TAHA, 2011).

CEPA (2016) alludes that this sector in Tanzania is the fastest growing agribusiness sector, with growth rates of 9% to 12% per annum reached over the past five years (2008-2013). It is also estimated that more than 500,000 individuals depend on this sector as a source of employment, with 65% of the workforce being women. According to Tanzania Bureau of Statistics as reported by CEPA (2016), the horticulture sector is the second largest source of export earnings for Tanzania, with the Tanzania Revenue Authority estimates showing that between 2010 and 2014, the export earnings from horticulture more than doubled from US\$212m to US\$447m, although the volumes exported has remained constant at about around 260,000 tons per year.

Figure 2.2: Tanzania Horticulture Export Trend, 2010-2014



Source: Tanzania Revenue Authority In CEPA, 2016

The tremendous performance in horticulture industry in Tanzania has not been without challenges. The Fintrac Inc. (2015) report on USAID-TAPP project reveals that the horticulture sector in Tanzania is faced with several challenges, as explained hereunder:

- ❖ **Lack of cohesion and efficiency:** It is understood that there are many smallholder farmers in different villages producing low volumes, while harvests occur at different times. However, despite the high participation of these farmers, the lack of coordination between them creates expensive and inefficient logistics, where either farmers or buyers, spend significant resources to bring harvested crops to collection centers or sales points.
- ❖ **High post-harvest losses as a result of low technology application:** The sector is faced with extremely high post-harvest losses, as established by Fintrac Inc. (2015), that for many horticultural products these losses were as high as 40% to 50% of the harvested fruits and vegetables. It is worth noting that the lack of adequate technology application contributes towards such post-harvest losses and causes buyers to offer farmers low prices to cover such risks.
- ❖ **Rainfall dependence:** The majority of smallholder farmers are still highly dependent on rainfall for agriculture production. This eventually affects productivity, profitability and assurance of income for farmers. However, this is exacerbated by the farmers' insufficient capital to invest in water harvesting and storage.
- ❖ **Limited Private Sector Participation:** It has been observed that although the sector has been growing, private sector participation is still limited, especially in the Southern Highlands. There are also very few private companies providing essential services to the sector, such as provision of inputs, seedlings, land preparation and transport services.



- ❖ Lack of access to inputs: As mentioned earlier, access to inputs is a challenge, as Fintrac Inc. (2015) reveals, most local agro-dealers sell a limited range of inputs with more focus on price. As a result, the products sold in the market are at risk of being either of old chemistries, containing low concentration of active ingredients, or fake.
- ❖ Limited sources of formal credit to farmers: This is a common problem in the agriculture sector, as farmers lack the ability to access formal credit, and even if they do, it is extremely expensive.

ii. Cotton


Cotton is one of the top three most important cash crops in Tanzania in terms of foreign exchange earnings. It is estimated that the cotton sector employs half a million Tanzanian smallholder farmers. Western Cotton Growing Area (WCGA), which includes Simiyu, Shinyanga, Mwanza, Geita, Tabora, Mara, Kagera, Singida and Kigoma, accounts for 99% of national production while Eastern Cotton Growing Area (ECGA) consists of Pwani, Morogoro, Iringa, Tanga, Manyara and Kilimanjaro and contributes less than 1% to the national production. The average land holding is estimated to be 0.91 hectares (2 acres) per farmer and the average seed cotton yield is 562 kg per hectare (228 kilos per acre). The table below summarizes cotton production in the regions for five seasons depicting production trends and variations.

Cotton is an annual crop that requires a substantial investment in pesticides and fertilizer to achieve profitable yields. The major constraints that face the cotton farmers include soil fertility exhaustion, insect infestation and weeds. The solutions to these problems are fertilizer application, pesticides and weeding. However, the cost of inputs is often beyond the purchasing power of the average smallholder cotton farmer, and the result is that Tanzanian cotton yields on average are less than one third the global average.

Fluctuation in production trends can be attributed to both climatic factors and market dynamics. After the Cotton Act of 1994 that ushered liberalization in the sector, price wars among seed cotton buyers temporarily brought to the fore the forces of demand and supply and seed cotton prices went up, as did production. Liberalization also brought with it a redefinition of functions for some players like TCB whose new role under the Act was purely regulatory. Rather than cooperatives buying from farmers, ginners were allowed to buy directly thus resulting in a decline in production occasioned by farmers being unable to access inputs. The 2008/09 seasons saw the roll-out of contract farming, and farmers got inputs on time, world prices were equally good and production shot up. Some value chain players, especially buyers who were being elbowed out of the business lobbied among the political class for contract farming to be abolished. Their efforts bore fruit and the years following saw a decline in production as investment by ginners in input provision was withdrawn and farmers were again faced with an uncertain market. The rise in 2011/12 is due to the re-introduction of contract farming and since then there has been new impetus towards contract farming.

The progressive increase in production has not been without challenges. Cotton is an annual crop that requires a substantial investment in pesticides and fertilizer to achieve profitable yields. Some of the challenges listed as affecting production include;

- ❖ Reduction in soil fertility: This is largely due to poor husbandry. Farmers grow the same crop year in year out in the same parcels of land, hence not allowing room for



natural regeneration. The use of organic or inorganic nutrient-adding supplements is very low.

- ❖ Pests and insects: Management of pests and diseases especially in open fields under mixed crops without adopting integrated farming practices has been a major challenge. This has resulted in some insects being resistant to some pesticides or taking refuge in other crops during spraying only to return and undermine the cotton crop. The main problematic ones include cotton stainer (*dysdercus*), aphids and bollworm.
- ❖ **Weeds:** Weeding is a major contribution to both pests and insect control. However natural weed management is labor intensive and requires consistency, which most farmers lack or cannot afford especially in the Eastern Cotton Growing Area.
- ❖ **Timely access to inputs:** Cotton farmers have difficulties getting cash to pay for cottonseed, fertilizer and pesticides. The credit system established during the last few past years has become problematic. The system used passbooks filled in manually and revealed a lot of loopholes. Farmers were changing numbers in their passbook to get more inputs. However, under the contract farming model, the issue of access is being addressed but talking to farmers reveals that the delivery timeliness still pose a major challenge.
- ❖ **Insufficient extension services:** Cotton buyers and cotton farmers see each other only at the buying post during the marketing season. Cotton farmers rely on government extension staff whose number and capacity are limited. While there has been a consistent effort to increase the numbers, the capacity levels and sustainability still need to be boosted.
- ❖ **Cotton buying agents' dishonesty:** Cotton buyers, especially ginners hire agents that buy seed cotton directly from farmers. It is believed that these agents often use incorrect weighing scales hence they get more seed cotton from farmers than they pay for.
- ❖ **Inconsistent seed cotton prices:** For many years the price of seed cotton has exhibited a volatile trend with cotton farmers realizing slim margins, and sometimes the benefits from cotton farming are less than the income from alternative crops.

Smallholder farmers have limited access to inputs, largely due to rising input prices and the elimination of input subsidies following liberalization. Increased competition for lower stocks of seed cotton pushes up the farm-gate price of seed cotton. Since farmers are not rewarded for quality, they are incentivized to artificially increase the weight of the cotton in order to increase their income, usually by adding sand and water to the cotton prior to marketing. Some of these unethical practices have reduced significantly with the onset of contract farming.

Success in cotton contract farming would result into three main achievements for both farmers and contractors/companies, among them:

- i) Increase the incomes of smallholder cotton farmers through improved quality and increased yields and productivity.
- ii) Increase the competitiveness of the cotton sector in Tanzania by improving ginners access to high quality cotton.



- iii) Develop a more robust and enabling environment for the production and processing of high quality cotton.

2.3 Estimation of costs and benefits for the selected crops

a. Contract farming experience in horticulture

The study visited horticulture firms and farmers in Arusha region to understand the different dynamics involved in contract farming. Both small-scale farmers and large firms had different and compelling stories on their experiences on contract farming. However, one thing was certain: That contract farming provides a great avenue for both parties to manage risk by either having the assurance of supply of goods or having an assurance of markets of the produced goods. However, it must be understood that contract farming is not a 'magic pill' that solves all the problems faced by smallholder farmers.

The study learned that few – more advanced – farmers' (groups) sell directly to either supermarkets (or their outsourced purchasers) or hotels/restaurants/lodges, through special contracts between the farmer(s) and buyer. These contracts are always characterized by amongst other things such as a high demand on quality and continuity, as well as reliability of supply. For instance, from the discussions with Mr. Isanya of Zulfiros farm in Arumeru, it was revealed that the contract they entered into with the buyer, in this case, Serengeti Fresh, includes price, with a pre-requisite requirement that the agreements on Good Agricultural Practices must be implemented. The buyer also sends extension officers to the farm on a regular basis to monitor the production and to discuss problems. There is again a quality check on the vegetables on arrival in the packhouse.

However, before entering to any contract with the buyer, the farmer(s) is/are supposed to meet the following criteria:

- ❖ Availability of sufficient water
- ❖ Enough farm land, at least 10 acres
- ❖ There are enough sheds on the farm
- ❖ Toilets are in place every 500m
- ❖ There is an office space and;
- ❖ There is a storage facility for chemicals

The costs of meeting these criteria are borne by the farmer(s) and this is a very essential element before getting into contract farming in the horticulture sector. However, the farmer(s) expressed no discontent in meeting these requirements, essentially because of assurance of market for their produce.

Once the criteria are met along with other farm audits undertaken by the buyers, contracts are formalized between the two parties. The farmers are then responsible for all farm budget expenses, with an exception of inputs that they are provided on credit by the buyer(s) on credit. Repayments are done once produce is sold to the buyer on the already agreed price as indicated in the contract.



*Rice farmers in Moshi, Tanzania 24 July 2014
The Durable Rice Blast Resistance for Africa annual project and stakeholders meetings co-convened by BecA-ILRI Hub; Ministry of Agriculture, Livestock and Fisheries (MALF) the United Republic of Tanzania; the Kenya Agricultural and Livestock Research Organization (KALRO); and Exeter University 22-24 July 2017 | Photo credit : BecA-ILRI Hub/Ethel Makila |*

The study has learned that although the costs incurred by farmers through contract farming are high, the returns are more than double the expenses incurred given the fact that high yields and market access are both assured.

Making reference to passion fruit farmers under the VECO East Africa project interventions in Kilimanjaro, the project builds farmers' capacities on best agriculture practices through organized farmer associations of not less than 30 farmers, and links them to buyers through contract farming. With favorable and conducive climatic conditions for fruit and vegetable production in Kilimanjaro region all year round, coupled with the region's strategic position to major exit points such as Nairobi and Mombasa, VECO East Africa initiated a pilot project for the production of passion fruit, French beans and peas in 2013. The company provided several services such as mobilization of farmers, exposure visits, capacity building for production, marketing and financial services, as well as market linkages and market access facilities.

It is understood that, most of the farmers that took part in this intervention have increased their incomes, are assured of markets, and have improved their social wellbeing.



According to VECO's program facilitator in Moshi:

“Policarp Mushi is another good example. After engaging in passion fruit production he made up to TZS 3million. Policarp has managed to renovate his house and pay school fees for his two children in secondary schools. After realizing the first production cycle's success Policarp has invested in production expansion from half an acre to a one acre.”

❖ Economic Analysis of the impact of the reform

Through the interviews and data collection exercises conducted by the study with horticulture farmers, it was possible to capture the actual costs that farmers incur in order to be contracted by the respective firms as was explained earlier. The table below provides a description of some of these costs and the benefits enjoyed by farmers.

Table 2.1: Example of typical costs incurred by French bean farmers under contract farming

	Direct cost	Amount, TZS
Farmer Costs	Land Preparations	40,000
	Bedmaking/furrow/basin/levelling	60,000
	Seeds@acre	300,000
	Planting labor	50,000
Credit from Buyer	Chemical & application	250,000
	Fertilizer	200,000
Farmer costs	Harvest (3500kg@150)	525,000
	Irrigation (labor & water)	150,000
	Weeding & fertilizer application	90,000
	Total Expenses	1,665,000
	Price @kg	1,400
	Average quantity @acre	3,500
	Total Sales @acre	4,900,000
	Profit	3,235,000

From these costs and benefits, the study undertook an analysis to determine the extent to which farmers would either benefit or lose as a result of entering into contract farming. However, the following assumptions were taken into consideration in undertaking this analysis:

- ❖ Costs will rise according to CPI
- ❖ Farm operations are labor intensive
- ❖ Farmers have access to domestic and world market information
- ❖ The exchange rate is stable

Having considered the above assumptions, the table below provides the analysis

Table 2.2: Cost-Benefit Analysis of a Contracted Farmer

	Y1	Y2	Y3	Y4	Y5
CPI	1.0941	1.0941	1.0941	1.0941	1.0941
R	1.125	1.2656	1.4238	1.6018	1.8020
Costs	1,821,677	1,993,096	2,180,647	2,385,845	2,610,354
Benefits	5,361,090	5,865,569	6,417,519	7,021,407	7,682,121
Net Benefit	3,539,414	3,872,472	4,236,872	4,635,562	5,071,768
Discounted Benefits (NPV)	3,146,145	3,059,731	2,975,691	2,893,958	2,814,471
Discounted Costs	1,619,268	1,574,792	1,531,538	1,489,472	1,448,561
Total Net Benefit to be realized in 5 years					14,889,996



The table on previous page provides for the expected costs and benefits of farmers under contract farming and reveals that from 1Ha of land, the farmer will be able to realize more than TZS 14.8 million in a five-year period.

A sensitivity analysis was conducted, assuming that there was a 10% increase in the price of chemicals and a 7% increase in the price of crops, and realized that similarly, farmers in contract farming were more likely to benefit.



*Milking a cow in Tanzania
A Maasai woman in Morogoro, Tanzania, collects milk after waiting for the calf to begin suckling. In this way, the calf stimulates milk let-down and is believed to clean the teats before milking. | Photo credit: ILRI/Tarni Cooper |*

Table 2.3: Cost-Benefit Sensitivity Analysis on Contracted Farmer

	Y1	Y2	Y3	Y4	Y5
CPI	1.0941	1.0941	1.0941	1.0941	1.0941
R	1.125	1.265625	1.423828125	1.601806641	1.802032471
Costs	1,870,911	2,046,963.73	2,239,583	2,450,328	2,680,904
Benefits	5,744,025	6,284,538	6,875,913	7,522,936	8,230,844
Net Benefit	3,873,114	4,237,574	4,636,330	5,072,608	5,549,941
Discounted Benefits (NPV)	3,442,768	3,348,206.64	3,256,243	3,166,804	3,079,823
Discounted Costs	1,663,032	1,617,354	1,572,931	1,529,728	1,487,711
Total Net Benefit to be realized in 5 years					19,833,845

b. Contract farming experience for cotton

In 2007, the government through the Tanzania Cotton Board (TCB), embarked on a pilot contract farming enterprise with cotton growers in Mara Region's three districts - Serengeti, Bunda and Musoma Rural - to boost production of the country's major cash crop through the timely supply of inputs and guaranteed markets. The pilot confirmed its potential to address the problems within the cotton sector. During three seasons of contract farming implementation, the following were some of positive impacts;

- ❖ Farmers were able to access inputs on credit which allowed most of them to increase productive activities
- ❖ Assurance of market for their produce enabled them to invest with confidence
- ❖ Extension services support improved production per acre hence increasing profits
- ❖ Improved quality and quantity of seed cotton to the ginners, which in turn fetched good prices at the world market. Good husbandry also achieved good quality seed cotton
- ❖ It supported 500,000 households in Tanzania and earned over USD 73 million in foreign currency in the previous season.
- ❖ The jobs created at the ginners' level and also among the buying agents including the farm workers, transformed the rural economies.

Contract farming executed under the auspices of Gatsby Charitable Foundation, succeeded in boosting productivity through the extensive uses of inputs and extension services, with the outcomes convincing the government to extend the system countrywide in the 2011/2012 farming season. Borrowing a leaf from the successes of the contract farming pilot in Mara Region, the Cotton Buyers and Ginners Association, UMWAPA², reintroduced the system in

² Original members of UMWAPA were: Kahama Oil Mills, Kahama Cotton Company Limited, Fresho Investment, ICK Cotton Company Limited, NIDA Textiles Mills, Birchand Oil Mills Limited, TanCrop Tanzania Limited, Afrishan Cotton Ginners Limited and Matayosons/Biharamulo Cotton Union.



2014/2015, touting it as the best strategy to boost the cotton sector for the benefit of both investors and peasants. The companies, through an investment of over TZS 4 billion, had distributed sufficient inputs - seeds and pesticides - to all registered cotton growers in the districts of Sengerema in Mwanza, Kahama in Shinyanga and Bukombe, Mbogwe, Chato, Nyang'wale and Geita in Geita region.

Cotton buyers were required to invest in farm inputs and extension services for growers before buying their produce, while producers were required to form business groups that offered reliable networks for the execution of the program. Besides guaranteeing credits to individual farmers, the groups served as business entities, contracted by ginners to buy cotton from members on commission, eliminating hundreds of the crop buying agents who not only used to reap millions of shillings in commissions but also steal from farmers by tampering with the weighing machines.

Besides the supply of inputs, the coalition has recruited 20 extension officers whom it has dispatched to all the districts under the programme; UMWAPA recognized that unreliable extension services were among some of the most serious problems that cotton growers faced. The extension officers were provided with motorcycles, fuel and other tools enable them to work closely with farmers in order to increase production.

According to the members of UMWAPA³ that were interviewed, the prospects for bumper harvests in the 2014/2015 season were high in the districts under contract farming and the coalition was contemplating increasing investments by supplying free seeds subject to the successes recorded that year.

According to the UMWAPA members, the system that promised a lasting solution to the chronic problems in cotton production and marketing - shortage of farm inputs, unreliable extension services, cheating and cotton contamination - turned out to be a serious threat. The marketing season for cotton that year coincided with national elections and unfortunately some political aspirants told contracted farmers that they could sell their produce to any buyer; given that contracted farmers expected to have their crop payments deducted for inputs advanced to them, When they chose to side-sell cotton, UMWAPA members lost their investments and were obliged to buy cotton from the open market for use in their ginneries and textile mills.

c. Major concerns by Contractors/companies

While all the contractors/companies see a big potential for contract farming in cotton, they would like to see the following key shortcomings addressed.

- i) First is the land regulatory framework: Currently Farmer Based Groups (FBGs) are loose formations that can neither sue nor be sued. This has created a dangerous legal loophole for contract farming since farmers know that in case of default, the ginners are left without recourse. The contract farming bill, which was to address this glaring loophole, is yet to be enacted, hence enforcement rests with the local leadership.

3 The UMWAPA members interviewed are: Afrisian Ginning Company (Shinyanga); Gaki Investment Co. Ltd (Shinyanga); Alliance Ginneries Limited (Kwimba-Mwanza); S.M. Holdings Limited/Nkalalo Ginneries (Kwimba Mwanza); Biore Ltd (Meatu Simiyu); ICK Cotton Oil Company (Sengerema) and NIDA textiles (Dar es Salaam).

- ii) **Strengthening FBGs:** The ginnerers have acknowledged that Farmer Groups arrangements have helped improved the quality of seed cotton, while at the same time eliminating cheating and contamination of the produce. They also suggested the need to have unique farmer identification cards that can be used to trace farmer production trends, debt collection and eliminate cross-selling/buying. Such information can be captured and shared through PambaNet.
- iii) **Loss of cash in seed loans and inputs:** While loan repayment stands at about 85% on average, ginnerers agree that a major contributing factor to default is side-buying/selling thus negating the benefits of contract farming and causing losses to those that are investing in the supply chain.

2.4 Recommendations

Contract farming has proved to have considerable benefits to the farmer as well as to the firms. However, in as much as it is important to have a generic contract framework to guide contractual procedures and take into consideration each parties' rights and duties, it is essential to take into consideration that different crops must have different contracts. For instance, contracts for perennial crops such as sugar, tobacco and cotton may differ from horticulture crops.

Although contract farming is viewed as the best method for promoting agriculture, however it should not be considered for the crops that can be found in spot markets such as maize, rice and beans. It is thus important to undertake further assessments on the eligibility of crops to be considered for contract farming.

It is also important to include a caution on political interference in the contractual agreements. A good example is cotton, where in 2015, due to political interference many farmers dishonored their contracts and sold their cotton to other buyers with whom they had no contracts with.

Farmers should have access to capacity building programs to enhance their knowledge on the importance of contract farming. Each crop board should have their own dependent units that oversee contract farming practices. Thus, it is not necessary to dissolve or introduce new institutions to oversee contract farming in Tanzania. The existing boards would be responsible for training and capacity building.



Regulations Governing Authorization and Access To Breeder Seed of Registered Public Varieties by Private Seed Companies

3.1 Introduction

Smallholder producers, of whom only 10% use improved seeds, drive the country's agricultural production. One could say that the use of improved seed is confined to large-scale commercial farmers and a few smallholder farmers who opt for commercial production, albeit in small areas of 1-2 hectares. The World Bank Agribusiness Indicator Report (2010/11), asserts that 85% of the improved seed available was for maize. Despite the increase in availability of improved seed, only 27% of cropped land used for maize is estimated to have used improved seed.

The country's seed sector is governed by the Seed Act (2003), which allows private firms to produce, import and sell seeds in Tanzania, however, the market is heavily regulated. Agriculture Seed Agency (ASA) and Tanzania Official Seed Certification Institute (TOSCI) were established after the Seed Act reforms. The main function of ASA is to produce, multiply and distribute foundation and certified seeds produced from public research institutes as well as certification of Quality Declared Seeds (QDS) produced on farm by small scale farmers (WB, 2012).


There are more than 52 private sector seed companies operating in the country that supply different varieties of improved seeds. The common brands or suppliers of seeds include Monsanto, Pioneer, Pannar, as well as hybrids developed in Kenya and other countries. There are also locally formulated open pollinated varieties (OPVs); however, OPVs that are specially adapted to the local climate and soil conditions are not readily available.

Although government has implemented some recent policy measures to increase access to seeds, such as implementing regional agreements (e.g. SADC MoU) to quicken the registration of improved seeds, overall the liberalization of the sector has been limited with supply of improved seeds still relatively low due to persistent policy institutional constraints⁴ including (a) restricted take-up of government released varieties by the Agricultural Seed Agency (ASA) due to limited capacity for foundation seed production, while companies do not have timely access to public varieties⁵ and lack sufficient processing capacity; and (b) inadequate funding for Tanzania Official Seed Certification Agency (TOSCI), resulting in fewer than needed field inspections – e.g. just two field inspections of hybrid maize when four are required.

This report singles out the problems faced by the sector due to procedures and regulations governing authorization and access to breeder seed of registered public varieties by private seed companies; and the quality of publicly produced early generation seeds. The report therefore attempts to provide (a) an analysis of the cost-benefit of changes in regulations governing the authorization and access to breeder seed of registered public varieties by private companies and improved quality of publicly-produced foundation seed; (b) how such a reform will impact

4 GAFSP, 2016. *Global Agriculture And Food Security Program (Gafsp) Private Sector Window Agribusiness Country Diagnostic – Tanzania*, 2016)

5 As of 2016/17, private seed companies are allowed to buy pre-basic seeds from the Government



on farm productivity; and (c) estimate the costs to the government in implementing changes in regulations governing authorization and access to breeder seed of registered public varieties by private seed companies; as well ensuring improved quality of publicly-produced foundation seeds.

This report is based on opinion sought from stakeholders in Dar es Salaam, Mbeya and Njombe, as well as secondary reports on the subject.

3.2 Status of Seed Supply in the country

The country has an inadequate supply of improved seeds whereby in 2014 alone, it was estimated that supply could not meet the annual requirement of 600,000 tons of certified seeds⁶. Plans have been underway to fill this gap by private companies such as Africa Seed Company, with plans to locally produce and supply 300,000 tons of improved seeds⁷. Although the National Agriculture Input Voucher Program (NAIVS) has contributed towards increasing the number of smallholder farmers using improved seeds, a number of issues with the implementation of the program has reduced its efficiency⁸. These include inconsistency in the distribution of vouchers and delays in the redemption of vouchers by banks; lack of finance available to agro-dealers and an inadequate number of trained agro-dealers and extension staff to supervise the program⁹. These factors were confirmed by farmers and agro-dealers interviewed in Mbeya and Njombe (see below).

The low adoption of improved seed is attributed to several factors. Despite the liberalized environment, a number of policy-level hurdles have constrained the seed industry's ability to deliver services. A recent government directive lifted a restriction prohibiting private companies from producing their own foundation seeds from public varieties, but local seed companies that multiply seeds from public varieties are still unable to access foundation seeds in a timely manner. Nor do all local companies have the necessary capacity or facilities to process foundation seeds.

The other constraint relates to the time it takes for companies (local as well as international) to introduce new seed varieties in the country. Even after the passage of new Seeds Act, the certification and release of new seed varieties in Tanzania can take up to three years. Meanwhile, on the demand side, a large percentage of farmers retain seed from their prior year cereal crop for planting and are less likely to buy new seed every year. Farmers still lack awareness about the use of improved seed for higher yields. The seed-to-grain price ratio for maize crop using hybrid seed is 10:1, which is considered high. As a result, many farmers cannot afford to buy seeds.

6 Mkwame, M (2014)

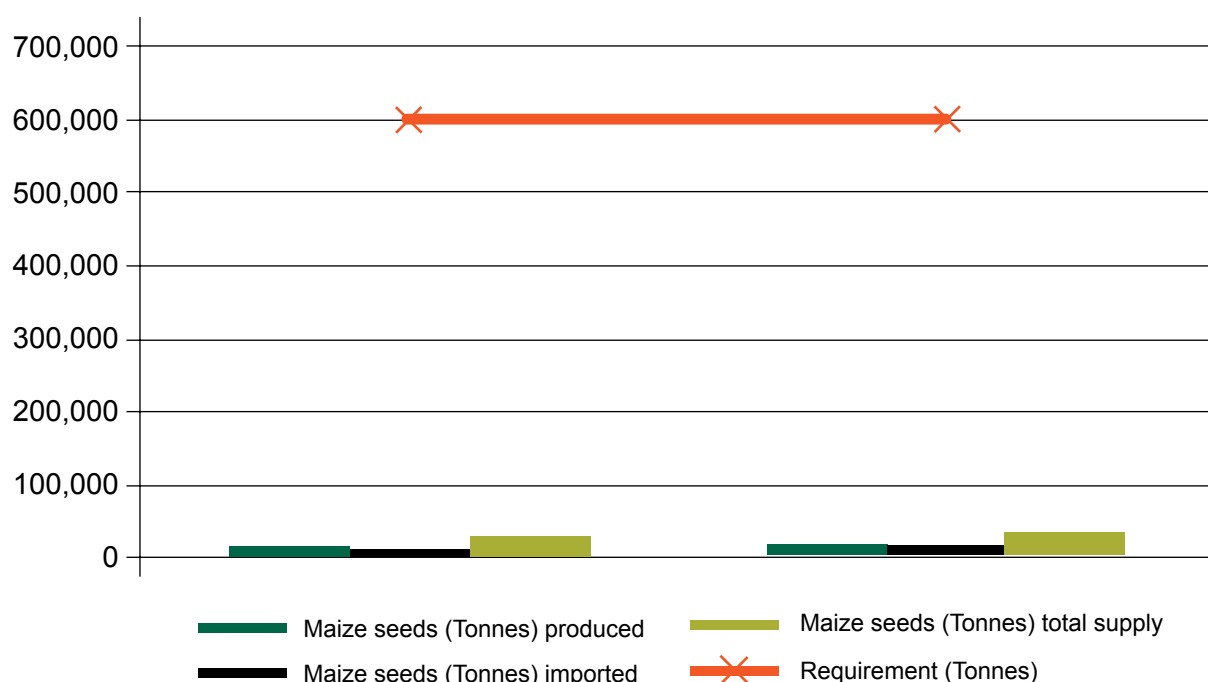
7 Kilimo Trust (2014). Draft for consultations. (www.kilimotruster.org)

8 Dealt in dealt in chapter 4

9 GFSP, 2016



Figure 3: Supply and Requirement of Seeds in Tanzania, 2014/15-2015/16



Source: MALF Seed Unit, 2017

3.3 Impact of the reform

3.3.1 Farmers

The study undertook an analysis of the impact of the government providing access to private firms for breeder/pre-basic seeds for farmers. The study realized that, such reform would not add any significant costs to the farmers, but instead anticipates huge benefits, especially in terms of production and eventual income to be realized through the sale of the produce.

Through consultations with agriculture officers at the Ministry of Agriculture, Livestock and Fisheries (MALF), the study analyzed the impact of this reform on farmers if private companies had access to pre-basic hybrid seed. Given that other factors of production remain constant (land size (k) and technology (T), it is assumed that with continued application of the seeds by the farmers the quantity produced will increase more than two-folds in four years. This situation will also hold, given the fact that there is low seasonal variability, as it is known that such variability occurs every five years in Tanzania.

The study also anticipates that prices of agricultural produce will continue to increase, assuming that there are no market distortion measures and farmers are able to access regional markets like Kenya. In this regards, farmers' income is expected to continue to increase for the next five years. Eventually, for 1 ton, the farmer will be able to receive a total of TZS 735,025.

Table 3.1: Analysis of Cost-Benefit to farmers for Pre-Basic seeds

	Y0	Y1	Y2	Y3	Y4	Y5
CPI	0	1.0941	1.0941	1.0941	1.0941	1.0941
Df (Risk as per May 2017)	0	1.125	1.266	1.424	1.602	1.802
ΔPn0		0.25	0.25	0.25	0.25	
Benefits	YR0	YR1	YR2	YR3	YR4	YR5
Increased Maize Production (kg) per Ha	4,600	5,750	7,188	8,984	11,230	11,230
Price/tonne	159,691	174,718	191,159	209,148	228,828	250,361
Discounted Benefits		155,305	151,040	146,891	142,856	138,933

3.3.2 Firms

The firms were also analyzed to determine the economic impact the reform would have. It is important to note that, during the consultations with agriculture officers at the MALF, it was revealed that only four companies had applied for the public varieties in 2015/16, out of which three were qualified and awarded the license. Discussions with some of these firms revealed that the amount of seeds provided was relatively small (around 50 to 100 Kgs), which also raises further concern as to whether or not this reform will have the desired effect.

However, the study went further in analyzing the impact, based on the AGRA-SSTP (2016) report on early generation seeds in Tanzania. The study analyzed the production costs and expected revenue of both Hybrid Seeds and Open Pollinated Variety (OPV) seeds. Based on these findings, supported by further discussions with sector players, our study realized that indeed, providing pre-basic seeds to firms does provide significant benefits. Notably, Hybrid seeds will provide more benefits to firms than OPV seeds, given the fact that the former provide higher benefits than costs (see table below).

Table 3.2: Hybrid Seeds Cost-Benefit Analysis (USD)

	Y0	Y1	Y2	Y3	Y4	Y5
CPI	0	1.0941	1.0941	1.0941	1.0941	1.0941
Df (Risk as per May 2017)	0	1.125	1.265625	1.423828125	1.601806641	1.802032471
Costs	4,129	4,517.54	4,942.64	5,408	5,917	6,473
Benefits	14,000	5,317.40	16,759	18,336	20,061	21,949
Net Benefit	9,871	10,799.86	11,816	12,928	14,145	15,476
Discounted Benefits (NPV)		9,599.88	9,336.20	9,080	8,830	8,588
Discounted Costs		4,016	3,905	3,798	3,694	3,592



Table 3.3: OPV Seeds Cost-Benefit Analysis (USD)


	Y0	Y1	Y2	Y3	Y4	Y5
CPI	0	1.0941	1.0941	1.0941	1.0941	1.0941
R	0	1.125	1.265625	1.423828125	1.601806641	1.802032471
	Y0	Y1	Y2	Y3	Y4	Y5
Costs	1,577	1,725.40	1,887.76	2,065	2,260	2,472
Benefits	5,400	5,908.14	6,464	7,072	7,738	8,466
Net Benefit	3,823	4,182.74	4,576	5,007	5,478	5,994
Discounted Benefits (NPV)		3,717.99	3,615.87	3,517	3,420	3,326
Discounted Costs		1,534	1,492	1,451	1,411	1,372

Even when the difference between discounted benefits of both types of seeds is taken into account, we find that firms that produce hybrid seeds will realize benefits of around USD 5,262 for the next five years. Furthermore, when the differences in all discounted factors are taken into account (i.e. difference in the benefits and also in the costs), the production of hybrid seeds remains to benefit the firms by almost USD 3,042.

3.4 Stakeholder Views Based on Interviews in Mbeya and Njombe

The function of producing and distributing improved seeds in Tanzania is handled as a partnership between government and private sector operators. Improved seeds are basically two types: hybrid seed (such as those for maize) and open-pollinated seed varieties (OPVs) such as for beans. The seed law requires that before a new seed variety is released it must be tested in research stations for two seasons and on farmers' fields for one season.

There are three types of public bodies/institutions involved in the production of improved seeds. Among them are research institutions (working closely with farmers in final stages) engaged in the production of pre-basic or breeder seeds; such as Uyole, Ilonga, Ukiliguru, and Lyamungu. There is also the Agricultural Seed Agency (ASA), (established under the Executive Agencies Act No.30 of 1997 and CAP 245 R.E. 2002) involved in the production and multiplication of Basic Seeds, Certified Seed-1 and Hybrid Seeds. ASA's headquarters is in Morogoro and among the zonal offices visited was Njombe. The third one is Tanzania Official Seed Certification Institute (TOSCI), (established under the Seed Act No.18 of 2003), which is responsible for overseeing seed quality along the entire value chain from pre-basic seed production, multiplication sites/farms, storage warehouses, and shops that sell seeds to farmers. TOSCI has its head office in Morogoro, and zonal offices in Mwanza, Arusha, and Njombe. Private sector operators, usually registered seed companies (such as SUMA JKT Seed Co., Highland Seed Co., Bewula Seeds), and some registered contract farmers, are normally engaged in the multiplication of Certified Seed-1 as well as in the multiplication and distribution of Certified Seed-2, which is ultimately taken to the farmers for use. Private sector operators can also buy lines of breeder (pre-basic) seeds from research stations locally (e.g. at



Uyole) and internationally (e.g. at CYMMIT) and pay royalties for patented seed types (about 0.5% of the value for Tanzanian produced seeds). The process of selecting agents for the multiplication of government sponsored basic or certified seed involves issuing formal tenders.

Uyole Scientists reported that under the East African Community Harmonization of Standards protocol, less time was required to test seeds before release by allowing scientists to adopt an approach for multi-location trials within one season to shorten the previous requirements for two-seasons testing. However, the timetable for the National Seed Release Committee is still once per annum, which delays evaluation of results, for instance, a month after the Committee has just met.

Among the challenges mentioned by researchers at Uyole were:

- i) The Seed Law of 2003 and its 2007 regulations as amended in 2017 (to include cassava and yams), require that once research stations have developed pre-basic seeds, they shouldn't engage in the next stage of multiplication but hand over to third parties to continue with that task. This has resulted in some useful seed varieties remaining on the shelves waiting for willing agents to pick them up for multiplication. Researchers at Uyole suggested reforming the law to allow research stations to engage in multiplication when necessary.
- ii) Since private companies do not engage themselves with self-pollinated seeds, there is need to scale up the availability of parental material from public research stations.
- iii) The National Seed Release Committee has a limited budget and meets only once a year. This delays the release of seeds for crops that are cultivated twice or thrice a year and their results are fast-tracked but have to wait for 12 months before assessment by the Committee. Financially endowed private companies usually can afford to finance the Committee to convene an unscheduled meeting to evaluate their seeds. A larger budget is required to support the NSRC to meet more regularly.
- iv) The system for selecting contract farmers for seed multiplication is not regarded as transparent in the absence of clear criteria for qualification as a seed bulking agent.
- v) The fee for testing new seed varieties was too low, but thanks to the recent (January 2017) amendments it has been modified to correspond reasonably with the costs.
- vi) Royalty payments given to public institutions for hybrid seed and OPV does not adequately reflect the efforts by researchers, mainly due to behavior by private sector seed multipliers who rarely go back for more parent material after obtaining the first batch.
- vii) Research institutions such as Uyole cannot plan properly on how much of parental or pre-basic seeds will be required for each season. This has resulted in the carry-over of stocks that are not bought by seed multiplication agencies/companies.

Among the challenges mentioned by ASA officials in Njombe, that validated similar observations by a World Bank report in 2012, included the following:



- viii) ASA lacked the necessary capital base to invest in efficient methods for seed cleaning and packaging. Some farmers and traders in Lusisi village and Makambako town complained of getting packages with broken seeds and spending too long waiting to get enough consignment for their shops, respectively.
- ix) Lack of operating capital by ASA also constrained them from aggressively marketing of seed varieties that are potentially better than those developed and sold by private companies.

Among the challenges and suggestions for improvements mentioned by TOSCI officials based in Njombe, also cited in the 2012 World Bank report, were:

- x) TOSCI lacked the pre-requisite laboratory and transport facilities to adequately cover the southern highlands zone from Njombe town. They gave examples of their failure to visit and inspect seed businesses in regions such as Katavi for the past six years. It is important to step up inspection routine due to a growing problem of mixing improved seeds with local seeds by private companies/traders. TOSCI requested that its budget be increased to adequately discharge its mandated functions.
- xi) Loopholes in enforcing quality control measures given that TOSCI do not have a role in the registration of companies engaged in the seed industry. They deal with companies certified as seed importers or seed dealers/traders, and agro-dealers are also subjected to multiple approvals. For example, dealers travel to Morogoro (TOSCI) and Dar es Salaam (Ministries) for approvals, and at the same time each of the government agents take their own samples of seeds when they visit their stores or shops. TOSCI officials suggested that the country adopt a single window approach to harmonize the process of selection and registration of companies engaged in the seed industry. This approach is already in use by other EAC Partner States, as cited in the case of Kenya Plant Health Inspectorate Service (KEPHIS).

3.5 Cross cutting matters critical to the growth of improved seeds sector

a. VAT levied on seeds and its packaging material

The recommendations in 2014 to the Ministry of Finance by MALF and Tanzania Seed Trade Association (TASTA) for improved tax treatment of seeds and seed packaging materials to improve agricultural trade and competitiveness are yet to be fully implemented. Contrary to the law, some local government authorities still charge cess on seeds produced locally. The proposal to remove VAT and cess on seed packaging materials was not approved in the 2016 Finance Bill, hence, VAT at 18% continues to be levied on seed and seed packaging materials. Packaging materials are also subject to an excise duty of 50%. Whereas, some district authorities do not charge cess on seed packaging materials, others charge 3% to 5%.

b. Time required for releasing imported new varieties

The country has achieved the release of plant varieties from outside the country faster than its EAC neighbors. However, it still requires seeds to be retested even when they

have undergone successful trials in comparable environments. The Act and regulations have been developed based on the principles of regional harmonization. The country has ratified several harmonization agreements with other countries including: The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), the East African Community (EAC) and the Southern African Development Community (SADC). The process of domestication of the harmonized policies and regulations is however not complete, and there are limited success cases.

c. TOSCI Accreditation to ISTA and OECD to enable regional and international seed sales

TOSCI has successfully completed the process for accreditation by the International Seed Testing Association (ISTA) for the national laboratories for testing seeds and membership to the Organization for Economic Co-operation and Development (OECD) seed scheme. This will be useful for enabling Tanzania to export seeds, and allowing farmers to obtain reliable quality seeds from outside the country.



*Delivering milk to a collection centre in Tanga, Tanzania.
A farmer delivers milk at a collection centre in Tanga,
Tanzania | Photo credit: ILRI/Paul Karaimu |*

Table 3.4 of Comparisons of Costs and Benefits of Seeds Reforms

Reform Area	Current Status	Recommended Reform	Costs of reforms	Benefits of Reforms	Ratio of Costs: Benefits
Process for selection of qualified contractors for seed multiplication	System not transparent with respect to eligibility criteria. Potential contractors usually in suspense unsure of being picked to continue with contract	Improve the system for the process of picking contractors for seed bulking	Published booklets or manuals for eligibility criteria; placing adverts in season for next cycle of selection; advertise to let the public know who has been picked	Better planning by companies and individuals and therefore more economic use of their resources; prevent abuse of picking sub-optimally qualified agents; public respect of the system	Less costs compared to the overall benefits
Role of research stations in Post-basic seeds activities	Seed law (2003 as revised in 2017) require that research stations be restricted only to basic seeds production. Not allowed to engage in multiplication stages	Research stations should be allowed to selectively engage in post basic seed production in areas where the private sector is not active enough so as to enable the public benefit from new seeds	Additional budget for (a) research stations to engage in bulking and marketing of improved seeds; (b) publicity and marketing of improved seeds where the private sector is not actively involved	The public to have access to more varieties that have been produced by public research stations using tax money. This should result in enhanced uptake of improved seeds by the public assuming such seeds will be slightly cheaper than those exclusively produced by the private sector	Less costs compared to the overall benefits
Handling and marketing of OPV seeds	Private sector operators tend to buy and pay royalty for limited amounts of OPV seeds and then don't make repeated orders in consequent seasons. Research stations remain	Stricter monitoring of private sector to prevent them from cheating by buying adequate stocks for multiplication to meet actual demand for improved OPV seeds	Stricter monitoring costs by TOSCI	Buyers to get genuine improved OPV seeds and therefore obtain better yields and harvests and more income, ceteris paribus	Benefits outweigh costs and so its worth strengthening TOSCI

Table 3.4 of Comparisons of Costs and Benefits of Seeds Reforms (Cont'd)

Reform Area	Current Status	Recommended Reform	Costs of reforms	Benefits of Reforms	Ratio of Costs: Benefits
	with stocks of OPVs carried over due to withheld demand by private sector seed companies				
Role of Public Bodies in Seed Multiplication	ASA ¹ is the main agency	(a) More money to allow ASA to aggressively market its products and offer a wider choice to farmers	Increased budget for ASA to improve the packaging and timely delivery of its products and also aggressively market seeds produced by public research stations	Increased sales likely to lead to (a) better sales income to cover the costs for maintaining fixed assets, and ultimately more profit, and (b) raise the demand for basic seeds from research stations, which will also get more money and invest more in researched products	Benefits most likely to outweigh costs for increased investments to improve services by ASA
Role of Public Bodies in Seed Quality Certification and control	TOSCI ² is the main agency	(a) More budget allocation is needed for TOSCI to adequately and routinely perform its functions of site visits and inspections (b) Streamlined registration of seed dealers and retailers to be directly supervised by TOSCI	Costs to be incurred will be related to (a) increased number of regional offices from the current zonal offices (b) more staff members to undertake inspections (c) recurrent costs for field visits	Mostly will come as social benefits as the society benefits from a well trusted system of improved seeds supply, and may open up regional market for exported seeds from Tanzania. But there are also benefits to TOSCI staff who will excel in their professional areas; and seed companies will not incur losses from rejected seeds due to adulteration	Benefits most likely to outweigh costs for increased investments to improve services by TOSCI



Reform Area	Current Status	Recommended Reform	Costs of reforms	Benefits of Reforms	Ratio of Costs: Benefits
Duration for testing and certification of improved seeds	Requirements for testing of seeds for one year in the field and one season at farmers' condition	<i>This already done. Now can have multiple locations of testing to obtain results in a shorter period than before</i>	No extra costs	Savings from prolonged processes of testing and approval	Less costs compared to benefits (<1)
Protocols for submission of results from tests for registration	National Seed Release Committee meets once a year to review results of tests and approve for registration and use in the country	Change timetable to meet quarterly so as to allow faster decisions for seeds of crops that mature early and therefore results can be out in less than 6 months	Costs for Committee meetings to increase four time compared to the current system of once per year	Faster release of seeds and therefore more choices by producers	Less costs compared to benefits (<1)
Process for registering seeds distributors and retailers	Licenses and control of deals and retailers fall under multiple agencies	Adopt a single window approach so as to streamline and harmonize the process of selection and registration of companies engaged in the seed industry	Written directive to streamline process in favor of a single window system	Reduced costs for issuing licenses; better and harmonized control of behavior of distributors, stockists and retailers	Less costs compared to benefits (<1)
Access to international pool of certified seeds	Mostly actively done by private sector operators	<i>ASA should also be encouraged to tap into international seed pool such as those produced by CIMMYT</i>	Some extra budget for ASA operations	More varieties at slightly cheaper price given that ASA is not driven by purely profit motives	Less costs compared to benefits (<1)

Note: ¹Agricultural Seed Agency; ²Tanzania Official Seeds Certification Institute

3.6 Proposed Recommendations

If Government were to allow private companies access to pre-basic seeds, this would be desirable for the sector performance. However, there is a dire need to increase the number of licensed companies based on the experience they will gain in producing these seeds and providing adequate pre-basic seeds to expand their operations.

Knowledge and information for farmers on the use and application of improved seeds is of paramount importance and the government and all other players should provide it. In doing so, the difference between yields of those who use hybrid seeds and those who don't will be apparent, and hence promote the use of these seeds thus contributing to the country's agricultural transformation through improved production.

Under the current laws, researchers are not required to multiply the pre-basic seeds provided by the Government. However, this study recommends allowing research institutions such as Uyole, to multiply as means of increasing the supply of the seeds to the market.

Furthermore, TOSCI needs to be empowered and provided with adequate financial resources to monitor the entire process of private companies producing the foundation seeds. In doing so, the market will inspire confidence with recommended quality seeds being produced and sold to the farmers.

Tanzanian farmer discusses his maize ears - A farmer in Morogoro, Tanzania, discusses differences in his maize ears caused by differences in on-farm conditions, at a field day organized by Tanzanian seed company Tanseed International. For more about the collaboration between Tanseed and CIMMYT, see CIMMYT's June 2009 e-news story "No maize, no life!" available online at: www.cimmyt.org/en/about-us/media-resources/newsletter/pre... | Photo credit: Anne Wangalachi/CIMMYT |



Agricultural Marketing: Reforming the Institutional arrangements and Regulations Governing Export Permits For Agricultural Commodities

4.1 Background and Introduction


The issue of government trade policy and regulations requiring exporters to obtain a letter of authorization from the Directorate of Food Security, MALF, in order to export staple cereal commodities was identified and prioritized for reform by the Micro Reforms for African Agribusiness (MIRA) and government counterparts in Tanzania as one of the five reform targets under the project. Rapid reconnaissance surveys carried out in 2014 to diagnose and assess the landscape of regulations and identify those that limit private investment in smallholder value chains, and the ones in need of reform. The follow-up with in-depth interviews revealed that for trade policy, (Abt Associates, 2014). Private sector stakeholders have expressed their belief in the need to reduce transaction costs for traders seeking a permit by removing the requirement for them to go all the way to the Director of Food Security in Dar es Salaam. But senior government officials perceive that export permits provide authoritative data about the quantities that are being transported out of the country and the Ministry of Agriculture is mandated to collect, analyze and provide information on commodity exports.

The Ministry of Agriculture, Livestock and Fisheries (MALF¹⁰) has since the early 1980s implemented continual export bans of cereals especially maize during cropping seasons when there were estimated shortfalls in production resulting from projected domestic demand exceeding domestic supply (Makombe and Kropp, 2016). The bans were intended to improve food security by ensuring that Tanzanians consume food produced in the country. The export bans were implemented using instrumental rules embodied in the Export Control Act and its regulations. An export ban is authorized under the Export Control Act. Only the President has legal authority to issue an export ban. This explains why the ban is often announced following a Cabinet meeting or in the Parliament, or when the President addresses a public gathering.

Beginning in September 2012, the Government lifted the maize export bans, and committed to discontinuing export ban policy to foster relations with the East Africa Community and other trading partners, and began to invite international players and agribusinesses to invest in agriculture in the country. But the Government began to require exporters to obtain a letter of authorization from the Directorate of Food Security, MALF, to export staple cereal commodities and processed products from the country. This requirement is implemented using instrumental rules embodied in the Food Security Act of 1991 (revised in 2009) and regulations under the management of food security (early warning and crop monitoring). However, the practice dates back to the 1980s when the then government parastatal, National Milling Corporation dominated maize marketing and discouraged private traders (Tanzania Exporters Association, 2012).

The requirement to obtain a letter authorizing export of food applies to virtually every food

10 Formerly Ministry of Agriculture, Food Security and Cooperatives)



commodity (particularly maize, rice and sugar) and by-products such as wheat bran (TANEXA, 2012). Government officials assert that the permit system is intended to promote food security and to monitor the quantity of staple foods. Food security is monitored through the early warning and crop monitoring system¹¹. If the assessments indicate that domestic food availability may be insufficient this may trigger an increase in imports and/or a quota on food exports. It may also result in certain local government districts banning or restricting food exports which will restrict the internal movement of staples as well as limiting exports. Delinking domestic food markets from regional and world markets creates increased price volatility and undermines the stated objective of promoting food security.

The process of obtaining export permits remains cumbersome and effectively discriminates against smallholder farmers and small traders. It was noted that markets open up for small and medium scale traders to re-use permits issued to these large traders at a fee.

Obtaining the permit represents a challenge, and is prohibitive for small and medium scale traders. According to research conducted by TANEXA, the majority of the respondents (61%) claimed to be negatively affected by the export permit issuing process (TANEXA, 2012). This process raises transaction costs for Tanzanian exporters to a very high level and makes it difficult for them to conduct business and trade foodstuffs within the EAC and SADC. One impact of these requirements has been the decreased numbers of exporters. Worse still, these high transaction costs effectively discriminate against small-scale traders seeking to obtain an export license. Export licenses are issued for each transaction; and in addition, when exporting any agricultural product the trader must show the following documents: Business license (issued by the local Government authority); Import/export license issued by the Ministry of Industry and Trade, Tax Clearance certificate (issued by TRA), TFDA certification of safety of food and drugs, Mark of Origin (issued by TBS), Quality Standard Certification (issued by TBS), Export Permit (for food crops issued by the Ministry of Agriculture), Phyto-sanitary Certificate (required for raw agricultural produce issued by the Ministry of Agriculture), and the radiation certificate. While this is undoubtedly onerous, it is not clear that all of the procedures are enforced, which makes the rules unpredictable and non-transparent and creates opportunities to elicit illegal payments.

Each exporter is required to go through five different steps as outlined below to obtain a letter of authorization. The steps are (TANEXA, 2012; Amin and Stryker, 2013):

- i. Letter of request by the District Administrative Secretary for an exporter to be issued a National Food Export Permit
- ii. Forwarding letter by the Regional Administrative Secretary for the exporter to be issued a National Food Export Permit
- iii. National Export Permit issued by MALF
- iv. Letter of validation of National Food Export Permit by the Regional Administrative Secretary

¹¹ For a detailed explanation see Mukhtar Amin and Dirck Stryker, *Impact of Export and Import Permits on Staple Food Trade in Tanzania*, September 2013.



v. Letter of validation of National Food Export Permit by the District Administrative Secretary

In addition, export permit applicants are also required to travel to the district, regional and the MALF headquarters in Dar es Salaam for various procedures. The permit is issued in Dar es Salaam and this process takes between two to four weeks, depending on where the exporter is based (TANEXA, 2012). While the district and regional government authorities issue export permits during cropping seasons when there are production surpluses, they impose restrictions by withdrawing existing export permits and not issuing new permits when there are estimated shortfalls in domestic production. Thus, stoppage of issuance of export permits issuance has the same interpretation and effect on trade as a proper ban despite differences in implementation. This explains why exporters are concerned about knowing the difference between these policy instruments.

The export permit system has resulted in trade being dominated by specialized “clearing and forwarding” agents who have the ‘know-how’ to obtain all letters of authorization to export food. They then allow traders to use them to export their foodstuffs for a fee (TANEXA, 2012; Amin and Stryker, 2013).


The government has attempted to streamline the procedures and now allows a trader to apply directly to the MALF. The procedures are particularly onerous, and in many cases prohibitive, as traders in outlying districts have to travel to Dar es Salaam to obtain the permit. Only large traders have the capacity to comply with the regulatory requirements.

Tanzania Exporters Association (2012) found that as a result of the cumbersome and bureaucratic export permit rules there has been a reduction in the quantities exported and in profits for food exporters, small cross-border food traders and smallholder farmers. The study also found that the Integrated Food Security and Nutrition Assessment System that is used to trigger the notice that requires letters of authorization to export cereals works through an assessment that is not based at the district level. This gives a notice of generalized food insecurity when there is only localized food insecurity, resulting in the imposition of export quotas and bans even in areas where there is food sufficiency.

4.2 Recent events on export permits

In July 2016 the Minister of Agriculture, Livestock and Fisheries (MALF) issued a temporary suspension of exports of maize, rice and beans based on the triggering assessment system of the early warning and crop monitoring embodied in the Food Security Act to stop issuance of permits of food exports (see Eastern Africa Grain Council (EAGC), Agricultural Trade Policy Advisory Forum for Eastern and Southern Africa (ATPAF-ESA), 2016).

This decision was taken as an initial step to implement a proper food export ban through the legal backing of an order issued by the President and that is gazetted and assigned a Government Notice number. The Minister issued the restrictions on exports because as in past situations when similar bans were imposed, the Food Situation Preliminary Forecast Report of 2015/2016 showed that 15 of the 30 regions were vulnerable and facing food shortages. The suspension of export permits was considered as a temporary measure while a national stock-



taking was conducted that was to be completed in October 2016, when the fully detailed Food Security Forecast report would have been made available. It is generally perceived that most of the trade in food is informal, however, it comprises smuggling activities rather than legal trade. The former can cause food shortages, food insecurity and hunger as widespread production shortfalls and rising prices in neighbouring countries prevail. Senior government officials argue that the restrictions on grain exports do not violate the common market agreement of the East African Community member states because they are imposed on smugglers and not on legal trade.

There has been an outcry from private sector firms in response to the new rules suspending exports. Although exporters with permits should not be affected by the announcement, anecdotal evidence shows that trucks carrying grain were impounded and stopped at the border points or en-route to the border ((ATPAF-ESA¹², 2016). This causes suppliers to fail to fulfil their forward deliverable contracts. Consequently, these traders incur heavy financial losses. Processors that have recently invested in plants and equipment using borrowed funds to supply markets in Kenya are incurring financial losses, failing to service their debts and laying off workers. The ban is having deleterious effects upstream on farmers who have entered into production and marketing contracts with off-takers to produce for export markets. These farmers are failing to sell their output at competitive prices and to pay back their bank loans.

Cumbersome export licensing imposes costs on traders, that result in smallholders receiving lower prices for their crops. The additional direct and indirect costs resulting from the export permit system are effectively added to the marketing costs, which are already high in Tanzania. Traders are likely to pass on any additional costs created by the Tanzanian permit system onto the farmers. Tanzania exports maize to Kenya, a significant importer from both the region and global markets. For Tanzanians to export their products in the EAC region they must be competitive in the Kenyan market - this limits the ability of the traders to pass on the increased marketing costs onto consumers. It will shift the burden of the higher marketing costs (and any other costs) onto the Tanzanian farmer by offering a lower purchase price. The existing permit system effectively reduces farmers' living standards and does not contribute to food security.

It is important to point out that the periodic suspension of export permits and imposition of bans on food crop exports, particularly maize, goes against regional trade agreements, fosters rent-seeking behaviour, and ultimately harms producers, who are affected by a lower demand for their crops and dampened price incentives. While the government claims to defend the interests of Tanzanian consumers, its actions hurt producers. Export bans have supposedly been lifted, but the government should now raise the awareness of government implementing agents and the private sector on to the status of agricultural trade controls. Any change in the current situation (of no export bans in place) needs to be signalled clearly and widely and preferably publicly debated prior to the imposition of new bans. Barring that, clear rules need to be established for the conditions under which a staple crop export ban would be re-instituted.

The implications for agribusiness investments in smallholder value chains: Export bans provide strong disincentives to participating and investing in the private grain trade, as well as indirectly making processor access to raw material supplies less certain.

12 *Agriculture Trade policy Action Forum for Eastern South Africa*



The recent Policy Action Node (PAN) study (2013) concluded that stakeholders across the food value chain concur that barriers to cross-border trade need to be eliminated. This study and others have identified negative impacts of the cumbersome export permit processes; these are:

- a. Dampened incentives to grow food crops, particularly maize, which undercuts national food security.
- b. Leads to greater price volatility, which dissuades farmers and other private sector actors from investing in agricultural production, storage, warehousing and transport.
- c. Reduces overall farmer income and induces producers to shift to other (cash) crops such as sunflower, because of the higher, more predictable revenues.
- d. Fails to exploit Tanzania's comparative advantage in producing and exporting staple grains. (Making it difficult to export rice undercuts production incentives and invites rice imports, while Tanzania has the potential to export significant volumes of rice to the sub-region).

According to Stryker, 2012, Tanzania is the only country in East Africa that formally restricts trade other than on an occasional ad hoc basis, irrespective of being a signatory of the EAC Common Market protocol (with specific reference to cross border movement of food).

4.3 Consultations with Exporters

The consultant interviewed some exporters of food and related products to assess their experiences with the export permit process. The companies interviewed were Bakhresa and Mohamed Enterprises Tanzania Limited (MeTL). The findings from these consultations are summarized below:

i. Tanzania exporters of Agricultural produce and export permits


Tanzania exporters of agricultural produce help to build up the country's economy by encouraging local producers and farmers. Furthermore, it gives such exporters the opportunity to supply and work in the international markets.

In this brief we present export permit issues raised by two exporters, namely Bakhresa Group of Companies and Mohamed Enterprises Tanzania Limited (MeTL) Group of Companies.

ii. Bakhresa Group of Companies

The Bakhresa Group operates in not less than nine countries in Africa including Uganda, Rwanda, Burundi, Malawi, Mozambique and Zimbabwe that do not have export permit requirements. It was noted that Tanzania is amongst very few countries on the continent that employ export permit requirements.

There are considerable delays faced by the company just after applying for an export permit. The application process is complicated as it passes through a very long process. For instance, one must write a letter and submit it to the Director of Food Security, but he may first want to



consult the Permanent Secretary (PS) of the Ministry concerned for advice over the permit release. The PS may also in some cases seek for advice from the Minister, which in a long run leads to considerable delays.

According to the interviewee, the government would suspend export permits rather abruptly at a time, with no prior information given to exporters; the latest of such occurrences was in January 2017, following the Prime Minister's visits to food reserves located in Ruvuma Region.

Recently, the Bakhresa Group of Companies was unable to export grain due to lack of export permit for almost one month, resulting in a loss of between USD 4 million to USD 5 million. Part of the loss was incurred refunding a client from Saudi Arabia who entered a contractual agreement for the import of wheat bran. Another client claimed his business activity to be greatly affected as he ceased production operations for animal feed due to the delay with raw materials.


Mr. Hussein reiterated that the company had long-standing trade relationships with other wheat bran customers in the Philippines, Dubai and Qatar spanning over 20 years but currently that trade relationship had deteriorated due to the unpredictability of securing export permits in Tanzania. This has not only affected the company's business, but also the county's foreign exchange earnings and producers' incomes as customers shift to other countries as sources of supply. Mr. Hussein gave an example of an abrupt export permit suspension in January (2017) when the company had already secured an export market in Saudi Arabia for wheat bran worth TZS 4 billion. Not only did the company lose that income, but also had to refund the costs the latter had incurred in opening a Letter of Credit (L/C) and costs related to shipping arrangements. As a result of such cumbersome procedures, the company is currently left with only three major customers of flour in Africa. They are the Democratic Republic of Congo, Angola and Kenya. Most of the other customers have declined to continue trading with Bakhresa due to the duration taken to process export permits and getting the consignments on time. These customers have thus shifted to Bakhresa's competitors in South Africa, Malawi and Zambia.

iii. MeTL Group of companies

Mohamed Enterprises Tanzania Limited (MeTL) Group's agricultural product export portfolio includes cocoa, sesame seeds, sunflower seeds, pigeon peas, yellow gram, cardamoms, castor seeds, coriander seeds, green moong, groundnuts, honey, soya beans, tea, red beans and maize. These products are exported to Europe, India, Pakistan, China, Japan, Indonesia, Malaysia, Sri Lanka and the Middle East (supplied to the World Food Program). Forestry export products include gum Arabic and beeswax, which are mainly exported to Europe, USA, and Japan. Also exported is sawn timber from the MeTL Group's saw mill in the Tanga region of Tanzania. Sisal fibre yarn twines and ropes are exported to industrial users in Japan, India and other Asian countries. Products are also exported to Spain, Italy, Belgium, Holland and France, as well as Ethiopia, Saudi Arabia and Yemen. The majority of textiles produced by the MeTL Group's textile mills are exported to the Democratic Republic of Congo, Rwanda, Mozambique and other neighbouring countries. Sizeable quantities are also exported to Greece and Italy. Mo Cashews Ltd, the Group's cashew processing company exports raw cashews in shells as well as top-grade processed cashews to several global markets including the USA, Pakistan,



*Sisal ready for packing according by grade
Project 4 monitoring and evaluation activities on
30 Oct 2013 at Dar es Salaam, Tanzania (photo
credit: Bio-Innovate-ILRI/Albert Mwangi).*



Sri Lanka, South Africa and the Middle East. As the only manufacturer of bicycles in East Africa,

the group commands an impressive network of people, infrastructure, technology, market intelligence, logistics and procurement. MeTL Group has an extensive infrastructure of more than 120 offices throughout Tanzania, all of which are equipped with warehouses, vehicles and processing equipment. Trained personnel purchase commodities directly from the farm-gate and then clean, process and grade the goods ready for export to the international market.

The company has a branch located at Kyela, in Mbeya region dealing with the collection of cocoa from the farmers through a free market arrangement, but there is no contractual agreement between them as buyers and the cocoa producers when buying the product.

4.4 Challenges faced by such exporters

MeTL Group has been experiencing a lot of challenges in getting the export permits on time. With fluctuations in world market prices of agricultural commodities, the delays affect the company's opportunities for premium prices.

For instance, cocoa world market prices have recently dropped from USD 3,300 per ton to USD 2,300 per ton. With the delays encountered in arranging exports, the company has lost considerable amounts of revenue; and on the side of cocoa producers, they experienced lost incomes while the country lost its foreign exchange earnings.

MeTL also asserted that the government has been reducing the permit period for specific products that also affects the quantities to be exported. With reduction in permit period, this means that exporters struggle to collect enough agriculture goods to export given that some commodities require up to three months for the collection, of which a reduction in the permit to one month means that such companies are unable to export the same quantity of consignments that they would have filled up in 3 months. The permit is given for a certain quantity and within a specified time; export time is limited, normally within one month.

Hence it is a restrictive export permit, which makes it difficult for exporters to meet importers requirements, with the additional the high transaction costs involved in applying for export permits - affecting both the exporter and the country's capacity to generate foreign exchange earnings, let alone the multiplier effects on domestic production, farmer incomes and employment along the value chains. The interviewee proposed a minimum period of three months as the life span for each permit. The abrupt cancellation of permits without prior notification has also been cited as being one of the major challenges faced by MeTL. It was thus proposed that the government put in place a mechanism that provides information well in advance of export permit suspensions in order to assist exporters in their planning and avoiding unnecessary loses to them and the country at large. Moreover, it was suggested that, the government need not to cancel export permits for agriculture commodities that are not consumed in the country, such as cocoa and wheat bran.



4.4.1 Estimation of Costs to Businesses by Imposing Export Permits

Costs in USD	Unit	Amount	Unit Cost, USD	YR0	YR1	YR2	YR3	YR4	YR5	Notes
Bureaucratic costs: follow-ups of permits from ministry of agriculture (see note 1)	Permit/month	4	100	400	400	400	400	400	400	1
Costs of 30-days permit validity: extra storage charges at the port/container terminal	ton	400	2	800	800	800	800	800	800	2
Contract cancellation and admin costs due to abrupt export bans affecting 2000t per month				0	0	0	0	0	0	3
Loss of sales revenue due to export ban in 3 months per year	ton	6000	430	2580000	2580000	2580000	2580000	2580000	2580000	3A
Storage costs at the port/Container terminal before removing the items	ton	2	400	2400	2400	2400	2400	2400	2400	3B
Loss of Established Customers due to export ban	ton	6000	430	0	0	0	0	0	0	3A*
Marketing costs to replace lost customers	-do-	1	3000	3000	3000	3000	3000	3000	3000	
Stream of Costs				2586600	2586600	2586600	2586600	2586600	2586600	
Benefits Permits Are Issued for 6 months or scrapped in USD	Unit	Amount	Unit Cost	YR0	YR1 (mil)	YR2	YR3	YR4	YR5	Notes
Savings from reduced bureaucratic costs: less time used for follow-ups of permits from ministry of agriculture (see note 1)	permit per quarter	3	400	1200	1200	1200	1200	1200	1200	4
No more costs of slippage of the 30-days permit validity: savings on extra storage charges at the port/container terminal	ton	400	2	4000	4000	4000	4000	4000	4000	5
Contract cancellation and admin costs due to abrupt export bans affecting 2000t per month										6

4.4.1 Estimation of Costs to Businesses by Imposing Export Permits (Cont'd)

Costs in USD	Unit	Amount	Unit Cost, USD	YR0	YR1	YR2	YR3	YR4	YR5	Notes
Savings from reduced loss of sales revenue due to export ban in 3 months per year	ton	6000	430	2580000	2580000	2580000	2580000	2580000	2580000	6A
Savings from elimination of extra storage costs at the port/Container terminal before removing the items	ton	2	400	2400	2400	2400	2400	2400	2400	6B
Uninterrupted growth of business as confidence is built due to reliability of consignments from Tanzania	ton	2000	430	0	400	480	576	691.2	829.44	7
Reduced marketing costs from savings to replace lost customers	as above	1	3000	3000	3000	3000	3000	3000	3000	8
Enhanced utilization of previously idle capacity due to reduced production rate	year			0	11,145,600	11,145,600	11,145,600	11,145,600	11,145,600	9
Stream of benefits				2,590,600	13,736,600	13,736,680	13,736,776	13,736,891	13,737,029	
Marginal Revenue Obtained				4,000	11,150,000	11,150,080	11,150,176	11,150,291	11,150,429	
Ratio of Benefits to Costs				1.00	5.31	5.31	5.31	5.31	5.31	
ratio of Costs to Benefits				1.00	0.19	0.19	0.19	0.19	0.19	



Notes

Key Assumptions: One container of wheat weighs 25 tons, with export price of USD 430 per ton. Issued Export Permits are valid for only 30 days	
1	Each permit is valid for 30 days and it takes about 5-10 working days or 1-2 calendar weeks to get one -- involving several follow-ups by one dedicated officer. We assume 10% of monthly salary used to chase one export permit. That is USD 100 per permit irrespective of the volume of consignment. Assume 4 permits processed per month, works out to USD 400 cost of bureaucracy.
2	Each consignment requires a separate permit valid for 30 days only. Normally it takes up to 15 days, to get one permit. Meaning one is left with only ten days to process cargo shipment (buyer to pay for the consignment--since they only pay once shown that there is an export permit - cheque cleared, and port formalities). For that reason, 1-in-5 permits fail to utilize the 30-day window, and so company is compelled to start processing a new permit. Postponement of shipment attracts storage charges of USD 50 per day per container by shipping lines since the containers will have already been stuffed ready for shipment. We assume a five days delay since it's a replacement of unused permit. In order to calculate cost per ton, assume each container is 25 tons. We use a factor of 0.2 that this penalty is payable for the 2000t of flour exported monthly.
3	Since 2016 export sales have declined from 5,000 t/month to about 2,000 t/month. This was caused by Tanzania adopting a single custom territory regime with DR Congo. Wheat was affected by that rule since it's not produced in the country. Importers from DR Congo shifted to source their imports from or through other countries such as Mozambique.
3A	Assumed each year the company suffers from unexpected bans for 3 months, thus losing sales of 2000t per month for the period of ban. It loses income equivalent to USD 430 per ton during the period.
3B	We assume this affects 20% of the packed consignment ready for export (this is a different phenomenon to that of delayed shipment due to expiry of export permit). Shipping Lines usually charge USD50 per container (25t) per day before removal of items. We assume the cost applied for 3 days.
3A*	Let us assume it is synonymous with 3A - loss of income due to unexpected ban -- because they will no longer buy. But the managers wanted to impress the fact that once you annoy a customer, you also disturb his/her future plans to expand imports from Tanzania -- meaning by now it should have gone up beyond 2,000t per month.
	This is a more difficult impact area to translate to costs. Let us assume a one-week marketing visit to the lost customers will cost USD 3,000 (ticket USD1000, hotel, USD 1000 and other hospitality costs USD 1000).
	The factory processing capacity is 1,500 tons per day. So we lose a market share equivalent to 2,000 t/month. This translates to 6 % reduced output for the export market per month. I proposed we assume the loss to the company is negligible because it can use the

Notes

Notes	Key Assumptions: One container of wheat weighs 25 tons, with export price of USD 430 per ton. Issued Export Permits are valid for only 30 days
	opportunity to service the machines during the period of low production. However, this will lower the amount of wheat cargo handled by the ports by 6 percent. This cost is external to Azania Millers.
4	There will be saving equivalent to eight months' worth: Each permit is valid for 60 days and it takes about 5-10 working days or 1-2 calendar weeks to get one -- involving several follow-ups by one dedicated officer. We assume 10% of monthly salary used to chase one export permit. That is USD 100 per permit irrespective of the volume of consignment. Assume 4 permits processed per month, that works out to USD 400 cost of bureaucracy per quarter.
5	Each consignment requires a separate permit valid for 30 days only. Normally it takes up to 15 days, to get one permit. Meaning one is left with only ten days to process cargo shipment (buyer to pay for the consignment--since they only pay once shown that there is an export permit-, cheque cleared, suffing and port formalies). For that reason, 1-in-5 permits fail to utilise that 30 days window, and so company is compelled to start processing a new permit. Postponed of shipment attracts storage charges of USD 50 per day per container by shipping lines since the containers will have already been stuffed ready for shipment. We assume a five days delay since it's a replacement of unused permit. In order to calculate cost per ton, assume each container is 25 tonnes. We use a factor of 0.2 that this penalty is payable for the 2000t of flour exported monthly.
6	Since 2016 export sales have declined from 5,000 t/month to about 2,000 t/month. This was caused by Tanzania adopting a single custom territory regime with DR Congo. Wheat was affected by that rule since it is not produced in the country. Importers from DR Congo shifted to source their imports from or through other countries such as Mozambique.
6A	Assume each year the company suffers from unexpected bans for 3 months, thus losing sales of 2000t per month for the period of ban. It loses income equivalent to USD430 per ton during the period.
6B	We assume this affects 20% of the packed consignment ready for exportation (this is a different phenomenon to that for delayed shipment due to expiry of export permit). Shipping Lines usually charge USD50 per container of 25t per day before removal of items. We assume the cost applied for 3 days.
7	The managers had the opinion that business could be growing at about 20 percent per year from the baseline figure of 24,000 t per year. So we assume annual increments 20 percent annual increments from year one-- with possibility of expanding exports to 3,000 t per month in the next five years.
8	This is a more difficult impact area to translate to costs. Let us assume a one-week marketing visit to the lost customers will cost USD 3,000 (ticket USD1000, hotel, USD 1000 and other hospitality costs USD 1000).
9	The factory processing capacity is 1,500 tons per day. So we lose a market share equivalent to 2,000 t/month. This means there will be about 6% increased output from the mills: hence more revenue. (0.06*1500t per day*24days per month*12months*USD430).



4.5 Estimation of Costs to Government for Reforming Export Permits

The online export permit system will be developed in adherence to the standards and procedures for developing information management systems. This will commence with a system analysis including interacting with various expected users and beneficiaries of the system. The system architecture/flowchart will be shared with key stakeholders during the design stages, developing the system and databases, test the system and agree on key functionalities, plan for hosting location and environment, training of the system to the key users and beneficially.

The system will be developed by using latest tools for systems development like Hypertext Preprocessor (php) which is a widely-used open source general-purpose scripting language , mysql - which is an open-source relational database management system (RDBMS), javascripts - is a full-fledged dynamic programming language that, when applied to an HTML document, can provide dynamic interactivity on websites.

The system will be online and mobile friendly and will allow various users to use the system via various tools like computers, mobiles phones and tablets. The systems will be hosted in an environment that will ensure 24/7 availability, security and high connectivity speed. The servers for hosting the systems shall keep the data for long time so as to store data/records for a number of years. The system will generate all possible reports that are relevant for the review and approved permit application. To add more, the system will offer intuitive on-line self-service which helps easily in the submission of applications online and tracks status in real times. It ensures transaction consistency and accuracy through efficient automated policies, overall quicker turnaround times compared to offline processes.



*On station established Napier for seed multiplication at Arusha, Tanzania.
| Photo:ILRI/ David Ngunga |*

The summary of the various component are as follows:-

Online Application for Export Permits										
no	Item	unit	qty	Unit cost in USD	Y1	Y2	Y3	Y4	Y5	Total, USD
1	System Analysis, Designing, consultations, stakeholder engagement and sharing of system architecture	man-day's	25	500	12,500	0	0	0	0	12,500
2	Server software's (Certificates, Pdf Convertors)	Lumpsum	1	2000	2,000	0	0	0	0	2,000
3	System development	man-day's	60	500	30,000	0	0	0	0	30,000
4	System Implementation	man-day's	20	500	10,000	0	0	0	0	10,000
5	Hosting & Domain maintenance	months	12	800	9,600	9,600	9,600	9,600	9,600	48,000
6	Training - Admin, Users	man-day's	15	500	7,500	0	0	0	0	7,500
7	Support and maintenance	months	12	300	3,600	3,600	3,600	3,600	3,600	18,000
8	Backup system	annual	1	360	360	360	360	360	360	1,800
9	Computers	pcs	40	700	28,000	0	0	0	28,000	56,000
	Total				103,560	13,560	13,560	13,560	41,560	185,800



4.6 Impacts of suspending Export permits

The reforms in export permits to the firm will certainly have some benefits earning a typical company some marginal revenue of about USD 11,150,000 per year. The benefit to cost ratio (BCR) is 5.3:1.


The cost to government will mainly be in establishing and managing a monitoring and information system involving several stakeholders involved in export permit transactions: Three ministries (agriculture, marketing and finance), three agencies (TRA, TFDA and TPA), twenty regional administrations of mainland Tanzania and main border posts of Tunduma, Itungi Port, Ujiji, Mtwara-Mozambique border post, Mutukula, Rusumo, Sirari/Isebania, Holili, and Horohoro. In order to install and operationalize the system it will cost the government USD 185,800 for the five-year period. The main benefits to the country will be the gains which private sector companies achieve as shown above whereas the benefits outweigh costs by 5.3 to 1.

The matrix below summarises the impacts of export permits to agribusiness firms, farmers and the country at large.

The matrix below summarises the impacts of export permits to agribusiness firms, farmers and the country at large.

Table 4.1: Matrix showing impact of export permits/ban on farmers and agribusiness

Category	“Problem” Policy regulation	Potential impact on local agribusiness	Consequent impact on smallholder farmers	Consequent impact on the country
Food Export permit/Ban	Policy uncertainty regarding institution of food export regulation	Export permits suspensions and cumbersome permit processes distort pricing and disrupt market access for exporters and the supply of inputs for processors. This uncertainty deters investments in production/processing expansion. Constrains quantities exported and reduces profits for food exporters, small cross-border food traders.	Limits the potential opportunities smallholders have to sell raw produce to exporters and/or processing companies. Reduce smallholders’ profits and opportunities to increase farm investments. The export permit procedure discriminates against smallholder farmers and small traders who want to participate in export trade. Delays efforts to reduce income poverty	Reduced foreign exchange earnings Delays efforts to reduce/remove rent seeking reduces the multiplier effects of food exports in the value chains and to the economy as a whole.



In conclusion there are all indications that the benefits of reforms certainly outweigh the costs associated with the reforms. This implies that the government should continue with reforming the system.

4.7 Recommendations

At present, the whole process of export permit requirements is not automated. Hence the export permit process should be simplified by making it online and ensure that all institutions involved in processing the permit are interconnected; the government should adapt new technologies that can act as a central system of application through the website/internet so as to improve the quality of services in issuing export permits rather than dealing with it on paper. This could at least shorten the time taken in applying for export permits as they currently face difficulties in securing permits on time for specific items like wheat which demands at least seven more certifications from different authorities before being allowed for export. These are TFDA, Ministry of Agriculture, Client Protection, Phytosanitary, Tropical Pesticides, Tanzania Aviation Commission, TRA and Tanzania Chamber of Commerce and Industry.

The export permit suspension is generic and not specific to certain food commodities. Apparently, once the government has announced the suspension of export permits, the authorities deny permits for all food crops and processed food items and their by-products; this happened in January 2017, soon after the suspension of export permits, some wheat bran exporters suffered financial losses as was the case with MeTL and Bakhresa Group of Companies. Experience has shown when the government temporarily suspends the issuance of export permits for staple foods; implementers of the suspension misinterpret this order by banning the export of more or less all food crops. In this regard, it is extremely necessary for the government to specify the food items whose export permits have been suspended and announce the suspension in good time so that exporters can do proper planning for their businesses.

Based on the above analysis, the government should:

- a) Specify the food items whose export permits have been suspended and do so in good time for exporters to plan;
- b) Streamline export licenses required by traders;
- c) Strengthen coordination of various stakeholders in agricultural export commodities; and
- d) Promote Warehouse Receipt Systems and the operationalization of commodity exchange facilities, which is overdue.
- e) Develop a long-term strategy for key food crops to boost food security and remove export permits, in line with other EAC member States.
- f) Establish online permit application.



In the medium term, the government should put in place a better mechanism of assessing food availability in the country instead of the current system, which has compromised, not only the benefits of exports that would have accrued to farmers but also export earnings that the country would have obtained. In other words, the current system has not been able to ensure food security stability in the country. The government should therefore revisit its policy on food exports and take measures that would align her policy with that of other members of the EAC. Trade in food should be considered as an important strategy for improving food security in the country.

In the long-term, the best solution is to ensure that the sector produces surplus food to enable the country capture export markets and hence impact positively the farmers and all the players involved in the agriculture value chain.



Hand fertilization in Tanzania
A group of farm workers apply fertilizer in a field of Staha maize for seed production at Suba Agro's Mbezi farm in Tanzania
| Photo credit: CIMMYT / Peter Lowe |

Reform on Fertilizer Delivery Mechanism

5.1 Introduction

This section addresses the challenges emanating from the implementation of the National Agriculture input voucher System and discusses needed reform of fertilizer delivery s through digitizing the voucher system and developing a database of farmers to be linked to the key operators of the system, listed further below.

5.2 NAIVS program in Tanzania

5.2.1 Brief history of input subsidies in Tanzania

The history of farm input subsidies in Tanzania can be traced back to 1967 when the Tanzanian Villagization programs were adopted to aggregate rural living units to facilitate the provision of rural population services such as schools, health centers, piped water, electricity and access to roads (Coulson, 1982). Importation and distribution of agricultural inputs were state-controlled with highly subsidized input prices. The program was largely halted in 1982 due to the repeal of the village legislation. The economic crisis of the mid-1980s led to the commencement of an economic reform program in 1986, involving the liberalization of agricultural markets and foreign exchange, the removal of domestic price controls, and the reform of state monopolies. Agricultural market liberalization started with the food crop markets, and then cash crops market in the early 1990s. Input subsidies were phased out between 1991 and 1994. Fertilizer subsidies decreased from 80% in 1990, to 55% in 1992, and to no more that 20% by mid-1992 (Putterman, 1995).

Ten years later, the government instituted a transport subsidy for fertilizer to encourage broader use of this input. However, debates about the cost effectiveness, targeting and distribution of benefits derived from this subsidy led to a redesign of the program around 2007. The transport subsidy was phased out, and replaced with a voucher-based subsidy – the NAIVS, which was implemented through World Bank’s supported “Accelerated Food Security Project” (AFSP) since June 2009.

5.2.2 Overview of NAIVS

The primary aim of the NAIVS program was to improve household and national food security at a time when the costs of grain shortfalls and associated price of grain imports were particularly high. However, the program also sought a sustained gain in maize and rice productivity by encouraging farmers to try new seed varieties and experiment with the use of chemical fertilizers. Once convinced of the value of these improved inputs, farmers were expected to be able to continue to purchase improved inputs through a growing number of rural retail shops. The three-year graduation strategy encouraged farmers to learn about the new technologies, and then begin purchasing these on their own.

Initially, the aim of the input subsidy was to increase maize and rice production, in order to improve both household and national food security. This was reinforced by the sharp rise in grain and fertilizer prices in 2007 and 2008. The country had faced a major drought and significant rise in food prices in 2006, leading to the institution of a ban on grain exports. While



rains improved in the following two years, the unexpected rise in international grain prices highlighted the concern to strengthen domestic production and grain stocks.

The second aim of the NAIVS was to introduce more farmers to the use of improved maize and rice seed and chemical fertilizer. Adoption rates and average yields were low, and relatively few farmers had ready access to these inputs. The subsidy, in effect, shared the costs of the farmer's own experimentation with these inputs, and encouraged farmers to re-evaluate the payoffs to improved inputs.

A third aim was to strengthen input supply chains for improved seed and fertilizer, by encouraging the establishment of agro-dealerships at the village level. By making the voucher redeemable at a local retail shop, and providing training to over 3855 rural agro-dealers, the designers promoted the expansion of input supply chains extending from national seed and fertilizer merchants, to regional wholesale facilities, and on to village based agro-dealers.

When the severity of the sharp rise in fertilizer and grain prices became apparent in 2008, the Government requested the World Bank to provide additional emergency funding for the NAIVS initiative. Available government resources were only adequate to cover 30% of the 2.5 million smallholder farm households believed eligible for the NAIVS program. Supplementary funding from the International Development Association (IDA) would allow the government program to benefit all eligible households on a three-year rotating basis. The World Bank's Board of Executive Directors offered Tanzania a concessional loan of US\$160 million (the Accelerated Food Security Project) over the three-year 2009/10 to 2011/12 period to expand the subsidy effort, and strengthen associated seed and fertilizer supply systems.


A third aim was to strengthen input supply chains for improved seed and fertilizer, by encouraging the establishment of agro-dealerships at the village level. By making the voucher redeemable at a local retail shop, and providing training to over 3855 rural agro-dealers, the designers promoted the expansion of input supply chains extending from national seed and fertilizer merchants, to regional wholesale facilities, and on to village based agro-dealers.

5.2.3 Targeting of Regions

The NAIVS program was originally piloted in two districts and then expanded to 58 districts distributed across 11 Regions¹⁴ in 2008/09. When the World Bank funding was requested, it was anticipated that the program would ultimately expand to 12 high potential maize growing regions. The rice subsidy would be directed to farmers growing rice in formal irrigation schemes in the same regions.

By 2011/12, the peak year of voucher distribution, the NAIVS had effectively been expanded to become a nationwide program. While the dominant share of input subsidy vouchers continued to be distributed in the 12 Regions originally designated, every other rural Region in the country received at least small quantities of vouchers. The Ministry recognized that the level of productivity gain achieved through the distribution of improved inputs in many drier regions

¹⁴ Iringa, Mbeya, Ruvuma and Rukwa in the southern highlands; and Kilimanjaro, Arusha, Manyara, Kigoma, Tabora, Mara and Morogoro in the central and northern parts of the country. Pwani was to be added in 2009/10.



of the country would likely be lower than in the higher rainfall zones, but was under political pressure to make the program more universal.

(a) Targeting of Farming Households

The NAIVS program primarily targeted a middle group of farmers with limited experience using improved seed and fertilizer, but with the farming resources needed to apply these inputs well. A complicated listing of qualification criteria was demarcated. To qualify, a farmer had to be a full time farmer in good repute, cultivating less than one hectare of maize or rice, willing to follow the advice of extension workers, willing to co-finance the inputs (pay 50 percent of the input cost), and willing to verify his or her use of the inputs. Preference was to be given, within this population, to female-headed households and farmers who had purchased little or no inputs during the previous five years.

Farmers meeting these criteria were to be selected by a Village Voucher Committee established specifically to facilitate the distribution of the vouchers. This Committee was to be elected by the Village Assembly to include 3 men and 3 women. The decisions of this Committee were then verified by the Village Assembly.

In practice, the Village Voucher Committees first sought to identify farmers capable of providing the cash needed to make the 50% co-payment for the inputs. Secondly, they sought to pursue what they perceived to be a fair allocation to needy and deserving households. In villages with a large proportion of vouchers per population (e.g. some villages received enough vouchers for over 90% of all farmers) only households that could not afford the top up failed to benefit. In villages receiving fewer vouchers relative to the local farm population, many Village Voucher Committees aimed to distribute vouchers to a few farmers in each part of the community. Based on the evidence gathered during implementation support missions, farmers were generally satisfied with the distribution process, and complaints were limited. Unhappiness was more likely when there were few vouchers available relative to the size of the village. And many farmers did not understand or agree with the three-year graduation strategy (discussed below).

In general, the Regional Government Officials met with the then Ministry of Agriculture Food security and Cooperatives (MAFC) staff once a year to discuss the allocation of vouchers by Region, and similar meetings were held at the regional level to decide on the district and village allocations. At each level of government, the aim was to allocate vouchers in proportion with local perceptions of the numbers of farmers who could 'make best use of these inputs. In practice, voucher distribution was not proportional to population. In some districts, the majority of farmers received vouchers, while in neighboring districts a much smaller proportion of farmers might benefit. The justification for these differences was not documented.

(b) Input Subsidy Package

Each targeted farmer was expected to receive three vouchers.

- ❖ Roughly 80% of the vouchers were allocated to maize farmers. These included vouchers for 10 kg of either an improved open pollinated maize variety, or a maize



hybrid, suitable for planting approximately one acre of land. District extension officers decided in advance whether a village would receive the voucher for the open pollinated variety or the hybrid seed.

- ❖ The remaining 20% of vouchers offered 15 kg of paddy seed – suitable for approximately one acre of irrigated rice.

The second voucher was for one 50 kg bag of diammonium phosphate basal fertilizer, or two 50 kg bags of Minjingu Rock Phosphate (MRP). Many farmers expressed dissatisfaction with the MRP in the earlier years of the program because this was received in the form of a powder which was difficult to spread. Farmers also questioned the crop response to this input. The MRP was later replaced with similar product called Minjingu Mazao that was granulated with the addition of nitrogen. Depending on their location, farmers could alternatively obtain different basal formulations such as a superphosphate, although this choice was unusual.

The third voucher was for 50 kg of top dress fertilizer which was almost universally designated as urea. Farmers in a few areas were allowed to alternatively purchase ammonium sulphate. Details about the number of vouchers distributed by regions are available in Appendix 2-4.

The value of the three vouchers was agreed upon in discussions with regional officials and representatives of the seed and fertilizer companies prior to each season. This was targeted to assure farmers paid only 50% of the value of the inputs as a cash top up. However, in some years rising fertilizer prices, in particular, required that farmers pay 55% to 60% of the input cost. The government agreed with distributors that marginally higher prices would be offered in designated parts of the country considered more remote.

(c) Selection of Agro-Dealers

The World Bank funding included support for the training of approximately 3,855 agro-dealers who registered interest in participating in the program. This training was provided just prior to the 2009/10 input distribution season. The trainees included many retailers who had not previously sold seed or fertilizer. However, not all of these later participated in the program.

Village and district officials were expected to jointly select the agro-dealers to participate in the program. This was to ensure the selection, where possible, of retailers known to, and trusted by, local communities. In practice, the district officials commonly took a dominant role in the selection of these dealers. It was anticipated that multiple agro-dealers would compete to provide inputs in each village. In practice, however, only one or two agro-dealers were designated as the 'reliable' providers of service.

In 2012/13, this arrangement was changed in response to complaints from seed and fertilizer companies who claimed they had provided inputs on credit to many designated agro-dealers, but then not been fully paid when the vouchers were redeemed. The seed and fertilizer companies sought a larger role in the selection of their designated agro-dealer agents in order to strengthen their commercial wholesale to retail supply chains. In addition, these dealers sought to be paid first in order to assure that seed or fertilizer provided on credit was fully funded.



*Grasses and forages are planted as contours surrounding food crops in Lushoto, where land is limited.
| photo credit: ILRI/Diep Pham |*



(d) Redemption of Vouchers

Farmers were expected to sign for their three vouchers, and then take them to the designated agro-dealer to exchange them, in conjunction with their cash payments, for the inputs. More commonly, however, recipients were asked to sign their vouchers on the day the inputs were readily available from the designated suppliers. This was to avoid the loss of vouchers and facilitate their management. In many cases, the vouchers were signed by farmers, and then maintained by the village voucher committee for safekeeping, while the farmers completed their cash payments and collected their inputs. The Village Voucher Committee then facilitated the completion of signatures by the agro-dealer.

As originally planned, the agro-dealer collected the vouchers, and submitted these to the District Agricultural and Livestock Development Officer (DALDO) for verification. The vouchers were then submitted to the local branch of the National Microfinance Bank (NMB) for payment of the 50 percent subsidy. Later, vouchers were collected by the seed and fertilizer suppliers (or their designated agents) for verification, submission to the NMB and payment.


(e) NAIVS Timeframe

The NAIVS program effectively began operation in 2008/09, with a plan to provide 2.5 million farm households each with three years worth of assistance on a rotating basis. By the third year of the program, the 730,667 households benefiting in the first season, would have received vouchers for three consecutive years (Table 2.1). The distribution of vouchers was scheduled to peak in 2010/11. Thereafter, the number of recipients would decline as the remaining targeted recipients graduated from the program. The overall commitment was expected to be completed during the 2013/14 cropping season.

Table 1.1: Household Beneficiaries for NAIVS

	Number of Vouchers distributed					
	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Planned	740,000	1,500,000	2,040,000	1,800,000	1,000,000	500,000
Actual	730,667	1,511,900	2,011,000	1,779,867	940,783	932,100

Source: MALF Agriculture Input Section



In practice, two changes disrupted this planned schedule. First, the program was expanded from the coverage of 12 regions of the country, to become a nationwide program. As a result, the number of potential beneficiaries sharply expanded. Second, the graduation strategy was not consistently implemented. A significant number of farmers continued to receive input subsidy vouchers for a fourth, and even a fifth, consecutive year. While the majority of vouchers continued to be targeted toward the high potential zones originally selected, by 2012/13, roughly 40% of the vouchers were being distributed in other parts of the country.

The Ministry of Agriculture Food Security and Cooperatives (MAFC) sought to maintain a primary focus on higher potential zones for maize and rice production, while arguing that the three year graduation strategy should not be consistently applied because inputs were still difficult for most farmers to afford, and some farmers needed additional experience with the use of these new inputs. However, the opportunity to test new seed varieties and fertilizer also needed to be provided to other farmers in the country. Ultimately, budget constraints limited the capacity of the MAFC to pursue its joint objectives of food security and expanding coverage. Correspondingly, the justification underlying the distribution of vouchers across regions, districts and villages became less clear.

The then Ministry of Agriculture Food Security and Cooperatives (MAFC) aimed to phase out the distribution of input vouchers and promote the development of rural credit markets as a means to facilitate input purchases. Initially, given the high cost of inputs and lack of well-functioning credit supply, the MAFC plans to subsidize this credit. Farmers may receive up to a 75% discount on their interest rate, but are expected to fully repay the loan. This proposal was piloted during the 2013/14 cropping season.

(f) Expenditure on NAIVS

The planned budget for the NAIVS targeted a subsidy cost of between US\$60 million and US\$100 million per year depending on the number of vouchers distributed. The unit cost of the subsidy vouchers for open pollinated maize and rice were estimated to be about US\$42 per household (for seed and two bags of fertilizer) and the hybrid maize seed package was priced marginally higher at an estimated US\$48 per household. In addition, the voucher printing was estimated to cost about US\$0.90 per set of three, and the NMB was to be paid a 4% commission for managing the payment of agro-dealers.

In practice, the actual cost of the subsidy program was dependent on the shifting year to year cost of fertilizer imports. In 2011/12, the subsidy was valued at between Tsh. 60,000 (US\$38) and Tsh. 68,000 (USD\$43) depending on the receipt of hybrid maize seed. The following 2012/13 season, the subsidy sharply increased in value to between Tsh. 100,000 (US\$63) for the open pollinated maize package to Tsh. 110,000 (US\$69) for the hybrid maize package.

NAIVS budget estimates are disaggregated into direct costs, indirect costs and complementary investments. The direct costs encompass the costs of the seed and fertilizer subsidy including the costs of the printing, distribution and redemption of the subsidy vouchers. The indirect costs include the overall costs of managing the implementation of the program, including awareness raising about program rules. These do not, however, encompass the wage costs of MAFC staff allocating time to program implementation. The complementary investments include the costs



of strengthening agro-dealers' network, and strengthening the national seed system, as well as the costs of independent impact assessment surveys.

The large difference between the planned and actual expenditures in 2010-11 and 2011-12 primarily reflects the problem of delays in the allocation of government funding within the designated fiscal year. This led to delays in the payment of agro-dealers and associated delays in the payment of seed and fertilizer suppliers. The MAFC had to request a supplementary commitment of funding for the 2011-12 fiscal year to complete payments to agro-dealers due prior to the end of the 2010-11 fiscal years. Similar delays were experienced in 2011-12 and in 2012-13.

Correspondingly, the estimates of the direct cost of the subsidy per household do not coincide with the fiscal year expenditure data. These must instead be derived from available information on the voucher value, printing costs, estimated distribution costs and redemption costs. The variability of these estimates primarily reflects changes in the value of fertilizer from year to year, as well as adjustments in the proportion of input costs subsidized. In 2011-12, for example, a rise in fertilizer costs after the voucher value was set resulted in the MAFC subsidizing approximately 40% of the designated input costs. The following year, this increased to over 55%.


Under the original terms of the AFSP, the World Bank agreed to fund 50% of the subsidy costs for the three years (2009-10, 2010-11 and 2011-12) with the highest number of expected beneficiaries. Given the budget difficulties faced by the government in 2011, the World Bank agreed to pay up to 83% of the costs of the maize and rice input subsidy in 2011-12. The Bank also agreed to provide US\$25 million in additional financing to assist the government with these subsidy costs during the 2012-13 cropping season.

5.3 Benefits and Bottlenecks of NAIVS

The input subsidy program helped Tanzanian smallholders harvest more than 2.5 million tons of additional maize and rice grain. These gains were large and consistent enough to encourage the government to lift a ban on grain exports in 2012, despite the existence of a sub-regional drought in Eastern Africa. Independent surveys confirmed that farmers receiving subsidized maize seed and fertilizer increased their maize yields by an average of 433 kg per acre. Farmers receiving subsidized rice seed and fertilizer increased their average paddy yields by 263 kg per acre. Furthermore, more than 2800 agro-dealers were trained. Commercial seed and fertilizer companies expanded their investments in wholesale to retail distribution chains. More than 700 of these agro-dealers are now designated commercial sales agents for one or more input supply companies.

Nonetheless, the NAIVS program has encountered multiple challenges during its implementation as summarized below.

- ❖ The program was originally designed to intensify grain production in 12 relatively high potential Regions. By the 2011/12 season, however, the program had effectively been extended to national coverage across 21 Regions, including many drier areas where the returns to improved maize and rice inputs are expected to be much lower.

- 
- ❖ While many participants graduated after receiving three years of support, upwards to 60% of the households receiving vouchers in 2011/12 were obtaining these for a fourth or even fifth consecutive year.
 - ❖ Some farmers claimed they had passed the vouchers on to a son or daughter.
 - ❖ Others complained that seed and fertilizer inputs were still expensive, thus justifying a continuing subsidy.
 - ❖ In effect, an inducement to encourage the testing and adoption of new technologies became an income transfer to reduce production costs.
 - ❖ The NAIVS program also faced multiple logistical challenges:
 - ❖ Many farmers received their vouchers late – sometimes well after the beginning of the planting season. In one season (2011/12) the vouchers were so late that the government issued supplementary ‘Certificates of Confirmation of Receiving Subsidized Agricultural Inputs’ in order not to miss the season altogether; this delayed the delivery and application of the improved inputs.
 - ❖ Delayed Delivery of Vouchers and Inputs One of the main challenges underlying the NAIVS was the untimely delivery of both vouchers, and the subsidized inputs. Farmers commonly complained about the late delivery of the vouchers. Many received their vouchers after the planting rains had already begun. This contributed to a delayed planting of their crops. But many also complained that they did not know whether they would receive a voucher until it was too late. This probably contributed to delays in the initiation of commercial input purchases by farmers not targeted to receive assistance. This problem was particularly difficult in the 2011/12 cropping season when the vouchers were withheld in the port of Dar es Salaam until January because of a tax dispute. The MAFC distributed Certificates of Confirmation of Receiving Subsidized Agricultural Inputs as a temporary replacement for the vouchers in order to allow targeted farm households to obtain their inputs. However, these were not consistently accepted by the designated agro-dealers.
 - ❖ Even if vouchers were available within the village, these were not necessarily distributed to the targeted households until the seed and fertilizer inputs were available. The delivery of these inputs was sometimes constrained by the failure of the agro-dealer to raise enough capital to purchase the inputs from available wholesalers. While some agro-dealers were able to obtain seed or fertilizer on concession from the supplying companies, many with limited or unfavorable credit histories had to purchase and deliver the inputs as cash became available. In some cases, agro-dealers supplied seed and basal fertilizer, but the top dress fertilizer could only be supplied at a later date.

These sorts of delays undoubtedly reduced the yield gains obtainable with the improved inputs. The profitability of using improved seed and chemical fertilizer declined, undermining the probability of success of graduation and sustainability of the input market.



5.4 Delayed Payment to Seed and Fertilizer Suppliers

The delay in the delivery of inputs was reinforced by the delay in the payment to seed and fertilizer suppliers. In 2011, 2012 and 2013, a significant share of the vouchers were still being redeemed by agro-dealers or seed and fertilizer suppliers more than six months after the inputs had been provided. The primary reason for this problem was that the government struggled to provide its funding for the input subsidy on a timely basis. In addition, there were multiple delays in the process of submitting vouchers for redemption and completing payments through the NMB. Vouchers had to be organized as a set, and submitted to the District Agriculture and Livestock Development Officer (DALDO) for countersignature prior to their submission to the National Microfinance Bank (NMB). The NMB refused to accept vouchers if there was not enough funding to complete all payments due within any particular district. The NMB also refused to accept vouchers for redemption in districts differing from their targeted distribution. If serial numbers were mixed in the original allocation, it could take weeks to sort out the mistake during voucher redemption. Finally, the NMB encountered problems with the sorting of vouchers and verification for payment.

The long delay between the timing of the provision of inputs, and the payment for these inputs, had several consequences. Agro-dealers struggled to obtain enough capital on a timely basis to assure the completion of their input deliveries. Some agro-dealers suffered a loss on the program and dropped out, because of the high interest rates on outstanding input loans. Some obtained late payments and used these to pay other debts, rather than paying their debts to seed and fertilizer suppliers. The combination of high interest rates on outstanding loans, and the uncertainty of payments, likely contributed to increasing the costs of both seed and fertilizer inputs available to the NAIVS program. Again, these problems undermined the sustainability of the program.

- ❖ The agro-dealers and associated seed and fertilizer suppliers were commonly paid late. While most vouchers were ultimately reimbursed, the process of collection from the agro-dealer, confirmation by district officials, and reconfirmation by a participating commercial bank, was slow. At times, there was no funding available in the project account to meet these payments. Originally, voucher payments were made to agro-dealers, but some of these retailers failed to resolve their debts with their seed and fertilizer suppliers. Therefore, in the later years of the program, the seed and fertilizer companies were mandated to collect the vouchers from their agents, and receive their reimbursement payments directly.
- ❖ It is estimated that less than 1% of the vouchers may have been fraudulently redeemed. However, there were multiple rumors, and newspaper reports of district officials working with local agro-dealers to redeem vouchers for their own benefit. Some of these cases were confirmed, and correspondingly prosecuted by the police and anti-corruption agency. The number of complaints was larger in the earlier stages of the program than in later years.
- ❖ Some observers complained that the vouchers failed to assist the poorest households. However, this was not the intention of the program.

- ❖ Instead, vouchers were offered to households that could afford the 50% cash top-up payment.
- ❖ Priority was then given to households who that not previously purchased seed and fertilizer, and to female-headed households.
- ❖ Voucher recipients tended to be marginally better endowed than the average farmer, but there was little sign of elite capture once the rules of allocation and village voucher committees were well established in 2009.
 - The main challenge of the program was to achieve a successful graduation to commercial input purchases.
- ❖ 47% of the graduates that had never tried improved inputs prior to the NAIVS continued to purchase seed on their own, and
- ❖ 19% continued to purchase fertilizer.
- ❖ In comparison, two-thirds of participating farmers that had previous experience with the improved inputs continued to purchase seed, and 44% continued to purchase fertilizer, after graduating.
 - The combination of high input costs at the farm gate, and the low prices for surplus grain, limited the profitability of fertilizer to most farmers.
- ❖ Those obtaining higher levels of fertilizer use efficiency, and thus higher yields per unit of input applied, found the investment profitable. However, fertilizer is not profitable for the majority of households obtaining lower yield gains.
- ❖ Additional assistance is needed to both further reduce input costs (e.g. through bulk purchases), assure correct application (e.g. through better targeting of nutrients, timeliness and improved weed control), and raise farm-gate prices (e.g. through bulk and delayed seasonal sale of grain products).

5.5 Views of Stakeholders in the Field

Information presented below was obtained from farmers engaged in maize farming, this is the primary target for the government's input subsidy scheme in Mbeya and Njombe regions. Anecdotal evidence was obtained from both government officials involved in supervising the scheme and farmers benefiting from the scheme and those that were not beneficiaries. Their views can be summarized as follows:

I: Government officials were of the view that the current scheme was:

- a. Too widely spread with shallow outreach and benefited relatively fewer farmers than actual requirements in the target villages. The package was also offered to some resource-poor farmers, who ended up selling it to other people. A change to the approach was recommended by e.g. targetting fewer and more enlightened villagers and ensuring that proper supervision was carried out in fertilizer and insecticide application as well as timely weeding of the fields.




- b. Farmers were given a package of two types of fertilizers (DAP and Urea), whereas the technical recommendation for Njombe and Mbeya regions was a package of three types of fertilizers (DAP, Urea and CAP) for a farmer to obtain optimal yields per acre of maize. Giving them only DAP and Urea sent the wrong message to most farmers that it was all that was needed for them to get better yields. It was recommended that they be provided with the full recommended package, including insecticides for them to obtain the optimal benefits from yield boosting inputs.
- c. The problem of late delivery of seeds and fertilizer still persisted compelling farmers to use their own stocks (usually local seeds) and defer the application of fertilizers until they received them; leading to lower yields. Government is therefore urged to keep on improving the timing of supply of inputs if the scheme is to fully provide the intended benefits.
- d. The existing fertilizer and seeds packages wrongly assumed uniformity of soil types in a given district. It is recommended that soils be widely tested to determine the type and dose of fertilizers required in each Ward.

II: Researchers required more financial and human resources to adequately conduct on-farm research with farmers that will provide better results from the yield boosting inputs.

III: Traders had several complaints and suggestions for improving the input subsidy system:

- e. When subsidized inputs come too late during the season farmers opted to leave seeds (because they would have already planted using their own seeds) and take fertilizer alone. This is a loss to the government (for the subsidized amount) and the traders for the part they have used to buy the seeds.
- f. They could not understand the logic behind the requirement by Tanzania Fertilizer Company (TFC) that traders should surrender deeds for fixed assets to be registered as agents; and yet they were required to pay fully on cash for fertilizers bought. This denied them opportunities to use their assets to acquire loans from other sources.
- g. They spent unnecessarily too much time (up to more than three days) waiting to load consignments of improved seeds from government agents such as Agricultural Seed Agency (ASA) in Njombe because the agency used manual methods for packaging and labeling seeds.
- h. The profit margin per package of seeds is TZS 2,000 per 10 kg package, considered too small when one takes into account the several trips to a particular village an agent has to make before the transactions are completed
- i. Village Input Distribution Committee demanded to be paid lunch allowances by the Input Agents, a cost not factored in when they negotiated for the cost of input distribution. The practice has been going on despite a circular by the LGAs prohibiting it. Agents know that Village governments, on the other hand, don't budget for the upkeep of committee members, and if they don't pay them there will be little support for the whole exercise of delivering and collecting payment from farmers.

- 
- j. Some popular seeds preferred by farmers (e.g. PANAR in Njombe) were not included in the list of subsidized seed varieties. This requires a more harmonized approach in identifying seed breeds acceptable to farmers.
 - k. The system where farmers were allowed to partially pick what they could afford, and yet it would not be helpful in realizing the full benefits, could be discouraged. Government should make it clear that farmers should use the whole technological package or leave it.
 - l. Government seed agency (ASA) should be more financially enabled to adopt better seed sorting and packaging technologies as well as invest in marketing approaches to compete with private seed producers and distributors.

IV: Farmers attested that subsidized inputs helped to boost yield levels and income. However, they noted that:

- m. Given that they mostly relied on natural precipitation, more yields could be realized if seed planting was done on time. This would require two actions: timely land cultivation and timely access to improved seeds. Farm mechanization centers could be one of the solutions for timely land preparation, while improved management of the input supply system is required to ensure seeds are received on time.
- n. Most farmers believed that the subsidized package of inputs (DAP and Urea) was all that was needed for them to improve yields. It was therefore suggested that it was better to reduce the number of beneficiaries and remain with fewer who obtained the technically recommended package of DAP, Urea, CAN and pesticides. Farmers who used the full package incurred about 44% more cost per acre, but managed to have 33% higher yields compared to those that applied only two types of fertilizer (see table 2). However, a subsidized farmer who incurred own expenses to apply an additional round of fertilizer, had the same level of yield obtained by a fully self-sponsored farmer but had TZS 40,000 higher gross margin per acre. Below is a table showing the impacts of input subsidies under different subsidy approaches.



USAID in Africa
Paprika pepper farmer in Tanzania
A farmer shows off her crop of paprika
peppers in Mang'alali village, Iranga
region. USAID helps farmers to improve
their yields and get
better prices for their crops in Tanzania. |
Photo credit courtesy USAID|



Table 5.1: Comparison of Performance of the different phases of Input Subsidy Approaches used by Government

	Type of Scheme	Effects on use of inputs	Effect/Impact on production and productivity	Effect on farmers' income	Effects on Government Budget
1970s:	Transport subsidy for pan-territorial pricing to allow for equitable access to fertilizer	Could not stimulate much because farmers had to pay the full factory cost of inputs, but there was a relief in transport cost	Only well-off farmers could afford to use fertilizers, leaving others to depend on area expansion to compensate for low unit area productivity	Those buying fertilizer had their income savings due to subsidized transport costs	Used USD 15 million per year, equivalent to TZS 35 ¹ million
1990-2001	Removal of transport and input subsidy	Use of fertilizer declined by 84%	Reduced productivity and level of production. Production compensated by increasing area farmed	All treated equally. Those expanding the area farmed had to incur more costs	No budget allocated for subsidy
2001-2007	Partial transport subsidy and input subsidy	Use of fertilizers and improved seeds increased	Positive to those applying. Demonstration effects to those not covered on benefits of fertilizer	Positive income changes	4-5 percent of budget allocated for subsidies (Minot,2009)
2007/08-2013/14	Paper Voucher system (NAIVS). Started with 50% subsidy on fertilizers and seeds, reached 2 million farmers	Use of fertilizers and seeds increased to reach 151,000 mt by 2013/14 (57% of 263,390 mt nationally used amount)	Contributed to additional 2.5 million tons of cereals in three years	Positive, but those affording to an extra bag obtained about 30 percent more income	Increased from TZS 31.9 bn (or USD 29.7 million ²) in 2009 (for 130,000mt) to TZS 128.7 bin (or USD 79.11 million ³) in 2011 (151,000 ton) (estimated at USD 100m per year)
From 2014/15-	E-Voucher system (modified NAIVS). Adjusted transport costs which farmers have to pay dealers. Dealers lodge claims electronically	Positive effects similar to the use of paper voucher	More cereals to be available to the market	Deliver cost of fertilizer gone down to control of arbitrary profit margins charged by dealers in the old system	Cost for printing vouchers; cost of creating and updating a register of all farmers ⁴ ; saving of 2% of budget suspected of pilferage under the current system



5.6 Decision to establish E-Voucher Input Subsidy System from 2014/15

Given the NAIVS bottlenecks discussed above, there is a need to address them through an electronic database voucher system for fertilizer and seeds subsidy. By doing so:

- ❖ There would be cost savings emanating from stoppage of printing vouchers in England: and reduced costs emanating from stoppage of distributing vouchers.
- ❖ There will be costs associated with installing the electronic voucher system all the way from relevant villages to the central government; actually there will be five locations where the electronic system will have to be installed: Village; District; MALF, Ministry of Trade, Industries and Investment, TRA and Port.

It was decided that from 2014/2015 the NAIVS should be modified to become the Electronic Smart Subsidies in Agriculture (ESSA). Under the ESSA farmers are entitled to input vouchers which enable them to acquire specific inputs to the value of the voucher (which is approximately half the market price).

This analysis of e-voucher fertilizer subsidy system is done in relation to a) development costs (cost of Establishing Data Base¹⁵) b) Final cost per user and; annual monitoring and implementation costs.

During the farmer registration, the following variables were captured for each farm/farmer:

- ◆ Farmer's Name and Picture of farmer
- ◆ Famer Mobile number
- ◆ Family size
- ◆ Address of Farm
- ◆ Commodities grown
- ◆ GPS coordinate of the farm
- ◆ Type of ID, Photo of ID, ID Number.
- ◆ Location of the farm (village; ward; district).

The Farmer name, mobile number, commodity, ID type and ID Number are used for the E-subsidy database in the fertilizer subsidy program. These variables are critical and used to identify beneficiary farmers of the fertilizer subsidy for traceability of the subsidy and to avoid double allocation.

The process for the fertilizer subsidy program is then as follows:

1. All fertilizer suppliers who wish to take part in the subsidy program are required to register with the crops directorate of the MOFA and qualified suppliers' details are then inputted into the e-subsidy database.
2. Once the farmer is registered, on the e-subsidy platform an electronically generated subsidy code is generated and automatically sent directly to the beneficiary farmers' phone.

¹⁵ Includes: System Analysis, Designing, consultations, stakeholder engagement and sharing of system architecture; Server software's (Certificates, PDF Convertors); System development; System Implementation; hosting & Domain maintenance and; backup system.



3. The farmer then sends the code to the retail shop where the retailer validates the code by sending the code to the subsidy platform using Unstructured Supplementary Service Data (USSD) a protocol used by GSM cellular telephones to communicate with the service provider's computers. The platform then validates the code by sending the quantity of each commodity the farmer is entitled to, the name of the farmer the type of ID to be used to identify him/her and the ID number.
4. The supplier initiates the claim process upon confirmation of the farmer ID, by sending a USSD message to the platform with the commodity and the quantity the farmer wants to collect. The subsidy platform sends a message to the farmer to confirm if he indeed wants to claim the said commodity and amount. Should the farmer confirm yes, the supplier is then notified to release the item to the farmer.

5.6.1 Key operators of the E-Voucher system

The key operators that will manage the e-voucher system include the Central and local governments. At the central government relevant ministries are: The Ministry of Agriculture, Livestock and fisheries, Ministry of Industries, Trade and Investment, The ministry of Finance and Planning, Tanzania Revenue Authority (TRA) and Tanzania Ports Authority (TPA). At local government level only rural local governments where main food crops, particularly maize are grown; in total these are about 150 LGAs. Each of these (155) operators will require computer and related systems and hence both fixed and recurrent costs.

5.6.2 Structure of the e-Voucher Database

Databases are basically computer structures that save, organize, protect, and deliver data. A system that contains databases is called a database management system.

Table 2.1: Database costs for e-voucher system (USD)

No.	Item	Y1	Y2	Y3	Y4	Y5	Total
1	Approximate cost of Establishing DB ¹⁶	62,119	-	-	-	-	62,119 ¹⁷
2	System Implementation ¹⁸	10,000	-	-	-	-	10,000
3	Training - Admin, Users	7,500	-	-	-	-	7,500
4	Backup system (Cloud storage)	360	360	360	360	360	1,800
5	Computers	108,500	-	-	-	108,500	217,000
6	Final Annual cost per user	1,085	1,085	1,085	1,085	1,085	5,425
7	Total	189,564	1,445	1,445	1,445	109,945	303,844

¹⁶ Includes: System Analysis, Designing, consultations, stakeholder engagement and sharing of system architecture; Server software's (Certificates, Pdf Convertors); System development; hosting and domain maintenance; support and maintenance

¹⁷ Ghana Ministry of Food and Agriculture (MOFA) July 2017 report on "Impact Assessment for Agribusiness Reforms" for cost of Establishing Database

¹⁸ This together with the remaining cost items were computed by the Research team

The initial cost of creating the database, software and hardware costs and establishing processes, mostly borne by the government will not be a recurring expense in the upcoming years of the expansion of the registration process.

5.7 Value Cost Ratio (VCR)

The VCR is a common method for examining the financial incentives to use fertilizer; it is the ratio of technical response to fertilizer use and the fertilizer-output price ratio. If the $VCR > 1$ then fertilizer use is profitable and incentivized since this indicates that the value of the output generated is greater than the cost of the fertilizer; however, the literature suggests that for developing countries the general rule is that the VCR must be above 2 before a farmer will consider using fertilizer, and in particularly high-risk environments the VCR may need to be as high as 4. This is because farmers may face additional costs to applying fertilizer and they may face risks each year that could lower output, lowering their VCR.

According to the Ghana Ministry of Food and Agriculture (MOFA) July 2017 “Impact Assessment for Agribusiness Reforms” (July 2017), the VCR for Tanzania is 2.5. This ratio is not very different from other countries like Mali (3.72), Burkina Faso (2.82), Ghana (2.6), Nigeria (2.0), Uganda (2.0) Rwanda (1.75) Kenya (2.25) Malawi (2.0) and Mozambique (3.75).

Table 5.2: Potential Benefits and Impacts of the E-voucher Database

Benefit	Impact
Improve Targeting of farmers for the subsidy program.	Database will greatly improve the ability to quickly and efficiently identify small scale farmers, their locations and subsidy needs and to more accurately target them for the subsidy program.
Reduce the problem of leakage of subsidized fertilizer.	The accuracy of the biometric fingerprint identification process will ensure that the farmer collecting the subsidy is the correct person and has collected the correct type and amounts of fertilizer.
Provide a real time updated, database of the subsidy distribution process.	Data is expected to be transferred to the e-agriculture database with minimal delay from the collection points.
Administrative Cost Savings.	Savings from fast and easy electronic transmission of subsidy data and subsidy redemption information, less administrative support required for MALF and for agro-dealers and distributors.
Time savings in processing subsidies.	Electronic transmission greatly reduces time to process subsidies.
Cost savings to Suppliers and distributors.	May result in cost savings for suppliers and distributors.
Ease of use – impact on adoption.	Ease of use will greatly impact adoption of the system and increase reach of subsidy program.
Ease of monitoring fertilizer levels.	If used to track the amount and type of fertilizer distributed, can be effectively used to monitor / replenish fertilizer levels and plan for future subsidy seasons.



Provide transparency and accountability in the subsidy program.	Data will be visible to all relevant parties and authorities increasing transparency at all steps and levels of the subsidy process.
Improve payment tracking and payment timelines for agro-dealers.	If used to track fertilizer amounts and payments can greatly help to ensure that agro-dealers are paid the subsidy money due to them honestly and transparently in a timely manner, based on their sales volumes. This would be an important factor in improving one of the biggest hurdles for the success of the subsidy programs – the timely payment of the agro-dealers.
Create a central store of accurate, secure and trusted information.	Provide a reservoir of data that can be used by MALF to shape and influence national agricultural policies and by MALF to connect farmers with other agricultural and economic initiatives and opportunities such as loan programs.
Provide entry into the UN backed initiative - the Blue Numbers.	The Blue Numbers program seeks to give unique identifiers for Smallholder farmers allowing them to be properly integrated into global supply chains and provides multiple benefits to the farmer under the program.

5.8 Experience of E-Voucher system from other countries

5.8.1 The Case of Zambia and Zimbabwe

HOW E-VOUCHERS WORK: E-vouchers use a mobile delivery and tracking system to distribute subsidized products through private-sector suppliers to targeted farmers. This involves a web-based system that can be accessed on mobile phones. This allows for real time registration of beneficiaries and electronic payment to the retail agents who distribute the products.

Under an e-voucher system, beneficiaries are targeted just as they would be under the current NAIVS system. The beneficiaries receive a Voucher Scratch Card (VSC) linked to their specific National Registration Card (NRC) number. This scratch card entitles the beneficiary to a specified array of agricultural inputs and implements. The cards are redeemed at nearby retail agro-dealer outlets. On confirmation of the transaction, which is done by entering the scratch card number and beneficiary's NRC number through their mobile phones, the agro-dealer receives instant payment to their online account.

E-vouchers are designed to leverage private sector participation in input distribution, and therefore, can help to eliminate many of the costs currently incurred by the government. Tendering is eliminated, because farmers choose the inputs they wish to acquire from local agro-dealers. Agro-dealers assume the cost of input storage, while the e-voucher system facilitates the management of payments. Farmers incur the cost of transporting inputs from the agro-dealer to their homes. Consequently, the administrative cost of implementing the input subsidy through an e-voucher could be significantly lower than the paper voucher distribution system. The experience of Zambia shows that the administrative costs for the e-voucher amounts to 5% of the entire subsidy budget compared to 35% under the current FISP system (Makunika 2011).



Timeliness of Input Delivery: The World Bank (2010) identifies several factors that contribute to frequent delays in distributing subsidized inputs to farmers, including corruption in the distribution process and inefficiencies in planning, tendering, and procurement.

By eliminating the need for tendering, as well as delegating input distribution to the private sector, e-vouchers have the potential to reduce delays in input distribution. Again, the Zambian experience attests to this point. According to C SPR (2011) 68% of the e-voucher beneficiaries interviewed in nine provinces had received their e-voucher inputs by October and 96% by November 2010. The remaining 4% received their inputs by December the same year. This is a significant improvement over the previous FISP system, which in some cases does not deliver inputs to farmers until January (C SPR 2011).

Agro-Dealer Density: Agro-dealer capacity and density are major concerns when considering the viability of implementing a voucher-based input subsidy program.



*Harvested Napier ready to be taken to farmers plot for planting (Arusha, Tanzania)
| Photo credit: ILRI/ David Ngunga |*



Rolling out the e-voucher system will require the following:

- i. Undertake a series of start-up planning, organization and training activities. This should include completion of a computerized farmer registry in potential target areas, e-voucher program design/implementation details, and agro-dealer accreditation and farmer sensitization/training;
- ii. Design a geographically phased approach. This is necessary given the variations in terms of agro-dealer concentrations, infrastructure availability, and farmer concentration. Our recommendation is to begin with those areas with high potential for success, i.e., dense agro-dealer network, good infrastructure, prior experience with the system, as well as already existing demand for inputs to ensure initial success and to lower the risk of program failure during the initial learning phase.
- iii. Donors can assist government to improve the effectiveness of the system by offering training to agro-dealers on agronomic practices and business skills;
- iv. To ensure agro-dealers have sufficient access to inputs on credit from the input suppliers to meet increased demand brought about by a voucher-based FISP system, mobile transaction companies can assume the additional role of facilitating payment to input suppliers by agro-dealers for inputs received, as well as facilitating ordering of inputs;
- v. To promote greater private sector response, government should determine and announce well in advance the value of the vouchers, and the list of qualifying inputs in participating districts;
- vi. E-voucher cards should be designed to be flexible, so as to permit farmers to acquire a variety of inputs and to source inputs from various agro-dealers in their region;

If the FISP is to be implemented through the e-voucher, the government cannot rely on the private sector to carry the debt as they do now. This may require better financial management on the part of government or the development of a settlement guarantee system that allows accounts to be settled in the absence of immediate repayment from the government.

5.9 Conclusion

The E-Voucher system is most likely going to benefit both the government (reduced cheating) and the farmers (reduced transaction costs).

Fertilizer Regulations Reform On Testing Period

6.1 Introduction

Tanzanian law requires that all importers and exporters of fertilizer be registered and issued with permits. The Fertilizer Act 2009¹⁹ put forward regulations on manufacturing, importation and trading in fertilizer or fertilizer supplements, among others. The Act was developed by the Ministry of Agriculture (now Ministry of Agriculture Livestock and Fisheries) and private sector involved with fertilizer, focusing on monitoring the quality of imported industrial fertilizers to be used by the farmers²⁰. The Fertilizer Act established the Tanzania Fertilizer Regulatory Authority (TFRA) to undertake the regulation of all matters pertaining to quality of fertilizers, registration and license of all fertilizer and fertilizer supplements dealers and their premises, the issuance of permits for importation and exportation of fertilizer and fertilizer supplements, maintaining and periodically publishing a register of fertilizer dealers. Under this Act, all sterilizing plants and fertilizer premises must comply with all the required conditions for registration including minimum knowledge in the management and use of fertilizer and be duly registered. The application for registration is submitted to the director of TFA who may cancel/suspend or accept the registration upon satisfaction. Currently, there are 20 importers but the three dominant importers are Yara²¹, ETG, and Premium Agro-Chem²². These three companies account for more than 70% of the quantity imported.

Until early 2017, importers of a new type of fertilizer paid USD 30,000, amounting to USD 10,000 per season, before obtaining approval and registration from the Tanzania Fertilizer Regulatory Authority (TFRA). This arrangement was seen as unnecessary given that other countries were already using the same type of fertilizer. It was after consultations with stakeholders that the requirement was relaxed in late 2016 to cover only one season, with a payment of USD 10,000.

This report attempts to show how the shortening of the testing period from three to one season will impact on farmers' yields and incomes. It also shows, based on qualitative judgment, how that decision will impact on the growth of the fertilizer industry in terms of blended types and choice and the expected costs to government by reducing the period of testing and testing fees.

6.2 Historical data on fertilizer use in Tanzania

Fertilizer use in Tanzania remains low, with less than 7% of the planted area using inorganic fertilizers. The low use of fertilizer is frequently explained as a combination of demand and supply constraints. The level of application of inorganic fertilizers was estimated by FAO and IFDC to be approximately 17kg per hectare in 2015/16²³, based on estimated 300,000 tons used by farmers²⁴. Before 2016, fertilizer use rose at an average of 10% per year, increasing

19 It replaced the Fertilizer and Animal Foodstuff Act of 1962

20 Benson, Todd, S. Kirama and O. Selejo (2012)

21 YARA supplies 120,000 tons of fertilizer annually to the East African region, including through a network of distribution outlets across Tanzania

22 FAO-MAFAP and IFDC (2017): section 3.1

23 This is considered a significant increase compared to an average of 5.5 kg/ha applied between 2005 and 2009

24 FAO-MAFAP and IFDC (2017): executive summary



from 119,000 tons in 2005/06 to 210,900 tons in 2012/13 (see Annex table 1)²⁵. Despite the increase, it is still considered too low compared to the estimated annual nutrient depletion rate of 41 kg for nitrogen, 4 kg for phosphorus, and 31 kg for potassium²⁶. The most predominant type of fertilizer is Urea, meant to supplement nitrogen deficiency in our soils; followed by NPK (which combines nitrogen, phosphorus and potassium); and then Diammonium phosphate (DAP), which is also rich in nitrogen but combined with phosphorous. The three types of fertilizers (Urea, DAP and NPK) fertilizers account for 84% of all products used in the country. The application of locally made Minjingu Rock Phosphate (MRP) blends peaked in 2008/09, but failed to maintain local demand which kept on decreasing until 2011 when it started to pick up again²⁷ (see Figure 1). According to records by TFRA there are 37 different types of fertilizer currently registered for use in Tanzania²⁸, this compares to 250 types in the markets of Zimbabwe and Zambia. The lack of access to blends means that farmers cannot use the fertilizer varieties that are best suited to their soil characteristics; as a result their yields suffer, as do their potential incomes.

It is worth noting that not all of the fertilizer imported or produced locally is used in one season. This happens despite the stock of fertilizer falling far below the ideal amount required to raise crop productivity to technically feasible ideal levels. According to analysis carried out in 2012 by IFDC²⁹ the country was supposed to use 574,000 tons of fertilizer by 2015 in order to attain productivity gains envisaged under the TAFSIP. But according to a recent report compiled by FAO-MAFAP/IFDC, the amount used in 2015/16 it reached only 300,000 tons.

The decision to reduce the time to test and approve new types of fertilizer is therefore timely. However, given that it is less than one season since the rule was relaxed, it is not practical to conclude if that decision has led to more fertilizer importation. At this juncture, therefore, we can only articulate what were the implications of requiring three seasons of testing, and what the anticipated benefits are from reducing the testing period to one season.



Desmodium in Mbaazi, Tanzania.
| photo credit: CLEANED VC |

25 www.africafertilizer.org

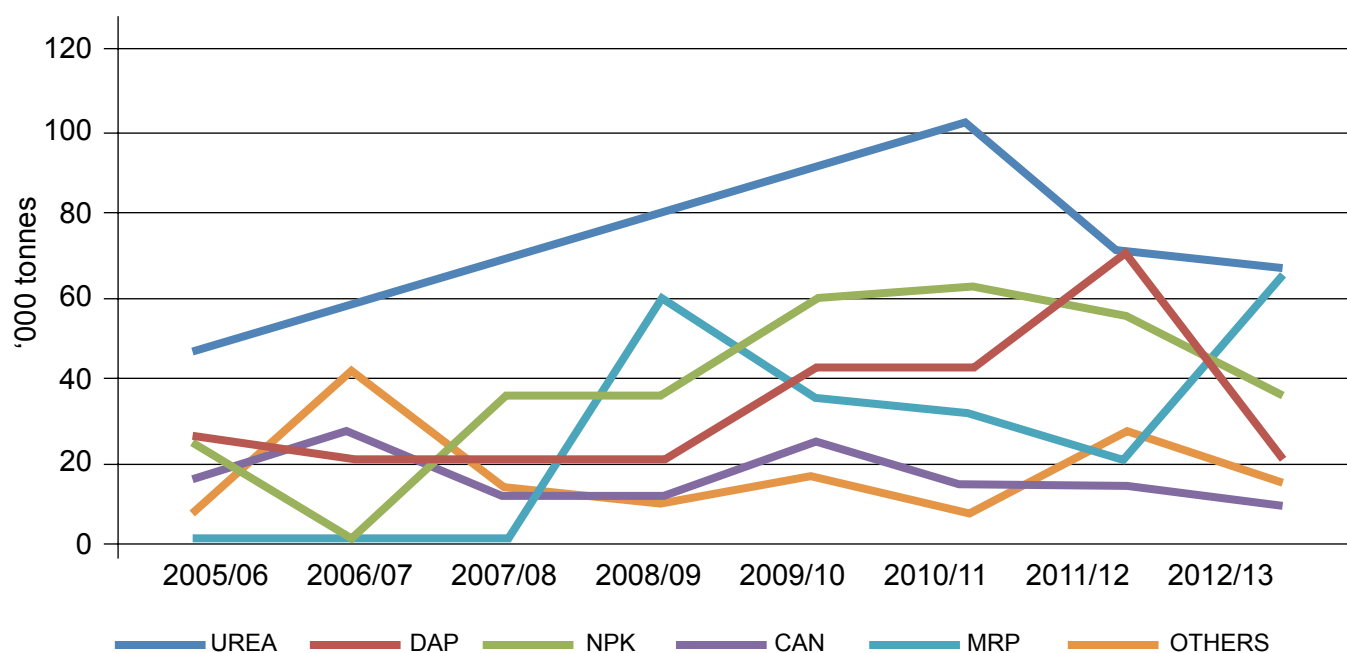
26 IFDC (2012)

27 Production of MRP is about 30,000 tons per year but still require imported amounts of nitrogen and potassium for blending so that its used for cash crops like coffee, tea, tobacco, and sugarcane, particularly in the acidic soils found in large parts of Tanzania

28 GAFSP, 2016. *Global Agriculture And Food Security Program (Gafsp) Private Sector Window*

29 *Agribusiness Country Diagnostic – Tanzania*, 2016)

Countrywide Fertilizer Used per Year



Note: MRP=Minjingu Rock Phosphate; DAP=Diammonium Phosphate; NPK=Nitrogen, Phosphate and Potassium blend; CAN=Calcium Ammonium Nitrate

Source: Annex table 1 (www.africafertilizer.org).

6.3 Implications of Restricted Regulations

Restrictive fertilizer regulations had several implications, mostly negative, to the firms, the farmers and the nation in general as summarized in table 6.1 below.

Table 6.1: Summary of Implications of Restricted Fertilizer Importation Regime

Benefit	Impact
Improve Targeting of farmers for the subsidy program.	Database will greatly improve the ability to quickly and efficiently identify small scale farmers, their locations and subsidy needs and to more accurately target them for the subsidy program.
Reduce the problem of leakage of subsidized fertilizer.	The accuracy of the biometric fingerprint identification process will ensure that the farmer collecting the subsidy is the correct person and has collected the correct type and amounts of fertilizer.
Provide a real time updated, database of the subsidy distribution process.	Data is expected to be transferred to the e-agriculture database with minimal delay from the collection points.
Administrative Cost Savings.	Savings from fast and easy electronic transmission of subsidy data and subsidy redemption information, less administrative support required for MALF and for agro-dealers and distributors.



Time savings in processing subsidies.	Electronic transmission greatly reduces time to process subsidies.
Cost savings to Suppliers and distributors.	May result in cost savings for suppliers and distributors.
Ease of use – impact on adoption.	Ease of use will greatly impact adoption of the system and increase reach of subsidy program.
Ease of monitoring fertilizer levels.	If used to track the amount and type of fertilizer distributed, can be effectively used to monitor / replenish fertilizer levels and plan for future subsidy seasons.
Provide transparency and accountability in the subsidy program.	Data will visible to all relevant parties and authorities increasing transparency at all steps and levels of the subsidy process.
Improve payment tracking and payment timelines for agro-dealers.	If used to track fertilizer amounts and payments can greatly help to ensure that agro-dealers are paid the subsidy money due to them honestly and transparently in a timely manner, based on their sales volumes. This would be an important factor in improving one of the biggest hurdles for the success of the subsidy programs – the timely payment of the agro-dealers.
Create a central store of accurate, secure and trusted information.	Provide a reservoir of data that can be used by MALF to shape and influence national agricultural policies and by MALF to connect farmers with other agricultural and economic initiatives and opportunities such as loan programs.
Provide entry into the UN backed initiative - the Blue Numbers.	The Blue Numbers program seeks to give unique identifiers for Smallholder farmers allowing them to be properly integrated into global supply chains and provides multiple benefits to the farmer under the program.

i) Firm level implications

The most obvious disadvantage to fertilizer companies was the extra cost of USD 20,000 they had to pay to the TFA for carrying out the tests and getting the required registration certificate. The change of policy now requires that a new fertilizer may be sold to farmers after one year of testing, normally in multiple locations and with different farmers, as a pre-registered product while full registration tests continue. This arrangement has certainly provided some financial relief to the companies.

iv) Farmer level implications

Restrictions on new types or blended fertilizers tend to restrict choices and therefore increase the prices of available brands, thus affecting effective demand by users. Studies of fertilizer markets throughout Africa have shown that reducing trade costs together with increased reliance on domestic blending to avoid transportation of inert fillers can easily save \$30-40 per ton.

6.4 Implications of relaxed regulatory regimes

Among the benefits of relaxing regulations pertaining to the fertilizer industry include reducing transaction costs for new fertilizer blends introduced in the country, which will also attract more players³⁰ and more competition for the benefit of consumers. The entry of new blends will also offer farmers a wider choice adaptable to the local soils. Another advantage is that of allowing TFRA to deal with their role of quality oversight of stocks sold to customers, which has been one of the weaknesses in the fertilizer value chain. According to Tanzania Association of Horticulture Producers (TAHA) the effectiveness of TFRA is constrained by the requirement for compulsory field trials rather than permitting automatic registration against vendor specified minimum nutrient content with a listing of all contaminants. A relaxed regime would enable TFRA to know what is available in the market and provide for a targeted approach to testing based on guaranteed content. Increased market surveillance by inspectors will curb the widely reported problems of adulteration. Officers will also have more time to offer customer education and also receive on the job training courses for handling some specialized agro-chemicals, especially in the horticulture industry. It is obvious that farmers will be buffered from incidences of fake and adulterated fertilizers, which have negatively affected productivity and their income levels.

Table 6.2: Summary of Implications of Relaxed Rules for Fertilizer Importation and Registration

Firm	Farmer	Government	Country/Society
Advantages			
<ul style="list-style-type: none"> Requirement for one season of testing saves the company USD 20,000 	<ul style="list-style-type: none"> Fast tracked access by 66% to start using an approved new type of fertilizer Which could give the farmer an extra two seasons of gaining from improved yields as a result of the earlier released fertilizer More effective TFRA in controlling quality of marketed stocks will guard the farmer against adulterated stocks of fertilizer 	<ul style="list-style-type: none"> 66% saving of salaries to deployment experts undertaking the testing for three years Staff of TFRA have more time for inspections on quality and curbing adulteration of products. Appropriate type of fertilizer offers farmers the opportunity to realize higher yields and better income 	<ul style="list-style-type: none"> Earlier capture of the markets with more competitive commodities whose productivity has been increased using improved fertilizers

³⁰ Such as Yara International, which in 2015 launched a USD 25 million fertilizer terminal. The investment is likely create over 400,000 new jobs within the agricultural value chain while increasing revenues by USD 1.2 billion



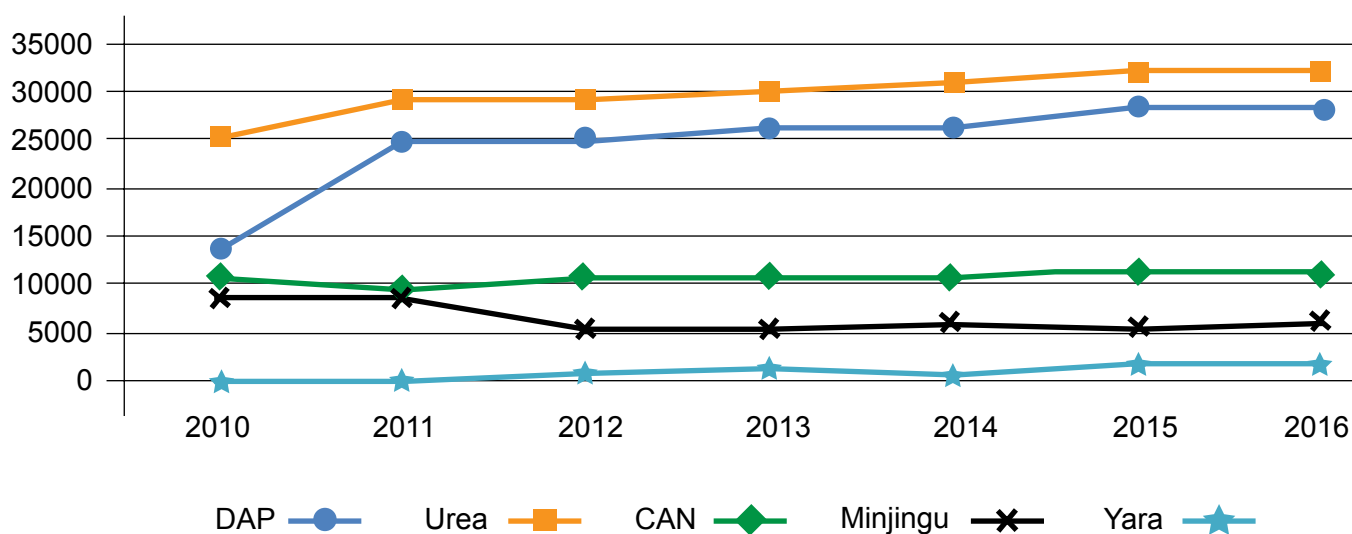
Firm	Farmer	Government	Country/Society
Advantages			
<ul style="list-style-type: none"> • Reduced storage costs by 33% while stocks wait for approval 	<ul style="list-style-type: none"> • Earlier access to more choices of type of fertilizers suitable to the local soils, thus getting better return per shilling invested (see tables 3 and 4) 	<ul style="list-style-type: none"> • 66% savings on government assets (vehicles, laboratory equipment, etc) deployed for testing the product for three years 	<ul style="list-style-type: none"> • Earlier by two years in correcting deteriorating soil resources
<ul style="list-style-type: none"> • Earlier (by 66%) determination of market access certainty compared to previous system 	<ul style="list-style-type: none"> • Earlier opportunity to correct soil PH after continuous use of one type of fertilizer which is usually harmful to soil health. Better combination of fertilizer offers 25% to 40% more returns per shilling invested than using one type of fertilizer (see tables 3 and 4 with examples from Mbeya and Iringa) 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Better use of human resources in experimenting with the fertilizer for one year instead of three years. Saving by two years.
<ul style="list-style-type: none"> • 66% reduction of transport and accommodation costs to various locations where the testing is undertaken 	<ul style="list-style-type: none"> • Earlier gains from cheaper fertilizers compared to old ones 	<ul style="list-style-type: none"> • 	

a. Feedback from the Field on the Impact of Relaxed Controls

Uyole based soil scientists interviewed at Uyole had the opinion that reducing the time required to register a new fertilizer type into the market had no adverse effects because they could establish its efficacy within one year by adopting multiple sites experimentation both at the research and farmers' fields. The experiments, costing about USD 3,000 per site, could be established to capture the effects of all the agro-ecological zones and soil types in the country.

Normally, the benefits from new fertilizer types, such as those introduced by YARA, are based on their effects on soil pH, some having faster effects in altering soil acidity and texture than others. Scenarios for the cost of delaying a new type can only be built based on the specific fertilizer compared to continuing with the status quo. Moreover, the benefits from yield changes will also depend on the seed variety and other complementing fertilizers applied. Data on fertilizer use in Mbeya between 2010 and 2016 indicates that the entry of new types of fertilizers such as Yara has been slow, although it seems it was initially accepted during the second year of its introduction (see chart 1 and table 2).

Chart 1 - Trend of Fertiliser use (tonnes) in Mbeya Region



Source: Annex Table 2

b. Economic analysis using different fertilizer options on maize

Economic analysis (Table 3), indicates that a farmer using a combination of CAN, SA, UREA and CAN with a maize harvest of 4,227kg/ha will earn a return of 0.99 per shilling invested, and seemed to be more profitable followed by a farmer using D.I Grow Organic Plus alone with yield of 1,952kg/ha with return of 0.68 per shillings invested. A farmer with less working capital may opt to use D.I Grow Organic Plus alone instead of using D.I Grow Organic Plus with TSP which has a high yield (2,218kg/ha), but less return per shilling invested as compared to farmer using D.I grow organic plus alone.

Table 6.3: Research Station Economic analysis of using different fertilizer option on maize in Iringa region

Option	Total average cost (Tsh.)/ha	Yield (kg/ha)	Selling price/kg (Tsh.)	Gross Revenue (Tsh.)	Gross Margin (Tsh.)	Return per Shilling
Control	536,500.00	1211	500	605,500.00	69,000.00	0.13
DI	581,500.00	1952	500	976,000.00	394,500.00	0.68
DI + TSP	776,500.00	2218	500	1,109,000.00	332,500.00	0.43
TSP + SA + UREA +CAN	1,059,570.00	4227	500	2,113,500.00	1,053,930.00	0.99

Source: Sections of report provided by Dr Juliana Mwakasendo, Uyole Research Station, February 2017



The alternative crop to plant on land in Iringa and Mbeya is beans. The economic analysis is shown in Table 6.4 below.

Table 6.4: Economic analysis of using different fertilizer options on beans

Option	Total average cost (Tsh.)	Yield kg/ha	Selling Price/kg (Tsh.)	Gross Revenue (Tsh.)	Gross Margin (Tosh.)	Return per Shilling
No Fertilizer	553,100	681.0	1,100	749,100	196,000	0.35
Rhizobium	553,900	836.4	1,100	920,040	366,140	0.66
TSP	712,300	1070.0	1,100	1,177,000	464,700	0.65
TSP+Rhizobium	733,100	1,163.4	1,100	1,279,740	546,640	0.75
DAP	751,300	1,034.2	1,100	1,137,620	386,320	0.51
TSP+CAN	785,000	1,346.0	1,100	1,480,600	695,600	0.89

Source: Sections of report provided by Dr Juliana Mwakasendo, Uyole Research Station, February 2017


6.5 Conclusion

The positive developments of relaxing the requirements for the importation and registration of blended fertilizer types will have beneficial effects to the firms, the farmers, the government and the society in general.

Benefits to Firms include reduced costs for testing, not only the direct cost of USD 20,000 per type of blended fertilizer, which they now don't have to pay, but the logistical costs of following up the approval and registration process. Firms can now quickly roll out their new brands, and therefore get returns on their investments two years earlier than before. The move by government also sends a signal to investors and innovators about a friendlier market to engage in, and if possible use Tanzania as a launching pad to enter other countries in the SADC and EAC economic blocs. The fast-tracked system also allows the company to make earlier decisions on the need to either expand (if approved) thus making an earlier entry into the market, or abandon the brand, thus saving their resources.

Benefits to farmers are mostly related to accessing fertilizer blends earlier enough that can increase crop productivity, estimated to be around 20% to 30% higher offered by most of the newer blends coming into the market to address farm needs in soils or crops that require specialized composition of nutrients.

Benefits to Government and the society will come from the relief given to staff of TFRA who will have more time to dedicate in surveillance and inspections to ensure quality products are distributed to farmers. This is an important benefit given the recent complaints by farmers about adulterated products. This will in turn assure the farmers of better products, improved productivity, enhanced incomes and food security. Adulteration of brands by unscrupulous dealers/retailers has tended to tarnish the image of the government and the fertilizer companies. Better controls through improved surveillance will restore confidence by companies to invest more in the sector and also raise the trust among farmers on the benefits of using fertilizers.



However, it should be remembered that while relaxing registration conditions is necessary, on its own, it does not suffice to adequately stimulate the fertilizer industry. There are several other factors that should be sorted out, which are still seen as impediments to the uptake of fertilizer at farm level and growth of the industry. These are summarized below:

- a) High cost of imported fertilizers, caused partly by (i) depreciating local currency against the US dollar; (ii) avoidable handling charges at the entry ports due to delays in clearing the commodity; and (iii) high transport costs from the ports to the districts, which account for 22% of the CIF price³¹. Due to the low capacity of the railway system (TAZARA and TRL), most of the fertilizer is transported by road. Improving the railway system could have considerable effects in lowering the unit cost of transportation. Poor rural road networks also add up to the final cost of delivering fertilizer to farmers.
- b) Low purchasing power by most smallholder farmers, such that even when they get two bags of subsidized fertilizers, they cannot afford to purchase additional amounts needed to offer optimal yields in their localities, thus sacrificing a third of potential income³².
- c) Adulteration of stocks of fertilizer brought to the market, which adversely affects farm yields with farmers losing money they have used to buy it, and the costs for farming.
- d) Weak network of agro-dealers, most of whom have low capital base among fertilizer stockists and retailers, bringing smaller amounts at a time, causing delayed application of fertilizer by some farmers.
- e) Lack of banking sector products to support the agro-input business
- f) Low levels of education by traders and users on appropriate handling and application of fertilizers for different crops
- g) Lack of education by farmers on how to handle soil acidity or extreme alkalinity, which compromises the efficiency of applied fertilizers. Knowledge is still limited among farmers on soil amendments and lime treatments or integrated nutrient management.

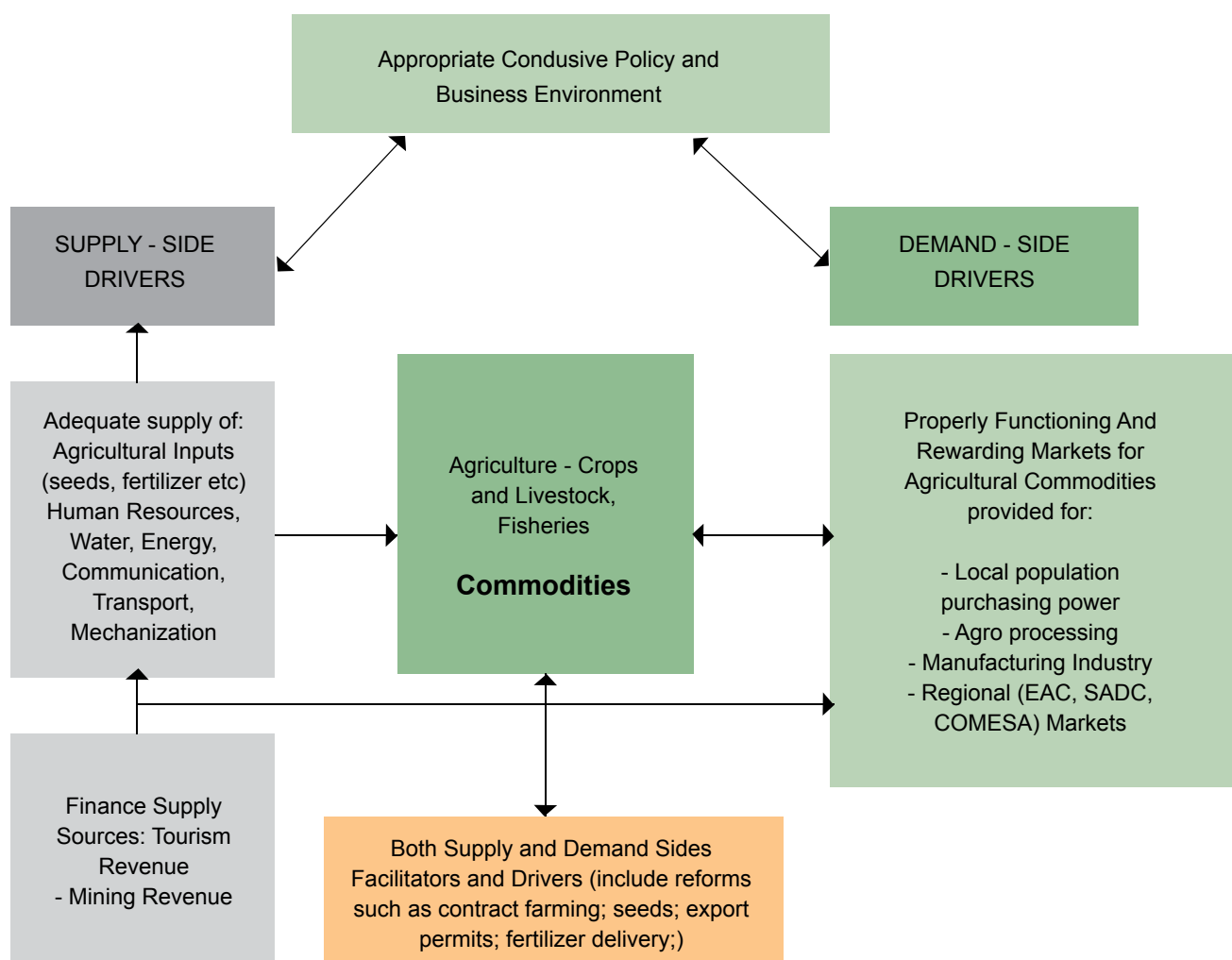
31 Based on a study in 2007 by Chemonics International and IFDC as cited in FAO-MAFAP and IFDC (2017). Importer's margin accounted for only 6.1 percent of the final cost paid by agro-dealers.

32 Technical specifications in MAbeya and Iringa require that farmers apply Urea, DAP and CAN at different times of growth cycle of maize. The government offers a package of only two bags, usually Urea and DAP, with the expectation that the farmer will buy at own full cost the third bag needed at near tassling stage.

Conclusions And Policy Recommendations

The optimal impact of these reforms on the performance of the agriculture sector, particularly for farmers and society as a whole, can only be realized if the reforms are implemented simultaneously.

General Diagram illustrating the driving force in the Agricultural Sector and the Impact on stakeholders






Vaccination against East Coast fever in northern Tanzania

A Maasai man in northern Tanzania helps deliver the 'infection-and-treatment' method of immunizing cattle against the usually fatal tick-transmitted disease known as East Coast fever, which devastates cattle herds in sub-Saharan Africa. The disease is spreading rapidly and currently threatens some 28 million cattle in East and Central Africa. Last year it killed more than one million cattle in 11 countries and caused US\$300 million in losses. Many of the animals threatened by the disease—which typically kills cows within three to four weeks of infection—belong to poor pastoralist herders and smallholder farmers for whom the loss of even one cow can be disastrous.

| Photo credit: ILRI/Stevie Mann |

REFERENCES

- Abt Associates, 2014, "Import and Export: A Guide to Trade in Vietnam".
- ACF. 2009. Report on Proposed Reforms for the Zambian Fertilizer Support Programme. Lusaka: Agricultural Consultative Forum.
- Ali, A. and A. Abdulai, (2010), "The Adoption of Genetically Modified Cotton and Poverty Reduction in Pakistan". Journal of Agricultural Economics vol.61, No1, 2010, 175-192.
- Arne Hanningsen, Daniel F. Mpeta, Anwar S. Adem, Joseph A. Kuzilwa, and Tomasz G. Czekaj, "The Effects of Contract Farming on Efficiency and Productivity of Small-Scale Sunflower Farmers in Tanzania"
- Baker, J. (2000), "Evaluating the Impact of Development Projects on Poverty". Barrett, B.C. (2008), A Handbook for Smallholder participation: Concepts and Evidence from Eastern and S. Africa. Food policy 33(4) pp. 299-317.
- Benson, T and N. Minot. 2009. Fertilizer Subsidies in Africa. Are vouchers the answer? IFPRI issue Brief 60.
- Binswanger, H. and M. Rosenzweig (1984), Potential competitiveness of the Mexican processed vegetable and strawberry markets, In Contractual Arrangements, Employment and Wages in Rural Labor Markets in Asia, Yale University Press, New Haven.
- Burke, W.J. 2012. Determinants of Maize Yield Response to Fertilizer Application in Zambia: Implications for Strategies to Promote Smallholder Productivity. Ph.D. dissertation, Michigan State University.
- Caliendo, M. and S. Kopeinig, (2008), "Some Practical Guidance for the Implementation of Propensity Score Matching". Journal of Economic Surveys, Vol. 22, (2008), 31–72. Practitioners. The World Bank Washington, D.C.
- Coulson, A (1982). Tanzania: "A Political Economy" New York: Oxford University Press,
- Coulter, J., Goodland, A., Tallonaire, A. and R. Stringfellow (1999), Marrying Farmer Cooperation and Contract Farming for Agricultural Service Provision in Sub-Saharan Africa, Guide to Developing Agricultural Markets and Agro-Enterprises Series, World Bank.
- Covey, T. and E. Stennis, (1985), "Analysis of the Rough Rice Futures Contract", Agricultural Economics Research Report 156, Mississippi State University, USA.
- CSPR. 2011. Assessment of the Implementation and Viability of the Farmer Input Support Program in Zambia: With Case Studies of Mazabuka and Monze Districts. Lusaka: Civil Society for Poverty Reduction
- Damian M. Gabagambi, Chaboba Z. Mwangwa, Devotha B. Kilave. (2015). Electronic Smart Subsidies in Agriculture for Food Security in Tanzania. Universität zu Berlin and the Leibniz Centre for Agricultural Landscape Research (ZALF).



DC:World Bank. Crawford, E. W., T. S. Jayne, and V. A. Kelly. 2006. "Alternative Approaches for Promoting Fertilizer Use in Africa." Agriculture and Rural Development Discussion Paper 22, World Bank, Washington, DC.

Debra, K. 2002. "Agricultural Subsidies in Sub-Saharan Africa: A Reflection." PowerPoint presentation made at the Second Regional Meeting of Agro Inputs Trade Associations in West and Central Africa, Mercure Sarakawa Hotel, Lomé, Togo, December 5–6.

Dorward, A. (2001), The effects of transaction costs, power and risk on contractual arrangements: a conceptual framework for quantitative analysis, *Journal of Agricultural Economics* 52(2), 59-73.

Eaton, C. and A.W. Shepherd, (2001), *Contract farming: Partnership for Growth*.

FAO (2012), "Women and Sustainable Food Security", Food and Agriculture Organization of the United Nations, <http://www.fao.org/>.

FAO (Food and Agriculture Organization). 1986. *African Agriculture: The Next 25 Years*. Annex V, *Inputs Supply and Incentive Policies*. Rome:

FAO 2012 E-voucher for Agricultural Inputs in Zimbabwe

FAO Agricultural Services Bulletin 145, Rome, Italy. FAO (2013), "Potential Constraints to Smallholder Integration into the Developing Sisal Value Chain in Tanzania" FAO Committee on Commodity Problems, Negombo, Sri Lanka, 5-7 November 2013.

FAO (Food and Agriculture Organization) 2005. "Increasing Fertilizer Use and Farmer Access in Sub-Saharan Africa: A Literature Review." Agricultural Management, Marketing, and Finance Service (AGSF), Agricultural Support Systems Division,

FAO, (2010), *Law and Markets – "Improving the legal environment for agricultural marketing, Agricultural Services"* Bulletin No. 139, Rome.

Ghana Ministry of Food and Agriculture (MOFA) July 2017 report on "Impact Assessment for Agribusiness Reforms" for cost of Establishing Database³³ and Assessment by Mr. John Kajiba ICT Manager, ESRF for the rest of estimates.

Goodman D. and M.J. Watts (eds) (1997), *Globalising Food: Agrarian Questions and Global Restructuring*, Routledge, London.

Goodman D. and M.J. Watts (eds) (1997), *Globalising Food: Agrarian Questions and Global Restructuring*, Routledge, London.

Gulati, A., and S. Narayanan. 2003. *The Subsidy Syndrome in Indian Agriculture*. New Delhi: Oxford University Press.

33 Includes: System Analysis, Designing, consultations, stakeholder engagement and sharing of system architecture; Server software's (Certificates, Pdf Convertors); System development;



Gulati, A., P. S. Birthal, and P.K. Joshi, (2005), Vertical Coordination in High Value Commodities: Implications for the Smallholders. Markets, Trade, and Institutions Division, Discussion Paper No.85, Washington, D.C.: IFPRI

Guo, H., R.W. Jolly, and J. Zhu, (2005), "Contract Farming in China: Supply Chain or Ball and Chain?" Paper presented at the 15th Annual World Food & Agribusiness Symposium, IAMA, Chicago.

Hayami, Y. and K. Otsuka (1993), The Economics of Contract Choice, Oxford University Press, Oxford.

Hayami, Y. and K. Otsuka (1993), The Economics of Contract Choice, Oxford University Press, Oxford.

Hobbs, J. E. and L. M. Young, (1999), "Increasing Vertical Linkages in Agriculture Food Supply Chains: a Conceptual Model and Some Preliminary Evidence," Research discussion paper 35.

IFAD (2009), "Rural Poverty Portal, Rural Poverty in Peru", International Fund for Agricultural Development. <http://www.ruralpovertyportal.org/web/guest/country/home/tags/peru>.

IFDC Africa Division. Dorward, A. 2009. Rethinking agricultural input subsidy programmes in a changing world. Paper prepared for the Trade and Markets Division, Food and Agriculture Organization of the United Nations.

International Fertilizer Development Center (IFDC). (2012). Tanzania Fertilizer Assessment. IFDC.

Kato T. (2013). Impact of Agricultural Input Subsidies on Poverty in Tanzania. Repoa.


Kay, S. (2012), Positive Investment Alternatives to Large-Scale Acquisitions of Leases. Transnational Institute. Accessed at: <http://www.fian.org/resources/documents/others/positive-investment-alternatives-to-largescale-land-acquisitions-or-leases/pdf>.

Kelly, V. A., and M. L. Morris. 2006. "Promoting Fertilizer to Increase Productivity in African Cereals Systems: What Role for Subsidies?" Paper prepared for the organized symposium, "Seed/Fertilizer Technology, Cereal Productivity, and Pro-Poor Growth in Africa: Time for New Thinking?" 26th Conference of the International Association of Agricultural Economists (IAAE), Gold Coast, Queensland, Australia, August 12–18.

Key, N., and Runsten, D. (1999), "Contract Farming, Smallholders, and Rural Development in Latin America: The Organization of Agro processing Firms and the Scale of Outgrower Production". World Development 27 (2): 381–401.

Kirsten J.F. and K. Sartorius, (2002), "Farm-agribusiness Linkages in South Africa. Empowering Disadvantaged Communities through Links with Agri-business". A Report Prepared for the Food and Agricultural Organization (FAO), ROME, 31 August 2002 (Revised 4 November 2002).

Little, P. and Watts, M. (1994), "Living Under Contract: Contract Farming and Agrarian Transformation in Sub-Saharan Africa". Madison, Wis.: University of Wisconsin Press



Liversage, H. (2011), “Responding to ‘Land Grabbing’ and Promoting Responsible Investment in Agriculture”. IFAD Occasional Paper 2, Rome: IFAD

Makunka, Cynthia. 2011. Performance of the Food and Agriculture Organization’s Input Voucher Schemes in Zambia: A Case Study of Chongwe and Mazabuka Districts. M.A. thesis, University of Zambia.

Martinez, S. (2005), “Vertical Coordination of Marketing Systems: Lessons Learned from the Poultry, Egg and Pork Industries”. United States Department of Agriculture. ERS Agricultural Economic Report, No. 708.

Minot, N., and Roy, D. (2006), “Impact of High-value Agriculture and Modern Marketing Channels on Poverty: An Analytical Framework”. Mimeo. Washington, DC: Markets, Trade, and Institutions Division, International Food Policy Research Institute. April.

Msolla, M. M., S. M. Masagasi. (2010). Experience of the Inputs Subsidy Programme in Tanzania.” Presentation at International Training Program on Developing Private Sector Agro Input Markets—Designing and Implementing Targeted Subsidy Programs, Yankari, Nigeria. Dar es Salaam: Ministry of Agriculture, Food Security, and Cooperatives.

Netherlands Economic Institute (1970) ‘Divestiture Study of the Sugar Industry in Tanzania’ Report.

Nyagumbo, Isaiah. 2008. A Review of Experiences and Developments towards Conservation Agriculture and Related Systems in Zimbabwe. In No Till Farming, ed. T. Goddard, M. Zoebisch, Y. Gan, W. Ellis, A. Watson, and S. Sombatpanit. Tokyo: The World Association of Soil and Water Conservation (WASWC). Can be accessed at: <http://homepage2.nifty.com/waswc/WASWC%20Strage/S-Publication/nontill-book.pdf>

Oliver Williamson (1979), “Transaction-Cost Economics: The Governance of Contractual Relations” *Journal of Law and Economics*, 1979, vol. 22, issue 2, pages 233-61

Pingali, P.L., Hossain, M. and R.V. Gerpacio (1997), *Asian Rice Bowls: the Returning Crisis?*, CAB International, New York.

Pingali, P.L., Hossain, M. and R.V. Gerpacio (1997), *Asian Rice Bowls: the Returning Crisis?*, CAB International, New York.

Plotnick, R., Gugerty, K. M., and Cagley, H. J. (2009). *Political Economy of Fertilizer Policy in Tanzania*

Putterman, L. (1995). “Economic reform and smallholder agriculture in Tanzania: A discussion of recent market liberalization, road rehabilitation, and technology dissemination efforts.” *World Development* 23(2): 311–326. Google Scholar

REPOA. (2013). *National Agricultural Input Voucher Scheme (NAIVS 2009–2012), Tanzania: Opportunities for Improvement*. Repoa.



Rohrbach, David. World Bank. "Opportunities and Risks of Fertilizer Voucher Programs," USAID Agricultural Sector Council Daybreak Seminar. January 2012.

Setboonsarng, S. and Penkett, C. (2005), Discussion Paper on Contract Farming and Poverty Reduction in Cambodia and Lao PDR. ADB Discussion Paper. Forthcoming

Simmons, P. (2002), Overview of Smallholder Contract Farming in Developing Countries. ESA Working Paper Rome, FAO.

Simmons, P., P. Winters, and I. Patrick (2005), "An Analysis of Contract Farming in East Java, Bali, and Lombok, Indonesia." *Agricultural Economics* 33(s3): 513-525.

Singh, S. (2002), Contracting Out Solutions: Political Economy of Contract Farming in the Indian Punjab. *World Development* 30 (9): 1621–1638.

Sutton, J. and D. Olomi (2012), *An Enterprise Map of Tanzania*, International Growth Centre, UK

SWINNEN, J. and M. MAERTENS (2007), "Globalization, privatization, and vertical coordination in food value chains in developing and transition countries", *Agricultural Economics* 37(1), pp.89-102.

Todd Benson, Stephen L. Kirama, Onesmo Selejio. (2012). *The Supply of Inorganic Fertilizers to Smallholder Farmers in Tanzania Evidence for Fertilizer Policy Development*.

United Republic of Tanzania (URT) (1999), *Tanzania Development Vision 2025*, Planning Commission, Dar es Salaam.

URT (2000), *Composite Development Goal for the Tanzania Development Vision 2025*, Planning Commission, Dar es Salaam

URT (2006), "Contract Farming in Tanzania: Status and Prospects for Tanzania". A study Conducted under the Participatory Agricultural Development and Empowerment Project (PADEP). Ministry of Agriculture, Food and Cooperatives


URT (2010), *National Strategy for Growth and Reduction of Poverty (NSGRP/MKUKUTA) II*, Ministry of Finance and Economic Affairs, Poverty Eradication Department, Dar es Salaam

URT (2011b), *Tanzania Five Year Development Plan 2011/2012 – 2015/2016 – Unleashing Tanzania's Latent Growth Potentials*, President's Office, Planning Commission, Dar es Salaam

URT (2012), *Tanzania Long-term Perspective Plan (LTPP), 2011/12-2025/26 The Roadmap to a Middle Income Country*, President's Office, Planning Commission, Dar es Salaam

URT (2013a), *Contract Farming Act 2013*". Ministry of Agriculture, Food and Cooperatives Draft

URT (2013b), *2012 Population and Housing Census, Population Distribution by Administrative Units, Volume I*; National Bureau of Statistics, Ministry of Finance Dar es Salaam and Office



of Chief Government Statistician, President's Office, Finance, Economy and Development Planning Zanzibar, March.

URT (2013c), Economic Survey 2013, Ministry of Finance, Dar es Salaam, June.

URT (2013d), Key Findings of 2011/12 Household Budget Survey–Mainland Tanzania, National Bureau of Statistics, Ministry of Finance, November.

URT(2011a), Tanzania: Millennium Goals Acceleration Framework, Ministry of Finance, Dar es Salaam

Wainaina, P. W., J. J. Okello and J. Nzuma, (2012), "Impact of Contract Farming on Smallholder Poultry Farmers' Income in Kenya," Contributed paper presented at the 2012 Triennial Conference of International Association of Agricultural Economists, Foz do Iguacu, Brazil, August 18-24, 2012. No. 126196.

Warning, M., and Key, N. (2002), The Social Performance and Distributional Consequences of Contract Farming: An Equilibrium Analysis of the Arachide de Bouche Program in Senegal.

Williamson, Oliver (1979), "Transaction-Cost Economics: The Governance of Contractual Relations", Journal of Law and Economics, Vol. 22, No. 2. (Oct.), pp. 233-261. pdf

World Bank (2009)-Tanzania Accelerated Food Security Project 2009-2013

World Bank. (2012). Agribusiness Indicators: Tanzania. World Bank. (2014). Tanzania Public Expenditure Review: National Agricultural Input Voucher Scheme. Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/18247> License: CC BY 3.0 IGO."

World Bank. 2010. Impact Assessment of the Fertilizer Support Program, Analysis of Effectiveness and Efficiency: Zambia. World Bank Sustainable Development Department Report No. 54864ZM. Washington, D.C.: The World Bank. Agricultural and Rural Development, Africa Region.

World Bank. Tanzania: National Agricultural Input Voucher Scheme Public Expenditure Review. Strengthening National Comprehensive Public Agricultural Expenditure in Sub-Saharan Africa. February 2014.

World Development 30 (2): 255–263. World Bank (2014), "Structural Transformation in the Agricultural Sector through Bold Initiatives Draft.

Xu, Z., Burke W.J., Jayne T.S. and Govereh J. 2009. Do Input Subsidy Programs "Crowd in" or "Crowd out" Commercial Market Development? Modeling Fertilizer Demand in a Two-Channel Marketing System. Agricultural Economics 40.1: 79-94.

ANNEXE

Annex Table 1: Trend of Amount (in '000 tons) of Fertilizer Usage in Tanzania

Type of Fertilizer	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2011/13
UREA	46.6	56.8	69.1	80	90.8	100.5	69	65.9
DAP	26.6	21.4	19.4	20	41.6	42.9	69.9	21
CAN	15.5	25.6	12.1	12.1	23.4	14.4	12.8	9.8
MRP	0	0.2	0.6	58.5	34.4	30.8	20.3	64
NPK	23.7	1.4	34.7	35.5	57.6	61.4	53.4	35.9
OTHERS	6.9	40.7	13.6	8.9	15.6	7.6	26.3	14.3
Total ('000 tons)	119.3	146.1	149.5	215	263.4	257.6	251.7	210.9
Annual Percent increment		22.5%	2.3%	43.8%	22.5%	-2.2%	-2.3%	-16.2%

(source: www.africafertiliser.org, table 2)

Annex Table 2 Trend of Fertilizer use (metric tons) in Mbeya

	2010	2011	2012	2013	2014	2015	2016
DAP	14325	25701	26061	26295	26874	27937	28155
Urea	25646	29418	29500	30096	30759	31822	32230
CAN	10928	10343	10444	10584	10817	11233	11329
Minjingu	8779	8779	5386	5514	5609	5806	5866
Yara	0	0	163	867	887	1257	1103

Source: Mbeya Regional Statistics Office

List of Stakeholders Consulted

SN	Institution	Name	Position	Telephone/Email
1.	Njombe Regional Secretariat, P.O. Box 668 Njombe	Wilson Joel	Regional Agricultural Officer	0759976724; 0655976724; Wilsonhhoki@yahoo.com
		Anza-Amen L Ndossa	Regional Planning Officer	0754206984; 0686162668; Ndosadavid@yahoo.com
2.	INUKA Group, Wanging'ombe Ward	Prosper	Project Coordinator	
3.	Agricultural Seed Agency (ASA), Njombe	Mr Horombo	Branch Manager	0767067069
4.		Mr Daffa	Field Officer	
5.	Njombe Regional Secretariat,			
6.	TOSCI Njombe	Mr Nassari		
7.	Makambako Town Council	Peter Muro	Agric Officer-Inputs	0752125276
8.		Peter Munguyampa	Agric Officer-Crops	0755812009
9.	Makambako Town Traders Association	Magoma Sanga	Chairman	0754335540
10.		Bernadeta Sanga	Trader	0757296116
11.	Uyole Agricultural Research Institute, P.O. Box 400 Mbeya Tel.025-2510062 ariuyole@iwayafrica.com	Dr Benjamin Kiwovele	Zonal Research Coordinator	0784/0767-585613 bekwiliha@gmail.com; bekwiliha@yahoo.com;
		Dr Juliana Mwakasendo	Socio-economic analyst/scientist	0765176040; ndagilejam@yahoo.com
		Dr Ngailo	Soil Scientist	0784906728
12.	Tanzania Chamber of Commerce, Industry and Agriculture (TCCIA)	Mwakalukwa	Regional Chamber Chairman	
		Malinzi	Regional Manager	0767770877
		Christopher Lameck	Regional Statistics Officer	0755815171
13.	Iyayi Village, Luduga Ward, Wanging'ombe District	Maria Mgogosi	Farmers	0757124511
		Asifiwe Maligilo		0763191307
		Samson Kanjenge		none



SN	Institution	Name	Position	Telephone/Email
		Neema Chauvele		0762388303
		John Mhanze		
		Adela Mpalanji		
		Ayubu Msule		
		Mary Mpalanji		
		Angel Maligilo		
		Mch. L.Fisima	Farmer/Pastor	0765080741
		Meo Sanga	VALEO-Village Agric & Livestock Executive Officer	0759 621476
		Roden Wihanji	Village Chairman	0753435288
14.	Lusisi Village, Igima Ward, Wanging'ombe district	Lukombeso Damson	Farmers	0759325462
		Godi Jackson Mhema		0769817896
		Shangwe Ngeve		
		Henly Gerson Mfweya		
		Riziki Seleman Fwimi		0764988636
		Jestina Alfonse Kidenya		0758243102
		Rainard Hebely Ngimbuchi		0755513708

*Photo on next page: A woman works on her farm: Woman cultivating crops. Tanzania.
| Photo credit: Scott Wallace / World Bank |*





AGRA Headquarters

Alliance for a Green Revolution in Africa (AGRA)
West End Towers, 4th Floor
Kanjata Road, off Muthangari Drive, Off Waiyaki Way
Nairobi, Kenya

