

# ***Ex Ante* Institutional Assessment of the Proposed Agricultural Credit Subsidy Program of MAFC**

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The opinions expressed in this report are those of the authors alone and do not represent the views of BMGF.

## **ACRONYMS**

ACSP	Agricultural Credit Subsidy Program
AID	Agricultural Inputs Division
BRN	Big Results Now
CRDB	Community & Regional Development Bank
PDB	Presidential Delivery Bureau
BMGF	Bill & Melinda Gates Foundation
DPP	Directorate of Policy & Planning
GDP	Gross Domestic Product
GISAIA	Guiding Investments in Sustainable Agricultural Intensification in Africa
GOT	Government of Tanzania
MAFC	Ministry of Agriculture, Food Security, and Cooperatives
MSU	Michigan State University
NAIVS	National Agricultural Input Voucher Scheme
NBC	National Bank of Commerce
NMB	National Microfinance Bank
SUA	Sokoine University of Agriculture
TIB	Tanzanian Investment Bank
WRS	Warehouse Receipt System

## 1. Introduction

While Tanzania has enjoyed strong growth in Gross Domestic Product (GDP) per capita since 2000, this growth has led to neither substantial reductions in rural poverty nor improvements in household nutritional status. This seeming paradox of economic stagnation amid rapid aggregate growth is also seen in the agricultural sector of Tanzania, as the source of impressive recent growth in agricultural GDP has been concentrated among large-scale producers of rice, wheat, and traditional export crops. As has been recognized by African governments and donors alike in recent years, one of the keys to reducing rural poverty and improving the nutritional status of rural households in Tanzania will be to achieve wide-spread improvements in food crop productivity among small- and medium-holder farmers (hereafter called smallholders). For example, despite Tanzania's favorable agro-ecological potential, maize yields remain low for farmers in many regions, averaging between 800 to 900 kgs/ha nation-wide, though varying considerably by region. Subsequently, maize production has stagnated over the past decade and has not kept pace with population growth. While there are likely to be a range of factors which contribute to low maize yields in Tanzania, an obvious constraint is the fact that that few smallholders outside of the Southern Highlands region use inorganic fertilizer on maize or improved maize seed.

As in various countries in eastern and southern Africa, the Government of Tanzania (GOT) has recently implemented a large-scale fertilizer and seed subsidy program as its principal policy tool by which to address the challenge of low maize and rice productivity among smallholders. Begun as a pilot program in 2007 by Ministry of Agriculture, Food Security and Cooperatives (MAFC), the National Agricultural Input Voucher Scheme (NAIVS) was scaled up to reach as many as 2 million smallholders in 57 districts by 2009, a level it continued to reach in subsequent years. However, beginning in 2011/12, the scale of NAIVS began to decline due to a combination of the end of World Bank funding for the scheme and lower-than-anticipated GOT revenues.

Before the 2013/14 season, the Agricultural Inputs Division (AID) of MAFC proposed to pilot an Agricultural Credit Subsidy Program (ACSP). For reasons explained below, a pilot was not implemented in 2013/14, although MAFC was considering shifting some resources from NAIVS to a pilot of the ACSP for 2014/15. In this paper, researchers from Michigan State University and Sokoine University of Agriculture have collaborated under the GISAIA/Tanzania project to provide MAFC with an *ex ante* institutional assessment of the ACSP design that was first proposed in 2013 and was reconsidered for potential implementation for the 2014/15 fiscal year<sup>1</sup>.

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<sup>1</sup> We note that this paper is an assessment of the initial design for ACSP, and the first draft of this paper was shared with key MAFC officials in May 2014 to inform their forthcoming budget proposal to Parliament. When MAFC proposed their 2014/15 budget to Parliament later that month, the Minister of Agriculture noted that while ACSP had been considered for implementation in 2014/15, MAFC considered that the program was not fully prepared for implementation nor sufficiently reviewed. However, later in 2014, MAFC went ahead with a small pilot ACSP that used a similar (though slightly different) design to the one that this paper assesses. Nevertheless, many of our key concerns with the original ACSP design are also found in the design of the small pilot ACSP that was implemented by MAFC in a few districts in 2014/15. We have studied and

In this paper, we aim to provide MAFC with the following:

- a) First, we outline in more detail our understanding of the key actors involved in the ACSP, as per the following sources:
  - a. A program design document written by the Agricultural Inputs division (AID/MAFC, 2013);
  - b. Interviews of key MAFC officials (Dr. Mshindo Msolla, Mr. Canuth Komba) from the Agricultural Inputs Directorate
  - c. Implicit and explicit assumptions made by (a) and (b) about the role of each of the actors in the program and how they will behave and interact.
- b) Second, we provide our assessment of the conditions under which these assumptions may be met (or not) based on:
  - a. Our knowledge/experience with credit and marketing constraints for various kinds of crops within the Tanzania context;
  - b. Expectations of the behavior of each of the different kinds of actors that might be involved based on theoretical and empirical results from both neo-classical and/or new institutional economics
  - c. Lessons learned from agricultural credit subsidy programs using a similar design from other developing countries (preferably from sub-Saharan Africa).
- c) Third, based on the above, we assess the strengths, weaknesses, and key challenges facing the current program design and its underlying assumptions made about each actor in the credit supply chain and about the overall program performance.

## **2. Background on the Design of the Proposed Agricultural Credit Subsidy Program**

From the inception of NAIVS, Dr. Msolla and the Agricultural Inputs Directorate viewed NAIVS as a means by which the MAFC could help reduce the 'knowledge/ experience' gap of a large number of smallholders whose low level of use of inorganic fertilizer on maize (rice) and/or improved maize (rice) seed might have been due to lack of experience with the value of maize (rice) yield returns using inorganic fertilizer relative to the increased costs of using fertilizer. From the perspective of both the Agricultural Inputs Division (AID/MAFC) and the World Bank (from which much of the funding required for the scale-up of NAIVS came), receipt of a voucher via NAIVS would lower the financial risk of such farmers to experiment with the use of both inorganic fertilizer and improved seeds for themselves, on their own fields. Because of the inherent risks in rainfed maize production (and rainfed or irrigated rice production), both AID/MAFC and the World Bank intended to provide smallholder maize/rice producers with a three-year period during which to experiment with improved inputs on their own fields and thereby stimulate smallholder demand for commercial fertilizer and improved maize (rice) seed in areas in which (and for farmers for which) these technologies were found to be profitable by smallholders. Both Dr. Msolla and the World Bank intended for NAIVS to not be a long-term input subsidy

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assessed the revised ACSP design and a policy brief outlining this assessment is forthcoming and will be made available on the GISAIA/Tanzania website [http://fsg.afre.msu.edu/gisaia/index\\_Tanzania.htm](http://fsg.afre.msu.edu/gisaia/index_Tanzania.htm).

program but rather one with a fixed time limit and a planned phase-out strategy. In fact, the World Bank began its financial support for NAIVS explicitly and publicly stating that its financial support for the program would only be for three years (for the same reasons given by Dr. Msolla).

By 2012/13, NAIVS had already reached hundreds of thousands of smallholder maize and rice farmers (most of whom had not used inorganic fertilizer or improved seed before in maize or rice production (World Bank, 2014). Given that NAIVS had appeared to have largely fulfilled its primary goal of introducing smallholder maize/rice producers to inorganic fertilizer and improved seed, beginning in 2013, Dr. Msolla (and perhaps others within MAFC) began to consider the idea of proposing to shift some of the funding intended for NAIVS to a new MAFC-led program that would address the continuing constraint posed by limited smallholder access to credit and high interest rates. Specifically, AID/MAFC began to consider piloting a program to directly subsidize agricultural credit for farmer organizations, and eventually shifting funding for NAIVS to this agricultural credit subsidy program approach (reasons for this are given below).

In April 2013, researchers from Michigan State University (Drs. Isaac Minde and David Mather) and from Sokoine University of Agriculture (Dr. Daniel Ndyetabula) met Dr. Msolla and Ms. Theresia Msaki (DPP/MAFC) in Pretoria, South Africa, during the inception workshop for the BMGF-funded GISAIA project led by Michigan State University (Guiding Investments in Sustainable Agricultural Intensification in Africa)<sup>2</sup>. During these meetings in Pretoria, MSU/SUA learned that MAFC was considering implementation of a pilot Agricultural Credit Subsidy Scheme (ACSP) in addition to continuing NAIVS. Following discussions between Dr. Isaac Minde (MSU) and Dr. Msolla during a meeting of the Soil Health Policy Hub in May 2013, Dr. Msolla welcomed a proposal by MSU/SUA to provide MAFC with feedback on the intended design of ACSP, as Dr. Msolla felt that the program design could perhaps be improved by external review. After Dr. Msolla retired from MAFC and moved to AFAP in June 2013, MSU/SUA met with Mr. Canuth Komba in July 2013 to ask if he also felt that this study could be useful to informing the eventual design of the pilot ACSP.

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<sup>2</sup> GISAIA is a BMGF-funded grant to Michigan State University that is led by researchers from the Department of Agricultural, Food, and Resource Economics at MSU, who are collaborating with African research institutions in 9 different countries of sub-Saharan Africa on applied and empirical research to inform strategies and policies to promote sustainable intensification of staple food crops. Under the capacity-building component of GISAIA/Tanzania, Dr. David Nyange (MSU) has been serving as an Agricultural Policy Advisor & Capacity Building Coordinator within the Directorate of Policy/Planning (DPP) of MAFC since August 2013. Under a second 'research/policy outreach' component of GISAIA/Tanzania, researchers from Michigan State University (MSU) and Sokoine University of Agriculture (SUA) are collaborating on a series of empirical and applied agricultural and food policy research topics. The goal of the MSU/SUA research collaboration is not simply to produce new empirical research but to also use these results to inform policy dialogue between government and non-government stakeholders in Tanzania on strategies for promoting sustainable intensification among small- and medium-holder producers of key food staples such as maize and rice.

### **3. SUA/MSU understanding of the design of the proposed Agricultural Credit Subsidy Program**

#### **3.1 Existing sources of information on the program design**

Our understanding of the design of the proposed MAFC Agricultural Credit Subsidy Program (ACSP) is based on two main sources:

- 1) A program design document written by the Agricultural Inputs division (AID/MAFC, 2013);
- 2) Several discussions regarding this proposed program with key officials from the Agricultural Inputs Division of MAFC (Dr. Msolla, Mr. Komba) beginning in July 2013.

Based on these sources, it appears that there were limited discussions both within MAFC and between MAFC and key private sector stakeholders who would be targeted for participation in this program, regarding this program design, prior to AID/MAFC's initial discussions with a few potential stakeholders that were intended to gauge their interest in participation. In addition, the program design document itself contains limited information on the program design, goals, underlying assumptions, etc as it is only 12 pages (AID/MAFC, 2013).

#### **3.2 Goals of the Agricultural Credit Subsidy Program**

The MAFC's Agricultural Credit Subsidy Program (ACSP) design document (AID/MAFC, 2013) notes that NAIVS succeeded in its main goals of improving access to fertilizer and improved seed for a large number of smallholder maize/rice producers (who received one or more subsidy vouchers), and for providing these farmers with first-hand experience regarding the returns to these inputs on the farmers' own fields, there were several limitations with what NAIVS was able to achieve and/or problems with the design and implementation of NAIVS:

1. NAIVS failed to reach all farmers (farmers who could not be reached felt that they were discriminated against)
2. Farmers wanted assistance in acquiring fertilizer and seed for more than one acre
3. Late distribution of NAIVS vouchers
4. Lack of close follow-up which led to rent seeking in various levels
5. The government consistently failed to provide payment on time to agro-dealers who had redeemed NAIVS vouchers that season

MAFC's program design document (AID/MAFC, 2013) then claims that ACSP will address some of these challenges if the following conditions are met:

1. Government provides availability of funds well in advance
2. All participants in the program are prepared well in advance
3. Contracts exist between farmers and output buyers
4. To ensure no restriction on where output buyers should sell, there must not exist any district-level or national-level export bans
5. District councils will campaign widely to make sure that farmers get inputs on time and to strengthen extension services to farmers

6. District councils work together with farmers group to make sure that they pay back the loans

Unfortunately, the program design document (AID/MAFC, 2013) does not directly state the goals of ACSP. That is, the first list above denotes limitations in what NAIVS was able to achieve, while the second list are assumptions that need to be met for ACSP to address the limitations of NAIVS (i.e. to help address problems that NAIVS alone could not resolve). This implies that the goals of ACSP are essentially the same as NAIVS. While the ACSP document implies that ACSP would 'improve farmer access to improved agricultural inputs' – in ways that NAIVS did not – it does offer an explanation of underlying reasons that explain poor farmer access to improved agricultural inputs, nor why subsidizing credit for farmer organizations is a more appropriate policy tool (relative to NAIVS) by which MAFC can try to address this problem.

The ACSP design document implies that ACSP is merely a different and better way to achieve the same goals as NAIVS, yet our analysis in Section 5.4 suggests that ACSP would most likely subsidize credit for agricultural inputs for a completely different set of farmers than those currently targeted by NAIVS. That is, because ACSP is designed to extend credit for agricultural inputs via farmers who already belong to a farmer association, the farmers who would most likely receive subsidized credit under ACSP would *not* necessarily be farmers who were eligible for NAIVS vouchers but not selected by their village voucher committee, but rather cash crop growers. The reason for this is that cash crop growers are much more likely to belong to a functioning Agricultural Marketing Cooperative Organization (AMCO) in the first place (as discussed more below), are more accustomed to obtaining fertilizer on credit via their association, and who in many cases already have access to fertilizer on credit and may well be able to both afford and finance improved inputs for use on maize without a subsidy.

This means that it is unlikely that ACSP as currently designed (or even if altered in various ways) would address the same goals as NAIVS. Thus, we strongly advise that prior to MAFC committing resources to ACSP, MAFC first needs to decide on the true underlying 'goal' for a program and articulate this in writing, before a program intended to address that problem can be well-designed and evaluated. For example, what underlying problem(s) is the program intended to address, and what kinds of farmers does MAFC intend to assist via this program (i.e. regions, target crops, etc).

### **3.3 Program overview**

The following provides an overview of the key actors involved in the proposed design of ACSP, the expectations and responsibilities of each actor, and the chronological actions that must be completed in order for ACSP to be successful in providing farm groups with loans for agricultural inputs in a timely manner (i.e. well before planting), while also providing a framework by which actors can jointly work to limit the probability of that farm groups default on their loans.

1. Importers/Wholesalers/Agro-dealers imports and markets all agricultural inputs
2. GOT provides a credit guarantee to commercial banks for input loans that banks will make under the program to registered farmer organizations (farmer groups)
  - a. After receiving information on how much farmer groups are requesting in loans, the GOT provides a credit guarantee to the participating commercial banks by depositing 50% of the anticipated total loan value under ACSP into an account controlled by the participating banks. This deposit must be made well before the planting period of the main season.
3. Large Commercial Banks that chose to participate in ACSP
  - a. Once the GOT deposits the credit guarantee, participating large commercial banks are required to provide the remaining 30% of the total loan value requested, though they may double the total amount guaranteed by the GOT (i.e. 100%).
  - b. These banks will then make loans available to registered farmers through their registered groups such AMCOs, SACCOs, VICOBA, etc.
4. GOT subsidizes the interest rate paid by farmers on ACSP loans
  - a. The government pays 16% of the 20% interest charged by the banks; while the farmer groups pay the remaining 4%. Thus, participating farmer organizations receive a joint agricultural input loan at a highly subsidized interest rate.
5. Farmer groups are required to deposit 20% of the amount of their requested loan.
  - a. The loan amount that a farmer group may receive cannot exceed the aggregate value of value of inputs that would be required by each farmer in the group for one hectare of crop production each.
6. Farmer groups are required to enter a contract with both an output buyer and the bank prior to receiving a loan, regarding the sale of their crop production
  - a. As a condition for receiving a loan via ACSP, farmer groups must first negotiate and sign a contract with a buyer for their output (i.e. National Food Reserve Authority (NFRA), Export Trading Group, Bakresa, World Food Program, contract farming, processing companies, etc). This contract will also be co-signed by the output buyer and the bank.
  - b. In this contract, the farm group promises to sell a specified value of harvested crop output to this buyer. In turn, the output buyer promises to re-pay banks the value of the ACSP loan made to the farmer group from which they purchase output, after receiving the promised output from farm groups at harvest.
7. Receipt of inputs by farmers and payment of input suppliers
  - a. After it is proved that farmer groups have received inputs they purchase from an input supplier via their ACSP loan, the bank will directly pay the input supplier 100 percent of the value of input supplied.
8. Harvest of crop production by farm groups, sale of crop output, and re-payment of ACSP loans
  - a. At harvest, farm groups are expected to deliver their promised harvested crop production to their respective output buyer, who will pay farm groups the difference between their group's crop output value and the 80% of the farm group's loan value received by farmers.

- b. The output buyer then re-pays the bank for the 80% of each farm groups' loan value owed to the bank by the farmers.
9. Contract enforcement
  - a. The program design document assumes that enforcement of the contract between a farmer group, output buyer, and the bank will be done in collaboration between the farmer group and the bank. The document also assumes that when necessary, banks may receive assistance from regional, district, ward, division and/or village leadership to help enforce farm group re-payment of their ACSP loan.

### **3.4 Map of ACSP Actors and Exchange Relationships**

In Figure 1, we use the program design document (AID/MAFC, 2013) to map who are the key participants, the expected roles to be played by each, and institutional support they are expected to receive in order to ensure that the network of participants work towards meeting the program goal. The main assumption the program makes is that smallholder access to fertilizer is constrained by lack of access to credit for agricultural inputs. The proposed solution to smallholder credit constraints is to ensure that farmers get credit on inputs through existing financial sector institutions, through multiple forms of guarantees (including a government credit guarantee (50% of the value of the loans), farmer groups' upfront contribution (20%), and a contract between output buyers and farmers to ensure that the farm group output is marketed through the output buyer, who will deduct the value of the farmer group loan to repay the lenders for the 80% of the loan outstanding). All these guarantees, as well as government subsidy, are assumed to reduce the risks faced by financial institutions of lending to small and medium-holder farmers, and to thus improve access to capital needed by farmers to gain access to improved inputs such as fertilizer and improved seed that can improve crop productivity.

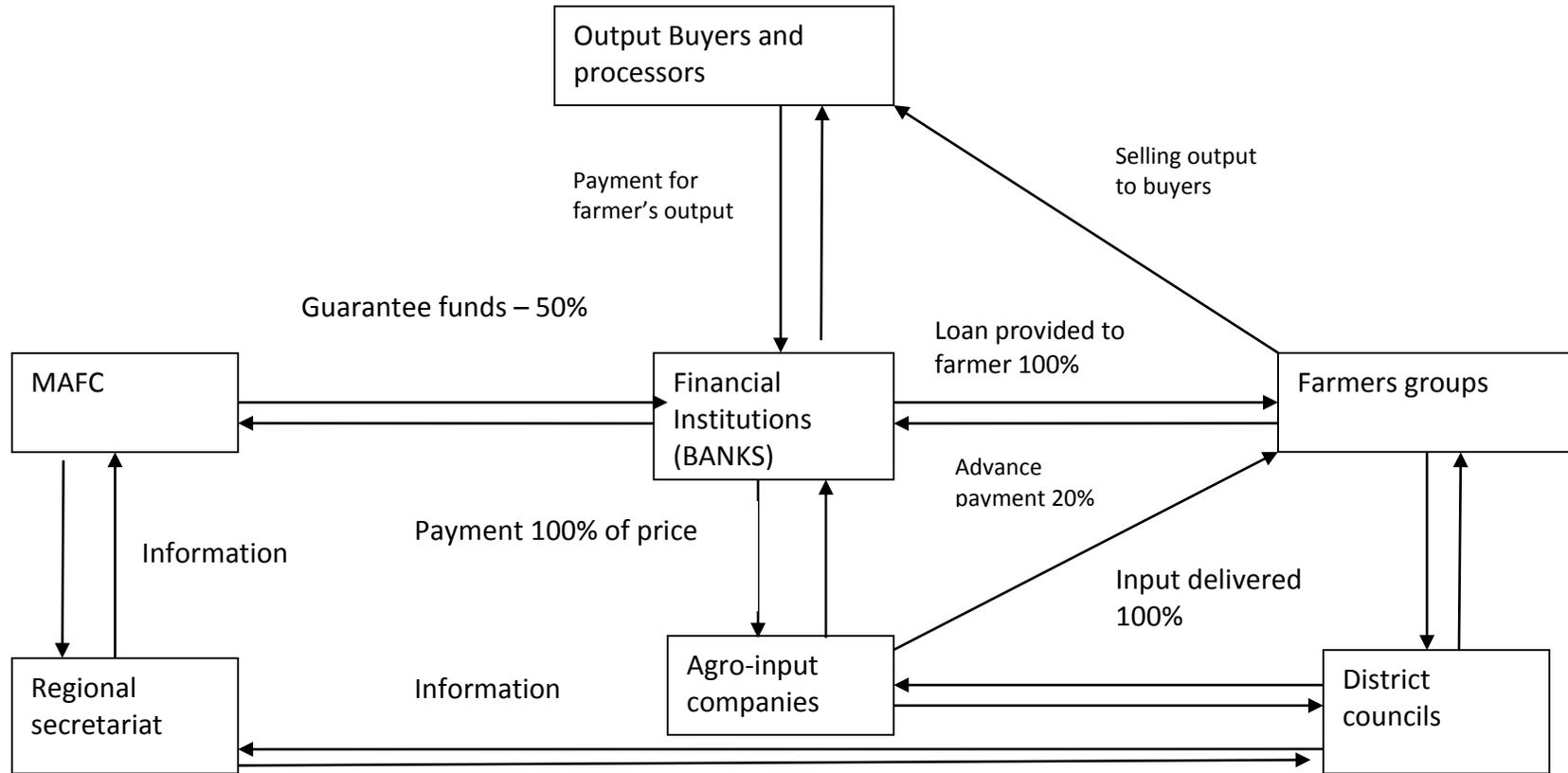
### **3.5 Initial attempt by MAFC to implement a pilot ACSP in 2013/14**

In mid-2013, the ministry convened a meeting of various potential banks (CRDB, NBC, NMB, TIB and community banks) and requested that they come up with a common position regarding how the ACSP could be implemented and to suggest common procedures. However, our understanding is that most commercial banks did not show any interest in participating and that those who did show an initial interest could not agree on common procedures. In addition, some did not think the program was ready for implementation and equated it with failed government-led programs from previous years. In the end, none of the large commercial banks decided to participate in the ACSP for the 2013/14 season.<sup>3</sup>

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<sup>3</sup> Because we have received conflicting accounts from MAFC on the extent to which the large commercial banks initially agreed to participate and the reasons why they chose not to participate in the end, it would be helpful if the SUA/MSU researchers working on this assessment could have access to official MAFC minutes from meetings between MAFC officials and the banks regarding the banks' potential participation in ACSP.

**Figure 1. Proposed Input Credit Subsidy Arrangement**



Initially the plan for ACSP was for all interested farmer associations/groups in the country to serve as participants, but given the state of program unpreparedness prior to the 2013/14 main season, the program was narrowed down to seven regions (Ruvuma, Njombe, Iringa, Mbeya, Manyara, Shinyanga, and Geita) and planned as a pilot program. This pilot was intended to target existing farmers groups with Agricultural Marketing Cooperatives (AMCOs) and SACCOSS that were already formally registered.

Our understanding is that community banks such as those in Mbinga and Njombe showed an interest and even submitted farmer groups, and at least these two regions were to be under this pilot. However, in late 2013, funds were not made available for ACSP given that the GOT had not yet repaid fertilizer/seed importers for their participation in NAIVS during 2012/13. Thus, in the end, MAFC was not able to implement a pilot ACSP in any districts during the 2013/14 season. However, as of the time that this study was completed, MAFC was considering implementation of a pilot ACSP in limited districts for the 2014/15 season.

#### **4. Assessment of the key assumptions underlying the design of the Agricultural Credit Subsidy Program**

##### **4.1 The goals of the Agricultural Credit Subsidy Program**

###### *4.1.1 Why does MAFC intend to shift resources from NAIVS to ACSP?*

One of the goals of this paper is to discuss the stated and unstated assumptions about the ACSP that will have to be met in order for the program to be successful (i.e. farmers receive subsidized credit in time to purchase inputs when needed; farmers repay loans after harvest). However, before we begin to discuss these assumptions, we first note that it is critical that MAFC is clear about what the goals of NAIVS were, the extent to which they were met, and why they were or were not met. Second, it is just as critical to be clear about what the goals of an ACSP are, especially given that the ACSP design document does not clearly state the goals of the proposed program (the document simply assumes that ACSP will help solve some of the problems that.

###### *4.1.2 What goals did MAFC have in mind when it designed and implemented NAIVS?*

Another way of asking this question is: what problem was NAIVS designed to help solve? While the reasons why MAFC and GOT policymakers supported NAIVS may vary, the underlying problem NAIVS was designed to address was low productivity of smallholder maize and rice production. For example, while smallholder use of inorganic fertilizer varied considerably by region, the 2007/08 National Sample Census of Agriculture 2007/08 found that only 7.2 percent of smallholder cropped area in the long rains of 2008 received inorganic fertilizer and 9.2 percent of smallholders who planted annual crops applied any inorganic fertilizer (NBS et al. 2010). Most of this inorganic fertilizer was applied to cash crops such as tobacco, coffee, horticultural crops, etc; thus there was very little inorganic fertilizer applied to maize and rice, with the exception of some of the highest potential areas and/or areas where cash crop production provided farmers with better access to fertilizer. Likewise, only about 11% of smallholders used improved seed in maize or rice production in 2007/08 (ibid).

There are many factors that could explain why fertilizer and improved seed use on these crops were low prior to NAIVS, such as:

- a) Smallholder maize production is inherently risky due to:
  - a. Yield uncertainty:
    - i. Almost all smallholder maize production is rainfed, thus adverse weather shocks can make yield unpredictable;
    - ii. Although some smallholder rice production is within irrigation schemes, the reliability of sufficient water is not guaranteed, and rainfed rice production faces the same risks as maize;
    - iii. Crop disease and insect pressure may also be unpredictable yet cause yield losses
  - b. Output market access and output price uncertainty
    - i. Smallholders living in villages with poor market access face uncertainty regarding the number of traders seeking surplus maize/rice that may visit their village during the post-harvest period and/or the timing of such visits
    - ii. The uncertainty of maize and rice yields can make output prices uncertain as post-harvest prices will tend to be relatively low (high) in good (bad) weather years
- b) Most small maize/rice producers lack sufficient resources to self-finance the purchase of fertilizer and improved seed and/or do not have access to seasonal credit to finance their purchase with which to purchase (improve farmer organizational management for increased collective action to expand their borrowing capacity in groups)
- c) Prior to NAIVS, most smallholder maize/rice producers did not have first-hand experience with using inorganic fertilizer or improved seed in maize or rice production, thus they lacked sufficient knowledge/experience with which to make an informed decision regarding the expected returns of these inputs relative to the risks involved (improve extension service)
- d) Many smallholders may have lived in villages where input dealers simply did not visit and/or had shops that were so far from these villages that farmers essentially did not have an option of purchasing improved inputs

Our understanding is that the two main goals of NAIVS were to:

- 1) Improve access to fertilizer and improved seed for maize/rice farmers who previously had not been using them
- 2) In the process of achieving (1), this should make it more affordable (and thus less risky) for them to gain first-hand experience in applying fertilizer on maize/rice and in using improved maize/rice seed, and observe for themselves the extent to which the value they receive in additional maize/rice production exceeds the additional cost they incur to purchase inputs such as fertilizer and improved seed.<sup>4</sup>

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<sup>4</sup> An important assumption made by NAIVS was that because zonal research station yield trial data suggested that use of fertilizer and improved seed in maize/rice production is profitable under normal weather conditions (in the zones initially targeted with vouchers), that smallholder farmers could achieve similar

Given these two clear goals, the targeting criteria for receipt of NAIVS vouchers were thus well-designed, as when these criteria were implemented correctly (as they appear to have been in many villages) the vouchers were primarily received by farmers who previously had not had experience in using either fertilizer or improved seed in maize/rice production (World Bank, 2014). It is also likely that during the scale-up of NAIVS, many villages that otherwise would not have received visits from input dealers began to receive this service (i.e. improving access to fertilizer and improved seed for use in maize/rice production). In addition, the assurance of smallholder demand for fertilizer and improved seed (due to voucher receipt) reduced the risk and unit costs for fertilizer and seed wholesalers and retailers, thus potentially resulting in medium-to long-term investments by private sector input distributors in physical infrastructure, human capital, exchange relationships throughout the input supply chain, etc.

It is important to recall that the criteria for receiving a NAIVS voucher specifically targeted neither wealthier farmers nor the poorest of the poor, but rather farm households with the following characteristics:

- a) Grows maize or rice
- b) Cultivates not more than 1 ha of maize or rice
- c) Previously had not been using inorganic fertilizer or improved seed on either of those crops
- d) Are able to self-finance 50% of the value of any of the three vouchers in the NAIVS voucher package (one 50 kg bag of basal fertilizer, one 50 kg bag of topdressing, and one 10kg bag of seed).

As noted by an assessment of NAIVS led by the World Bank (2014), these targeting criteria were optimal for the efficiency by which each voucher led to both an increase in maize or rice production and the probability that the farmer who received the voucher was not previously using inorganic fertilizer or improved seed on maize/rice. By contrast, while a voucher received by a farmer who had previously were already using fertilizer on maize would certainly represent a financial gain for that individual, by providing that voucher to that type of farmer, MAFC would not have achieved the goals of either: 1) improving access to fertilizer/seed for those previously not used to using it on maize/rice' or 2) enabling farmers with little to no experience of applying fertilizer to maize/rice or using improved maize/rice seed to have a relatively low-cost opportunity to gain experience using these inputs on their own field. The 'learning effect' objective of NAIVS was thus to provide voucher recipients with first-hand experience (over three consecutive years of voucher

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yields if agricultural extension agents inform them of the proper application rates, timing, complementary crop and plot management practices (such as timely weeding), etc.

<sup>4</sup> Whether or not these farmers achieved good returns would be a function of not merely receipt and application of fertilizer and seed, as the yield gains from these inputs also depend upon not only rainfall and local soil conditions but also farmer knowledge of recommended seeding rates and techniques, fertilizer types and dosages recommended for their agro-ecological zone, and complementary crop and plot management practices (such as timely weeding).dealers and extension agents inform them of the proper application rates, timing, complementary crop and plot management practices (such as timely weeding), etc.

receipt) of the net returns to using fertilizer and improved seed in maize/rice production<sup>5</sup>, which in turn would enable them to make an informed decision as to whether or not they should attempt to save for such inputs and purchase them at commercial prices once their three-years of vouchers is completed.

#### **4.3 Perceived NAIVS problem #1: Failure to reach all farmers (farmers who could not be reached felt that they were discriminated against)**

First, it should be noted that this political challenge is inherent in any targeted subsidy approach. That is, unless GOT can afford to provide a subsidy to *all* farmers, then some will inevitably be 'left out' of whatever subsidy program is implemented. For example, in 2011/12, NAIVS vouchers reached approximately two million rural households at a cost of approximately US\$80 million, an amount that represented by far the largest single program item in MAFC's budget. Yet, the GOT clearly cannot afford to subsidize fertilizer and improved seed for all maize and rice farmers in Tanzania, as the cost would be far greater than \$80 million.

Thus, if the GOT wants to directly subsidize the price of inputs (or the interest rate paid for agricultural credit), it does not have a choice but to target some farmers and exclude others, given the vast expense of subsidizing the price for the entire market. In fact, that is why targeting criteria for NAIVS vouchers were designed – to limit the subsidy benefit to those farmers who were both most in need of assistance in gaining access to fertilizer/seed and experience with using it on their own fields, yet who also were in a position to be able to possibly purchase these inputs at the full commercial rate at the end of the 3-year household limit on voucher receipt.

In addition to being prohibitively expensive, a universal subsidy would have the additional disadvantage of being highly inefficient in part because a substantial number of farmers (especially in the southern highlands) were already using inorganic fertilizer prior to NAIVS. That is, while subsidizing farmers who are able to gain access to fertilizer on credit without a subsidy is obviously beneficial to these farmers (in financial terms), it is very unlikely to result in generating substantial additional crop output from these farmers, based on evaluation of the effect of receipt of subsidized fertilizer in areas of Kenya with very high commercial demand for fertilizer prior to an input subsidy program (Mather and Jayne, 2014). In addition, subsidizing farmers who already have access to credit and fertilizer will not solve the underlying problem of limited access to credit and/or improved inputs for the majority of smallholders for whom such improved inputs might be profitable but for whom cash constraints during the planting period prevent them from purchasing fertilizer at commercial prices.

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<sup>5</sup> Whether or not these farmers achieved good returns would be a function of not merely receipt and application of fertilizer and seed, as the yield gains from these inputs also depend upon not only rainfall and local soil conditions but also farmer knowledge of recommended seeding rates and techniques, fertilizer types and dosages recommended for their agro-ecological zone, and complementary crop and plot management practices (such as timely weeding).

Second, we note that while it is true that there were some farmers who met the NAIVS target criteria who did not receive a NAIVS voucher, moving from NAIVS to an agricultural credit subsidy program is unlikely to reach these farmers, for reasons that will be explained below. *In fact, as explained in Section 5.4, ACSP is very likely to only reach farmers who already have access to credit (i.e. those that grow cash crops), which would dramatically reduce the rate of return to the funds spent by MAFC on this program, and also begs the question of why MAFC would want to spend its scarce resources to subsidize credit for farmers who are in a position in which they already have access to inputs on credit and are able to afford them.*

#### **4.4 Perceived NAIVS problem #2: Farmers wanted assistance in acquiring fertilizer and seed for more than one acre**

We note again that one of the main goals of MAFC was to introduce farmers unaccustomed to using fertilizer/improved seed in maize/rice production to these inputs, yet the reason why the voucher was limited to one acre was to enable the program to provide a reasonable amount of input for a farmer to experiment with – yet not so much that the program cannot afford to distribute this kind of benefit to a large number of recipients. For example, it is easy to see that if NAIVS decided to double the amount of fertilizer and seed available via a package of the three vouchers (two for fertilizer, one for seed) that unless the program budget also doubled, then instead of reaching two million farmers in 2010/11, MAFC would have only reached one million farmers. In summary, if MAFC were to try to provide assistance to farmers so that they could acquire inputs for *more* than one acre, this would inevitably mean that the program would reach many fewer farmers, which would only increase the political problem of farmers who are upset because they have not directly received a subsidy from NAIVS.

#### **4.5 Perceived NAIVS problem #3: Late distribution of vouchers & #4 The government consistently failed to provide payment on time to agro-dealers who had redeemed vouchers that season**

The first and most critical assumption made by the MAFC ACSP design document for the success of the ACSP is that ‘Government provides availability of funds well in advance’. There are several reasons why this assumption is highly questionable. First, our understanding is that since NAIVS was scaled up, the GOT has consistently been very late in repaying agro-dealers for redeemed vouchers. Second, our understanding is that one of the main reasons that a pilot ACSP was not implemented in 2013/14 even in a few districts is because the GOT could not find sufficient funding for ACSP given that it still had outstanding payments to make to agro-dealer hubs and importers from NAIVS vouchers redeemed during the 2012/13 season. Thus, given recent history with both NAIVS re-payment and with the pilot ACSP, why would MAFC assume that the GOT would be *more* likely to provide funds on time under ACSP if it has yet to demonstrate that it can make timely payments for NAIVS? The problem of GOT re-payment may also affect the likelihood that commercial banks will be willing to participate in future seasons.

The assumption that the GOT can make a credit guarantee payment well ahead of the main planting period is all the more critical because unlike NAIVS, the ACSP is not likely to result in ANY loans being made unless the government guarantee is paid on time – because the

private sector financial actor (big banks) will not act until the government first acts. By contrast, it appears that in the case of NAIVS, importers and agro-dealers are willing to participate in the program (perhaps because they are assured of 50% payment by the farmer at the time of voucher redemption), thus at least NAIVS is implemented even if government payments to importers are late.

#### **4.6 ACSP Assumption #3) Contracts exist between farmers and output buyers & #6) District councils work together with farmers group to make sure that they pay back the loans**

The challenge with assumptions #3 and #6 is not that contracts could exist but whether or not they are likely to be enforced, with the exception of loans made to cash crop growers by processors who contract with these growers and thereby provide inter-linked credit. For example, the assumption that district councils are able to ensure that a farmer group focusing on production of staple food crops pays back their loan is highly unrealistic for several reasons. First, the social, political and business distance between district councils and farmer groups is typically quite large, which suggests that leverage that the district could put on a given farmer group through 'social pressure' is not likely to be strong. Second, the history of state-subsidized agricultural credit for staple crop growers in many African countries during the 1970s/80s is that farmer default on seasonal agricultural input loans was often widespread for various reasons (Poulton et al, 1998):

- 1) Lack of enforcement of credit contracts during this period led to a climate of 'strategic default' among farmers in many areas, whereby farmers' past experience of 'getting away with' loan default without any penalties or even reduced access to future loan opportunities means that they see no incentive to repaying another loan.
- 2) Smallholder staple crop growers in a country like Tanzania do not face intense land pressure thus they do not have strong incentives to intensify their staple crop production via use of expensive improved inputs (with the exception of some areas in northern and lake zones). They also own or control the land they cultivate, thus they are not beholden to a land owner via a sharecropping arrangement, as is common for many households in southeast Asia.
- 3) Smallholders are typically very far from the nearest branch of the lending agencies (bank) that supplied the loan, and given poor rural roads, this implies that the costs of monitoring smallholder behavior are very high.
- 4) Even if there was a reliable institution through which the lender could try to enforce some kind of repayment from a farm group, these groups do not typically have transferable assets that could be taken from them in lieu of loan repayment (this is one of the fundamental reasons why rural interest rates are so high in rural Tanzania and many other African countries, as explained in more detail below).
- 5) Smallholder staple crop growers are generally not dependent on credit, thus they don't have much to lose if they default and are then banned (for a while) from the loaning agency from receiving another loan.

#### **4.7 ACSP Assumption #6) District councils will campaign widely to make sure that farmers get inputs on time and to strengthen extension services to farmers**

None of these assumptions are remotely realistic. The problem with assuming that district officials can influence whether or not farmers get inputs on time is that from our understanding, delays related to input receipt under NAIVS were not predominantly caused by importers, wholesalers, or agro-dealers failing to provide inputs when needed, but rather because of delays in voucher distribution at the MAFC, regional, district, and village levels. That is, there is virtually nothing that district councils can do to speed up MAFC distribution of vouchers, and to expect district councils to speed up input delivery when district/village councils themselves may have been at fault under NAIVS is equally unrealistic.

The second assumption is that district councils will 'strengthen extension services to farmers'. This assumption begs many questions: first, if extension services are not adequate at present, why are district councils not doing something about this? Second, do district councils actually have the administrative, financial and technical capacity to improve local extension services? The program design document assumes that this is the case, which begs a third question – if district councils truly do have the capacity to improve local extension services, why are district councils not already doing all they can to improve local extension services? Fourth, why would the implementation of ACSP suddenly result in district councils solving the problem of inadequate extension?

### **5. The economics of rural interest rates and seasonal agricultural credit**

#### **5.1 Why choose an Agricultural Credit Subsidy Program?**

The choice of ACSP as a policy tool implies that MAFC is concerned that interest rates on loans for agricultural uses are too high for the majority of farmers. While it's true that the interest rate for most if not all rural loans to small businesses in Tanzania (farm or non-farm) is quite high (20%), it is important to understand the factors that lead to this high rate, as they are also highly relevant to the likelihood that ACSP loans will be repaid or not.

#### **5.2 Why are interest rates for agriculture so high in Tanzania?**

There are a variety of reasons why interest rates for small businesses and farmers in rural Tanzania are so high. As noted by (Poulton et al, 2006):

- 1) The small scale of deposits and loans in rural areas lead to high administrative and management costs per transaction (i.e. per deposit/loan); these relatively high administrative costs per loan are exacerbated by the wide spatial dispersion of rural households and poor communications infrastructure, which lead to high costs of loan administration, monitoring and enforcement. *(That said, these costs associated with the wide spatial distribution of rural households are dramatically minimized by ICT and institutions such as M-Pesa).*
- 2) The seasonality of agricultural production leads to patterns of 'lumpy' demand for and repayment of loans by farmers. For example, a typical farmer will want to take out a loan at planting (November/December in the southern highlands) and will likely not be able to repay it until harvest (April/May/June, etc).

- 3) Rural households within a given village or ward face covariant risks due to adverse weather or prices. Covariant simply means that the risk facing one household in a given agricultural season is highly correlated with the risk facing other households. In other words, when a drought hits a ward or district, all households in the ward/district are likely to be adversely affected, whether they are growing crops or working in the non-farm economy.
- 4) Rain-fed crop production is inherently risky due to the unpredictable nature of adverse shocks such as drought, flooding, pest and disease pressure which can lead to large declines in crop yield. This is a key reason why banks and other financial institutions charge such a high interest rate to farmers, given the high risk that such loans will not be repaid due to the riskiness of rain fed agricultural production.
- 5) Banks or institutions that lend to a typical small- or medium-holder farmers face additional risk given that most farmers do not have sufficient collateral with which to guarantee repayment. For example, because most Tanzanian small and medium-holders do not have either formal land title or transferable land rights to officially surveyed plots, they cannot use their land rights as collateral. Other potential sources of collateral could include savings deposits, livestock holdings, and/or farm equipment, though these typically only belong to larger and/or wealthier farm households who often simply self-finance their agricultural inputs rather than face high interest rates.
- 6) Banks or institutions that lend to farmers who produce a commodity such as maize or rice face even more risk than those who lend to a producer of a cash crop such as cotton, tea, tobacco, coffee, etc:
  - a. Maize/rice are staple food commodities, thus producers may decide to store/save/consume their production rather than make the sales necessary to repay a loan. By contrast, cash crops such as coffee/tea/tobacco have little to no consumption value for rural households.
  - b. Maize/rice are storable, thus producers do not have to make a sale immediately after harvest in order to gain income or utility from their production (as is the case with cash crops that must be processed soon after harvest in order to be of high value – such as sugarcane, tea, etc)
  - c. Maize/rice producers can sell their produce to a wide range of buyers. Most food crop buyers are not formally organized, they are in-and-out of the market between and within seasons, they are different sizes (small, medium and big) are normally not registered as formal businesses and thus are difficult to monitor and control. Thus, the value chain from farmers to assemblers to wholesalers is highly fragmented. By contrast, producers of most cash crops (coffee, tea, tobacco, sugarcane) only have a small number (or sometimes only one) potential buyer of their crop, Thus they do not have an option of selling their output to someone other than the organization that provided the farmer with an input loan. Because supply chains for cash crops are vertically integrated (processor, distributors and exporters), very rarely you can find intermediaries performing just one marketing function.
  - d. In sum, for any crop which does not need specialized technology in processing or storage after harvest and which potentially has many buyers renders itself prone to side selling.

The reasons above all help to explain why rural areas are often not served by banks, and why, in the cases where such loans may be available to farmers, financial institutions that lend to rural households (and especially to farmers with rain fed production systems) charge such high interest rates. In summary, high rural interest rates are typically due not to either collusion or lack of competition among lenders, but rather are simply the result of real costs and risks that such lenders face: high per-loan transaction costs of administration, monitoring and enforcement, and a high risk that adverse weather or other events may leave loan recipients with poor harvests and thus unable to repay their input loans.

While Micro-Finance Institutions (MFI) such as SACCOS (Savings and Credit Cooperatives) exist in some rural Tanzanian villages, such institutions are typically not designed to provide seasonal credit for agricultural inputs for the following reasons (Poulton et al, 2006):

- 1) A single MFI (such as a SACCO) is highly vulnerable to covariant risk (i.e. a drought that affects an entire village or even most of a district). Thus, for SACCOS to make loans for agricultural inputs, they would need to be linked to a considerably wider area than just one village (or district)
- 2) A single MFI usually has relatively low levels of capital, thus they tend to favor relatively small loans that are repaid relatively quickly, such as for short-term consumption
- 3) While MFIs can be linked to larger formal banks to provide access for larger pools of finance, this can significantly weaken the incentives of the local MFI to manage and protect savers' deposits (i.e. enforce repayment). In other words, when the capital which is lent to individuals in a community comes from outside the community, it is considerably more difficult for community social pressure to enforce repayment of loans.

For the reasons given above, the majority of MFI/SACCO clients usually are small traders or micro-entrepreneurs – not farmers, and MFI's tend to be in either urban areas or densely populated rural areas with a strong non-farm economy and/or a significant amount of high-value, commercialized agriculture (ibid). This is in fact what we find in the nationally-representative household-level 2010/11 National Panel Survey (NBS, 2012): only 0.5% (0.7%) of Tanzanian maize (rice) growers receive a loan for agricultural inputs from their local SACCO.<sup>6</sup>

### **5.3 Under what conditions do we observe successful seasonal agricultural input finance and repayment in the rural Tanzanian context?**

We typically only observe small- and medium-holder farmers receive seasonal input loans from agro-processors of cash crops such as coffee, tobacco, tea, sugarcane, or horticultural crops such as green beans, snap beans, and other products for the limited domestic market (and a larger export market), etc. These processing firms typically contract with farmers at planting, providing selected growers with inputs such as fertilizer, seeds and extension

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<sup>6</sup> Authors' estimation using household-level data from the National Panel Survey 2011/12 (NBS, 2012).

advice, and they recoup their loans by deducting their value from the resulting cash crop production that growers sell to the processor at harvest. That is, although these small-holders may not possess sufficient collateral at the time that the loan is made, the processors know that the expected value of a given contracted grower's harvested cash crop production will generally be considerably higher than the loan value, and that the grower is unlikely to intentionally refuse to sell his/her cash crop output to the processing firm from which he/she received a loan, for the following reasons (Poulton et al, 1998):

- a) Coffee/tea/tobacco have little to no consumption value for rural households, thus they have a strong incentive to sell to agro-processing firms
- b) Cash crops such as tea and sugarcane must be processed very soon after harvest in order to gain income or utility from their production (as is the case with cash crops that must be processed soon after harvest in order to be of high value – such as sugarcane, tea, etc)
- c) Because of (b), there are often very few buyers of cash crops (or sometimes a single buyer) from which cash crop growers can choose. In the case where there may be multiple processing firms (such as for cotton in some countries), these firms typically coordinate with each other to ensure that they each purchases harvested output from only the farmers to which they provided a loan.

#### **5.4 What are the characteristics of farmers who belong to functional Agricultural Marketing Cooperative Organizations (AMCOs)?**

One of the key design features of ACSP is that it proposes that banks will make loans to existing farmer associations. Given the implied assumption that ACSP is a 'follow-on program' to NAIVS, this begs the question of the extent to which farmers who currently belong to functional farmer associations have similar characteristics to those used for targeting of NAIVS benefits (i.e. relatively smaller maize/rice producers, with little to no previous history of using fertilizer prior to NAIVS). Tanzania has a long history of promoting farmer associations, notably during President Nyerere's promotion of state-led rural development. However, since the wide-scale liberalization of the Tanzanian economy in the 1990s, many farmer associations either disbanded or continued to exist in name only. Thus, we use the term 'functional' to describe farmer associations (specifically, AMCOs) that not only exist on paper, but actively provide some kind of service to their members, such as receipt of technical advice or extension or improved access to (and prices received from) agricultural input and output markets. That is, one of the key theoretical advantages of a marketing cooperative is that individual farmers who belong to such a group have the potential to enjoy considerably reduced transaction costs of accessing technical advice and input or output markets, and better terms (interest rates, prices of inputs and outputs) when they engage markets, due to the fact that a group of farmers has more leverage in terms of numbers, volume, and information (vis a vis banks, input dealers, traders or assemblers seeking to buy surplus crop production, etc) than an individual would have on his/her own.

Unfortunately, neither the Agricultural Census of 2007/08 nor the National Panel Surveys of recent years specifically ask household respondents if any individual in their household belongs to an AMCO. However, for farmers who receive extension, obtain agricultural inputs, and/or sell crop surpluses, NPS does record from each survey respondent

(household) their source of extension or inputs, and the buyer of the crop surplus. Among households reporting receipt of extension advice in 2010/11, only 2.5% (0.5%) of maize (rice) growers received extension advice via a cooperative or farmer association.<sup>7</sup> By contrast, 33% of tobacco growers report receipt of extension advice via a cooperative. Similarly, less than 1% of maize and rice growers obtained agricultural inputs via a cooperative, and even fewer than that obtained agricultural inputs on credit via a cooperative. Finally, only 0.1% (0.2%) of maize (rice) report that they sold maize (rice) through a cooperative.<sup>8</sup>

These findings are consistent with anecdotal evidence that suggests that the vast majority of currently functional AMCOs in Tanzania are primarily organized to provide services related to cash crops such as coffee, tobacco, tea, etc. There are two main implications of this for ACSP. First, if ACSP expects banks to make loans to farmers (to help finance fertilizer and seed for maize or rice production) who currently belong to an AMCO, it appears that most functional AMCOs at this point in time are organized around cash crops. According to agro-dealers interviewed by the authors in four different regions of Tanzania in 2013/14 (Njombe, Mbeya, Morogoro, Arusha) (Waized et al, 2014), when asked which maize and rice growers who received NAIVS vouchers would most likely be able to self-finance fertilizer and/or improved seed for use on maize or rice production if NAIVS were scaled down or stopped, most agro-dealers said that farmers who are growing cash crops or have other higher-value crop or livestock activities (such as coffee in Njombe/Mbeya, or horticultural or dairy producers in Arusha) would most likely be able to afford these inputs for use on maize or rice at commercial prices. Therefore, if ACSP targets maize and rice producers who belong to an AMCO for receipt of a loan with a highly subsidized interest rate, it would appear that farmers who would meet that criteria (i.e. belong to a functioning AMCO) most likely could afford to self-finance those inputs due to their high-return crop or livestock activities and/or their access to credit via those activities. In addition, for the reasons given in (a) to (c) in Section 5.3 above, and in the paragraph directly above, it appears that it is highly likely that potential lenders participating in ACSP will view AMCOs based on cash crops as those most likely to be able to consistently repay seasonal agricultural input loans, and farmer associations of maize/rice producers as much less likely to repay such loans (with the possible exception of maize/rice producers who currently participate in a successful warehouse receipt program<sup>9</sup>).

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<sup>7</sup> Authors' computations using the nationally-representative, household-level National Panel Survey 2010/11 (NBS, 2012).

<sup>8</sup> We note that further investigation is needed to determine whether or not some households who sell produce through a cooperative might report the 'buyer' as not the cooperative, but the organization that purchased the output from the cooperative. That said, even if there was some confusion among respondents about the 'buyer' of their produce, one would assume that if a significant number of maize/rice farmers were actually selling maize or rice through an AMCO that at least some of them would report that the buyer was the cooperative – yet among maize (rice) growers, less than 1% say they sold to or through a cooperative.

<sup>9</sup> In principle, the warehouse receipt system (WRS) is primarily intended to help producers of cereal crops such as maize and rice obtain higher prices for their surplus grain by marketing their grain in bulk and doing so later in the year when prices are higher. Given that this would provide them with higher cereal sales income that would arrive later in the year (closer to planting), this would indirectly improve the probability that they have cash on hand for inputs the following season. Yet, it may also be possible for WRS to be used as a way to link seasonal input credit and output sales, as a participating maize/rice farmer would be less likely

This suggests that if ACSP is implemented as designed, MAFC will likely be subsidizing credit intended for agricultural input use on maize/rice primarily for farmers who grow cash crops, which begs the question of why MAFC would want to subsidize credit for farmers who: 1) already have access to fertilizer and seed for their cash crop production; and 2) can likely afford to repay unsubsidized loans and/or self-finance inputs for maize/rice production due to the high value of their cash crop output. By contrast, with NAIVS, MAFC increased access to fertilizer and maize/rice seed for maize/rice producers – many of which would probably not purchase these inputs without a subsidy. Thus, by shifting funds from NAIVS to ACSP, it is very likely that instead of increasing access to fertilizer and improved seed for farmers who otherwise may not use it, the funds spent on ACSP will instead simply provide a cash transfer to cash crop growers who already have access to improved inputs on their cash crops and/or can afford to self-finance improved inputs for maize/rice production, should they choose to do this. Not only would this change shift scarce government resources for transfers from poorer to less-poor farmers, subsidizing farmers who can already afford fertilizer and/or seed at commercial rates can be a highly inefficient way to promote higher fertilizer use on maize and rice. The reason for this is that a subsidy targeted to a household which would, in the absence of the subsidy, likely purchase fertilizer and/or improved seed at a commercial will tend to displace (or crowd-out) already existing commercial demand from that household (Jayne et al, 2013).

## **6. Conclusions**

Based on the discussions we have held with MAFC personnel responsible for agricultural inputs, the limited reading of the intentions of ACSP and the limitations of NAIVS which the proposed program intends to overcome, we conclude as follows:

- 1) The five limitations of NAIVS noted by the current MAFC design document (2013) for ACSP are likely to persist under ACSP and are likely to be at an even higher magnitude for the reasons aforementioned.
- 2) The plan of ACSP to provide subsidized credit to farmer groups and to attempt to enforce loan repayment involves many actors and institutions; the map of exchange relationships between actors in the ACSP implies that the required contract negotiation, monitoring and enforcement will be quite complex and result in extremely high transactions costs
- 3) From the reading and discussions we have had, the government is already heavily indebted to several financial institutions—the same institutions expected to participate in the new program. We sense that these institutions will logically demand to be repaid for what the GOT owes them under NAIVS

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to side-sell his maize/rice given the opportunity to sell via the WRS at a higher price; and this expected production might be used as collateral as in the case of cash crop interlinked credit. That said, our understanding is that current WR system being piloted among rice producers is not working as well as planned and is not widespread at this time, which suggests that if it were possible to use a WRS to help enforce seasonal loans to maize/rice producers, it would not reach many farmer groups. This underscores the need for MAFC to review the types of existing farm groups that are formally registered and who expressed an interest in the pilot ACSP in 2013 so that MAFC will have a better idea of what kinds of farmers would likely receive subsidized credit if ACSP is piloted at some point in the future.

- before they will even consider participation in a different program. This means that their continued engagement is contingent on them being paid in full and as soon as possible.
- 4) It will take time and resources (capacity building activities) to adequately prepare existing farmer groups (who do not already have access to credit via cash crops) to ensure that they are able to effectively participate in these discussions as partners in business and be ready to stand up and be accountable for the loans they obtain, etc.
  - 5) MAFC should review the nature of the farmer groups that currently meet the ACSP participation criteria, as it is likely that many of these groups are focused on cash crop production. If this is the case, this implies that MAFC would be shifting resources from subsidizing input access for maize/rice producers who otherwise would not likely purchase fertilizer or improved seed on their own (under NAIVS) to subsidizing credit for farmers who currently already have access to credit for fertilizer/seeds for their cash crops and who can already afford existing interest rates (under ACSP). Why would MAFC want to subsidize credit access for growers who very likely already have access to improved inputs via interlinked credit from cash crop processing companies?
  - 6) A large and very important part of the process involves contracting—the banks with the government, the banks with the farmer groups, etc. Unfortunately though, the bio-physical and socio-economic characteristics of maize and rice do not render contract enforcement viable for seasonal loans made to maize/rice producers. These are crops that can be grown by every smallholder farmer, can be sold to anyone by any farmer, and can be processed by many, at a time and amount desired by the seller or buyer. These facts plus the experience from many African countries in subsidizing inputs for staple food crops suggest that the likelihood that maize/rice producers side-sell their output is quite high (i.e. that they do not sell their output to the buyer stipulated by the bank that gives them an ACSP loan). This implies that loans made to farmer groups contracted to supply maize/rice to buyers have a relatively high likelihood of not being repaid, meaning that the 50% government guarantee on those loans will not be recouped by the government.
  - 7) Perhaps, of utmost importance at this time would be do a synthesis of the different evaluations of NAIVS conducted by different institutions and individuals and build consensus on what went right and what went wrong in the NAIVS and what then needs to be amended
  - 8) Whereas the understanding of the economic and technical efficiency of NAIVS is paramount, this needs to be preceded by a clarification and review of the objectives of any alternative program that is designed to follow-on to the progress made under NAIVS. Without clarification of the goals of ACSP, it is difficult for us (or anyone) to adequately evaluate its design.
  - 9) Whether NAIVS or ACSP, it is important to subject our approach to the principles of a SMART subsidy: Specific, Measurable, Attributable, Replicability and Time bound.
    - a. For example, a SMART subsidy program involves(S)pecific targeting to farmers who would not otherwise use purchased inputs (or to areas where

added fertilizer can contribute most to yield improvement), (M) easurable impacts, (A)chievable goals, (R)esults orientation, (T)imely duration of implementation, i.e., being time-bound or having a feasible exit strategy. (Minde and Ndlovu, 2007)

- b. In addition, Morris et al (2007) identify ten characteristics of a 'market smart' subsidy program. For example, the design should promote or 'crowd-in' private sector investment and engagement instead of 'crowding-out' or displacing it; it should promote the factor or product as part of a wider strategy that includes complementary inputs and strengthening of markets, and recognize that effective demand from farmers for the input is critical for long-run sustainability
- 10) If MAFC's goal is to improve smallholder access to financing for agricultural inputs, rather than pursuing a model that has been shown to fail in most cases when implemented within a context like that found in Tanzania at the present, they should instead consider shifting some of the resources previously used for NAIVS to improving Warehouse Receipt Systems (WRS) for maize and rice. While WRS are not always successful in a developing country context, WRS have been shown to work successfully in some African countries. A well-run WRS offers the following benefits to participating smallholders: (a) Immediate cash at harvest as needed; and (b) the opportunity to potentially receive a much higher price for their grain during the lean season (the portion that remains from what they have deposited with the WRS). This by itself could greatly relieve the typical smallholder maize/rice producer's credit constraint for agricultural inputs during the planting period, as the receipt for stored grain can be used as collateral for a loan. In fact, the Big Results Now (BRN) initiative of the Presidential Delivery Bureau is already planning to invest in improving existing infrastructure, inventory and sales management of WRS for rice and maize growers, thus MAFC could perhaps wait to see the extent to which BRN is successful in improving the performance of WRS for maize and rice. That said, it must be acknowledged that in order to be financially sustainable, a WRS requires sufficient warehouse physical infrastructure and maintenance, technical and managerial skills to effectively manage inventory, and a business-like ability of managers to coordinate and negotiate with buyers in the lean season when prices are higher.
- 11) MAFC should also consider exploring policy options other than subsidies that can meet the same objectives as NAIVS – namely, to improve smallholder access to fertilizer and improved seed for use in maize/rice production -- as these have the potential to be less costly and more sustainable.
- a. For example, instead of shifting funding from NAIVS to ACSP, perhaps MAFC could consider shifting some of the NAIVS funding to areas such as: Improvement in marketing-related infrastructure (rural roads; improved rural information and communication; port infrastructure (Benson et al, 2013)), and enhancing farmer groups' collective action, each of which can lead to significant reductions in the prices farmers pay for inputs, and raise the prices they may receive for their agricultural outputs. In addition, benefits from these kinds of expenditures would be distributed across a wide

range of rural households (in areas that receive improved marketing-and communications related infrastructure) and not simply accrue to those included in a given subsidy program. Also, benefits from improved infrastructure would last for many years, whereas those from a subsidy program largely are largely enjoyed in just the year of receipt (however, an important exception to this is the public good nature of the learning effect that NAIVS vouchers have likely had to help smallholder maize/rice farmers make more informed decisions regarding the profitability and returns to inorganic fertilizer and improved seed for their maize/rice production).

In summary, before MAFC shifts a large sum of funds to a program that lacks not only clear goals but also a thoroughly-reviewed design, we suggest that MAFC should do a lot more work to clearly define what problem this program would be designed to solve and where/how the program is intended to succeed (i.e. for which farmers, which crops, in which regions). The key challenge with any agricultural credit subsidy program is that it is well-documented that successfully linking seasonal input credit with food crop sales is very difficult, and experience in many African countries has shown that interlinked credit is typically only successfully repaid in the case of cash crops. In addition, many of the farmer groups that would likely qualify for an ACSP loan and/or be approved by banks are likely to be groups focused on cash crop production. If this is the case, then spending scarce MAFC resources to subsidize input loans for cash-crop farmers -- who are generally wealthier than the average farmer and who already have access to credit/fertilizer for cash crops -- implies that ACSP would be a very different kind of program than NAIVS and would lead to very different outcomes.

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