

Document of  
The World Bank

Report No: ICR00003242

IMPLEMENTATION COMPLETION AND RESULTS REPORT  
(IDA-46190, IDA-51730)

ON A

CREDIT

IN THE AMOUNT OF SDR 124.1 MILLION  
(US\$185.0 MILLION EQUIVALENT)

TO THE

UNITED REPUBLIC OF TANZANIA

FOR AN

ACCELERATED FOOD SECURITY PROJECT

December 23, 2014

Agriculture Global Practice  
Country Department AFCE1  
Africa Region

## CURRENCY EQUIVALENTS

(Exchange Rate Effective August 1, 2014)

Currency Unit = Tanzanian Shilling (TZS)

TZS 1650 = US\$1

FISCAL YEAR

July 1 – June 30

## ABBREVIATIONS AND ACRONYMS

AF	Additional Financing
AFSP	Accelerated Food Security Project
AGC	Attorney General Chamber
ASA	Agriculture Seed Agency
AIS	Agriculture Input Section
ARI	Agriculture Research Institute
BCR	Benefit-Cost Ratio
CAS	Country Assistance Strategy
CBO	Community-based Organization
CR	Circular Resolution
CSO	Civil Society Organization
DAA	District Agro-dealers Association
DRD	Department of Research and Development
EAAPP	East Africa Agricultural Productivity Project
ERL	Emergency Recovery Loan
EMP	Environmental Management Plan
ESMF	Environmental and Social Management Framework
FM	Financial Management
GFRP	Global Food Crisis Response Program
GoT	Government of Tanzania
ha	Hectare
ICR	Implementation Completion and Results Report
IDA	International Development Association
IFR	Interim Financial Report
IPMP	Integrated Pest Management Plan
INMP	Integrated Nutrient Management Plan
IRR	Internal Rate of Return
ISR	Implementation Status and Results Report
ISTA	International Seed Trade Association
ISFM	Integrated Soil Fertility Management
MAFC	Ministry of Agriculture Food Security and Cooperatives
MIS	Management Information System
MoF	Ministry of Finance
Mt	Metric tons
MTEF	Medium Term Expenditure Framework

M&E	Monitoring and Evaluation
NMB	National Microfinance Bank
NAIVS	National Agricultural Input Voucher Scheme
NAISP	National Agricultural Input Subsidy Program
NPV	Net Present Value
NVSC	National Voucher Steering Committee
OPV	Open Pollinated Varieties
PDO	Project Development Objective
PER	Public Expenditure Review
PFM	Public Financial Management
PMU	Procurement Management Unit
QDS	Quality Declared Seed
SDR	Special Drawing Rights
t	Tons
TANADA	Tanzania Agro-dealers Association
TBC	Tanzania Broadcasting Cooperation
TOSCI	Tanzania Official Seed Certification Institute
VVC	Village Voucher Committee
WB	World Bank

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**United Republic of Tanzania**  
**Accelerated Food Security Project**

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## DATA SHEET

<b>A. Basic Information</b>			
Country:	Tanzania	Project Name:	Tanzania - Accelerated Food Security Project
Project ID:	P114291	L/C/TF Number(s):	IDA-46190,IDA-51730
ICR Date:	26/12/2014	ICR Type:	Core ICR
Lending Instrument:	ERL	Borrower:	THE UNITED REPUBLIC OF TANZANIA
Original Total Commitment:	XDR 124.1 M	Disbursed Amount:	XDR 119.53M
Revised Amount:	XDR 121.68M		
<b>Environmental Category: B</b>			
<b>Implementing Agencies:</b> Ministry of Agriculture Food Security and Cooperatives			
<b>Cofinanciers and Other External Partners:</b> None			

<b>B. Key Dates</b>				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	12/17/2008	Effectiveness:	08/26/2009	08/26/2009
Appraisal:	04/21/2009	Restructuring(s):		06/29/2012, 12/11/2012, 12/02/2013
Approval:	06/09/2009	Mid-term Review:	12/03/2010	12/03/2010
		Closing:	06/30/2012	06/30/2014

<b>C. Ratings Summary</b>	
<b>C.1 Performance Rating by ICR</b>	
Outcomes:	Moderately Satisfactory
Risk to Development Outcome:	Substantial
Bank Performance:	Moderately Satisfactory
Borrower Performance:	Moderately Unsatisfactory

<b>C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)</b>			
Bank	Ratings	Borrower	Ratings
Quality at Entry:	Moderately Satisfactory	Government:	Moderately Unsatisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Moderately Unsatisfactory
<b>Overall Bank Performance:</b>	Moderately Satisfactory	<b>Overall Borrower Performance:</b>	Moderately Unsatisfactory

<b>C.3 Quality at Entry and Implementation Performance Indicators</b>			
<b>Implementation Performance</b>	<b>Indicators</b>	<b>QAG Assessments (if any)</b>	<b>Rating</b>
Potential Problem Project at any time (Yes/No):	Yes	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA):	None
DO rating before Closing/Inactive status:	Satisfactory		

<b>D. Sector and Theme Codes</b>		
	<b>Original</b>	<b>Actual</b>
<b>Sector Code (as % of total Bank financing)</b>		
Agro-industry, marketing, and trade	4	4
Crops	90	90
Public administration- Agriculture, fishing and forestry	6	6
<b>Theme Code (as % of total Bank financing)</b>		
Global food crisis response	100	100

<b>E. Bank Staff</b>		
<b>Positions</b>	<b>At ICR</b>	<b>At Approval</b>
Vice President:	Makhtar Diop	Obiageli Katryn Ezekwesili
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## **F. Results Framework Analysis**

### **Project Development Objectives (from Project Appraisal Document)**

The objective of the Project was to contribute to higher food production and productivity in targeted areas by improving farmers' access to critical agricultural inputs.

### **Revised Project Development Objectives (as approved by original approving authority)**

The PDO was not revised. The PDO level indicators were revised as follows:

- Additional maize production derived from improved seed and fertilizer;
- Additional paddy production derived from improved seed and fertilizer;
- Maize yields achieved by farmers with subsidized seed and fertilizer; and
- Paddy yields achieved by farmers with subsidized seed and fertilizer.

**(a) PDO Indicator(s)**

General Comment: Targets in the original PAD and the Additional Financing of October 2, 2012 were set on an annual basis. For the purposes of this ICR, cumulative data has been derived as appropriate in order to suite the reporting format.

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
<b>Indicator 1 :</b>	Additional maize production derived from improved seed and fertilizer (mt)			
Value	0	2,400,000		2,300,000
Date achieved	5/30/2009	5/30/2009		06/30/2014
Comments	2.3 million tons (95.8% of target) of maize produced. Please note that the original PAD and Additional Financing of October 2, 2012 provided data on an annual basis. Cumulative data for both targets and actual values have been used for this ICR to fit in the ICR format. Further note that this relates to data for Year 2 –Year 5 as there was no data collected in Year 1 due to a poor M&E system.			
<b>Indicator 2 :</b>	Additional rice production derived from improved seed and fertilizer (mt)			
Value	0	86,800		82,800
Date achieved	5/30/2009	5/30/2009		06/30/2014
Comments	82,800 mt (95.4% of target value) of rice produced. Please note that the original PAD and Additional Financing of October 2, 2012 provided data on an annual basis. Cumulative data for both targets and actual values have been used for this ICR to fit in the ICR format. Further note that this relates to data for Year 2 –Year 5 as there was no data collected in Year 1 due to a poor M&E system.			
<b>Indicator 3:</b>	Maize yields achieved by farmers with subsidized seed and fertilizer (t/acre)			
Value	0.33	0.90		0.93
Date achieved	5/30/2009	5/30/2009		12/30/13
Comments	0.93 t/acre (103% of target) of maize yield achieved. The final data relates to the 2012/13 cropping season as the yield data for the 2013/14 crop season was not available for the ICR.			
<b>Indicator 4:</b>	Paddy yields achieved by farmers with subsidized seed and fertilizer (t/acre).			
Value	0.74	1.31		1.11
Date achieved	5/30/2009	5/30/2009		12/30/2013
Comments	1.11 t/acre (85% of target) of rice achieved. This indicator relates to the 2012/13 crop season as the yield data for the 2013/2014 crop season was not available for the ICR.			
<b>Indicator 5:</b>	Project Beneficiaries.			
Value	0	2,500,000	N/A	N/A

Date achieved	10/1/2012	10/1/2012		06/30/2014
Comments	The target was 2.5 million beneficiaries. The Results Matrix of the original credit, which is restated in the Project Paper for the Additional Financing (Report NO. 71677-TZ dated October 2, 2012) only provides the annual number of voucher recipients. Since some beneficiaries were graduating as others were joining, it's difficult to deduce from voucher recipients how many new individual beneficiaries and how many are old beneficiaries. About 6,845,000 vouchers were distributed over five years. Assuming each beneficiary received a voucher for three years as stipulated in the program, then 2.3 million households benefited from the scheme. However, this is just an assumption as household graduation after three years was not systematically enforced. And some households might not have received their third voucher by project's end.			
<b>Indicator 6:</b>	Of which female (beneficiaries) (%)			
Value	0	28.7% (2,061,000)		14.7% (1,027,000)
Date achieved	10/1/2012	10/1/2012		06/30/2014
Comments	14.7% (1,027,000) of total number of beneficiaries were women. This analysis relates to voucher recipients because of data issues discussed in PDO Indicator No. 5 above.			

**(b) Intermediate Outcome Indicator(s)**

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
<b>Indicator 1 :</b>	Seeds sold by agro-dealers to farmers (tons)			
Value	6,500	76,100		70,500
Date achieved	5/30/2009	5/30/2009		06/30/2014
Comments	70,500 metric tons (92.6% of target) of seed were sold to farmers.			
<b>Indicator 2 :</b>	Fertilizers sold by agro-dealers to farmers (tons)			
Value	111,000	930,000		791,000
Date achieved	5/30/2009	5/30/2009		06/30/2014
Comments	791,000 metric tons (85.1% of target) of fertilizers were sold to farmers.			
<b>Indicator 3 :</b>	Percentage of farmers using improved seed and fertilizer in target areas.			
Value	24	35		23 <sup>1</sup>
Date achieved	5/30/2009	5/30/2009		06/30/2014
Comments	23% of beneficiary farmers are using improved seed and fertilizer.			
<b>Indicator 4 :</b>	Area cultivated with sufficient fertilizers and improved seeds (ha)			
Value	299,700	343,000		684,000
Date achieved	5/30/2009	5/30/2009		06/30/2014
Comments	684,000 ha (199.4 %) of land cultivated with sufficient fertilizers and improved seeds.			
<b>Indicator 5 :</b>	Satisfactory semiannual M&E reports produced			

<sup>1</sup> This indicator is not amenable to aggregation to derive cumulative end of project values and thus what is reported here is the value for the 2012/13 cropping season.

Value	No	Yes		No
Date achieved	5/30/2009	5/30/2009		06/30/2014
Comments	Satisfactory semiannual reports were not produced.			
<b>Indicator 6 :</b>	Recommendations in the annual evaluations implemented (%)			
Value	0	81		50
Date achieved	5/30/2009	5/30/2009		06/30/2014
Comments	50% of annual recommendations were implemented			
<b>Indicator 7 :</b>	Production of basic seeds (maize OPV) by private sector and ASA (000 tons)			
Value	41,000	230,000		228,000
Date achieved	5/30/2009	5/30/2009		06/30/2014
Comments	228,000 metric tons (99.1% of target) of maize OPV basic seeds were produced.			
<b>Indicator 8 :</b>	Production of basic seeds (rice OPV) by private sector and ASA (000 tons)			
Value	46.00	110.00		99.40
Date achieved	05/30/2009	5/30/2009		06/30/2014
Comments	99.40 metric tons (90.4% of target) of rice OPV basic seeds were produced			
<b>Indicator 9 :</b>	Production of pre-basic (breeder) seeds of maize OPV in target research			
Value	0.70	20		18
Date achieved	05/30/2009	5/30/2009		06/30/2014
Comments	18 metric tons (90% of target) of pre-basic breeder seeds of maize OPV were produced.			
<b>Indicator 10 :</b>	Seed sector policy (P) and implementation framework (IF) developed and endorsed			
Value	No	-	Yes	No
Date achieved	05/30/2009	5/30/2009		06/30/2014
Comments	Study was underway and not yet completed by the time of the ICR.			
<b>Indicator 11 :</b>	Trained agro-dealers who remain active in the agricultural input distribution (number).			
Value	500	2,500		2,010
Date achieved	05/30/2009	5/30/2009		06/30/2014
Comments	2,010 (80% of target) agro-dealers were trained and remained active in agricultural input distribution.			
<b>Indicator 12 :</b>	Proportion of farmers receiving seed and fertilizer subsidy vouchers.			
Value	-	90%		99%
Date achieved	05/30/2009	5/30/2009		06/30/2014
Comments	99% of farmers received seed and fertilizer subsidy vouchers. Target surpassed by 9%			
<b>Indicator 13 :</b>	Proportion of reimbursement payments completed within 45 days			
Value	-	90		0
Date achieved	05/30/2009	5/30/2009		06/30/2014
Comments	No reimbursement payment was completed within the stipulated timeframe.			

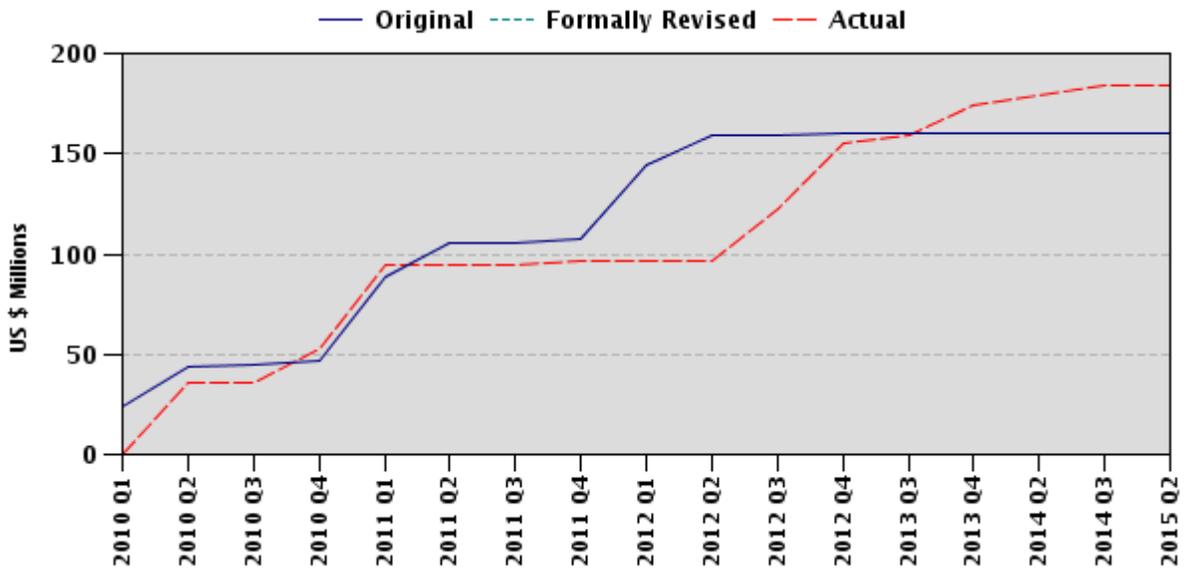
## G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	12/14/2009	Moderately Satisfactory	Moderately Satisfactory	35.81
2	06/15/2010	Satisfactory	Moderately Satisfactory	35.81
3	03/19/2011	Satisfactory	Moderately Satisfactory	94.02
4	07/11/2011	Satisfactory	Moderately Satisfactory	96.57
5	03/11/2012	Satisfactory	Moderately Satisfactory	122.73
6	07/10/2012	Satisfactory	Moderately Satisfactory	155.33
7	09/05/2012	Satisfactory	Moderately Satisfactory	155.33
8	03/21/2013	Satisfactory	Moderately Satisfactory	158.97
9	11/28/2013	Satisfactory	Moderately Satisfactory	173.97
10	06/16/2014	Satisfactory	Moderately Satisfactory	183.97

## H. Restructuring (if any)

Restructuring Date(s)	Board Approved PDO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		DO	IP		
06/29/2012	No	S	MS	155.33	Extension of closing date
12/11/2012	No	S	MS	155.33	Additional financing and extension of closing date
12/02/2013	No	S	MS	173.97	Extension of closing date; cancellation of part of the credit

## I. Disbursement Profile





## **1. Project Context, Development Objective, and Design**

### **1.1 Context at appraisal**

1. At appraisal, Tanzania, like many other countries, was still managing the effects of the 2007/2008 Global Food Crisis during which the world experienced an unexpected spike in key food prices. For instance, by mid-2008, the international prices of maize, rice and wheat were up by 70 percent, 180 percent, and 120 percent respectively, compared to mid-2007 prices. During the same period, World fertilizer prices had also spiked substantially (as a result of high oil prices) and there were concerns that the high fertilizer prices would further constrain food supply. Many countries resorted to subsidies as a mechanism to offset these shocks. On its part, the Government of Tanzania (GoT) had responded to the rising input costs and food prices by piloting a National Agricultural Inputs Voucher Scheme (NAIVS) to enable farmers to access agricultural inputs for the 2007/2008 cropping season to boost agricultural production. The failure of the 2008/09 short rains in northern Tanzania – which normally account for about 20 percent of national food production – added to the concerns about a potentially serious food crisis, and galvanized the country’s resolve to scale up the pilot program in 2009/2010.

2. However, time was of the essence as input vouchers and inputs themselves had to reach farmers in time for the August/September 2009 planting season, which accounts for about 80 percent of the nation’s agricultural output. GoT, whose own budgetary resources had been strained by the economic contraction in the wake of the global financial crisis, needed urgent external support to successfully implement this scheme. It is in this context that it had approached the World Bank for emergency assistance.

3. On its part, the World Bank had responded to the 2007/2008 global food price crisis by setting up a Global Food Crisis Response Program (GFRP), which consisted of fast-track funding from its IDA resources and from trust funds, to help clients address the immediate food crisis, while promoting agricultural policies and investments for increasing resilience in the long term. It is against this backdrop that the World Bank accepted GoT’s funding request and approved a support package in June 2009 under “OP/BP 8.00 – Rapid Response to Crises and Emergencies”. The funding package consisted of US\$30 million additional financing for the Tanzania Social Action Fund Project to strengthen social protection to the vulnerable, US\$30 million additional financing to the Agricultural Sector Development Project to strengthen the long term fundamentals of agricultural growth, and US\$160 million for a new Accelerated Food Security Project, which is the subject of this ICR, to stimulate a rapid food supply response by scaling up the NAIVS in view of the continuing food crisis threat.

### **1.2 Original Project Development Objectives (PDO) and Key Indicators**

4. The PDO was to contribute to higher food production and productivity in targeted areas by improving farmers’ access to critical agricultural inputs.

5. The following key performance indicators were selected at appraisal:

- Maize production in targeted regions (tons).
- Rice production in targeted regions (tons).
- Average maize yields in targeted regions (tons/ha).

- Average rice yields in targeted regions (tons/ha).

### **1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification**

6. The PDO was not revised, but associated Key Indicators were. The original PDO indicators measured production and yield gains for maize and rice among targeted regions. However, since not everyone in targeted regions was participating in the voucher program, these indicators were an inappropriate reflection of the input subsidy outcomes. The PDO indicators were, instead, modified during the Additional Financing in October 2012 to circumscribe them to outcomes more directly related to subsidized input usage (with 2008/2009 as a baseline year, and 2013 as end date). Furthermore, a beneficiary target, including the number of females, was also added. The new PDO indicators were:

- Additional maize produced with subsidized seed and fertilizer;
- Additional paddy produced with subsidized seed and fertilizer;
- Maize yields achieved by farmers with subsidized seed and fertilizer;
- Paddy yields achieved by farmers with subsidized seed and fertilizer;
- Project beneficiaries (number) of whom female beneficiaries

### **1.4 Main beneficiaries**

7. The project target beneficiaries were 2.5 million rural smallholder farmer households who cultivated less than one hectare of land for maize and rice in 65 districts. These districts were identified as those most suited for producing the two crops. They were concentrated mainly in the southern highlands, northern highlands, and western region, which account for about 70 percent of total maize production and 50 percent of total paddy production in the country<sup>2</sup>. In addition, key government institutions such as the Agriculture Seed Agency (ASA), the Tanzania Official Seed Certification Institute (TOSCI), and some private sector institutions and agro-dealers were among the target beneficiaries of the project.

### **1.5 Original components**

8. **Component 1 – Improving access to agricultural inputs.** This included: (a) providing paper vouchers to eligible smallholder farmers in targeted areas, to enable them to purchase improved seed and fertilizers at a subsidized price from certified agro-input dealers who would in turn redeem the vouchers at the local branch of the partner bank (National Microfinance Bank); and (b) carrying out an awareness campaign related to the voucher program, including training the Village Voucher Committees that would facilitate in the scheme's implementation. Under the scheme, the value of the voucher was pre-set at printing to cover 50 percent of the estimated cost of the agricultural input, with the beneficiary responsible for topping up the difference between the voucher and the actual price at the time of purchase (which may be more or less than 50 percent depending upon the actual price at the time of purchase).

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<sup>2</sup> The Government eventually expanded the program to more than 120 districts across 23 regions of the country.

9. **Component 2 – Strengthening the input supply chain.** This included: (a) expanding and training a network of agro-input dealers; and (b) strengthening the national seed systems by – (i) updating the policy and regulatory framework to stimulate a vibrant private seed industry; (ii) stimulating business-oriented, farmer-based seed production and marketing units across the country; (iii) providing irrigation and other equipment to three agricultural research institutes for producing pre-basic seed, and to ASA for producing quality basic seed; (iv) providing equipment to TOSCI to improve its certification capability.

10. **Component 3 – Project management and monitoring and impact evaluation.** This included: (a) capacity building for the National Voucher Steering Committee and the Agricultural Inputs Section of the Ministry of Agriculture, Food Security, and Cooperatives in charge of project management; and (b) funding for project monitoring and evaluation, including impact assessments.

### **1.6 Revised components**

11. The components were not revised.

### **1.7 Other significant changes**

12. *Extension of project closing date (June 30, 2012 – June 30, 2014):* The closing date of the original credit was extended on three occasions. The first extension, from June 30, 2012 to June 30, 2013, was to allow for the completion of: (i) the redemption of outstanding subsidy vouchers; (ii) outstanding procurement contracts; (iii) the performance audit; and (iv) the preparation of a pilot for an electronic voucher system. The second extension, from June 30, 2013 to December 31, 2013, was intended to bring the timing of the original credit in line with the additional financing (*discussed below*). The third extension, from December 31, 2013 to June 30, 2014, was to complete the purchase and installation of irrigation infrastructure at two ASA seed farms in Morogoro and Arusha regions.

*Changes to subsidy modalities and overall project financing.* During the first two years of the project, IDA financed 50 percent of the subsidy costs, and GoT financed the remaining 50 percent. However, national budget constraints caused long delays in the release of government funds and IDA increased its share to 83 percent, against 17 percent for GoT for the 2010/11 cropping season. This was covered through reallocations from internal project savings. In addition, an additional financing of US\$25 million equivalent was approved by the Bank in October 2012 to finance one additional round of input subsidies for maize and rice farmers who had yet received support for 3 consecutive years. According to MAFC records, an estimated 1.5 million households had received the mandated three consecutive years of subsidy support, and over one million had received assistance for only one or two years but not the mandated three. Government resources were expected to support 640,000 of these households and the Additional Financing would support 300,000 farmers during the 2012/13 cropping season in seven regions. The Bank would cover 100 percent of the subsidy value for these farmers, whereas Government would finance 100 percent of the subsidy costs in the rest of the regions. By then, Government

had decided to expand the program nationally<sup>3</sup>, with the Bank and GoT covering separate regions<sup>4</sup>.

## 2. Key Factors Affecting Implementation and Outcomes

### 2.1 Project Preparation, Design and Quality at Entry

#### Project Preparation

13. *Soundness of Background Analysis.* The project was prepared under “OP/BP 8.00 – Rapid Response to Crises and Emergencies”. As a result, some of the analyses, such as baseline studies were to be carried out during project implementation. However, the project preparation team carried out reviews of the Government’s pilot voucher program and the experience from Malawi’s subsidy program, both of which informed the project’s design. The assessment of the ability of the Ministry of Agriculture, Food Security, and Cooperatives to manage the project, especially with respect to procurement, financial management, and overall oversight, appears to have been inadequate, though, in view of the challenges faced later by the ministry in these domains during project implementation (discussed in Section 2.2 below).

14. *Incorporation of Lessons Learned.* Useful lessons were drawn from GoT’s previous experience with agricultural subsidies, especially the pilot NAIVS, and from Malawi’s agricultural input subsidy scheme, which were incorporated into the design. These include: (i) beneficiary targeting to maximize poverty reduction; (ii) field demonstrations to increase input demand; (iii) beneficiary involvement in program administration to increase program participation; (iv) working with the private sector to strengthen input markets; and (v) ensuring fiscal sustainability through a clear exit strategy. However, some of the weaknesses in the pilot NAIVS that had been noted at appraisal were not adequately mitigated in the project design (or were just hard to mitigate), and came to undermine project implementation, including: (i) belated voucher deliveries that were not in consonance with the cropping calendar; (ii) lengthy voucher redemption processes that hurt agro-dealer cash flows; (iii) insufficient agricultural extension support at local level that led to sub-optimal input efficiency; and (iv) the partner bank being overwhelmed by huge volumes of vouchers, resulting in slow redemptions, etc.

15. *Soundness of the Rationale for the Bank’s Intervention.* The 2008/2009 economic shocks had been projected to reduce Tanzania’s GDP growth to 4-5 percent in 2009, from 7.4 percent in 2008. The budget deficit was projected to grow higher than previously estimated (US\$250-US\$450 million). Under these tough economic times, GoT’s funding for the NAIVS in 2008/09 was only able to reach 30 percent of eligible households. In order to have a greater impact, the program needed more funding. The Bank’s intervention was, therefore, critical in contributing to closing the funding gap that threatened the government’s efforts to adequately address the food crisis and improve food security.

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<sup>3</sup> The project was initially designed to operate across 11 regions in the country. Government later expanded coverage to 23 regions effectively becoming a national program.

<sup>4</sup> Farmers in the seven regions covered by the Bank were allowed a choice of basal fertilizer options, whereas those in the rest of country covered by Government funding were restricted to the domestically produced rock phosphate. as a basal fertilizer. Earlier experience in the project indicated most farmers preferred to purchase imported di-ammonium phosphate (DAP) rather than domestic rock phosphate.

## **Project Design**

16. *Project design.* The project's components were consistent with the PDO, and were mutually reinforcing: the vouchers to stimulate agricultural input demand, and the agro-dealer network to respond to it. The support to the seed sector addressed needs for good quality, locally adapted seed, which again was consistent with the PDO. The project had an exit strategy based on clear farmer graduation timelines. Mainstreaming project implementation into existing public administration structures accelerated project start up. However, to the extent that this was a short duration project (3 years), the inclusion of major civil works in the project (such as irrigation infrastructure) without expedited procurement arrangements (or advance preparation of technical specifications and other documentation) appears to have been a design shortcoming.

## **Government Commitment**

17. GoT was highly committed to the project as it facilitated the preparatory activities, including working collaboratively with the Bank team. The government team made up of representatives from MAFC, the Ministry of Water and Irrigation (MOWI) and the Ministry of Finance and Economic Affairs (MOFEA) worked hard to expedite the project's preparation. GoT worked hard to accelerate the delivery of the first year's vouchers, which arrived just two months after project effectiveness.

## **Risks and Mitigation Measures**

18. At appraisal, likely sources of implementation challenges were identified as: (i) counterpart funding release difficulties or GoT's share becoming a potential undue fiscal burden; (ii) possible negative impact of the export ban of grain on farm prices; (iii) poor information flow among program participants; (iv) agro-dealers' limited technical and financial capacity; (v) unfavorable output price movements; (vi) sub-optimal technical efficiency of applied inputs; (vii) inadequacies in beneficiary targeting; (viii) poor monitoring and evaluation; and (ix) adverse weather events. Of all the above risks, counterpart funding posed the most daunting challenge. Counterpart funding shortfalls were mitigated by increasing IDA contribution, first from 50 percent to 83 percent, and in the Additional Financing of October 2012, to 100 per cent in selected regions. By ICR time, Government still had open liabilities on long overdue voucher redemptions. Clearly this risk was hard to mitigate. In addition, poor monitoring and evaluation, and inadequacies in beneficiary targeting did materialize and could not be effectively mitigated. One risk that hadn't been identified at appraisal but which became a major constraint was Government institutional capacity, especially procurement which, as discussed below, was a major constraint to project implementation, and was not mitigated.

## **2.2 Implementation**

19. Factors that facilitated project implementation include:

- *Strong government interest in the program.* The government ensured that key implementation arrangements and mechanisms were in place at all levels (national, regional, district and village) as per the project design. The government also initially ensured timely transfer of funds to the National Microfinance Bank (NMB) that was

in charge of redeeming vouchers. In addition, Government fast-tracked initial voucher printing, which were ready within two months after project effectiveness.

- *Participation of the private sector.* About 1,000 agro-input dealers had been trained under a previous activity funded by the Alliance for a Green Revolution in Africa, in conjunction with the Citizens' Network for Foreign Affairs (CNFA). This activity was in support of the pilot NAIVS. The project leveraged this experience in expanding this nascent agro-input dealer network, including engaging the services of CNFA which had already developed training materials and methods. The project also benefited from the participation of NMB which had developed voucher redemption experience under the pilot NAIVS and had a country-wide branch network to serve the participating agro-input dealers.
- *Additional Financing.* As discussed earlier in Paragraph 13, additional financing in the amount of US\$25 million was approved by the Bank in order to bring the project to an orderly conclusion. This not only facilitated providing the remaining rounds of support to eligible project beneficiaries, but allowed more time for completion of other remaining activities, especially those relating to strengthening the input supply chain.

20. However, and as already discussed above, there were also a number of factors that negatively affected project implementation. These factors, especially those related to slow procurement processes, contributed to multiple project extensions, which turned a short-duration, emergency project into a five year operation, These factors include:

- *Significant problems associated with the vouchers.* First, apart from the first and fifth years, there were significant delays in printing and distributing vouchers during other years (especially in 2011/12), which was disruptive to the program. Second, some agro-dealers experienced difficulties raising adequate capital to purchase the inputs from wholesalers. Third, from 2011 to 2014, slow release of counterpart funding and other bureaucratic delays severely undermined redemptions of vouchers held by agro-dealers (for over six months in some cases), prompting some to drop out. Fourth, the principle of graduating program participants after three years was generally not enforced, not only undermining a basic sustainability tenet of the program, but also limiting its expansion to other needy families. Fifth, the envisaged access to extension services materialized in only 25 percent of cases, which potentially limited amplification of program outcomes.
- *Delay in procurement for key activities.* The project was plagued with procurement delays that resulted in the cancellation of some key activities<sup>5</sup> in the procurement plan. In addition, several of the activities retained in the procurement plan could not be initiated or completed: (i) the planned second training of agro-dealers never materialized; (ii) the final impact assessment surveys were never completed; (iii) the services for strengthening rural retail systems were never procured; (iv) a center pivot

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<sup>5</sup> (i) Design and Pilot Test of Electronic Voucher System; (ii) Tracking of Input Purchase behaviour after the end of subsidy; (iii) Conducting of Impact Assessment of Quality Declared Seed System in 18 Districts; (iv) Assessment of Strength of Agro-dealers Development; and (v) Facilitating Agro-dealer Associations to Establish 400 Demonstration Trials in Villages under the Subsidy Program.

irrigation scheme on the ASA seed farms in Morogoro and Arusha could not be completed; and (v) an end of term survey which could have provided a comprehensive report on poverty, gender, and social development impacts was never completed.

## **2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization**

21. *M&E design.* The PDO indicators, especially as further refined during the Additional Financing (see paragraph 6 above) were pertinent to measuring project development outcomes.<sup>6</sup> The project had provided for a number of important evaluations to provide the needed data for assessing project outcomes, including: a baseline survey, a mid-term assessment, and an impact assessment at project completion. In addition, it had provided for establishing a Monitoring and Evaluation (M&E) system to systematically document project inputs and outputs for use in improving management performance. Overall, the project had reasonably good M&E design elements. However, since the initial project duration was short (3 years), orchestrating these assessments would have required intricate planning, or possibly awarding the contract for the three assessments to a single firm to minimize procurement overload, given the inherent risks from procurement delays.

22. *M&E implementation.* M&E implementation was weak. The baseline survey, which was originally planned for February 2010, was completed in the last quarter of 2011. A mid-term survey conducted in mid-2012 provided a fair indication of some of the impacts of the project.<sup>7</sup> However, the procurement of an end of project survey in late 2013 was never completed. In addition, an MIS system to systematically track delivery of inputs, as well as targeted outputs and outcomes was never established as planned. Hence, data collection remained ad hoc, and at the time of the ICR, there were significant gaps in the data available at the project management team level.

23. *M&E Utilization and Sustainability.* The above shortcomings notwithstanding, the M&E outputs available were utilized in different fora. These data were reported in two limited impact assessment reports, and one larger public expenditure review (PER) report for the NAIVS. These were disseminated and discussed in detail in the Ministry, and the PER was discussed in a national workshop sponsored by the Ministry of Finance. But its recommendations were not followed through. Sustainability of the M&E system could not be ascertained as, at the time of the ICR, significant weaknesses, including staffing in the system, remained.

## **2.4 Safeguard and Fiduciary Compliance**

### **2.4.1 Safeguard Compliance**

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<sup>6</sup> However, some intermediate indicators remained poorly defined. For instance, Indicator No. 5 was formulated as a percentage, although its annual targets were stated in absolute numbers. In addition, many of the indicators were defined as annual targets with no clear end of project targets. These were expected to rise and fall with the increase and decrease in the number of vouchers distributed.

<sup>7</sup> DEC oversaw the survey, although this led to uncertainty and confusion about the responsibility for analyzing and writing up the survey results. Ultimately, much of the survey data was not analyzed, including the impact of production and productivity on social and gender aspects.

24. The project was classified as Category B and three safeguard policies were triggered: OP4.01 (Environmental Assessment), OP4.09 (Pest Management), and OP7.50 (Projects on International Waterways). As agreed at appraisal, this project used the Environmental and Social Management Framework (ESMF) of the Agricultural Sector Development Project as the two projects were implemented by the same Ministry. As required by the ESMF, an Environmental Management Plan (EMP) was prepared for investment activities pertaining to strengthening national seed systems. Also, an Integrated Pest Management Plan (IPMP) to manage the use of pesticides as well as Integrated Nutrient Management Plan (INMP) to manage the use of fertilizer were prepared. An environmental impact assessment showed no significant fertilizer and pesticide residues in surface and underground water as chemical input use is still generally low. Simplified INMP guidelines in Kiswahili were prepared for use by farmers. However, because of the continued existence of knowledge and skills gaps in safe handling of chemical inputs by farmers, the overall safeguard compliance was rated as *Moderately Satisfactory* in the last ISR.

#### 2.4.2 *Fiduciary Compliance*

25. *Financial management.* Interim Financial Reports (IFRs) were generally submitted on time, and at the time of the ICR, all withdrawal applications had been completed. However, overall FM performance was frequently rated *moderately satisfactory* during project implementation, including in the last ISR. Issues included: (i) failure to track budgets well enough to ensure that all resources are defined in the Medium Term Expenditure Framework (MTEF); (ii) ensuring timely transfer of allocated funds to NMB to expedite voucher redemptions; (iii) poor tracking of advances to regions and districts (large outstanding advances to the regions and districts are still in the process of being resolved); and (iv) inadequate follow-up on external audit findings. The 2010/2011 project audit had qualifications relating to: ineligible expenses, failure by the Ministry to strictly reconcile the record of vouchers sent for redemption and the payments made by NMB, and failure to record unused vouchers in store ledgers. The ineligible expenditures (US\$ 20,954) were refunded to the project, as were funds (US\$ 19,000) associated with incomplete delivery of goods by a supplier. Otherwise, there were no other reported incidents of malfeasance. Regarding disbursements, the project had, at the time of the ICR, disbursed US\$158.97 million (99.1 percent) of the original credit (because of procurement delays, US\$3.7million equivalent from the original credit earmarked for certain activities was cancelled). All the US\$25.0 million (100 percent) of the Additional Financing was disbursed.

26. *Procurement.* Overall, the project complied with the Bank's procurement policy (OP/BP 11.00) as well as the national procurement act. From a fiduciary perspective, there were no incidents of malfeasance reported or discovered in the course of the project's implementation. However, procurement was rated *moderately unsatisfactory* by the Bank procurement team as the project suffered from long delays leading to cancellation of certain key activities, as indicated above. This was mainly due to: (i) lack of capacity at the implementing agency to prepare the requisite procurement documentation, and meticulously follow up on the procurement processes until their logical conclusion; and (ii) inordinate administrative bureaucracies, such as infrequent meetings by the Ministerial Tender Board regarding contracts above the Directors' and Permanent Secretary's approval authority.

### **2.5 Post-completion Operation/Next Phase**

27. The NAIVS was originally planned as a six year program ending in 2014. However, GoT remains concerned about the high costs of agricultural inputs. GoT is, therefore, trying to organize a program to provide subsidized credit to smallholder farmers by paying banks the difference between the commercial interest rate of 18 percent and the program's designated rate of 4 percent. In addition, government has agreed to pay commercial banks 50 percent of the value of the credit upfront, as a guarantee against possible defaults. Farmers are expected to contribute 20 percent of the input cost, leaving banks to bear the risk on the remaining 30 percent of the cost. Farmers are also expected to agree to market their produce through a designated trader or warehouse, allowing the banks to first be repaid, before the residual sales proceeds are remitted to the farmer. These discussions have included proposals for bulk purchases of inputs and bulk sales through a new warehouse receipts system. The government was initially expected to fund this program in 2013/14, but failed to provide funding to the banks in advance. In the new fiscal year, Tsh58 billion (US\$35 million) has been budgeted for this activity. The Ministry has approached two commercial banks (Tanzania Cooperatives and Rural Development Bank, and National Microfinance Bank), which have expressed their willingness to participate in the program subject to government paying the guarantees upfront. Regarding the agro-dealer networks supported by the project, their sustainability could not be ascertained as there was no strategy in place regarding the continuation of their operations.

### **3. Assessment of Outcomes**

#### **3.1 Relevance of Objectives, Design and Implementation**

28. *Relevance of objective.* The relevance of the project's objective remains *high*. Increasing productivity and production of principal food items remains a top Government priority as clearly articulated in the National Strategy for Growth and Poverty Reduction – MKUKUTA II (July 2010). The fourth goal of MKUKUTA II, Cluster 1, seeks to particularly ensure food security. The project's objective is also consistent with the current Bank CAS (2012-2015) objectives, especially outcome 1.2, which focuses on increased agricultural productivity and commercialization. Farmers' access to improved seed and fertilizer remains a key to attaining such a goal.

29. *Relevance of design and implementation.* The relevance of design and implementation arrangements is rated *substantial*. On the one hand, several design and implementation features are still relevant, such as: (i) the use of an existing public administration network to facilitate rapid project start up; (ii) the use of representative village committees to confer some measure of control and community empowerment upon beneficiaries (despite being overshadowed by the local administration officials in some cases); and (iii) involvement of local private distributors to reinforce a sustainable mode of input distribution, among others. On the other hand, paper voucher procurement, distribution, and redemption mechanisms can be very onerous and future designs of such programs should leverage technology using paperless vouchers including enhanced accountability features. In addition, some activities, such as major irrigation infrastructure, probably should not belong to these kinds of emergency projects given their short-term duration.

## 3.2 Achievement of Project Development Objectives

*Rating: Substantial*

30. As indicated under Section 2.3, the project had several M&E shortcomings. Therefore, data quality is poor. The analysis in this Section relies on some data collected by MAFC, and impact assessments carried out in 2010 and 2013.

31. Although only one indicator (maize yield achieved by farmers with subsidized seed and fertilizer) out of the six PDO level indicators was fully achieved, the project made significant progress on most of its targets.

32. At the end of the project, 2,300,000 tons of additional maize production were produced with subsidized seed and fertilizer compared to the target value of 2,400,000 tons. Also, 82,800 tons of additional rice was produced with subsidized seeds and fertilizers compared to the 86,800 tons target. The increased production of maize and paddy enabled Tanzania to be self-sufficient in cereal grain production, and thereby resulted in the lifting of the grain export ban instituted in 2011.

**Table 1: Achievement of key performance indicators**

Indicator	Baseline	Target	Actual	% of target achieved
Additional maize production derived from improved seed and fertilizer (tons)	0	2.4 million	2.3 million	95.8
Additional rice production derived from improved seed and fertilizer (tons)	0	86,800	82,800	95.4
Average maize yield achieved with subsidized seed and fertilizer (tons/acre)	0.33	0.9	0.93	103.0
Average rice yields achieved by farmers with subsidized seed and fertilizer (tons/acre)	0.74	1.31	1.11	85.0
Number of Vouchers Distributed <sup>8</sup>	0	7,172,000	6,968,783	97.2
Of which female voucher recipients	0	2,061,000	1,027,000	50

<sup>a/</sup> cumulative for years 2 to 5

<sup>b/</sup> cumulative for years 1 to 5

33. The increased use of subsidized input also led to an increase in productivity of maize and rice. At the end of project, the average maize yield increased from a baseline of 0.33 tons/acre to 0.93 tons/acre, slightly above the target value of 0.90 tons/acre. Productivity of paddy increased as well, from a baseline average yield of 0.74 tons/acre to an average yield of 1.11 tons/acre, slightly short of the targeted 1.31 tons/acre.

34. About 6.97 million vouchers were distributed, against a target of about 7.17 million vouchers (the target number is derived from the cumulative summation of the annual targets in the project documents). These vouchers were supposed to benefit about 2.5 million households. The M&E system does not allow determining whether the target of 2.5 million households was achieved. Assuming that each household received the stipulated 3 vouchers (one per year for three years), then some 2.3 million households benefited from the program. However, this is difficult to determine since some households might have received vouchers for more than the

<sup>8</sup> This indicator supplants the number of beneficiaries for which the computation is not possible given limited information about the targeting process i.e. how many of the beneficiaries received 1, 2 or 3 vouchers.

three stipulated years, and others for less. Regarding women, only 15 percent of the voucher recipients were women against the targeted 29 percent.

35. About 20 private companies and ASA are now involved in maize seed production, representing about 87 percent of the total seed volume supplied in the country. At the end of the project, 288 tons of basic seed were produced by private firms and ASA, against a target of 230 tons and from a baseline of only 44 tons. In addition, 99.4 tons of basic rice seed was produced, slightly below the target value of 110 tons, and against a baseline of only 46 tons. Furthermore, the capacity of three research stations in Arusha, Morogoro, and Mbeya regions to produce pre-basic seeds was significantly strengthened. At the end of the project, they produced 18,000 tons of pre-basic breeder maize seed (against 700 tons at baseline) and 40,000 tons of rice of pre-basic breeder rice seed (against 1,200 tons at baseline).

### **3.3 Efficiency**

*Rating: Substantial*

36. The project's efficiency was assessed using a cost-benefit analysis. Project benefit estimates are based on incremental maize and paddy production using the subsidized inputs of improved seed and fertilizer. But as is normally the case in traditional farming systems, other crops rotated in previously fertilized fields also benefit from residual fertilizer and experience increased productivity, sometimes quite significant. Moreover, the beneficiaries' heightened sense of plant nutrition and overall crop husbandry often spreads over to non-program crops. However, for the purposes of this analysis, all these ancillary benefits were not assessed, hence the re-estimated cost-benefit analysis is very conservative. The number of program beneficiaries is estimated at 6.97 million farm households. At ICR, the project's IRR was estimated 53.5 percent compared to 37 percent at appraisal, and the NPV at US\$118.9 million, compared US\$67 million at appraisal.

### **3.4 Justification of Overall outcome Rating**

*Rating: Moderately Satisfactory*

37. The intervention contributed significantly to maize and rice production and productivity in targeted areas. These improvements are partly responsible for the government's decision to lift the grain trade ban it had instituted in 2001. It also expanded private sector input supply chain in the country allowing the private input market to develop. However, it fell short on some of its PDO level indicators, and implementation delays resulted in the cancellation of some key activities and uncompleted major infrastructure.

### **3.5 Overarching Themes, Other outcomes and impacts**

#### **(a) Poverty impacts, Gender Aspects, and Social Development**

38. *Poverty impacts.* The project focused on households farming less than one hectare. Shortcomings in strict criteria enforcement notwithstanding, field missions did not detect cases of elite capture. It is, therefore, generally understood that project benefits largely accrued to this population segment, which is generally among Tanzania's rural poor. However, it also

acknowledged that poorer households that could not afford the 50 percent subsidy top-up were excluded from the program. More generally, the program contributed to increased grain supplies, which moderated consumer prices of these items, especially maize, which is a staple for the poor, both rural and urban.

39. *Impact on gender.* Village Voucher Committees were composed of six members, three of whom were women, which elevated women's involvement in the local communities' decision-making processes. However, the proportion of women headed households among the program beneficiaries was smaller than expected. This is probably because women headed households were poorer than average, and might not have had the means to pay the top-up costs to the input subsidy.

40. *Social impact.* The beneficiary selection process was participatory: after vetting applicants against selection criteria by the Village Voucher Committees, final beneficiary selection was validated by the Village Assembly. This is believed to have created a greater sense of community empowerment. In addition, the training of agro-input dealers as reliable sources of technical information on agricultural inputs, and the expansion of their network, has created a socio-economic dynamic between the farmers and their input suppliers.

#### **(b) Institutional change/Strengthening**

41. The project equipped the Agricultural Seed Agency to improve production of basic seed for private companies to multiply and commercialize to farmers. The installation of the planned pivot irrigation systems was never completed and GoT plans to complete it with its own budget. The project also equipped the laboratory of the Tanzania Official Seed Certification Institute as well as strengthened its capacity to process regional seed marketing certificates. In addition, the three strategically located agricultural research institutes in Arusha, Morogoro, and Mbeya regions were equipped with irrigation and other equipment to significantly increase pre-basic seed production. Available data on pre-basic seed production and purchase show that pre-basic seeds for maize and rice produced by these institutes were sufficient to cover the county's required foundation seed production.

#### **(c) Other Unintended Outcomes and Impacts (positive of negative)**

42. Delayed payments to agro-dealers especially in the regions that were covered by government prompted agro-dealers to factor in those delays in the final price of the input. This led to an escalation of input prices that still persist under input supply programs backed by government.

### **3.6 Summary of findings of the beneficiary assessment survey**

43. *Increased awareness of improved agricultural inputs.* Farmers are more aware of productivity gains from improved seeds and from judicious use of fertilizer. They have a better understanding of the fertilizer options: basal fertilizer (manure versus DAP, versus Mining Mazak) and top dressing (urea versus urea + CAN/ammonium sulfate). Indeed, over 57 percent of program graduates continued to buy improved maize or rice seed after graduating from the NAIVS. The data also indicate that 37 percent continued to purchase chemical fertilizer in the year following their graduation.

44. *Strengthened relationships with agro-dealers.* The program's expansion of a network of trained agro-dealers and the program's modus operandi have forged a close relationship between farmers and dealers from whom they not only buy inputs, but also receive advice on their proper application. The reduced distances to agro-dealers is also likely to facilitate continued use of improved seed and fertilizer.

#### **4. Assessment of Risk to Development Outcomes**

*Rating: Substantial*

45. The project sought to contribute to higher food production and productivity in targeted areas by improving access to critical agricultural inputs. It sought to make these gains sustainable through various provisions in the project's design, including: (i) placing a time limit (of 3 years) to the subsidy, a time during which the graduating farmers were expected to have built financial capability to acquire these inputs on their own; (ii) expanding a network of trained agro-input retailers to facilitate farmers' easy access to inputs and related basic information; (iii) strengthening national seed systems; (iv) strengthening collaboration with research and extension on integrated soil management, etc. As discussed above, some gains were made to varying degrees on some of these elements, such as expanding and training the input dealer network, and rehabilitating some of the seed network. And as also noted above, some farmers are continuing to purchase inputs on their own. However, the project's approach to wean farmers from subsidy dependence through the 3-year graduation strategy was not consistently enforced. Government is, instead keen on continuing a subsidy program, this time in the form of subsidized credit. The sustainability of the program will then hinge upon Government's ability to fund it, a substantial risk to the program. In addition, the construction and rehabilitation of a center pivot irrigation system for ASA, was left incomplete. According to MAFC officials, the ministry intends to complete this infrastructure with its own resources in 2014/15 and has made budgetary provision for its completion.

#### **5. Assessment of Bank and Borrower Performance**

##### **(a) Bank Performance in ensuring quality at entry**

*Rating: Moderately Satisfactory*

46. As an emergency operation, it was prepared under an expedited process, with little time for extensive analytical rigor. Nonetheless, the project exhibited many good quality features, including: (i) a simple and clear PDO, well aligned to country priorities; (ii) PDO indicators, although short on pertinence in formulation, that were broadly reflective of expected project outcomes; (iii) a recognition of the prevailing fluid macroeconomic environment that inspired a flexible design with respect to Government counterpart funding (which was allowed to evolve in tandem with Government's fiscal disposition); (iv) a provision for retroactive financing to expedite voucher procurement in time for the upcoming planting season; (v) mainstreaming implementation in Government administrative structures to facilitate early implementation; (vi) accommodation of a number of useful lessons from the NAIVS pilot and the Malawi experience; (vii) an exit strategy to deter subsidy-dependence, and lighten Government fiscal burden, etc. There was strong collaboration with Government which had a deep interest in the project.

However, some of the major shortcomings include: (i) inadequate assessment of Government capacity which led to significant implementation delays; (ii) inclusion of some activities (such as major irrigation) that would ordinarily take a long time, or for which expedited procurement would have to be facilitated (like a head start on procurement documentation during project preparation); and (iii) some intermediary indicators with unclear end targets.

#### **(b) Quality of supervision**

*Rating: Satisfactory*

47. The Bank organized two missions per annum to provide implementation support to the government. The mission team members consisted of technical specialists who provided hands on solutions to key implementation issues, including transferring knowledge to their government counterparts. With its key FM and Procurement staff based in-country, the Bank worked closely with the government team to discuss key fiduciary issues. The team kept management informed of implementation progress through systematic reporting in aide-memoires, back-to-office reports and ISRs. The Bank also responded positively to government request for additional financing and extension of the closing date to scale up project implementation. During the AF preparation, the Bank team worked with the government team to revise and reformulate certain indicators that were perceived ambiguous and unachievable. However, the team erroneously did not change the baseline and the targets for the first three years and that remained the same until end of project. The Bank could have done more in building the capacity of MAFC staff in fiduciary management and monitoring and evaluation, including strategic outsourcing of discrete items to expedite implementation. These are recognized weaknesses across the country portfolio and merit a broader response.

#### **(c) Justification for Rating Overall Bank Performance**

*Rating: Moderately Satisfactory*

48. Taking into account the quality of preparation and supervision, the overall Bank performance is rated *Moderately Satisfactory*.

### **5.2 Borrower performance**

#### **(a) Government Performance**

*Rating: Moderately Unsatisfactory*

49. The GoT exhibited high level of commitment to the success of the project. It facilitated the preparation process by working in close collaboration with the Bank team. During implementation government facilitated project supervisions and worked closely with the Bank team in addressing key implementation challenges. However, the government did not promptly resolve major fiduciary issues that caused delays in payment of government funding to input suppliers. Counterpart funding was simply not made available on a timely basis and this had a negative effect on key project aspects such as voucher printing and redemption. While the overall project contributed major improvements in production and food security, the sustainability of these gains has been seriously undermined.

## **(b) Implementing Agency or Agencies Performance**

*Rating: Moderately Unsatisfactory*

50. During project preparation and appraisal, MAFC worked closely with the Bank team and facilitated the process by coordinating the interventions of the key stakeholders. It met all effectiveness conditions, which ensured a timely project start-up. During implementation, MAFC maintained good relationship with the Bank team, facilitated all supervision missions, and addressed issues together with the Bank team. However, MAFC commonly failed to implement key procurement activities which led to delays in the execution of key activities, the failure to complete planned training of agro-dealers, the failure to complete key infrastructure investments, and the failure to complete several key impact assessments. Procurement delays were repeatedly discussed in implementation support missions' meetings with the implementation team, and meetings with the MAFC management. Yet little improvement was achieved. The MAFC also fell short of systematically monitoring project results as data collection, implementation monitoring and documentation were deficient.

## **(d) Justification for Rating Overall Borrower Performance**

*Rating: Moderately Unsatisfactory*

51. The overall borrower performance is rated *moderately unsatisfactory*. The government was committed to the project, but it was slow in fulfilling its financial commitments that caused significant implementation delays. It did not also address weaknesses in day-to-day monitoring of project results.

## **6. Lessons Learned**

52. **Five key lessons were learned from the implementation of this project. Firstly, successful implementation of emergency operations significantly benefits from careful advance planning, especially procurement.** In order to expedite voucher procurement for the first year, the project rightfully provided for retroactive financing in order for the vouchers to be ready for the August/September 2009 rains, even though the project only became effective in late August, 2009. However, the project could have benefited from advance planning regarding the procurement of other items, such as the service providers for the baseline and other assessments, the irrigation systems, etc. From the project's concept review in December 2008, to its effectiveness in August 2009, critical procurement documentation could have been prepared for these items (e.g. TORs and technical specifications). Several of these items were ultimately not procured or completed within the project implementation period, even after three project extensions.

53. **Secondly, mainstreaming projects in line ministries works best when complemented by pragmatic solutions to implementation issues as they arise.** Mainstreaming this project's implementation in the Ministry allowed leveraging some of the public administration strengths, ranging from drawing heavily from Government's experience in implementing the pilot voucher program, to taking advantage of the extensive public administration network that went all the way to the village level which, among other things, accelerated project start up. However, this

arrangement also exhibited several weaknesses, especially in monitoring and procurement. Pragmatic solutions, such as outsourcing certain discrete tasks (like writing TORs and drawing technical specifications for irrigation systems that might require specialized expertise), should have been considered, especially for small tasks with lower procurement thresholds, hence falling under Government's expedited approval provisions (Director or Permanent Secretary level). Such complementary actions do not go against the mainstreaming principle but are a recognition of some of its limitations in situations of especially emergency, when speedy effective action is critical. Yet, such actions would have gone a long way in expediting project implementation, instead of expecting that each and every task be done Ministry staff, which led to protracted delays.

54. **Thirdly, agricultural input voucher programs can significantly increase productivity, but remain difficult to administer.** As already noted, the voucher program had significant positive impact on production and productivity among program participants. But the program was hamstrung by challenges that had plagued such past programs (including the pilot around which it was modeled). To the extent that a voucher program might be considered the most viable option for supporting smallholders at a given point in time, some of the enhancements that might merit consideration, drawing on this program's experience, include: (i) integrating independent external monitoring in the design and arranging that such services be available early on through advance procurement planning; (ii) elevating the dialogue on enforcing the program's exit strategy beyond the project, given its bearing on the broader sector strategy and the country fiscal's situation; (iii) leveraging cell phone technology in program design and implementation; (iv) partnering with the microfinance institutions in order to facilitate financing poor farmers that might have potentially viable farming propositions but cannot raise the requisite top-up funds; and (v) incorporating in the design a more structured collaboration with/availability of extension services to amplify impact. In addition, since voucher programs require a lot of advance preparation like poverty and asset profiling, third party monitoring arrangements etc., they are inherently unsuitable under emergency operations of this nature.

55. Lastly, a final lesson learned is that inclusion of major civil works (e.g., the irrigation infrastructure) without expedited procurement arrangements, while well meaning, may not be best suited for these type of emergency operations. Such longer gestation investments could divert focus and contribute to implementation delays.

## **7. Comments and Issues by Borrower/Implementation/Partners**

See Annex 8 for Summary of Borrower ICR

## Annex 1. Project Costs and Financing

### (a) Project costs by component (in USD million equivalents)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Improving access to agricultural inputs	308.30*	313.20**	101.6
Strengthening input supply chain	12.20	5.56	45.6
Project Management	3.50	2.40	68.6
<b>Total Baseline Cost</b>	<b>324.00</b>	<b>321.16</b>	<b>99.1</b>
Physical Contingencies	0.00	0.00	0.0
Price Contingencies	0.00	0.00	0.0
<b>Total Project Costs</b>	<b>324.00</b>	<b>321.16</b>	<b>99.1</b>
<b>Total Financing Required</b>	<b>324.00</b>	<b>321.16</b>	<b>99.1</b>

Note: \*This includes US\$25 million additional financing. \*\*Includes actual cost of additional financing.

### (b) Project Financing (in USD million equivalents)

Institution	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Total
IDA	185	183.97**	57
Government of Tanzania	139	137.19	43
<b>Total Project Costs</b>	<b>324</b>	<b>321.16</b>	<b>100</b>

Note: \*This includes US\$25million additional financing. \*\*Includes actual cost of additional financing.

## Annex 2. Outputs by Component

1. Project outputs for each component are summarized below. These are based on data in the results framework, independent impact surveys (see Annex 6) as well as progress reports.
2. **Component 1: Improving access to agricultural inputs.** This component financed activities aimed at (i) scaling up the National Input Voucher Scheme, and (ii) improving farmers' awareness, information, and participation.
3. Subcomponent 1.1 *Scale up National Input Voucher Scheme.* This sub-component supported provision of agricultural input vouchers to eligible farmers in the targeted areas to purchase seeds and fertilizers. Achievement of this sub-component is rated *satisfactory*. Table 2.1 shows key intermediate outputs of the component.

**Table 1: Key Intermediate Output Indicators for Component 1**

Indicator	Baseline	Target	Actual Value Achieved
Seeds sold by agro-dealers to farmers (000 tons)	6,500	76,100	70,500
Fertilizers sold by agro-dealers to farmers (000 tons)	111,000	930,000	791,000
Percentage of farmers using improved seeds and fertilizers	0	90	99

4. The following are the major outputs of the component.

**Table 2: Key Intermediate Outputs**

Intervention	Output
Printing and distribution of vouchers	- 7.2 million vouchers printed and distributed to over 2.4 million farmers
Access to agricultural inputs	- 791,000 tons of fertilizer bought and applied - 70,500 tons of improved seeds of maize and paddy used

5. *Sub-component 1.2: Improving farmers' awareness, information, and participation.* This sub-component financed activities aimed at providing information to farmers, implementing agencies, agro-dealers, other private sector participants, agricultural research agencies, extension services, and the general public about the input voucher scheme.
6. *Awareness creation campaign:* During the execution of the project, the information dissemination was delivered through meetings at the regional, district and village levels. More than 10,000 leaflets containing information on (i) importance of using improved inputs; (ii) maize and paddy production; (iii) recommendations for the appropriate fertilizer for maize and rice were produced; and (iv) Integrated Nutrient Management Plan (INMP) guidelines were prepared and distributed to farmers in the targeted districts. Over 10 radio and 13 television programs on the success of the NAIVS were organized and broadcasted on Tanzania Broadcasting Cooperation (TBC 1), including local FM radios in Mbeya region. These

interventions covered the Southern Highlands’ regions of Mbeya, Ruvuma, Iringa and Rukwa. To enhance members of VVCs’ understanding of the NAIVS, the project trained the VVCs across the country. The VVCs were responsible for selecting beneficiaries, distributing vouchers to the participating farmers, and ensuring that the inputs were available and utilized at village level. Table 3 shows key outputs of this subcomponent.

**Table 3: Key Intermediate Outputs**

<b>Intervention</b>	<b>Output</b>
Awareness creation campaigns	<ul style="list-style-type: none"> <li>- 10,000 leaflets printed</li> <li>- 10 radio and 13 television programs on NAIVS organized and broadcasted</li> <li>- All VVCs trained in the implementation modalities of NAIVS</li> </ul>

7. **Component 2: Strengthening the inputs supply chain.** This component supported the input voucher scheme by (i) strengthening the agro dealer network; and (ii) strengthening national seed systems to improve the immediate and longer-term availability of quality seed for maize, rice, and other crops.

8. **Strengthening the agro-dealer network.** Through this component an expanded network of well-informed, trained agro-dealers that are located closer to the villages they serve has been established. The project increased farmers’ access to agricultural inputs by providing training in business and technical skills to agro-dealers involved in distribution of fertilizers and improved seeds to the participating farmers. In the course of project implementation, about 3,855 agro-dealers across the country were trained on business planning and handling of agricultural inputs. The trained agro-dealers were directly involved in the distribution of improved seed and fertilizers to the farmers in 24 regions under NAIVS. The involvement of the agro-dealers has led to a reduction of distance travelled by farmers to purchase inputs. Before the project, farmers had to travel long distances to purchase fertilizers and improved seeds, which translated into increased prices of fertilizers and improved seeds. Table 4 shows key outputs of the component.

**Table 4: Key Intermediate Outputs**

<b>Intervention</b>	<b>Output</b>
Training and participation of agro-dealers	<ul style="list-style-type: none"> <li>- 3,855 commercial agro-dealers trained nation-wide 2,010 of which are active.</li> <li>- 5,398 agro-dealers participated in the NAIVS</li> </ul>
Formation of agro-dealer association	<ul style="list-style-type: none"> <li>- National agro-dealer association formed; Tanzania Agro dealers Association (TANADA), which consists of representatives from 44 District Agro dealers’ Associations (DAAs) in the country</li> </ul>

9. **Strengthening National Seed Systems.** This subcomponent supported the development of a national seed policy, strategy, and regulatory framework to: (i) develop the enabling environment for a vibrant, competitive seed system in which private companies can participate successfully; (ii) stimulate the development of business-oriented, farmer-based seed production and marketing units in all regions; and (iii) support agricultural research institutes in producing

pre-basic and ASA in producing basic seed to enable private companies and Quality Declared Seed (QDS) system to supply high-quality seed to farmers.

10. The following are the major outputs of the subcomponent.

**Table 5: Key Intermediate Outputs**

<b>Intervention</b>	<b>Output</b>
Support to ARIs	<ul style="list-style-type: none"> <li>- research and laboratory equipment provided</li> <li>- irrigation and field equipment provided</li> <li>- cold storage facilities and seed cleaning equipment provided</li> </ul>
Support to ASA	<ul style="list-style-type: none"> <li>- seed cleaner, gravity table, treatment equipment and bagger-scale provided</li> <li>- new and rehabilitated seed storage facilities established</li> <li>- farm implements and transport equipment provided</li> <li>- Irrigation equipment sufficient for 50 ha at Arusha and 150 ha at Msimba provided</li> <li>- seed testing equipment for internal quality control provided</li> </ul>
Support to QDS production	<ul style="list-style-type: none"> <li>- 18 QDS farmers groups provided with seed treatment equipment (cleaner, sorter, etc.) to improve their seed production</li> <li>- 36 pieces of high quality tarpaulin (18 by 18 m side) for various seed drying, sorting and grading procured and provided to QDS producers</li> </ul>
Capacity building of TOSCI staff	<ul style="list-style-type: none"> <li>- 45 Authorized Seed Inspectors and 44 Subject Matter Specialists (SMS) benefited from training in seed production</li> <li>- 60 QDS farmers from 12 irrigation schemes trained</li> </ul>
Support to strategy development	<ul style="list-style-type: none"> <li>- seed sub-sector strategy developed</li> <li>- 2 training guide manuals for QDS producers developed. The training manuals have been used to train 63 QDS farmers, 5 District SMSs and 7 MATI tutors</li> </ul>
Support to TOSCI	<ul style="list-style-type: none"> <li>- In collaboration with EAAPP laboratory and field equipment's needed for International Seed Trade Association (ISTA) certification provided.</li> <li>- In collaboration with EAAPP office equipment, scientific instruments and precision tools procured.</li> </ul>

11. **Component 3: Project Management and Monitoring and Impact Evaluation.** This component financed activities aimed at improving project management, coordination and implementation, as well as monitoring and evaluation activities.

12. Major outputs of this component are shown in Table 6 below.

**Table 6: Key Intermediate Outputs**

<b>Intervention</b>	<b>Output</b>
Voucher printing and distribution	<ul style="list-style-type: none"><li>- over 7.2 million vouchers printed and distributed</li><li>- irrigation and field equipment provided</li><li>- cold storage facilities and seed cleaning equipment provided</li></ul>
Infrastructure development	<ul style="list-style-type: none"><li>- drilling and testing of borehole at Msimba and Arusha seed farm completed, awaiting installation of pivot irrigation systems machines</li></ul>
Procurement	<ul style="list-style-type: none"><li>- research and laboratory equipment procured for beneficiary ARIs</li><li>- irrigation equipment for research procured for beneficiary ARIs</li><li>- equipment for three research stations (Selian – Arusha, Ilonga – Morogoro and Uyole – Mbeya) procured</li><li>- seed treatment equipment for QDS acquired</li><li>- supply of scientific instruments and tools, supply of precision tools, weights and measures for TOSCI.</li><li>- supply of four wheel drive vehicles</li><li>- supply of 2 seed processing plants</li></ul>
M&E	<ul style="list-style-type: none"><li>- Impact Evaluation on NAIVS (1st and 2<sup>nd</sup> Round) conducted</li><li>- Seed Enterprises Development and Business Plan; and Environmental and Social Impact Assessment conducted</li></ul>

### Annex 3. Economic and Financial Analysis

1. This analysis includes a qualitative analysis of administrative and operational efficiency and cost-benefit analysis.

2. *Administrative and operational efficiency.* The project faced delays in implementation of activities due to administrative inefficiencies largely attributed to financial management, particularly delays in the GoT's financing and procurement issues. As noted earlier, the project utilized public financial management systems, which was saddled with cash flow problems leading to late transfer of funds from the Exchequer to NMB account. This meant that NMB was not able to pay agro-dealers on time. At the time of ICR, the government's payment of seed and fertilizer suppliers in the regions it supported had barely begun; though almost all input suppliers in the IDA funded zones had been paid. The delays in procurement largely contributed to the cancellation of about US\$3.7million of project funds. Besides, inefficiencies in the procurement processes and procedures resulted in delays in the execution of key activities, including uncompleted installation of center pivot irrigation system in ASA irrigation fields in Morogoro and Arusha. The delays in procurement activities led to extension of the closing date of the project on three occasions as noted in section 1.7 above, yet this important infrastructural activity was not completed. The inefficiencies in the procurement process were mainly attributed to the failure of the project management team to consistently track procurement tasks, procurement capacity constraints at MAFC and user departments/agency level, and slow public procurement procedures.

3. *Cost-Benefit Analysis.* Although it is not a requirement under OP/BP 8.00 guidelines for emergency operations, an ex-ante cost-benefit analysis (CBA) was conducted at appraisal. For that reason, the ICR team conducted a CBA for the activities under the three components of the project. Component 1 (input voucher distribution) constituted over 91.5 percent of total project cost, including additional financing. The component financed the distribution of over 20 million input vouchers to over 6 million beneficiary households. Data for component 2 was mainly obtained from capacity activities aimed at strengthening the agro dealer network. The following key assumptions form the basis of the analysis:

4. *Methodology and underlying assumptions.* (i) *Benefits:* The gross revenue from the sale of the maize and rice was assumed to be the project benefits accruing to farmers. The gross revenue is calculated as increased maize and rice production times average consumer price of the two crops [(maize= Tsh371.43 (US\$0.23 per kg ) and rice=Tsh1,850 (US\$1.12 per kg)]<sup>9</sup>; (ii) *Costs:* Costs include direct costs of the program per household in different regions and complementary investments (incremental farm production costs) per household and administrative and transport costs associated with the delivery of input vouchers; (iii) a 12 percent discount rate was used as a proxy for average opportunity cost of capital, based on the average bank lending rate in Tanzania; (iv) a five-year horizon was assumed for both maize and rice production; and (v) an exchange rate of Tsh1, 650=US\$1.

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<sup>9</sup> Estimates for average consumer prices per kg were obtained from PER NAIVS, February 2014, for eight regions: Arusha, Kilimanjaro, Morogoro, Ruvuma, Iringa, Mbeya, Rukwa, and Kigoma. The analysis uses consumer prices as opposed to farm gate prices as these were not readily available for representative regions.

5. *Results.* On the basis of the above assumptions, the project interventions for input voucher distribution generated a Net Present Value (NPV) of US\$118.9 million and Internal Rate of Return (IRR) of 53.5 percent compared to appraisal estimate of US\$67.0 million NPV and 37.0 percent IRR respectively. Table 1 below compares appraisal and end of project estimates for the project NPV and IRR respectively.

**Table 1: Appraisal and end of project efficiency estimates**

<b>Intervention</b>	<b>NPV (US\$ million)</b>		<b>IRR (%)</b>	
	<b>Appraisal</b>	<b>End of project</b>	<b>Appraisal</b>	<b>End of project</b>
Increase access to agricultural input	67.0	118.9	37.0	53.5

6. The project also resulted in non-quantifiable benefits associated with the distribution of the input vouchers, which strengthened the national maize and rice input distribution system. This was achieved through strengthening of the linkages between input (seed and fertilizer) companies, intermediary agro-dealers (agents) and village level small agro-dealers. The national agro-dealer network has been strengthened, and brought farmers close to services in the project implementation areas. The project, thus impacted on reviving the maize and rice input markets.

#### Annex 4. Bank Lending and Project Support/Supervision Processes

<b>Name</b>	<b>Title</b>	<b>Responsibility</b>
<b><i>Preparation</i></b>		
Madhur Gautam	Lead Economist	TTL
Sergiy Zorya	Senior Economist	Co-TTL
Zainab Z. Semgalawe	Senior Rural Development Specialist	
Ida Manjolo		
Marjorie Mpundu	Senior Counsel	Legal
Luis Schwarz	Finance Officer	Disbursement
Hermann Pfeiffer	FAO/TCIS	
Tekola Dejene	Consultant	
Oleg Nivievskiy	Consultant	
Vincent Gwaramzimba	Consultant	
A. Van Gastel	Consultant	
Markus Moeller		
James Monday		
Naima Hasci		
Jane Kibbassa	Senior Environment Management Specialist	Safeguards
Donald Mneney	Senior Procurement Specialist	Procurement
Bella Diallo		
Patrick Umah-Tete	Senior Financial Management Specialist	
Mercy Sabai	Senior Financial Management Specialist	
Vildan Vervbeek-Demiraydin		
Denis Biseko		
Donald Mitchell		
Meseret Kebede		
Almaz Teklesenbet		
Faith-Lucy Matumbo		
Justina Kajange		
<b><i>Supervision</i></b>		
David Rohrbach	Senior Agriculture Economist	TTL
Denis Maro Biseko	Senior Public Sector Specialist	
Xavier Gine	Lead Economist	
Jane A. N. Kibbassa	Senior Environment Specialist	
Faith-Lucy Matumbo	Program Assistant	
Donald Paul Mneney	Senior Procurement Specialist	
Hawanty Page	Program Assistant	
Mercy Mataro Sabai	Senior Financial Management Specialist	
Zainab Z. Semgalawe	Senior Rural Development Specialist	
Mei Wang	Senior Counsel	
<b><i>Completion Reporting</i></b>		
Abel Lufafa	Senior Agricultural Specialist	Task Team Leader
Kofi Amponsah	Consultant	Principal Author
Eustacius Betubiza	Consultant	Team Member

## **Annex 5. Detailed Ratings of Bank and Borrower Performance**

None

## Annex 6. Beneficiary/Impact Assessment Survey

### Methodology

1. *Selection of beneficiaries.* Before the implementation of the NAIVS program, it was estimated that 2.5 million households were eligible, but the government distributed vouchers to only 1.5 million households in 2000/10 and 2 million households in 2010/11. This resulted in fewer vouchers distributed than the number of eligible farmers each year. The assessment used this shortage to create a comparison group of farmers made up of non-beneficiary households within the same village. The treatment group was therefore comprised of farming households that received subsidy for the first time in the 2009/11 planting season and the comparison group consisted of eligible farming households in the same village that had never received the subsidy.
2. *Comparison of outcomes.* The analysis also compares outcomes between fourth-year beneficiaries – or graduates – that received the subsidy for the first time in 2008/09 with those that have received vouchers since 2009/10.
3. *Sampling.* The overall sample for the impact evaluation was selected from eight Regions that are representative of the NAIVS program area in the Southern and Northern Highland zones, because they have the highest potential for maize production. The study focused on 8 of these Regions, in particular those across Tanzania’s grain belt known as the “big six” that covers the Southern Highlands (Ruvuma, Iringa, Rukwa, Mbeya) as well as some of the Western Zone (Kigoma) and Central Zone (Morogoro). The sample also included two Regions in the North: Arusha and Kilimanjaro. Morogoro, Arusha, and Kilimanjaro are distinct in that they experience bimodal rainfall patterns, which result in a later start date for the main planting season as compared to southern areas with uni-modal rainfall. The sample was expanded in the 2012 follow up survey to include two additional regions – Dodoma and Tabora - that experience less rainfall to represent the country’s “dry zones”. In order to measure and compare the cost-effectiveness of the program across a wider variety of climatic zones and soil types.
4. The following are major findings of the beneficiary/impact assessment survey conducted as part of project closure:
5. *Increased production and productivity.* The project contributed to an increase in maize and rice production and productivity. Over 2.5 million farmer households received and redeemed seed and fertilizer vouchers directly contributing to additional production of about 2.85 million tons of maize and 97,000 tons of paddy to the economy<sup>10</sup>. According to the impact assessment report, yield gains has averaged 433 kg per acre for maize and 263 kg per ha for rice respectively, and participating farmers achieved maize yields averaging 925 kg per acre (2.3 t/ha), compared to only 454 kg per acre (1.1 t/ha) yields achieved by non-participating farmers. Participating farmers achieved paddy averaging 1.1 tons per acre (2.7 t/ha). In comparison, non-beneficiaries achieved paddy yields of only 0.7 tons per acre (1.8 t/ha).
6. *Increased utilization of improved seeds.* A significant number of farmers are now using improved seeds and fertilizer. Over 57 percent of program graduates continued to buy improved maize or rice seed after graduating from the NAIVS. The data also indicate that 37 percent continued to purchase chemical fertilizer in the year following their graduation. This implies a

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<sup>10</sup> Estimated cumulative total over the full five project years.

significant improvement in the adoption rates for these inputs compared with the period before the project started.

7. *Increased awareness of improved agricultural inputs.* Farmers are more aware of improved agricultural inputs and have recognized the use of recommended fertilizer and improved seeds offer productivity gains. For example, in southern highlands, demand and purchases of fertilizers and improved seed (hybrid seed) are high and in lowlands the use of Open Pollinated Varieties (OPVs) has increased.

8. *Increased number of agro-dealers.* There has been significant increase in the number of agro-dealers serving districts and villages. Over 2,300 agro-dealers across the country are capable of distributing agricultural inputs up to the village levels. The strengthened agro-dealer network has improved farmers access to improved agricultural inputs. Before the project farmers were travelling to the district headquarters to purchase agricultural inputs. The relationships between seed and fertilizer suppliers and agro-dealers have also strengthened considerably. More than 600 agro-dealers have been formally designated as sales agents for one or more input suppliers.

9. *Availability of technologies.* Farmers can now seek more information about a variety of technology options. Farmers, local extension staff, and agro-dealers, can now conduct more on-farm demonstrations and trials to test multiple technical options, including application of basal fertilizer (manure versus DAP, versus Minjingu Mazao) and top-dressing (urea versus urea + CAN/ammonium sulfate). They can also seek more information about the wider range of available maize and rice varieties adapted to their cropping systems and changing environment.

## **Annex 7. Comments from Co-financiers and Other Partners/Stakeholders**

None.

## Annex 8. Summary of Borrower's ICR and/or Comments on Draft ICR

### *Background*

1. At project inception, the agriculture sector of Tanzania was characterized by a number of challenges including among others (i) low productivity, (ii) over dependence of rain fed agriculture, (iii) inadequate agricultural support services, (iv) poor rural infrastructure, and (v) weak agro-industries and poor linkages within the value chain of agricultural produce. The government took different initiatives in order to address these challenges and accelerate agricultural development and rural transformation in the country. For example, the government re-introduced the National Agriculture Inputs Subsidy Program (NAISP) in 2003/2004. The objective of NAISP was to ensure national food security by increasing production and productivity of food crops through improving farmers' access to quality agricultural inputs. This was in line with the country's National Strategy for Growth and Reduction of Poverty (Kiswahili acronym MKUKUTA II), Tanzania Five Year Development Plan 2011/12-2015/16 and Tanzania Agriculture and Food Security Investment Program (TAFSIP), which calls for agricultural productivity growth and food security through the expansion of input subsidies to all regions of the country as a means of supporting productivity growth by the country's smallholders. Through NAISP, the government subsidized 50 percent of agricultural inputs market price particularly on basal fertilizer, top dressing fertilizer, and improved maize and paddy seeds. The remaining 50 percent of inputs market price under subsidy were paid by farmers. The farmers were subsidized with one bag of basal fertilizer, one bag of top dressing fertilizer, 10 kg of improved maize and 15 kilogram of paddy seeds. Each selected farmer received inputs under subsidy for three consecutive years. The subsidized inputs given to farmers were used in an area of one acre.

2. In 2009/2010 season, the government received a three-year credit (CR 4619-TA) worth US\$160 million from the World Bank (WB) in order to scale up NAISP through AFSP. The PDO was *to contribute to higher food production and productivity in targeted areas by improving farmers' access to critical agricultural inputs*. The credit was scheduled to end in June 2012, but due to uncompleted procurement the credit was extended to December 2013. In addition to that, the WB approved additional financing (CR-5173-TZ) worth US\$25 million to support the payment of input subsidies for 2013/2014 cropping season. The additional financing is scheduled to close on June 30, 2014.

3. The achievement of the PDO was to be measured by the PDO outcome indicators and their associated intermediate outcome indicators as shown in box 1 below.

#### **Box 1: Project indicators**

- |            |   |
|------------|---|
| (i)        | Additional rice production achieved with subsidized seed and fertilizer (in 000 tons)   |
| (ii)       | Average maize yield achieved with subsidized seed and fertilizer (tons/acre)  |
| (iii)      | Average rice yield achieved with subsidized seed and fertilizer (tons/acre)   |
| (iv)       | Project Beneficiaries (number in 000s)  |
| (v)        | Of which female (beneficiaries) (number in 000s)  |
| <b>1.1</b> | <b>The Intermediate Outcome Indicators</b>  |
| (i)        | Farmers using improved seed and fertilizer in target areas (%)  |
| (ii)       | Farmers receiving seed and fertilizer subsidy vouchers (%)  |
| (iii)      | Proportion of reimbursement payments completed to seed and fertilizer suppliers within 45 days of the delivery of their redeemed vouchers |

(iv)	Trained agro-dealers who remain active in agricultural input distribution (number)
(v)	Fertilizer sold by agro-dealers to farmers (000 tons)
(vi)	Seeds sold by agro-dealers to farmers (000 tons)
(vii)	Seed sector policy (P) and implementation framework (IF) developed
(viii)	Production of pre-basic seeds of maize OPVs in target research stations (tons)
(ix)	Production of pre-basic seeds of rice OPVs in target research stations (tons)
(x)	Production of basic seeds of maize OPVs by private sector and ASA (tons)
(xi)	Production of basic seeds of rice OPVs by private sector and ASA (tons)
(xii)	Percentage of recommendations in the annual evaluations implemented (%)
(xiii)	Satisfactory M&E Report produced
(xiv)	Area of maize & rice cultivated with improved seed & fertilizer using vouchers (in 000 ha)

### **Description of Original Project Components**

4. *Component 1: Improving Access to Agricultural Inputs.* This component encompassed the provision of agricultural input vouchers to eligible farmers in targeted areas to enable them to purchase seeds and fertilizer, as well as the improvement of farmers' awareness of the importance of improved inputs use through input voucher program and training for VVC.

5. *Component 2: Strengthening the Input Supply Chain.* The objective of this component was to build capacity of agro-dealers to improve their customer service provision, creating linkages to input supply companies, and building smallholder demand for improved inputs. In addition, this component strengthens national seed systems through (i) reviewing and updating of the national seed policy and regulatory framework, including developing a seed sub-sector strategy; (ii) stimulating business-oriented farmer-based seed production and marketing units; (iii) providing irrigation and field equipment, cold seed storage facilities and seed cleaning equipment to three Agricultural Research Institutes to support the production of pre-basic seed; and (iv) providing irrigation equipment, storage facilities, farm implements, seed cleaning equipment and transport equipment to the Agricultural Seed Agency (ASA) to support production of high quality basic seed.

6. *Component 3: Project Management and Monitoring and Impact Evaluation.* The objective of this component was to support project management, coordination and implementation, as well as to conduct monitoring and evaluation activities. Despite the additional financing, the components were not revised and remained the same throughout the project implementation period.

### **Project preparation and design**

7. AFSP was prepared following the WB response to the GoT's request for urgent support for its efforts to enhance national food security and avert the food crisis that could arise because of persistently high, volatile prices for food and agricultural inputs. The project was designed to scale up government efforts to boost domestic food production, make food more widely available, and increase the stability of food production through improving small scale farmers' access to agricultural inputs specifically, fertilizer and improved seed for maize or paddy. The project was designed mainly to support the government effort to improve national food security through improving production and productivity by providing input subsidies to small scale

farmers following and incorporating important lessons from government implementation of subsidy program in 2008/2009 and similar programs in other countries, such as Malawi. Also the project design considered the country's initiatives for development including the National Strategy for Growth and Reduction of Poverty (Kiswahili acronym MKUKUTA II), the Tanzania Long Term Perspective Plan 2011/12-2025/26, and the Tanzania Five Year Development Plan 2011/12-2015/16 with development objectives relating to agricultural productivity growth and food security.

8. The following risk were identified (i) political visibility as the project provided subsidies to large numbers of farmers which created political support, but also debated about the extent of coverage and efficiency of the use of public resources. This risk was mitigated by MAFC presenting inputs subsidy plans and openly discussed with Members of Parliament, regional and district stakeholders and inputs supplies; (ii) voucher misallocation and misuse which raised concerns about weak monitoring and control systems. This risk was managed by conducting a performance audit by the National Audit Office (NAO) and a third part independent monitoring and evaluation; and (iii) fertilizer runoff leading to groundwater contamination. The risk was handled through water contamination testing and the result indicates no significant contaminations were observed.

### **Assessment of Project Outcomes**

9. The following section provides an assessment of the achievement of the PDO. As stated earlier, the PDO is to contribute to higher food production and productivity in targeted areas by improving farmers' access to critical agricultural inputs. The main components that contributed to the achievement of PDO include: (i) Component 1: Improving Access to Agricultural Inputs; (ii) Component 2: Strengthening the Input Supply Chain; and (iii) Component 3: Project Management and Monitoring and Impact Evaluation. The detailed objectives of these project components are as described in section 4 above.

#### **1.2 Component 1: Improving access to agricultural inputs.**

10. The objective of this component was to scale up the input voucher scheme and facilitate the implementation through improving awareness, information and participation at local level. The component was divided into two sub-components which are (i) Scale up National Voucher Scheme and (ii) Improving farmers' awareness, information, and participation.

#### **Sub-component 1.1 Scale up National Voucher Scheme.**

##### **a. Voucher Printing and distribution**

11. The project increased the use of fertilizer and improved seeds of maize and paddy by distributing more than 15 million input vouchers to 2.5 million farm households in 121 districts in 24 regions (Annex 4). The distributed vouchers supported the purchase and application of over 500,000 tons of fertilizer, and over 50,000 tons of improved seeds of maize and paddy. In the fifth year of project (2013/2014 season), 2,796, 273 vouchers were printed and distributed to 932,100 farm households to assist in purchase of 93,210 tons of fertilizers and 9,620 tons of

improved seeds of maize and paddy. Table 2 shows a summary of project beneficiaries from 2009/2010 to 2013/2014.

**Table 2: Project Beneficiaries (numbers in 000s)**

Year	Baseline (2008/2009)	Year 1 (2009/10)	Year 2 (2010/11)	Year 3 (2011/12)	Year 4 (2012/13)	Year 5 (2013/14)
Targets	740	1500	2000	1800	940	932
Actual	731	1410	1928	1690	930	923
Percentage	99	94	96	94	98	99

Source: Input Section-MAFC 2014

### b. Production and Productivity

12. *Production:* The project through NAIVS has improved production of maize and paddy in the country. The WB Review Mission report in 2013 showed that production of maize and paddy has increased from 3.1 million tons in 2003/2004 to 5.2 million tons in 2012/2013 and from 688,000 tons in 2003/2004 to 1.3 million tons in 2012/2013 respectively. This production increase has made the country to record additional maize and paddy production (Table 3) allowing the country to retain self-sufficiency in cereal grain production. The increase in maize and paddy production assisted the lift of grain export ban in 2011 and subsequently reduced importation of grains in the country.

**Table 3: Additional maize and paddy production achieved (in 000 tons)**

	Year 1 (2009/10)	Year 2 (2010/11)	Year 3 (2011/12)	Year 4 (2012/13)	Year 5 (2013/14)
<b>Maize</b>					
Targets	601.8	840.4	787.8	442.3	364
Actual	n.d.	857.9	703.0	340.8	359.6
<b>Paddy</b>					
Targets	11.7	26.2	32.4	16.2	12
Actual	n.d.	12.3	17.8	28.3	24.4

Source: Agriculture Inputs Section-MAFC 2014

13. *Productivity:* The improvement of farmers' access to fertilizers and improved seed increased maize and paddy yield per acre. The WB reports show that average maize yield has increased from 0.5 tons per acre to 2.0 tons per acre and average yield for paddy has increased from 0.5 tons per acre to an average of 2.5 tons per acre in 2013/2014 respectively. Table 4 shows the trend of average maize and paddy yield per acre achieved with subsidized inputs from 2009/2010 to 2013/2014.

**Table 4: Average maize and rice yield achieved (tons/acre)**

Year	Year 1 (2009/10)	Year 2 (2010/11)	Year 3 (2011/12)	Year 4 (2012/13)	Year 5 (2013/14)
<b>Average maize yield</b>					
Targets	0.78	0.81	0.84	0.87	0.90
Actual	n.d	0.82	0.83	0.93	0.93
<b>Average rice yield</b>					
Targets	1.19	1.22	1.25	1.28	1.31
Actual	n.d.	0.99	0.97	1.11	1.11

Source: Agriculture Inputs Section-MAFC 2014

### **Sub-component 1.2: Improving farmers' awareness, information, and participation**

14. This sub-component aimed at providing information to farmers, implementing agencies, agro-dealers, other private sector participants, agricultural research agencies, extension services, and the general public about the input voucher scheme. The information described how the scheme works, how to participate, stakeholders' rights and responsibilities, the scale and timing of operations, and the exit strategy.

15. *Awareness campaign:* During the execution of the project, the information dissemination was delivered through meetings at the region, district and village levels. More than 10,000 leaflets on (i) importance of using improved inputs; (ii) maize and paddy production; (iii) fertilizer recommendations for maize and rice; and (iv) Integrated Nutrient Management Plan (INMP) guidelines were prepared and distributed to farmers in the targeted districts. Ten Radio and thirteen Television Programs on performance of NAIVS were prepared and aired through Tanzania Broadcasting Cooperation (TBC 1) countrywide and Bomba FM radio in Mbeya which covered for the Southern Highlands' regions of Mbeya, Ruvuma, Iringa and Rukwa.

16. *Training of Village Voucher Committees (VVCs):* The Project trained all VVCs who are key players in the implementation of NAIVS through the District officials. The VVCs had the role of selection of beneficiaries, distribution of vouchers to the participating farmers and ensuring that the inputs are availed and utilized in the respective villages.

### **1.3 Component 2: Strengthening the inputs supply chain**

17. The objective of this component was to facilitate input voucher scheme by (i) strengthening the agro dealer network; and (ii) strengthening national seed systems to improve the immediate and longer-term availability of quality seed for maize, rice, and other crops.

#### **Sub-component 2.1: Strengthening the agro-dealer network**

18. This sub-component aimed at improving business and technical skills of agro-dealers so that they can improve their provision of customer services, link to other input supply companies, gain better access to finance, and build smallholders' demand for improved inputs. A key

outcome of this sub-component was an expanded network of well-informed, trained agro-dealers that are located significantly closer to the villages.

19. The project increased farmers' access to agricultural inputs by training agro dealers who were involved in training, distributing fertilizers and improved seeds to the participating farmers. In the course of project implementation, about 3,855 agro dealers across the country were trained on business planning and handling of agricultural inputs. The trained agro dealers were directly involved in the distribution of improved seed and fertilizers to the farmers in 24 regions under NAIVS (Table 5). The involvement of the agro dealers during the implementation of the project has reduced the distance travelled by farmers to purchase the inputs. The interviewed farmers informed that, before the project, they were travelling long distances to purchase fertilizers and improved seeds. Travelling long distances increased the price of fertilizers and improved seeds.

**Table 5: Number of agro-dealers involved in NAIVS (2009-2014)**

Targeted regions	Commercial agro-dealers (Number trained)	Agro-dealers participating in NAIVS		
		2010/11	2011/12	2012/13 /a
Morogoro, Kigoma,Mbeya,Iringa,Rukwa and Ruvuma	1969	1459	1298	457
Arusha& Kilimanjaro	378	322	262	188
Shinyanga&Mwanza&Kagera	540	144	67	43
Manyara	88	51	34	21
Tanga	127	26	35	45
Other regions	753	333	314	199
<b>Total</b>	<b>3855</b>	<b>2335</b>	<b>2010</b>	<b>953</b>

20. Apart from the success which the farmers got from having agro dealers in their vicinity, the number of agro-dealers participating in NAIVS has been declining. This is due to the fact that most reliable agro-dealers remained in NAIVS and developed their business as were linked with input producers and importers. The interviewed agro dealers noted that their commercial supply chains have been strengthened under the project and their commercial sales (outside the voucher scheme) has increased. Some of these agro dealers are operating as agents of one or more seed and or fertilizers suppliers.

21. The objective of extending agro-dealer networks to the villages has been only partly successful as in most villages input shops do not exist as was anticipated during the project planning and implementation, and inputs were often left with the Village Executive Officers (VEOs), while agro-dealers collected the vouchers (and top-ups) once the voucher redemption was completed.

22. Formation of the national agro dealers association known as Tanzania Agro-dealers Association (TANADA) was facilitated by the project. TANADA is composed of representatives from 44 District Agro dealers' Associations (DAAs) in the country. The Chairperson and Secretary of the DAAs are members of TANADA.

## **Sub-component 2.2: Strengthening National Seed Systems**

23. The objective of this sub-component was to promote better and more sustainable access to a greater array of high quality seed of locally adapted varieties for a broad range of food crops, sold at competitive prices through the agro-dealer network supported through by the project. Activities within this sub-component were to ensure that high-quality seed were available in time to implement NAIVS and help to develop a sustainable and efficient seed system in the country. More specifically, was to: (i) support the development of a national seed policy, strategy, and regulatory framework to develop the enabling environment for a vibrant, competitive seed system in which private companies can participate successfully; (ii) stimulate the development of business-oriented, farmer-based seed production and marketing units in all regions; and (iii) support agricultural research institutes in producing pre-basic and ASA in producing basic seed to enable private companies and QDS system to supply high-quality seed to farmers. The key issues that contributed to the achievements of this sub-component are:

#### **Support to Agricultural Research Institutes (ARIs)**

24. The project supported three strategically located ARIs of Selian in Arusha for 5 ha, Ilonga in Morogoro for 15 ha and Uyole in Mbeya for 5 ha by providing research and laboratory equipment, irrigation and field equipment, cold storage facilities and seed cleaning equipment in order to increase production of pre-basic seed. During the implementation of the project production of pre-basic seed for maize and paddy were adequate to cover required foundation seed production. Table 6 shows production of pre-basic seed from 2008/2009 to 2011/2012.

**Table 6: Production of Pre-basic Seeds (in tons)**

Species	2008/09	2009/10	2010/11	2011/12	2012/13
Maize	1.67	3.42	6.47	5.53	5.32
Rice	- (drought)	8.9	5.8	26.6	1.1
Wheat	1.35	5.15	3.50	7.0	9.9
Beans	10.28	7.34	10.69	5.53	Na
Sunflower	0.05	0.10	0.03		29.9
Soya	0.06	0.11	Na	Na	Na
Pigeon pea	0.14	0.20	2.00	1.50	Na
Cowpeas	0.06	0.19	1.08	5.50	7.63
Sorghum	1.90	2.60	2.20	0.71	1.83
Millet			2.20	0.30	Na

Source: ARI 2014 (revised data obtained from MAFC Seed section).

#### **Support to Agriculture Seed Agency (ASA)**

25. The project supported two ASA seed farms of Arusha for 50 ha and Msimba for 150 ha to improve production of basic seed so as to enhance Private Seed Companies and QDS to produce and supply high-quality certified seeds to the farmers. The seed farms were supported with (i) a complete processing line for basic seed, including seed cleaner, gravity table, treatment equipment and bagger-scale; (ii) new and rehabilitated seed storage facilities; (iii) farm implements and transport equipment; (iv) irrigation equipment sufficient for 50 ha at Arusha and 150 ha at Msimba; and (v) seed testing equipment for internal quality control. The support that was provided improved the production of basic seed (Annex 7). Table 7 shows the production of

basic seed for maize and rice from 2007/2008 to 2012/2013. ASA seed specialist staffs were trained in Kenya (2) and Malaysia (2) at MSc level.

**Table 7: Production Basic Seed by ASA (tons)**

Year	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Maize	19.0	24.3	92.7	220.2	154	188
Rice	17.3	23.0	55.8	90.0	37.5	62.0

### Support to Quality Declared Seed (QDS) Production

26. During the implementation of the project, 18 QDS farmers groups were each provided with seed treatment equipment (cleaner, sorter, etc.) to improve their seed production. The seed equipment has been delivered to the farmer groups in Mvomero, Kilimbero, Kilosa, Ulanga and Morogoro Rural (Morogoro region); Kongwa, Kondoa, Mpwapwa, Bahi and Dodoma rural (Dodoma region); Iringa Rural and Mufindi (Iringa region); Njombe Rural, Makete and Ludewa (Njombe region); Nachingwea and Ruangwa (Lindi region); Masasi and Mtwara Rural (Mtwara region). Procurement of 36 pieces of high quality tarpaulin (18 by 18 m side) for various seed drying, sorting and grading were provided to QDS producers.

27. The outcome of the support by the project is reflected by a trend of QDS production as is shown in Table 8. QDS production has increased marginally over the project period but remained small as a proportional of total seed production in the country of about 2.8 percent. Low contribution of QDS to the total seed produced is attributed by; (i) financial capability of QDS producers; (ii) buyers preference to hybrid varieties than QDS; and (iii) drought which occurred in 2009/2010 and partly in 2010/2011 in Masasi, Mtwara Rural, Nachingwea, Ruangwa, Bahi, Morogoro Rural and Kondoa districts. Despite its low contribution to total seed production, QDS has successfully assisted farmers who cannot meet the expense of purchasing the varieties supplied by the Private Companies as the price of QDS ranges between Shillings 500 per kg to Shillings 1,000 per kg.

**Table 8: Quality Declared Seed (QDS) production from 2009/10 to 2012/13 (in tons)**

S/N	Crops	Production 2009/2010	Production 2010/2011	Production 2011/2012	Production 2012/2013
1	Maize	79.5	114.1	192.3	114.5
2	Rice	21.0	107.0	83.5	79.4
3	Sorghum	23.3	35.9	38	56
4	Wheat	4.7	1.8		-
5	Sunflower	32.3	41.1	66.2	72
6	Sesame	4.8	7.7	0.4	3
7	Beans	4.0	9.0	16.7	22
8	Cowpeas	8.3	4.7	10.8	4
9	Green gram	-	0.6		
10	Pigeon peas	3.7		7.1	2
11	Vegetables	4.4	0.4	0.3	1
<b>QDS-Production</b>		<b>194.4</b>	<b>322.2</b>	<b>415.3</b>	<b>354</b>

<b>Total Seed Production</b>	<b>10,459.2</b>	<b>18,442.9</b>	<b>21,748.8</b>	<b>12,455.98</b>
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*Source Agric. Input Section –MAFC*

28. The project supported refresher course on Seed production by TOSCI, ARI-Dakawa, ASA and Seed Unit staff of MAFC. The participants were 45 Authorized Seed Inspectors and 44 Subject Matter Specialists (SMS) from Dodoma, Singida, Mara, Mwanza, Kagera, Kigoma, Tabora, Manyara, Shinyanga, Simiyu, Morogoro, Iringa, Arusha, Kilimanjaro, Tanga, Mbeya, Rukwa, Katavi, Ruvuma, Njombe, Pwani, Mtwara and Lindi regions. The project supported the training of the QDS farmers groups and Subject Matter Specialist (SMS) from the districts. In totality, 60 QDS farmers from 12 irrigation schemes of Mwegu (Kilosa), Kitere (Mtwara), Kinyope (Lindi rural), Ruaha Mbuyuni (Kilolo), Mahiga (Kwimba), Irienyi (Rorya), Soko (Moshi), Lusu/Ifumba (Nzega), Ruhwiti (Kibondo), Mahenge (Korogwe), Kyakakera (Missenyi) and Msagali (Mpwapwa) and 78 SMS from 37 districts were trained on how to produce improved rice seeds. The Fields days/study tours were conducted at Agricultural Research Institution Trials, Agricultural Seed Agency (ASA) farms and their fellow QDS farms. Farmers had the chance to see the differences in QDS production against Pre-basic, Basic and Certified seed production on isolation distance, times of inspection, cares undertaken during harvesting, storage (pre-processing), processing and post processing storage, packaging and transport/sale; and sample taking.

29. In 2010/2011 at ASA Seed farms at Dabaga in Iringa and Msimba and Ilonga ARIs both in Morogoro 143 farmers (52 female and 91 male) and 23 extension staff participated in the study tours. In 2011/2012, 162 farmers (70 female and male 92) attended at QDS farmers group farms in Kondoa, Dodoma, Iringa, Kilosa, Morogoro and Ruangwa in Lindi region.

30. *Business Plan and Market Strategy:* The project facilitated the development of two training guide manuals for QDS producers, Subject Matter Specialists from Morogoro, Dodoma, Iringa, Njombe, Mtwara and Lindi regions and Ministry of Agriculture Training Institute (MATI) tutors. The developed manuals are standard teaching materials across the country and were used to train 63 QDS farmers, 5 District SMSs and 7 MATI tutors. The trained tutors will in turn use the manual to teach certificate and diploma course in agriculture and horticulture.

31. *Seed Strategy:* The Project supported the formulation of seed sub sector development strategy. The Mission and Vision of the Seed Industry Development Strategy is to ensure timely availability of high seeds to farmers timely at reasonable prices. TOSCI strengthening. In close collaboration with East Africa Agriculture Productivity Project (EAAPP), the Project supported the TOSCI with laboratory and field equipment needed for International Seed Trade Association (ISTA) certification. Office equipment, scientific instruments and precision tools were successfully procured by the project.

#### **1.4 Component 3: Project Management and Monitoring and Impact Evaluation**

32. This component supported project management, coordination and implementation, as well as monitoring and evaluation activities.

33. Sub-component 3.1: Project Management. The project was mainly managed by MAFC in collaboration with MoF and PMO-RALG. The day to day management of the project was carried

out by Agriculture Input Section (AIS) of MAFC. Given the scope of the project activities, National Voucher Steering Committee (NVSC) was formed to guide and coordinate the implementation of the project. The NVSC was chaired by Permanent Secretary, MAFC, and consisted of representatives from MoF, PMO-RALG, Directors of relevant MAFC departments, representatives of national farmer organizations, representatives of agribusinesses that produce and import inputs, and other representatives of the Private Sector, Civil Society Organizations (CSOs), Community Based Organizations (CBOs) and NMB. NVSC set the criteria and guidelines for allocating vouchers at the targeted regions, reviewed and approved annual work plans, addressed management and project implementation issues. The following was achieved under the project management:

34. **Voucher Printing and Distribution.** Since 2009/2010 more than 6.0 million vouchers were printed and distributed to 2.5 million farm household in 109 districts of 24 targeted regions. There were some cases of delay in voucher procurement and arrival in the country that pretentious timely distribution of vouchers to the farmers especially in those areas that gets early rains in the seasons. This affected the PDO of timely delivery of inputs to farmers at reduced costs prior to planting season. Mitigation for this was through the project management doing the following: (i) in 2010/2011 season project management produced and distributed Certificates of Confirmation of Receiving input voucher for the Year 2011/12. The certificates were then replaced by the vouchers when sent to the farmers in targeted villages; and (ii) in 2011/2012 and 2012/2013 season, project management stamped the previous years' unused voucher and distributed them to the farmers to meet the planting season. Stamping of unused voucher helped to distribute timely the inputs to those areas which the planting season starts in between August and September. The regions which starts the cropping season of Katavi, Kagera, Geita, Mwanza and Mara and districts of Ileje, Chunya, Mbeya Rural and Rungwe (Mbeya region), Njombe Rural, Njombe Urban, Makete and Ludewa (Njombe).

35. *Budget and Action plan. Auditing of AFSP Implementation, meetings.* The project management team prepared budget and action plan to ensure that the project is implemented effectively. The budget and action plan was presented to the NVSC for approval before including in the MAFC budget. Quarterly and annual project progress reports on financial and physical achievements of the project were prepared and submitted to WB and MoF. Auditing of the project implementation was carried out and audit reports including internal, external and special performance audit were prepared as was planned in the project document. Meetings were organized and conducted by the project management to discuss the implementation of the project as planned. Project management team successfully held two meetings in each year with the project review mission.

36. *Environmental Safeguards.* The project complied with environment safeguards by (i) preparing a simplified Integrated Nutrient Management Plan (INMP) guideline in Kiswahili language and distributing it to farmers to enhance safe handling and proper application of inputs, particularly fertilizer that was provided through subsidy; and (ii) conducting a quantitative assessment on the impacts of chemical fertilizer use on groundwater quality in and around villages receiving larger numbers of vouchers in 2013. The assessment report showed that there was no evidence of groundwater contamination associated with fertilizer application. In that case, the project's overall safeguard compliance was rated satisfactory.

37. *Integrated Soil Fertility Management (ISFM)*. Two technical meetings were held in Tanga and Iringa to bring together Soil Scientists (researchers) from the Department of Research and Development (DRD) of MAFC to review work that was done and to conclude AFSP activities. The meetings deliberated and provided adapted ISFM recommendations to farmers in the high potential zones for maize and rice production, as well as defined strategies for improving dissemination of research findings to the farmers. Results on 14 research projects that were carried out to verify fertilizer technologies such as optimum rates of fertilizers to apply, agronomic effectiveness of various P sources and residual P from different sources were presented. Thirteen (13) titles for promotion of technologies were also presented. These covered use of Minjingu Rock Phosphate, use of combined organic and inorganic fertilizers as well as conservation of soil and water for enhanced crop yields.

38. *Procurement of Goods and Services*. Procurement activities under the project were mainstreamed in the government system and managed by the Procurement Management Unit (PMU) of MAFC. There have been inefficiencies in processing the procurement activities due long procedures of procurement and vetting of contracts by the Attorney General Chamber (AGC). During the full course of implementation, the project was troubled by procurement delays. As a result of this, in 2012, MAFC requested a one year extension of original credit (CR 4619) so as to complete pending procurement activities. The original project was scheduled to close in June 2012. Also in September 2013 mission, the MAFC requested a further extension of the original grant (CR 4619) to June 30, 2014 in order to complete the procurement of irrigation equipment for two seed production facilities. Despite the procurement delays, the project managed to complete procurement activities under works, goods and consultant services.

39. *Goods, Works, Consultancy Services*. The following goods were procured and delivered to (i) research and laboratory equipment; (ii) irrigation equipment for research; (iii) equipment for three research stations (Selian – Arusha, Ilonga – Morogoro and Uyole – Mbeya); (iv) seed treatment equipment for QDS; (v) supply of scientific instruments and tools, supply of precision tools, weights and measures for TOSCI; (vi) supply of four wheel drive vehicle; and (vii) supply of two (2) seed processing plants. The project completed borehole drilling and testing at Msimba and Arusha seed farm; rehabilitation of offices and warehouse at Msimba seed farm and Installation of irrigation system at Msimba Seed Farm in Morogoro and Arusha seed farm. Contracts for the following consultancies were executed: (i) Seed Strategy/Incentive/Policy and Regulatory Framework; (ii) Impact Evaluation on NAIVS (1st and 2<sup>nd</sup> Round); and (iii) Seed Enterprises Development and Business Plan; and Environmental and Social Impact Assessment for the project. Annex 11 summarizes the completed procurement activities under AFSP.

40. *Sub-component 3.2 Monitoring and Evaluation (M&E)* Monitoring of AFSP implementation was carried out at all levels to ensure effective execution of planned activities. Monitoring was carried out by MAFC staff in collaboration with members of NAIVS steering committee that included representatives from MAFC, TASTA, TANADA, CSOs, CBOs, PMO-RALG and NMB. The main accomplishment of this component was baseline impact assessments which assured the management team of the success of the input subsidy targeting and provided an independent measure of the yield gains being achieved. The first round project impact assessments was carried out in 2010 and the second round was carried out on 2013. Both reports were submitted to WB and MAFC. The Important thing revealed from impact assessment among

others include maize and rice production gains and participating farmers graduating from NIAVS continue commercial purchase and use improved seed and fertilizers. Seed and fertilizer suppliers also report rising commercial (non-subsidized) sales of improved seed and fertilizer.

### **Way forward**

41. The following suggestions aim to inform on the opportunities for better agricultural inputs access and use by the farmers.

### **Enhanced agricultural credit for inputs**

42. Interest has been expressed in the option of providing subsidized credit to farmers graduating from the NIAVS program. Little commercial credit currently flows to the agricultural sector, and interest rates are high, because agricultural lending is risky. Repayment rates depend on weather, variable product prices, and the willingness of farmers to return borrowed money. There is growing interest in various insurance products to offset weather related risks. Price risks may be arbitrated in futures markets. Lenders have long been experimenting with group lending and liability to offset the risks of side selling, or farmers who simply seek to avoid repaying their loans.

43. The results of these initiatives continue to show that agricultural credit works most reliably in well defined, single channel supply chains. The ideal case is to sell through a single channel such as NFRA prior to the payment of the farmer. Lending is more risky when the contracted commodity may be sold through multiple channels as for tobacco and or cotton. Group liability may significantly reduce lending risk in narrower supply chains.

### **Provision of Starter Seed Packs**

44. The distribution of starter packs of improved OPV of food crops provides an excellent way to quickly raise productivity and food security of poorer farm households. The major advantage of the OPV is the seed only needs to be provided once. If farmers like the variety, they can readily select seed from their harvest for replanting the next season. If these varieties offer only a ten percent yield gain, the investment costs in seed production and distribution can be fully paid in the first year. Productivity gains in the following years are essentially free. This can be achieved through provision of approximately two kilograms of OPV grain seed, and one kilogram of OPV legume seed to enhance household nutrition. This program could be extended to encompass vegetative multiplied crops such as cassava, sweet potato and banana.

45. Ideally, this program should contract commercial seed companies to produce and deliver free seed to farmers. This would encourage a continuing expansion in wholesale to retail supply chains, even if the seed is initially delivered for free. Over time, farmers should become accustomed to looking for new varieties in their local retail shops.

### **Provision of Small Pack Seed Sales**

46. Farmers should be encouraged to consistently look for, and invest in, better seed varieties. Many crop varieties on the national registration list remain unknown to most farmers as are inadequately commercially multiplied for sale. Some are multiplied, but only sold in a few, limited parts of the country. MAFC in collaboration with LGAs and Private Sector should promote broader awareness of newly released varieties by establishing demonstrations linked with commercial sale of small packs of the new seed.

47. The value of this exercise is enhanced if linked with a careful survey of farmer preferences for alternative grain and plant traits. The results of this survey - an explanation of farmer preferences, as well as the priority farmers attach to different traits when selecting a variety, can be integrated back into national breeding programs.

### **Promoting adoption of chemical fertilizer**

48. While some of the graduates from the NAIVS have continued to purchase chemical fertilizer after the subsidy programme others are not. This is attributed by the small yield possibly because the fertilizer was wrongly applied, or the nutrient mix was inappropriate for their soils and some farmers simply do not have the cash available at the right time to purchase fertilizer. Several fertilizer companies have responded to this problem by starting to sell smaller bags of fertilizer for example, in 5, 10 or 25 kilogram bags rather than the standard 50 kilogram bag. In addition, several companies are working to better target fertilizer to local soil conditions.

49. Farmers should also be given more advice on how best to apply smaller doses. More grain can be produced if for example, 10 kilograms of urea is spread in small doses (e.g. a bottle cap dose) over one-third an acre than over two-tenths of an acre. This implies the need to shift the orientation of many extension programs including those commonly found in farmer field schools. MAFC in collaboration with LGAs and Public Sector should help farmers with alternative fertilizers and with, at least initially, smaller fertilizer doses.

### **Increasing input use through improved market efficiency**

50. There are several ways input sales can be made more reliable. One is to encourage bulk purchases of seed and fertilizer allowing volume discounts on both commodity and transport costs. Another is to promote input sales at the same time farmers are selling their agricultural products when they have cash in hand. A third option is to encourage electronic payments through mobile money transfer systems. These could be linked with efforts to encourage the commitment of remittances to input purchase, or savings tied with future delivery.

51. Public support has a larger role to play in promoting the improvement of farm-gate prices for basic staples. National grain markets tend to be highly seasonal, with prices just after harvest often 30 to 50 percent lower than the prices for the same commodities six months later. These markets are also characterized by large differentials between farm-gate and wholesale prices resulting from limited trade competition at the farm-gate, and the high costs of assembling many small lots of grain. When farmers receive a low price for their crop, they have less incentive to invest in improved inputs, and less capacity to do so.

52. Public investment in village warehousing offers the opportunity to bulk commodity for sale by the truckload, rather than by the bag. Warehouse storage allows farmers to take advantage of seasonality of prices by selling later in the harvest season. Finally, in order to increase trade competitiveness at the village level, truck or warehouse lots may be transparently auctioned on the regional or national market. This may take the form of a simple mobile phone based auction whereby a pre-defined group of traders receives an SMS offering the opportunity to bid on a truckload of grain by a designated deadline. The public investment may support building or refurbishment of a warehouse, the provision of training in warehouse management, the licensing of traders willing to participate in the commodity auction, or the monitoring of the system to assure the trade is transparent.

53. If these farmers find maize and rice production to be more profitable, they will invest more in improved seed, fertilizer and other farming inputs. The growth of productivity will improve the competitiveness of Tanzania's grain on regional markets.

## **Annex 9. List of Supporting Documents**

1. Aide-Memoires of Supervision Missions from 2009 to 2014.
2. AFSP Progress Reports, 2009-2013
3. Implementation Status and Results (ISR) reports, 2009-2014.
4. Ministry of Agriculture and Food Security, Tanzania Accelerated Food Security Project, Project Implementation Manual (PIM), September 2009.
5. Ministry of Agriculture and Food Security Accelerated Food Security Project, Draft Implementation Completion Report.
6. Ministry of Agriculture and Food Security, Interim Financial Report for the Period January-March, 2014.
7. Patel S., Tanzania National Input Voucher Scheme (NAIVS), Impact Evaluation, Baseline Report, October 31, 2011.
8. Project Appraisal Document (PAD), Accelerated Food Security Program of United Republic of Tanzania, for Emergency Program Paper May 27, 2009.
9. Project Paper, Additional Financing for Accelerated Food Security Program October 2, 2012.
10. Tanzania, Public Expenditure Review, National Agricultural Input Voucher Scheme, February 2014.
11. United Republic of Tanzania, Ministry of Agriculture Food Security and Cooperatives, Accelerated Food Security Project, Report on Cumulative Environmental Impact Assessment on Ten Regions of Mainland Tanzania, April 2013.
12. United Republic of Tanzania, Accelerated Food Security Project (P114291-Credit No. 4619-TA), Extension of Closing Date, June 29, 2012
13. United Republic of Tanzania, National Audit Office, Report of the Controller and Auditor General on Financial Statements of Accelerated Food Security Project for the year ended 30<sup>th</sup> June, 2013