Tanzania Mainland
ASR-PER 2014

– Validation DRAFT –

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Exchange rate:
1665 Tanzania Shilling per US-Dollar (average 2014)
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Fiscal year: July – June
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Preface

This combined Agriculture Sector and Public Expenditure Review (ASR-PER) 2014 for Tanzania Mainland is part of a series of reviews prepared on an annual basis. Its main purpose is to support informed decision-making and enhance the dialogue between the Government of the United Republic of Tanzania and the Development Partners (DPs). The series was started in 2006, but no reports were produced in 2012 and 2013. The series is planned to be continued with the support of ReSAKKS in the context of Joint Sector Reviews.

This report relates to Tanzania Mainland. A separate report was prepared for Zanzibar.

This report is based on the analysis of statistics, a review of selected documents and extensive analysis of statistics and information about public spending. The Team of consultants had interviews with the Agricultural Sector Lead Ministries (ASLMs) and private-sector stakeholders and farmers and farmers' organisations in the period October through December 2014. Field visits took place in October 2014.

The study was carried out by a team of three consultants: Dieter Orlowski (team leader), John Mduma and Hussein Nassoro. DFID and JICA provided the finance for the consultancy services.

The consultants liaised closely with the Departments of Policy and Planning of MAFC and MLFD and also met with Permanent Secretaries or their deputies of the two ministries. Both ministries had appointed an officer as the contact and entry point, who also kindly provided additional data and documents after the visit.

The report is produced for the benefit of our clients, which are the ministries, supporting development partners and also other stakeholders in the private sector. Yet, the Consultants remain responsible for this report's content. Statements, conclusions and recommendations are not necessarily those of the ministries in Tanzania or Development Partners.

The Team would like to express its deep gratitude for the support it has received and the interest and openness in the discussions.

Note on this validation draft version

This draft is meant to collect reactions and to invite the readers to comment. They are invited and requested to let our team know when the information presented in the report is not correct, or biased or distorted.

Questions and doubts are marked with "##". These will not appear in the final version. For the meantime, this mark can conveniently be searched, and readers are invited to look for the marks and provide answers and clarifications where they can.

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Acronyms

AES	Agricultural Extension Services
AGITF	Agricultural Inputs Trust fund
AGRA	Alliance for a Green Revolution in Africa
AMCOS	Agricultural Marketing Cooperative Society
ARI	Agricultural Research Institute
ASA	Agricultural Seed Agency
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ASDP	Agriculture Sector Development Programme
ASLM	Agricultural Sector Lead Ministries
ATI	Agricultural Training Institute
BOT	Bank of Tanzania
BRN	Big Results Now (Initiative)
CAADP	Comprehensive Africa Agriculture Development Plan
CBG	Capacity Building Grant (block grant for capacity building to districts)
COFOG	Classification of Functions of Government
CORDEMA	Client-Oriented Research and Development Management Approach
DAICO	District Agriculture, Irrigation and Cooperative Office
DFID	Department for International Development (UK)
DP	Development Partner(s)
DRD	Directorate of Research and Development at MAFC
EAC	East African Community
EBG	Extension Block Grant (block grant for extension to districts)
EPINAV	Project "Enhancing Pro-Poor Innovations in Natural Resources and Agricultural Value Chains"
FAO	Food and Agriculture Organization (UN System)
FFS	Farmer Field School
FO	Farmers Organisation

FSA	Farming System Approach
GBS	General Budget Support
GDP	Gross Domestic Product
GIZ	Gesellschaft fuer Internationale Zusammenarbeit (Germany; formerly GTZ)
HR	Human resources
IARC	International Arctic Research Center ## ??
ICT	Information and Communication Technology
IFMS	Integrated Financial Management System
IMF	International Monetary Fund
KARI	Kenya Agricultural Research Institute
KATC	Kilimanjaro Agricultural Training Centre
LGA	Local Government Authority
LITA	Livestock Training Agency
M&E	Monitoring and Evaluation
MAFAP	Monitoring and Analysing Food and Agricultural Policies (FAO programme)
MAFC	Ministry of Agriculture, Food Security and Cooperatives
MATI	Ministry of Agriculture Training Institute
MLFD	Ministry of Livestock and Fisheries Development
NAIVS	National Agricultural Input Voucher Scheme
NBS	National Bureau of Statistics
NGO	Non-governmental organisation
OC	Other (Operational) Charges
OCGS	Office of the Chief Government Statistician (Statistics Bureau of Zanzibar)
OPRAS	Open Performance Review Appraisal System
PDB	Presidential Delivery Bureau
PER	Public Expenditure Review
PPP	Public-Private Partnership
QDS	Quality Declared Seed
SACCOS	Savings and Credit Cooperative Society
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SUA	Sokoine University of Agriculture
TACRI	Tanzania Coffee Research Institute
TAFSIP	Tanzania Agriculture and Food Security Investment Plan
TORITA	Tobacco Research Institute of Tanzania
TOSCI	Tanzania Offical Seed Certification Institute
TRA	Tanzania Revenue Authority
TRIT	Tea Research Institute of Tanzania

USAID	United States Agency for International Development
VAT	Value-added tax
VICOBA	Village Community Banks
WARC	Ward Agriculture Resource Centre
WRS	Warehouse Receipt System
ZARDEF	Zonal Agricultural Research and Development Fund
ZIELU	Zonal Information and Extension Liaison Unit

Highlights and Key Messages

1. **Real agricultural GDP has been and continues growing regularly.** The real growth rate is above population growth, but less than the six percent targeted by the African Union / NEPAD.

2. **Districts are responsible for most agricultural services to farmers.** District budgets for agriculture constitute a significant share of public spending on agriculture. However, since districts define their own budgets, information about total actual spending by all districts is delayed and few details are available.

3. **The largest share of the funds allocated to and spent by the Ministry of Agriculture, Food Security and Cooperatives (MAFC) relates to grants to the National Food Reserve Agency (NFRA) and subsidy schemes.** A significant share of the remainder is spent on research and training, but the level of finance of these functions remains very low.

4. **The Ministry of Livestock and Fisheries Development (MLFD) spends only very small amounts on vaccines and carracides from its central-level budget.** If such spending occurs, it could well be classified as spending on public goods rather than subsidies. At the same time, no information is available about how districts spend funds on livestock.

5. **In FY 2012/13, agriculture absorbed 1.9 percent of total recurrent expenditure excluding interest of Tanzania Mainland.** Another 1.1 percent was spent on transfers to NFRA and subsidy schemes. In the approved budget for FY 2013/14, the share for recurrent expenditure excluding NFRA and subsidy schemes drops to 1.6 percent. These figures include spending by districts on both sides (denominator and numerator). This level of spending is very low by continental and regional standards and way below the Maputo target.

6. **The National Agicultural Input Voucher Scheme (NAIVS) ended with the end of the 2013/14 agricultural season.** The end was programmed. Motives for not extending the scheme are the assessment that it has served its purpose to expose farmers to the benefits of improved inputs and the observation that NAIVS is at risk to become more corrupt and diluted with regard to its objectives in the political process. In spite of some good studies, the overall impact and its sustainability without subsidies are difficult to estimate. Assuming 2 million farming households that each produce 450 kg of maize more on an area of 1 acre, the result would be an additional 0.9 million tons (out of about 5.4 million tons of maize produced in the 2012/13 season). However, the figures are not very robust. Whether this productivity gain is sustainable remains an open question.

7. **From 2014/15 onwards, a scheme by which small-holder farmers can acquire seeds and fertilizer for maize and rice on credit has been set up.** However, it is

questionable whether it will gain much ground as banks and input dealers are apparently reluctant to participate. The scheme is also questionable because it addresses the cost of credit while not solving the issue of access to credit.

8. **NFRA is changing its role.** Initially set up as a pure food reserve, it now gradually assumes the role of a buffer stock in an attempt to keep farmgate prices up in spite of good (even bumper) harvests. This comes at a substantial cost to the budget. Furthermore, NFRA is leasing storage capacity from the private sector and thereby reducing the ability of the private sector to even out seasonal fluctuations.

9. **Research, extension and training appear to be seriously under-funded and under-staffed.** It is unclear whether the rising expenditure on NFRA and NAIVS have marginalised this subsector. However, it is quite clear that these functions could absorb and benefit from higher allocations. It must be noted, though, that districts are responsible for agricultural extension, and districts are autonomous in allocating funds according to local conditions and priorities.

10. **Financing of the agricultural sector through banks shows no seasonality and no dips, but does not keep up with the expansion of credit to manufacturing and also trade.** There is no evidence that agriculture is being "crowded in" through government efforts to make investment in the sector more attractive. However, this finding should not be over-interpreted because (i) the data relate only to commercial bank lending and (ii) investment in trade with agricultural products and processing along the value chain can not be separated from other lending to the trade and manufacturing sector.

11. **Coverage of the Warehouse Receipt System (WRS) for food crops is negligible.** As it stands, the WRS cannot facilitate farmers' access to seasonal loans on any significant scale. Loan schemes for agricultural machinery are small and bugged by low repayment rates..

12. **The new initiatives to promote commercial agriculture pose a challenge to the coordination of policy and its implementation.** The dimension of the challenge is not clear, though. At the same time, one sees several large donor-funded projects emerging which are off-budget and implemented outside the government system. Coordination efforts are particularly important at the district level, where it is recommended that these projects act in close contact with the authorities and are transparent about their approach and funding.

13. **Finding and organising the data for this report has been very cumbersome, the quality of data remains not satisfactory.** For key agricultural data such as area planted, quanities harvested and yields, available statistics from different sources show different numbers. Agricultural statistics do not distinguish between smallholders and large farms. Nowhere is the methodology of data collection explained. Statistics shown on websites are often outdated, more generally not available.

But the same applies to fiscal data. The budget (presented to the parliament and/or approved) is not posted in full, only few back years are available, and they are difficult to

locate. We found Volumes II, III and IV, but not Volume I. It appears that overview tables are not even presented to the Legislature as routine part of the budget package; summary tables showing expenditure by vote in one line (maybe subdivided by Personal Emoluments, Transfers and others) could not be retrieved in spite of considerable effort. The Ministry of Finance apparently does not produce tables on spending by functional classification, even though this is accepted good practice and done by other countries.

Data on district spending are, admittedly, difficult to collect because of the autonomy which LGAs enjoy. However, data shown on the PMO-RALG website are not up-to-date and available for three years only.

Data on spending by Development Partners are inconsistent, incomplete and not instructive. The reasons are that (i) a variable and apparently decreasing number of projects are on-budget and spend their funds through the government system, and (ii) the quality and consistency of data that donors register in the Aid Management Platform (AMP) is so bad that it does not allow to interpret trends and expenditure shares.

1. Introduction

Sector-level Public Expenditure Reviews (PERs) are a standard instrument for Tanzania's annual rounds of performance evaluation. They are one of the main basic pieces of information and assessment for the dialogue between the Government and development partners (DPs) who support the country via general budget support (GBS) or sector policy support.

The purpose of the ASR-PER is as follows:

a) Provide a standard database on key indicators of sector development and government interventions and public spending, prepared with sufficient diligence so that discussions and debate can proceed directly to the causes of sector achievements and failures and implications for policy and spending, without having to discuss and possibly refute the data and the facts along the way.

b) Present in-depth analyses on current issues of sector policy in areas where looking at costs and expected results in conjunction can improve the quality of policy choices.

These are the standard objectives of typical Agriculture Public Expenditure Reviews (AgPER). Such reviews always consider the match (or mismatch) between policy objectives and expenditure patterns, and they always consider costs versus results and assess the value-for-money of spending. Typically, AgPERs are "think pieces" which highlight inconsistencies between policy and spending and analyse components of policy and spending where significant spending does not seem to produce commensurate results. They also analyse issues of current relevance and debate where different choices exist about how to address identified issues. In this case, AgPERs look into options in some detail and help to structure the debate.

In this sense, a normal AgPER is very similar to what has been defined as ASR-PER in the Tanzania context. However, the Tanzania and Zanzibar ASR-PERs are different from standard AgPERs because they are prepared annually. This has implications for the structure of this report and the content of the annual assignment given for this work. This report strives to be an example, a type of template for future reports.

Agriculture Public Expenditure Reviews also serve to monitor actual spending levels against the benchmark set by the Maputo Declaration of 2003. In this declaration, the Heads of State of the African Union committed to strive to allocate ten percent of actual total public expenditure to the agricultural sector. The commitment was meant to accelerate growth of agricultural production for the sake of poverty reduction and food security. The Comprehensive Africa Agriculture Development Programme (CAADP) was adopted in the same session as an instrument to ensure that additional spending leads to

an agricultural growth of at least six percent per year.[1] In June 2014, the Heads of State of the AU members reiterated their commitment through the Malabo Declaration, but emphasised the importance of quality of spending.

Definition of Agriculture Sector

The "agriculture sector" was later defined on the basis of the COFOG classification of expenditure (COFOG = Classification of Functions of Government, an international classification scheme used primarily by the UN system and in the IMF manuals on statistics of government spending). Thus, the "Agriculture Sector" includes crops, livestock, fishing and production forestry. Expenditure on irrigation schemes is included, while processing and marketing of agricultural products are not.

This definition is also used in this report, although it is controversial. The MAFAP project implemented by the FAO looks at agriculture-specific and agriculture-supportive expenditure; supportive expenditure includes rural health, rural education, and rural infrastructure (roads and electricity in particular). Neither of these definitions includes value chains, which have become fashionable in recent years. Obviously, agriculture based on private sector activities cannot prosper without agro-dealers to provide access to input, and without chains of traders and processors to ensure that food on the field is transformed to nutrition "on the plate".

This report follows the COFOG-based classification of expenditure on agriculture. The reasons are, first, that this is a practical definition. Public spending on value chain development is typically included in various other ministries, particularly the ministry responsible for trade and industries, but cannot easily be disaggregated. Second, expenditure on rural health, education and infrastructure serves various purposes; it is required even in situations where agriculture is only a small element of rural economies.

The data used in this report originate mainly from official statistical sources. Preference was always given to national sources when choices existed. All efforts were made to specify the source in sufficient detail so that series can be complemented in future editions of ASR-PERs. There was no primary data collection for this study; field visits only served to interview selected institutions and get a "feel" of the real situation outside the capital.

This report is comprised of the following main sections:

i. The first part of the main report (Chapter 2) focuses on key features of the sector and recent developments. It highlights significant changes in sector performance and volume and pattern of public spending.

[1] The Maputo Declaration did not specify how growth is to be measured, though. In most cases, the growth target is monitored via value-added contribution of agriculture to GDP in constant prices. The Malabo Declaration specifically refers to the target of six percent of growth of the agriculture sector's contribution to GDP.

ii. Current issues are dealt with in the second part of the main report (Chapter 3). Each year's report will select issues on the basis of relevance for current policy debates. Issues are likely to be different ones each year, although they may re-appear if they remain issues and continue to be relevant.

iii. The last part (Chapter 4) is dedicated to a special topic, which this year is the area of research and training. The special topic will be chosen each year by the parties involved in defining the Terms of Reference for the ASR-PER and should relate to areas where significant information gaps exist, where severe under-funding is suspected or where doubts about the effectiveness of policy and government interventions require a closer look and an in-depth analysis.

iv. An extensive Annex, which could also be classified as "Volume II" since it is readable on its own, contains the basic data and basic information about sector structure and performance. This Annex requires annual updates and is, in part, also meant to inform readers that are not so familiar with the agricultural sector in Tanzania. Country-based staff and close followers of the sector and sector policy would only look for changes from one year's annex to the next year's version.

    This Annex (Annex 1 in this report) will be updated (rather than re-written) for each annual edition of the ASR-PER. The consultants will provide all spreadsheets to those tasked to produce the next year's report. The annex and spreadsheets will clearly identify the sources so that series can be updated with a reasonable degree of consistency.

Establishing the basic data on agriculture and collecting and organising spending data in adequate detail was a major task and challenge. A particularly high share of the work went into this annex. It should be much less time consuming in future ASR-PER rounds.

2. Key Characteristics and Recent Developments

Most of the information presented in this section is taken from Annex 1, which provides the underlying data and sources. This section serves to highlight main characteristics of the agriculture sector and related public spending with a focus on recent developments. While the presentations in Annex 1 are essentially reporting the numbers and characteristics, this section adds some interpretations.

2.1 Key Characteristics

Real Sector

Agriculture is still the main sector of employment and main source of income for the majority of Tanzania's population. Agriculture (defined here as including crops, livestock, production forestry and fishing) contributes about 28 percent to GDP and is responsible for 33 percent of total value-added (all sectors' value-added before adding indirect taxes). The share is no longer declining.

The sector is characterized by a high degree of diversification. While maize, cassava and rice are grown on a large share of the area under cultivation, official statistics list 31 crops with each more than 10,000 hectares planted. In total, about 9 million hectares are under crop cultivation. The vast majority of farmers are full-time farmers.

Internal trade with agricultural products is governed by market mechanisms in principle. Exceptions are some export crops for which crop boards exist and the market for maize. Maize exports were frequently banned in order to ensure sufficient supply to the domestic market and to protect consumers from spikes of world market prices. The National Food Reserve Agency (NFRA), explicitly not designed as buffer stock to regulate prices, buys significant quantities of maize frequently at above-market prices from farmers.

Public Expenditure

Public expenditure on agriculture appears in the budget mainly as recurrent and development spending of the Ministry of Agriculture, Food Security and Cooperatives (MAFC) and the Ministry of Livestock and Fisheries Development (MLFD). Other central-level government institutions also provide public goods to the sector, albeit at low levels. However, a large portion of services to farmers and agriculture is provided by local government authorities (LGAs) and financed through their budgets. Districts and Councils receive grants from the central budget, which appear under the Votes of regions. The central budget documentation does not specify the amount for agriculture, but the Prime Minister's Office – Regional Administration and Local Government (PMO-RALG) provides summary statistics on expenditure on agriculture for some years. The amounts spent by

LGAs on agriculture are significant. Fifty-five percent of the total personnel costs of agricultural ministries and LGAs are spent at the district level. The share of non-personnel recurrent costs absorbed by LGAs is much lower.

While the agriculture sector receives substantial foreign aid, only a small and variable portion of it appears in budget estimates and financial statements. Most bilateral donors' spending is not captured. The quality of data contained in the Aid Management Platform is too weak for meaningful interpretation.

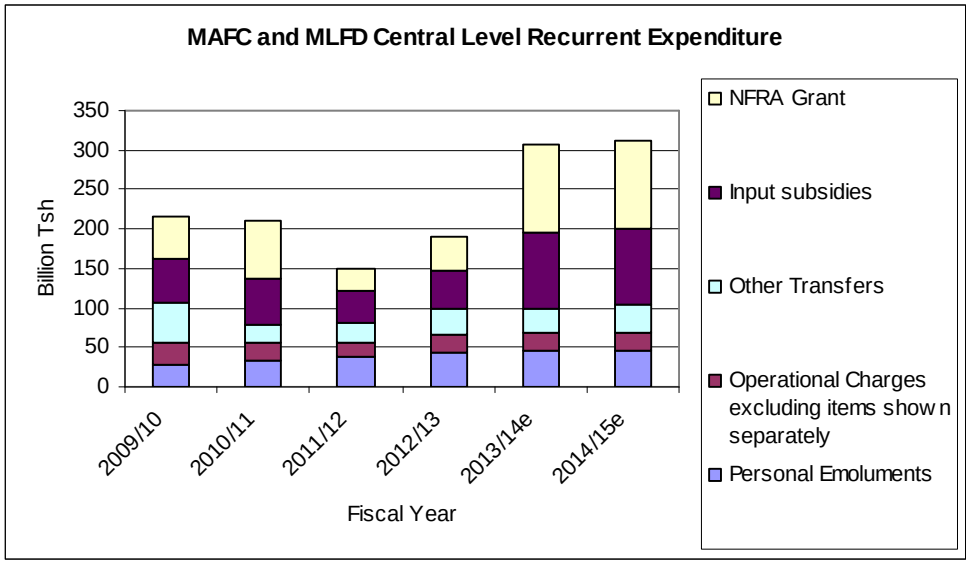
2.2 Recent Developments during the period 2011-2014

Public Spending

Government expenditure under the Votes of the two main ministries (MAFC and MFLD) and agricultural spending by districts has increased recently, but the increase is driven by outlays for input subsidies and grants to the National Food Reserve Agency (NFRA). A full comparison is, however, not possible because of lack of data on district spending after FY 2012/13.

The extent of expenditure on the NFRA, input subsidies and other transfers to autonomous government institutions (labelled "Special Expenditure") is shown in Figure 1 below. Note, though, that the data for the last two years refer to approved initial estimates, while data for earlier years refer to actual expenditure. Special factors have prompted the increase of NFRA grants and the expenditure on input subsidies, which are discussed in a subsequent section of this report. Expenditure on personnel and other recurrent charges except the "special expenditure" has increased very little since FY 2012/13 (see Table 1). Considering that the data for the last two years refer to estimates and taking into account the tendency to under-spend budgets, and also considering the effect of inflation, the normal expenditure at central level is declining.

Figure 1: MAFC and MLFD Central-Level Recurrent Expenditure



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Source: Budget Estimates, various years.

Note: "Special Expenditure" is defined as grants to NFRA, spending on input subsidies and transfers to other government agencies and international organisations.

Table 1: MAFC and MLFD Central-Level Recurrent Expenditure

Million Tsh

	2009/10 Actual	2010/11 Actual	2011/12 Actual	2012/13 Actual *	2013/14e Estimates	2014/15e Estimates
Routine Expenditure						
Personal Emoluments	28,419	34,159	38,897	41,888	44,757	45,598
MAFC	16,953	18,490	21,659	25,167	26,328	27,169
MLFD	11,467	15,669	17,238	16,721	18,429	18,429
Operational Charges excluding items shown separately	27,046	22,282	17,545	25,203	23,722	22,449
MAFC	11,673	9,781	7,174	16,368	14,516	14,916
MLFD	15,373	12,501	10,371	8,836	9,207	7,533
Total Routine Expenditure	**55,465**	**56,441**	**56,442**	**67,091**	**68,479**	**68,047**
Special Expenditure						
Input subsidies MAFC	54,963	56,902	39,893	47,858	97,014	96,900
Input Subsidies MLFD	332	149	26	127	106	37
NFRA Grant	54,657	74,383	28,134	42,423	110,400	111,254
Other Transfers	50,761	22,436	24,269	32,432	30,596	35,401
Total Special Expenditure	**160,714**	**153,870**	**92,323**	**122,839**	**238,115**	**243,592**
Total MAFC and MLFD Recurrent Expenditure	216,179	210,311	148,765	189,930	306,594	311,639

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Source: Budget Estimates, various years.

Notes: See Annex Table 9.

The levels of district spending are significant compared to central-level recurrent spending excluding the special expenditure (Table 2). Development spending by districts, also shown in the table below, are added in the table because this item ensures many routine

activities at local level. It is not clear whether the districts' development expenditure shown in the statistics provided by PMO-RALG on its website includes the foreign component.

Table 2: Recurrent Expenditure on Agriculture and Ratio to Agricultural GDP (Including LGA Spending)

Million Tsh

	2009/10 Actual	2010/11 Actual	2011/12 Actual	2012/13 Actual *	2013/14e Estimates	2014/15e Estimates
Central recurrent routine expenditure	55,465	56,441	56,442	67,091	68,479	68,047
Districts - recurrent		37,098	48,365	58,652		
Districts - development		69,631	56,227	34,909		
Total		163,170	161,034	160,652		
AgGDP (value-added) [Tsh billion]		9,429	11,675	13,780		
Public Recurrent Expenditure / AgGDP		1.7%	1.4%	1.2%		

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Source: Budget Estimates, various years for central-level expenditure, PMO-RALG website for district spending.

Note: AgGDP shown refers to the end year of the fiscal year, e.g. public spending in FY 2012/13 is set in relation to AgGDP in 2013.

Normal recurrent spending plus district-level development spending, but excluding NFRA, input subsidies and other transfers, amounts to 1.2 to 1.7 percent of agriculture's contribution to GDP. The ratio is declining because agriculture's contribution to GDP is growing while public expenditure on agriculture in this definition stagnates.

A substantial share of the MAFC budget that remains after input subsidies and grants to NFRA goes to technology-enhancing expenditure, defined in this report as the total of expenditure on research, training, the Plant Breeders' Unit, mechanisation and recurrent expenditure of the Irrigation and Technical Services Unit. These absorb approximately 40 percent of the total MAFC budget excluding transfers to NFRA and input subsidies (Table 3).

Table 3: Technology Enhancing Expenditure in MAFC

Million Tsh

	2009/10 Actual	2010/11 Actual	2011/12 Actual	2012/13 Actual	2013/14 Approved	2014/15 Approved
MAFC PE	16,953	18,490	21,659	25,167	26,328	27,169
MAFC Op Charges excl. input subsidies	11,673	9,781	7,174	16,368	14,516	14,916
MAFC Transfers excl. NFRA	45,606	19,033	19,454	17,388	19,988	28,332
Total MAFC excl. input subsidies and NFRA	74,231	47,303	48,288	58,922	60,831	70,417
of which technology enhancing	17,076	18,263	22,400	28,641	29,073	27,953
Technology enhancing as of MAFC w/o big spenders	23.0%	38.6%	46.4%	48.6%	47.8%	39.7%

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Source of data: Budget Estimates, various years.

Note: The low percentage in FY 2009/10 is due to unusually high transfers under the Crop Department in that year. No immediate explanation for this figure was available to the authors.

The cost of extension services is contained in district budgets and not shown separately from other charges of district-level agricultural services. The share of extension and technical services is likely to be substantial.

The cost of input subsidies (NAIVS) is not considered as technology-enhancing expenditure here. Some may claim that, by design, the purpose NAIVS is to improve technology and yields as well. But it is debatable how efficient and effective the expenditure actually was.

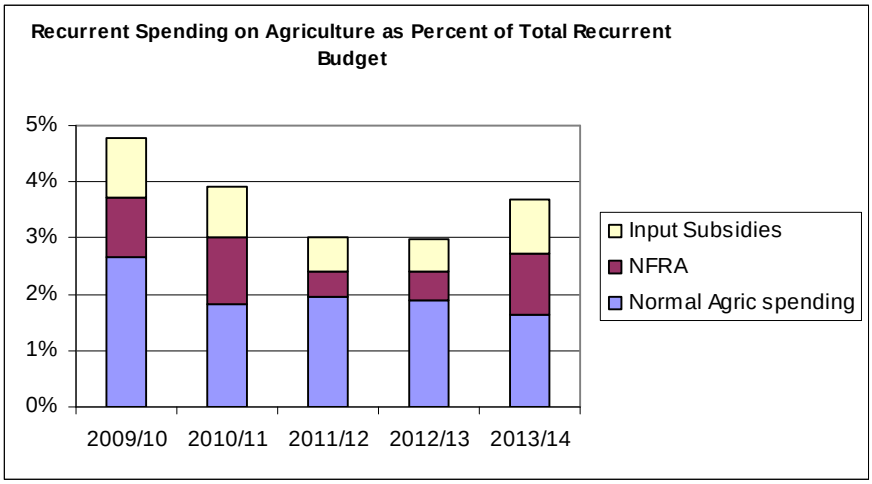
Compliance with the target of allocating ten percent of the budget to agriculture cannot be assessed in full detail and coverage. The main difficulties and constraints are:

- Data on spending by development partners on agriculture are partial and not reliable. The total spending by development partners cannot be assessed.
- Data on overall and on agricultural spending by districts are available only until FY 2012/13.

Therefore, the ratio could only be calculated for recurrent expenditure, and spending by districts on agriculture in FY 2013/14 was estimated by way of a simple guesstimate (plus ten percent). Total recurrent expenditure was defined excluding debt service.

The result shows that normal recurrent spending on agriculture, without the “big spenders” NFRA and NAIVS, amounts to 2 percent of total recurrent spending or below. The trend appears to be declining, but this may also be due to special factors. Including outlays for NFRA support and input subsidies, agriculture absorbs between 3.0 percent and 3.7 percent of total recurrent expenditure (excluding debt service) in the four years 2010/11 to 2013/14. The increase in the budget for FY 2013/14 is due entirely to increases of spending on NFRA and input subsidies.

Figure 2: Recurrent Spending on Agriculture as Share of Total Recurrent Budget



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Source: see Annex 1 Table 12.

Note: Data include spending by LGAs on agriculture (for 2013/14 estimated). Data for 2013/14 relate to approved expenditure.

Budget execution rates for the two central ministries were well below 100 percent for the last two fiscal years 2012/13 and 2013/14. The year 2013/14 was generally worse than the year before because actual revenue collected amounted to only 88 percent of the estimate, and total recurrent expenditure reached only 87 percent of what was planned and initially approved. The execution rates for agricultural ministries were still lower, except with regard to MLFD for recurrent expenditure in FY 2013/14.

The figures for MAFC must be interpreted with caution, though, because the bulk of recurrent spending relates to input subsidies and grants to NFRA. Whether recurrent expenditure on ordinary services and research and training in particular was equally affected can only be determined by looking at numbers by vote and item.

Table 4: Budget Execution Rates

	Overall	MAFC	MLFD
2012/13			
Domestic revenue	92%		
Recurrent expenditure	95%		
Agriculture Central Level			
Recurrent		84%	80%
Development local		41%	48%
Development foreign		97%	80%
2013/14			
Domestic revenue	88%		
Recurrent expenditure	87%		
MAFC / MLFD			
Recurrent		71%	90%
Development combined		82%	40%

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Source of data: 4th Quarter Budget Execution Reports 2013 and 2014.

Note: The 2013/14 Execution Report no longer distinguishes between domestic and foreign-financed development expenditure.

Policy Changes

Several policy changes have occurred in recent years. Some of the more significant ones are listed below.

As of July 2014, the input subsidy programme NAIVS (National Agricultural Input Voucher Scheme) is discontinued. The scheme has been in full operation since FY 2009/10. It was co-funded by the World Bank and had attracted international attention and praise because of some of its key characteristics, namely:

- Market friendliness: farmers purchased subsidised inputs from agro-dealers, training of agro-dealers was part of the scheme.
- Vouchers were provided to farmers for a period of up to three years. After this, farmers were expected to “graduate” and buy inputs on their own without subsidy if they found the use of improved seeds and fertilizer beneficial. The scheme was meant to allow farmers to experiment with modern inputs with reduced risk.
- The programme was defined for a limited and specified period from the outset.

- NAIVS was targeted to small farmers with potential to become producers focused on markets and on selling their produce. For this purpose, it was initially restricted to regions with agricultural potential (excluding particularly dry areas). Inputs were provided only for a small area of up to one acre. Vouchers were given out only for seeds and fertilizer.
- Farmers had to pay an estimated 50 percent of the cost of inputs themselves.
- Vouchers were denominated in monetary terms, not in percentage terms, and the number of vouchers was defined in each year. Thus, the budgetary impact could be assessed before-hand.
- A hierarchy of voucher committees was set up in order to avoid elite capture.

Judging from the rules, the scheme was meant to push adoption of modern technology by small farmers; it was not meant as a social programme for supporting the income of small subsistence farmers.

The scheme was now ended because (i) the World Bank support came to an end, and (ii) Government was of the opinion that a sufficient number of farmers had been exposed to modern inputs and would therefore continue to use fertiliser and improved seeds if this increases their incomes.[2] Another reason may have been the tendency to loosen the rules and expand the target area to low-potential agricultural locations in reaction to political factors and equity considerations.

As a follow-up measure, a scheme to provide loans for inputs at subsidised interest rates, which is based on group lending, is being set up. However, the new scheme is not yet fully operational. It appears that banks are reluctant to participate because of risk considerations and lack of confidence that the interest rate subsidy will be paid promptly.

In spite of the change, the allocation for the respective budget line, which has been in the tune of Tsh 100 billion per year, is not reduced. Officials explain this by the need to pay off debts to agro-dealers arising from vouchers issued in the period prior to June 2014 and not redeemed yet.

The transition from a voucher-based to a credit-based scheme is appealing and has its logic. However, the new scheme does seem to require more thought and practicable implementation rules.

NAIVS and the successor scheme are discussed in more depth in Chapter 3.1.

The National Food Reserve Agency (NFRA) appears to be quietly changing its role. When it was set up, it was explicitly not designed as a buffer stock and not mandated to stabilise prices. In the wake of the bumper harvest of the 2013/14 season, however, NFRA has stepped up its maize purchases significantly over and above the usual level, and has leased storage capacity from the private sector in order to supplement the facilities it owns.

[2] These arguments transpire from the Budget Speech 2014 of the Minister of Agriculture and interviews.

NFRA stock was set at a maximum level of 200,000 tons of grains; by September 2014, it held 300,000 tons.

In addition, NFRA is reported to pay farmgate prices well above prevailing market prices (which are low in view of the good harvest).

This silent change of intervention logic has two problems: first, it implies a very significant budgetary impact for financing the stock and for covering possible losses when NFRA is forced to sell maize at prices below the purchase price. Second, leasing storage capacities from the private sector implies that less maize can be stored by private operators; a substitution effect may take place.

The responsibility for irrigation has again changed. Initially and up to fiscal year 2010/11, irrigation was under the Ministry of Water. It was then shifted to MAFC. In the latest budget 2014/15, a National Irrigation Board appears with its own, new Vote.

New policy initiatives in the agricultural sector have emerged. After signing the CAADP Compact in July 2010, a sector investment programme **TAFSIP** (Tanzania Agriculture and Food Security Investment Plan) was finalized in October 2011.

The **"Big Results Now" (BRN)** initiative, which covers all sectors and also agriculture, was prepared in 2013 by way of so-called laboratories with support of Malaysian advisors. The BRN initiative aims primarily at setting focused and visible targets by which the performance of sector managers are assessed. The Presidential Delivery Bureau has set up a monitoring structure with dedicated offices at the Presidency and in each ministry. Implementation of the BRN initiative, however, is under the responsibility of the respective ministries. BRN has a cost estimate, but does not have parallel budget allocations. Additional details are shown in Chapters 3.3 and 3.4.

The **SAGCOT (Southern Agricultural Growth Corridor of Tanzania)** was set up in 2010 as a public-private partnership arrangement which operates an investment facilitation office called the SAGCOT Centre. Investors have to adhere to a set of principles, one of which is the obligation to involve small-scale farmers for instance by way of outgrower schemes. The office is operational, staff is in the process of identifying investment opportunities and marketing Tanzania as a place with unused agricultural potential attractive to investors at international fora. A catalytic fund, which is the second component of SAGCOT, has not yet been set up.

extension block grant; ## earmarked grants to agriculture for districts?

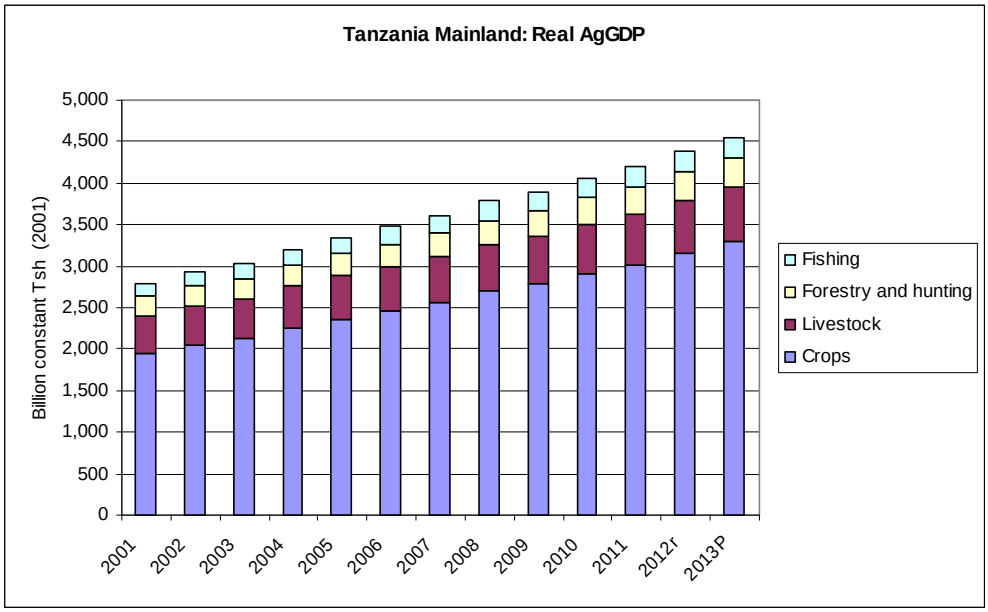
In October 2013, the Government adopted a new Agricultural Policy.

Finally, the Agricultural Sector Development Programme ASDP, which has been extended, has now come to an end. The ASDP is the main implementation instrument of the Government and the basis for support from Development Partners through a sector basket. ASDP 2 is under preparation.

Agricultural Production Trends

The contribution of agriculture to real GDP shows regular growth even in real terms. The crops subsector generates 68 percent of agricultural GDP in current prices in 2013, while livestock contributes 17 percent. Fifteen percent relate to fishing and forestry.

Figure 3: Real Contribution of Agriculture to GDP

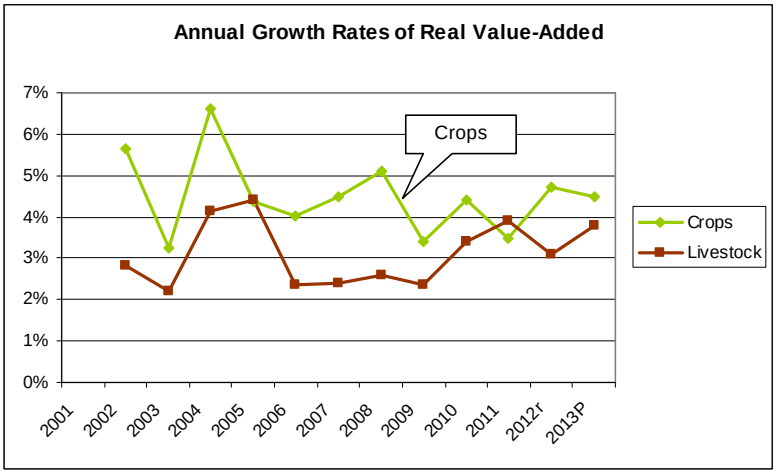


h:\.projects\AgPER-TZ\calc\GDP-tzm-c.xls – GDP-constant-combined

Source of data: Sources: Bank of Tanzania: Quarterly Economic Bulletin, various editions up to June 2014, and National Bureau of Statistics: Statistical Survey 2013.

Real agricultural GDP continues to grow regularly. Growth rates are above the rate of population growth, but less than the target of six percent (target of the Maputo Declaration and CAADP strategies).

Figure 4: Annual Growth Rates of Agricultural Real Value-Added



h:\.projects\AgPER-TZ\calc\GDP-tzm-c.xls – GDP-constant-combined

Source of data: Sources: Bank of Tanzania: Quarterly Economic Bulletin, various editions up to June 2014, and National Bureau of Statistics: Statistical Survey 2013.

The observed growth continues to be driven by expansion of the area under cultivation. Crop yields per hectare do not show significant improvements. Yields observed in the 2012/13 agricultural season stand at about 1.3 tons/ha for maize and 2.4 tons/ha for paddy. More recent data are not yet available. Details are shown in Annex 1.

Unfortunately, the statistics do not allow to distinguish between irrigated and rain-fed rice, and do not distinguish by farm size. Note that the bumper harvest 2013/14 is not yet reflected in available statistics.

Statistics about land use by crops and production quantities is not as robust as one would hope: series published in different places show unexplicable discrepancies, time series show peaks and troughs the cause of which remains obscure. They are shown in Annex 1 in Tables 3 and 4. Over the period 2007 to 2013, they point to the following aspects:

- Total area planted with annual crops has expanded consistently.
- The area under maize and sunflower has increased considerably.
- Cassava data do not appear to be very consistent, there is little expansion.
- While maize production increased enormously, cassava production is declining.

Because of insufficiency of data, some vexing questions cannot be answered. For example, it would be important to know whether the increase in maize production has gone hand-in-hand with a reduction of cotton or cassava. For sunflower, the question whether this production increase was on small or large farms remains open.

3. Selected Issues

3.1 Increasing Usage of Improved Inputs for Higher Productivity

Land productivity for major crops stagnates, and most small-scale farmers in Tanzania do not use improved seeds and do not apply chemical fertilizer. A voucher-based subsidy scheme designed to increase productivity and supply of food was introduced starting from the 2008/09 agricultural season, but phased out after the 2013/14 season. A new scheme, based on subsidised credit, is being introduced.

This section provides a closer analysis of the schemes and discusses their suitability to achieve the objective and financial sustainability.

3.1.1 Rationale of Government Interventions on Input Usage

Strong increases in the use of improved (and often hybrid) seeds combined with higher use of chemical fertilizer were the essential ingredients of the green revolution in many parts of the world. In Tanzania, however, as well as in many other parts of Africa, most small-scale farmers do not buy improved seeds and do not apply fertilizer. Even those who do apply the inputs do not follow the experts' recommendations. Where agricultural production grows, it is often because of increases of planted area rather than increased yields per hectare. As the population continues to grow and arable land becomes scarce, improving land productivity becomes crucial for supplying food. Furthermore, improving rural incomes derived from agriculture is key to reducing poverty.

The rationale for government interventions to enhance yields is based on the assumption that production would increase and farmers would benefit by more input intensive production methods. It is then based on the assumption that, in spite of potential economic benefits, farmers do not use these inputs because of one or several of the following factors:

a) Farmers are not fully aware of the benefits of using improved seeds and chemical fertilizer.

b) Farmers do not have the knowledge and expertise required to switch to input-intensive production methods.

c) Product markets for additional surplus are not accessible for small-scale farmers.

d) Input markets are not well developed, resulting in low availability and abnormally high prices of inputs. Particularly with regard to fertilizer, the cost of transport and financing costs at the input dealer level are significant. When competition is weak and risk is high because demand is difficult to predict, traders' mark-ups tend to be high.

e) Farmers may not have access to seasonal loans and therefore cannot purchase inputs even if they know about the benefits. Financial services are not well developed and farmers with financial surpluses they can use for the purchase of inputs have difficulties in keeping them safe until the time when inputs need to be paid for.

f) Exposure to risks of low rainfall or low produce prices increases with the input intensity of farming.

Often, several of the above-mentioned constraining factors are at play. At the same time, it is not always clear that farmers would actually be able to increase their income by switching to high-input production methods – sometimes, it is assumed, but not well assessed.

An important motivation for addressing the issues is to ensure the survival of the small-scale farming sector. Large commercial farms, when they are well managed, succeed in achieving higher hectare yields. In order to prevent marginalisation of small farms in view of increasing food demand, it is essential for these to remain competitive and improve their land productivity.

3.1.2 NAIVS

Design features

The National Agricultural Input Voucher Scheme (NAIVS) was introduced with the 2008/09 agricultural season as one attempt to address several of the above-mentioned constraints. NAIVS replaced an earlier scheme of transport subsidies for fertilizer, which was abandoned because the subsidy became marginal in view of the increasing fertilizer prices in 2008. NAIVS was inspired by a similar scheme in Malawi.

Judging from its design, NAIVS aimed at giving small-scale farmers an opportunity to try out improved seeds and chemical fertilizer at reduced cost and risk for a limited period of time. Simultaneously, NAIVS included efforts to develop input markets in order to reduce supply costs and enhance competition.

Some noteworthy design features are as follows:

i. It was targeted to small farmers: only farmers with up to one hectare of land were eligible, and the subsidy only covered inputs for one acre (0.4 ha).

ii. Farmers, however, should have potential to develop. Design elements to achieve this were the requirement that farmers assume about 50 percent of the cost of inputs (thus excluding farmers with no capital on their own) and was initially restricted to regions with agricultural potential (relatively dry regions were excluded).

iii. Farmers were expected to graduate after a period of three years, with the hope and expectation that they would continue to acquire inputs at their own costs after

they have been able to see the positive effects and learned how to adapt farming methods. The exit strategy was defined right from the beginning.

iv. The scheme was targeted to two crops (rice and maize) and only two types of inputs (improved seeds and fertilizer).

v. Extensive training was provided to existing and potential input traders in an effort to improve availability and enhance supply chain efficiency. The scheme was market-friendly in that it relied on private agro-dealers to supply the inputs rather than government institutions supplying the goods and thereby marginalising private traders.

vi. A hierarchy of voucher committees was set up in order to distribute the limited number of available vouchers to suitable farmers while avoiding elite capture of the benefits.

vii. The number of vouchers to provide and the regional distribution were determined well ahead of a growing season. This allowed traders to estimate demand and stock the required level of inputs. It also avoided budget overruns.

These features reflected the state-of-the-art design of subsidy schemes of that time, and NAIVS received a certain amount of praise because of that.[3]

The features addressed several of the constraints that would normally prevent farmers from using modern inputs. First, NAIVS reduced the risk, but only during the assumed learning period. Second, it explicitly addressed supply constraints by way of making demand more predictable and by providing training to agro-traders. Third, but more indirectly, NAIVS allowed farmers to accumulate some surplus so that they can use own savings to finance the following season's input requirements.

But there are other factors that are not explicitly addressed. The two important ones are, first, that NAIVS did not directly improve financial services available to farmers, nor is there an explicit link to a parallel programme. Second, the requirement of better and more extension services to accompany the expected change of technology was not addressed (although it may have been mentioned in the programme document and conceptual papers).

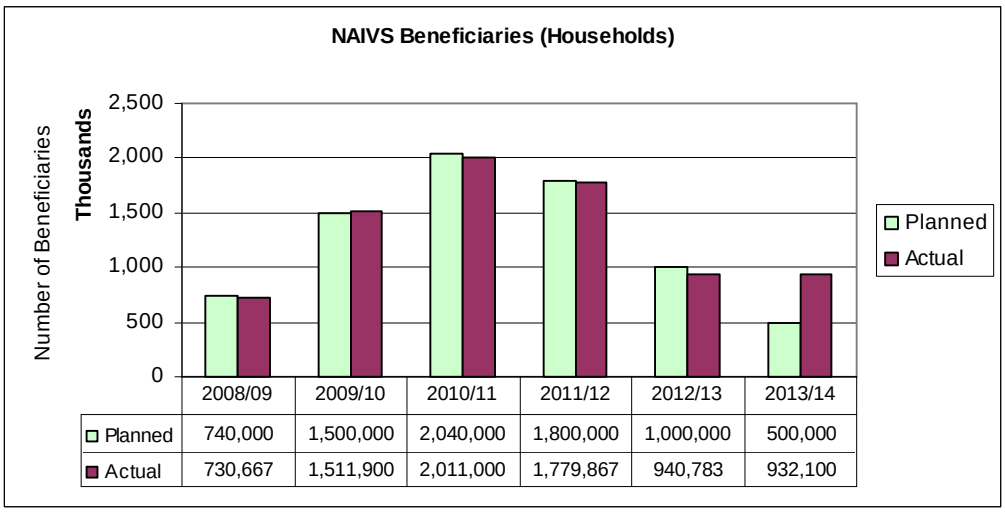
Coverage

The tables and charts below give an idea about the rate of implementation of the NAIVS scheme. The underlying data are taken from the PER-NAIVS study published in February 2014, which are quoted as originating from MAFC.[4]

[3] See Wanzala-Mlobela,Maria and Porfirio Fuentes, and Solomon Mkumbwa, (2013). Practices and Policy Options for theImproved Design and Implementation ofFertilizer Subsidy Programs in Sub-Saharan Africa. NEPAD Agency Policy Study.

The planned number of beneficiaries (presumably in the original project design) was rather well adhered to, except for the last 2013/14 season. The increase is due to the expansion of the scheme to more regions than was initially planned and the fact that a number of households did not "graduate" and continued to receive vouchers, either directly or by way of another family member applying for vouchers for the same piece of land. Thus, more vouchers had been given out in 2013/14 than per the initial plan.

Figure 5: NAIVS Beneficiaries (Households) Planned Versus Actual



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

h:\.projects\AgPER-TZ\calc\NAIVS-vouchers.xls – beneficiaries

Source: PER-NAIVS, 2014, p. 21.

Notes:

It appears from a comparison with detailed annex tables of the PER-NAIVS report that the actual number of beneficiaries was set as the highest number of vouchers issued among seeds, basal dressing and top dressing fertilizer. In principle, every beneficiary should have received a package of three vouchers for seed, basal fertilizer and top dressing. The numbers should be equal, but aren't according to the annex tables. On average over the sample, households received only 2.6 vouchers instead of 3. Only 85.5 percent of the vouchers received were actually used.

Therefore, the actual number of beneficiaries was presumably some 10-15 percent lower than indicated in the table above.

Data on the value of vouches are only available for some years. As Table 5 shows, the subsidy on seeds makes up about 30 percent of the total value of vouchers issued. The bulk of the seed subsidy is for hybrid maize.

[4] Some aspects give reason to caution about the reliability of these data, though. For example, the number of vouchers handed out for basal dressing is exactly equal to the number of seed vouchers for the three cropping seasons between 2010/11 and 2012/13. The listing of distributed vouchers by region contains 20 regions in the first year, 15 regions in the second and 24 in the third year. In the table for 2012/13, one region (Njombe) appears twice with different values. Fluctuations in the number of vouchers distributed in specific regions across years is difficult to interpret.

Table 5: Number and Value of Vouchers Under NAIVS

Values in Million Tsh

		2010/11	2011/12	2012/13	2013/14
Hybrid Maize Seeds	No. of vouchers issued	1,575,082	1,250,852	515,755	
	Value	31,502	25,017	10,315	
Open Pollinated Maize Seeds	No. of vouchers issued	386,349	317,564	312,079	
	Value	3,863	3,176	3,121	
Paddy Seeds	No. of vouchers issued	49,570	66,088	112,949	
	Value	595	1,200	1,355	
Fertilizer - Phosphate	No. of vouchers issued	2,011,001	1,634,504	940,783	
	Value	52,286	47,629	41,228	
Fertilizer - Nitrogen	No. of vouchers issued	2,009,293	1,658,883	940,783	
	Value	40,424	33,606	31,820	
Total value of vouchers		128,670	110,628	87,840	
of which seeds		35,960	29,393	14,791	
Memorandum items					
Cost of subsidy program according to budget documentation (see Annex 1):		129,168	139,360	72,706	120,013
of which					
Local Funding		56,895	39,892	47,842	96,914
World Bank		72,273	99,468	24,864	23,098
Beneficiary households		2,011,000	1,658,883	940,783	932,100
Value of vouchers/household		63,983	66,688	93,369	
Subsidy expenditure/household		64,231	84,008	77,282	128,755

File h:\.projects\AgPER-TZ\calc\NAIVS-vouchers.xls

Source of data: PER-NAIVS study, annex tables

Notes:

Budget data for 2013/14 refer to approved budget estimates; actual expenditure is shown for earlier years

The number of beneficiary households for 2013/14 is taken from the main text of the report. The number of beneficiaries for 2011/12 in this annex table deviates from the number provided in the text table. The contradiction is in the source, where two different tables report different numbers.

The table shows vouchers issued; the number of vouchers actually used may be lower since farmers have to pay approximately 50 percent on their own when the purchase the seeds and fertilizer.

Implementation Issues

In spite of the good design features of NAIVS, implementation problems occurred. The more serious ones are discussed below.

First, serious delays occurred in the process of redemption of vouchers. Some delays were due to organisational issues, but most were caused by budget constraints. As a result, agro-traders could not pay their suppliers in time, which in turn had to incur higher financing costs than initially calculated. In spite of the discontinuation of NAIVS after the 2013/14 season and fiscal year, a major factor behind the still high amount budgeted for input subsidies relates to the need to clear arrears due to traders and input suppliers from vouchers issued in previous years.

Second, opposition against the scheme appears to have gained weight because of instances of fraud and irregularities reported by the news media. According to the NAIVS study published in 2014, the amount of leakage due to fraud was not enormous, but the situation may have worsened as the scheme grew older. Fraud also occurred by way of

some agro-traders selling sub-standard seeds and by selling fertilizer that did not contain the nutrients it was supposed to contain. A strong certification and inspection system would have prevented this, but it was not in place.

In addition, political pressure led to a dilution of the initial philosophy. The scheme was interpreted as a means of support for the poor small-scale farmer rather than a mechanism to push modernisation of small-scale farms with access to markets and a minimum of own capital. As a result, the scheme was expanded to regions with less agricultural potential, more difficult access to markets and less prospect for fertilizer application increasing yields sufficiently to cover the cost of purchased inputs. Since the number of vouchers that could be issued was constrained by initial planning and budgetary constraints, it was necessary to spread the vouchers more thinly across more regions.

At the village level, the voucher committees somehow attributed vouchers to farmers and their families even after they should have graduated from the scheme after three rounds of receiving vouchers. Revealing in this context is the finding of the NAIVS Impact Survey that only six percent of the beneficiaries were aware that the subsidy would be provided for three years only. Most assumed that the assistance would be granted indefinitely.

Effects and Benefits to Farmers

The evaluation study of NAIVS concludes that one of the three major goals of the programme, which was to increase national grain production for maize and rice, was essentially fulfilled, as at least an additional 2.5 million tons of maize and rice grain have been produced by smallholders because of the availability of vouchers.[5] It is not clear in the report, though, over which period this refers to; presumably, one should be talking about approximately 800,000 tons per year. This encouraged the government in 2012 to lift the ban of exports on grain introduced in 2006, enabling Tanzania to export maize to neighbouring countries.[6]

The second objective was to encourage small-scale farmers to try out the use of improved seeds and chemical fertilizer at reduced cost and thereby reduced risk for a limited period of time. The assumption was that the farmers, once seen and experienced the benefits of the higher inputs and at the same time after being able to built up some capital, would graduate and buy these inputs on their own. The network of agro-dealers built up during the period of NAIVS should ensure that inputs are available on the market..

More than two million farmers have been participating in the programme, however, with mixed results. In a survey conducted over three years, comparing average maize yields of beneficiaries using vouchers against non beneficiaries the average gain in maize yields in priority areas (high rainfall districts) was more than 100 percent (925 kg/ acre versus 454

5 PER-NAIVS Study, 2014, page 8.

6 *ibid.*

kg/acre) and nearly 90 percent (732 kg/acre versus 387 kg/acre) in lower rainfall districts.[7] The average paddy yields increased by 263 kg per acre.[8] But the increase was from a low starting point.

Table 6: Effects of NAIVS on Land Productivity and Comparison With Input Costs

2011/12 cropping season	Higher Rainfall District	Lower Rainfall District
Average maize yield without vouchers (kg/acre)	453.6	386.5
Average maize yield with vouchers (kg/acre)	925.0	732.3
Yield gain obtained from the use of vouchers (kg/acre)	471.4	345.8
Increase of yield (percent)	103.9%	89.5%
Average farmgate price of grain (Tsh)	300	550
Value of yield gain (Tsh) at farmgate prices	141,420	190,190
Estimated full cost of inputs (Hybrid Maize) (Tsh)	145,000	
of which covered by vouchers (Tsh)	72,000	

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Source: PER-NAIVS Study, 2014, p.56; cost estimate on the basis of provided annex tables.

Note: The cost of inputs was estimated as twice the value of vouchers provided for a set of hybrid seeds, basal and top fertilizer.

It must be noted, though, that even under the voucher system, the average yields per acre were still comparatively low for more than 50% of the participants. According to the NAIVS Impact Surveys, 2011, almost 30 percent of the beneficiaries still produced less than 500 kg maize per acre.[9] At the other end of the scale, however, some NAIVS beneficiaries are said to produce more than 2,000 kg per acre, which, if true, would be high by any standards.

Depending on the level of grain prices and prices of seeds and fertilizer, the benefit-cost ratio for the farmers goes quickly “from good to bad”. It was estimated that farmers producing over one ton of maize per acre will benefit from purchase of improved seed and fertilizer at full market price, but with a lower production rate at least the purchase of

[7] The methodoloy of the survey from which these figures originate was to compare a sample of NAIVS beneficiaries with another group that would be eligible in principle but was not allocated vouchers because of the limited number available for each area. The bias could be that non-beneficiaries may also have used purchased seeds and some fertilizer which they paid with their own funds. Therefore, the comparison is not between “with” and “without” inputs, but rather between “with” and “without” vouchers.

[8] Note that the yield gains shown in the NAIVS Study are significant, but not even close to what the Minister of Agriculture, Food Security and Cooperatives stated in his 2014/15 budget speech to Parliament. He said that due to NAIVS, maize yields have increased from 5 bags to 15 bags per acre (plus 200%) and rice yields increased from 4 bags to 20 bags (plus 400%).

[9] PER NAIVS Study, 2014, p.40.

fertilizer, which in comparision to improved seed is the more expensive part of the package, will become unprofitable. The above Table 6 shows, at the bottom, that average yield gains barely pay for the additional inputs in higher rainfall districts at current prices. If farmers had to pay interest on loans for the full cost of inputs, they would not benefit. Higher farmgate prices or higher yield gains would make all the difference. The benefit is greater in districts with lower rainfall because farmgate prices in these areas are signficiantly higher and even compensate for a lesser yield gain.

Therefore it is not surprising that the survey concluded that only 37 percent of the farmers continue to buy fertilizer after the three-year period of receiving vouchers, but over 50 percent continue to buy improved seed.

With regard to paddy, the conclusion of the NAIVS study is explicitly pessimistic. It states that the overall benefit-cost ratio for paddy is only 65.83 percent, which implies that "the majority of rice farmers in almost all regions will not find the inputs profitable without the subsidy".[10]

Taking into account the wide range of maize yields per acre under the voucher system, there is still a substantial margin for improvement. This could be achieved by the promoting technologies to improve fertilizer use efficiency, but also by other complementary measures like timely weed control and improved water management. For the promotion of improved technologies, a functioning extension support would be necessary, but under the NAIVS programme, extension support was limited and only 20% of the farmers received direct advice (initial survey report, Patel, 2011).

Another benefit of the programme is the improved accessibiliy to seed and fertilizer in some parts of the country. More than 2800 agro-dealers were trained and more than 700 of those have become commercial sales agents for one or more seed and fertilizer companies.

The effect of NAIVS on overall maize and rice production is difficult to assess. Assuming that 2 million small-scale farmers (the approximate peak number of beneficiaries), each cultivating one acre, were able to produce 450 kg more, the additional production would be 900,000 tons. Compared to the annual production of 5.4 million tons in 2012/13, this would be a substantial contribution. However, many other factors are not known:

- Would the farmers continue to use improved seeds and fertilizer without subsidies? Doubts are justified because the profitability of input use is marginal under current prices.
- How many of the beneficiaries would have used these inputs anyway even without subsidies?
- Did the increase of maize production take place at the expense of other crops? Did farmers switch from cotton or cassava to maize because subsidies were available?

[10] PER-NAIVS Study, 2014, p.41.

- The size of the demonstration effect remains unknown. If farmers who did not receive vouchers increased the level of improved inputs in view of the success of neighbours receiving vouchers, the effect would be greater.

3.1.2 Credit Support Scheme

Starting from fiscal year 2014/15 (July to June) and agricultural year 2014/15 (October to September), MAFC discontinued NAIVS and introduced a successor scheme based on subsidised seasonal loans for the acquisition of seed and fertilizer inputs for small-scale farmers.

The rationale for changing the approach for increasing use of modern inputs by small-scale farmers is understandable. NAIVS has been in operation long enough to fulfil its function in demonstrating the possible advantages of using improved seeds and fertilizer; therefore, the assumption that farmers know the benefits and are, in principle, prepared to apply the new production methods with higher input intensity is sound. NAIVS was at risk of being diluted in the political process, and might become a scheme to permanently support the income of small-scale farmers instead of facilitating change was imminent. The end of World Bank support of NAIVS meant that the budgetary burden of continuing the scheme would increase, which would have reduced the funding of the provision of essential agricultural services even more.

However, the paradigm change apparently came as a surprise to many stakeholders, and it was not well prepared.

Mechanisms of the New Credit Scheme

The shift of support mechanisms is drastic. The new scheme will provide subsidised loans to small-scale farmers for the acquisition of seeds and fertilizer based on group lending principles. Eligibility criteria remain similar: credit for inputs is provided for one acre only, limited to maize and rice. But farmers only have to contribute 20 percent (instead of 50 percent under NAIVS) with their own funds. The interest rate that farmers have to pay for the seasonal loan is limited to four percent; the budget will cover the difference between that rate and the market rate (currently 18-20 percent per annum). It is not clear whether the regional focus of NAIVS will still hold. However, since the new scheme relies on efficient farmers' organisations, it is likely to have an impact primarily in high-potential areas with organised farmers' groups.

The initial Memorandum outlining the new approach, dated 11 July 2014, made provision for the budget injecting one third of the expected volume of loans into the banks that subscribe to the scheme; the banks would have to provide the remaining two thirds.[11] The

[11] MAFC: Memorandum entitled "WARAKA WA MKAKATI WA UTEKELEZAJI WA MPANGO WA RUZUKU YA PEMBEJEO ZA KILIMO KWA UTARATIBU WA MIKOPO KWA VIKUNDI VYA WAKULIMA KATIKA MWAKA WA 2014/2015", dated 11 July 2014.

mechanisms for paying the interest rate subsidy were not detailed. The memorandum mentioned the role of extension services in facilitating the adoption of input use, but is not specific on this aspect. The memorandum also states that farmers should present forward contracts about the sale of the products to NFRA, the World Food Programme, processors or a contract on a contract farming arrangement between a central buyer or processor and the farmers.

The Memo mentions that the scheme will target 121 districts in 24 regions (which is essentially country-wide) and is expected to benefit 794,041 households.

From discussions held in preparation of this study, a second modality was mentioned. In areas without banks that subscribed to the scheme, groups of farmers can obtain inputs from agro-dealers on credit. Farmers will have to pay 20 percent of the cost, a grant from government covers another 20 percent; the dealer will provide the remaining 60 percent on credit at market rates. No written document describing this mechanism could be located.

The Memo does not mention the cost of the scheme. But since the number of beneficiaries is lower than at the peak of NAIVS and the subsidy will, at a maximum, amount to 20 percent of input costs, the cost to the budget should be significantly less than the cost of NAIVS was.

Implementation Issues

As of October 2014, the mechanisms for implementing the new loan scheme were apparently not at all clear. Questions arise, for instance, with regard to:

- the procedures for payment of the interest rate differential (market rate versus the 4 percent charged to farmers) to participating banks;
- the procedures for controlling sales of inputs by agro-dealers in order to determine the amounts to cover the 20 percent subsidy if agro-dealers provide credit;
- mechanisms to ensure that the 20 percent subsidy is not paid if farmers buy inputs but do not contract vendors' credit.

By the end of 2014, only some community banks have concluded contracts with the authorities about their participation in the schemes. The major banks with wide representation in rural areas do not participate, allegedly because of fear that farmers may default and that the interest rate subsidy will not be paid promptly.

The effectiveness of the new system is contingent upon the capacities of Farmers Organisations (FOs) to aggregate commodities, add value (e.g., achieve buyers' quality standards), and identify and sustainably access markets. To create or strengthen these capacities, support will be required by FOs in order to meaningfully engage their members; provide them with technical and financial skills; support production and marketing techniques, building trust; and promoting a business-oriented approach to farming.

The New Concept in Perspective

Scaling up agricultural subsidy through NAIVS resonate with CAADP- Abuja declaration[12], in which several Sub-Saharan African governments committed themselves to implement fertilizer subsidy as a way to scaling up food production. This declaration received approval of the development partners.

Compared to the list of reasons why small-scale farmers may not use inputs although they are aware of the economic benefits, this new scheme exclusively addresses the constraint of lack of access to seasonal loans combined with high interest rates. Since it builds on the NAIVS scheme, it may be implicitly assumed that the agro-dealer network is functioning and therefore no further intervention required. The scheme has the benefit that farmers can weigh the expected additional revenues from using inputs against the cost, and that farmers on marginal land (with low and unreliable rainfall in particular) would not want to incur the risk of debt they cannot amortise.

The amount of public funds used for the credit scheme is undetermined. No ceiling on the amount of government funds to be used for it is set; in principle, all small-scale farmers are eligible if they are organised in groups and contract loans through the group. The period over which farmers can make use of subsidised input credit is not defined, the scheme is open-ended "until further notice".

3.1.3 Improving the Seed Subsector

Availability of improved seeds has remained a persistent problem. This is despite of actions to liberalise the seed trade and markets, which have motivated the emergence and entry of foreign and local seed companies. Currently, there are about 65 companies engaging in seed production and marketing in the country. The amount of seed supply has increased from 15, 000 metric tons to 31,000 tons after the policy was changed. This amount is still quite below existing seed demand, but the basis for estimating "demand" in the source of assessments of "demand" is not clear.

Tanzania legislated the Seed Act in 2003; Regulations for the stakeholders engaged in seed sub-sector in 2007 were issued in 2007. However, neither national policies nor strategies defining the approaches for developing the seed subsector have been developed so far. The majority of farmers are recycling seeds.

The formal seed production system involves production of improved seeds using well defined methods and subjecting to quality inspection and certification by Tanzania's Official Seed Certification Institute (TOSCI); only then can they be supplied to the end-users.

This system is not performing well, though, owing to factors such as lack of enough technical staff, lack of modern laboratory equipment and inadequate budget fund. TOSCI

[12] There was a call for political commitment to arrest land degradation and improve crop productivity by increasing fertilizer use to at least 50 kilograms per hectare.

could fill the gap of technical staff through the use of researchers from the Agricultural Research Institutes (ARIs) to conduct seed inspection, but the ARIs themselves are also chronically understaffed. In order to meet the growing demands for seed inspection, TOSCI opts to engage subject matter specialists, authorised district seed inspectors, ward agricultural extension officers and village agricultural extension officers employed by local administrations in supervising the "Quality Declared Seed" (QDS) production. However, the insufficient coordination between TOSCI and district, ward and village-level officers lead to several distortions in the volume and quality of seed production and distribution.

In addition, the Agricultural Seed Agency (ASA), which is a government owned sole producer of basic seeds, has inadequate resources to run its seed farms. Irrigation facilities are also required in their farms; but they are inadequate. Thus, the production capacity for improved seed is limited.

Generally, the state of the seed subsector needs to be improved as part of the efforts to enhancing usage of improved inputs. Production of QDS should be increased in order to reduce the existing supply gap and ensure availability of material at reasonable prices. Provision of complementary agricultural services such as extension services, irrigation, market information etc. are incentives for adoption of improved seeds.

3.1.4 Policy Implications

There seems to be a certain amount of political "appetite" for permanently subsidising the production of the two most important grains (maize and rice) and to give access to subsidies to all small-scale farmers in an open-ended programme. The experience with the NAIVS programme has shown that domestic production reacts positively. It has also demonstrate the benefits of market-friendly solutions.

However, this is likely to be a dangerous approach. If the subsidy is small, not many additional farmers might switch to use improved and fertilizer, while many others would simply continue to apply these inputs which they would also have bought without the subsidy. If the subsidy is significant, the implications for the budget would be desastrous.

The falling energy prices are another reason to refrain from providing fertilizer subsidies at the moment. Eventually, market prices will fall with energy prices, and the demand for subsidies if prices were to rise again could be enormous.[13]

Therefore, generalised subsidy schemes on seeds and fertilizer cannot be recommended.

The new credit-based scheme remains problematic not only because of its current implementation problems. The other problematic aspect is that it would reduce the total cost of inputs only for those farmers who take on seasonal loans; it would not benefit those who manage to put sufficient own funds aside for purchasing inputs for the next season. It

[13] The price of chemical fertilizer is closely linked to energy costs because the production is energy-intensive.

is also distortive because it favours grain production over the production of other crops which might be more beneficial to farmers and contribute to the diversification of their incomes and agriculture in general.

The subsidy-based scheme seems to be based on the assumption that the key problem for farmers is the high interest rate. One may, however, argue that accessability is more of a constraint than the lending rate of financial institutions. It might be more suitable to continue efforts to widen access to financial services rather than spending time and resources on schemes which provide concessional loans for a small group.

The NAIVS experience has also shown:

- the importance of predictable farmgate prices for produce at a sufficient level,
- the need for economic analysis at the farm level in order to avoid promoting production methods and products that are not sufficiently profitable without subsidies,
- the need to complement programme to promote usage of inputs with adequate extension services and training,
- the importance of ensuring quality of seeds in terms of uniformity, defined variety and germination rates.

Fertilizer trade is and will remain a challenge because of the long lead time in ordering supply, the bulkiness and high transport cost, and price fluctuations on the world market. Ensuring access to credit for agro-dealers as well as competition in this market are important in order to ensure availability of fertilizer at reasonable cost.

Finally, it is astonishing that farming methods that use low levels of fertilizer inputs, such as conservation farming methods, do not figure prominently in agricultural strategies. The question whether it makes sense to increase usage of chemical fertilizer in order to increase production and farm incomes may need to be raised more often.

3.2 Agricultural Financing

Various efforts have been made over the years to promote accessibility to agricultural financing. These include, among others, the establishment of an agricultural window through the Tanzania Investment Bank (TIB) and the provision of credit through the Agricultural Inputs Trust Fund. To some extent, these efforts have transformed the financial landscape. However, agricultural financing remains a major problem area. This section focuses on the status of agricultural financing and significant changes since the previous sector review.

3.2.1 Volume of Lending to Agriculture

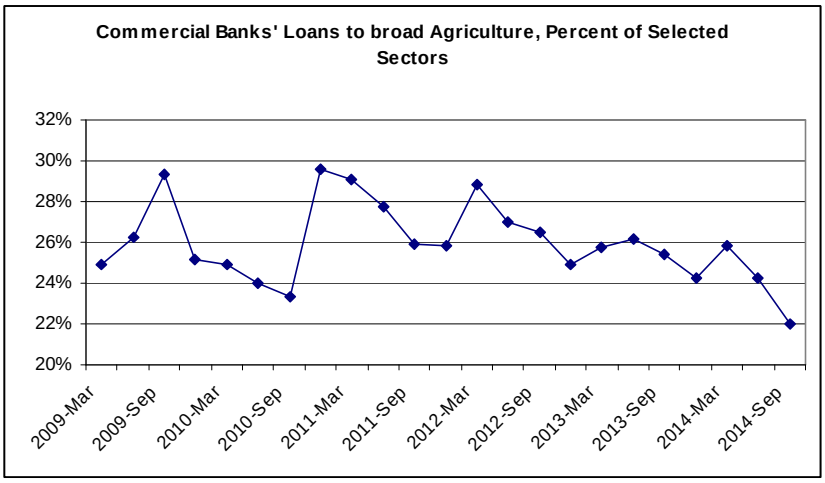
The agricultural policy of 2013 recognizes the role of financing in the modernization and development of the agriculture sector. The policy notes that unavailability of long-term

financing is a major limitation, constraining medium and large-scale investment in agriculture. Lack of access to investment financing often cited as among the factors explaining why the sector is dominated by smallholder producers who do not graduate to medium level. To address this challenge, the policy seeks to strengthen financial institutions and make them responsive to agricultural development financing need, collaborate with other actors in order to improve accessibility to actors within the sector, as well as design mechanisms for educating the public on issues related to loans and loans repayment.

Access to agriculture financings remains limited, particularly for agro-based SMEs. According to the 2011 Agriculture Finance Markets Scoping Survey (AgFiMS), out of 519,450 agri-business SMEs only 168,300 (32 percent of the total) accessed formal financial services, approximately 13 percent were served by informal financial services, and slightly over 54 percent were totally excluded from any formal or informal financial services.

The share of agriculture in commercial bank loans remains low relative to other sectors despite the relatively large share of agriculture in national GDP. The share in overall lending (measured by end-of-period outstanding loans) is declining slightly because of the higher growth in sectors like trade, education, building and real estate, but still relatively stable. The figure below illustrates a more partial indicator: the lending (outstanding loans) to broad agriculture (crops, hunting, forestry and fishing) compared to the total loans to these plus manufacturing and trade.

Figure 6: Commercial Banks' Loans to Broad Agriculture – Percent in Total Lending to Selected Sectors



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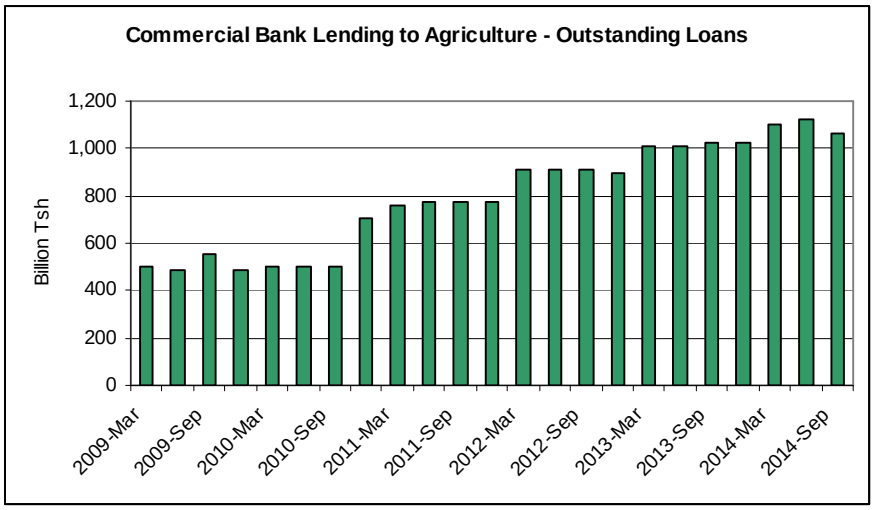
Source of data: Bank of Tanzania, Quarterly Reports.

Note: The percentage relates to the value of outstanding loans by commercial banks to broad agriculture as percentage of loans to (broad agriculture + trade + manufacturing).

Lending to agriculture, in nominal terms, has been increasing at a slow pace from 2013 onwards, as shown in Figure 7. Interesting is that there does not seem to be a significant seasonal fluctuations, which could mean that the majority of loans is investment loans

rather than seasonal loans. As usual, bank statistics do not show the agriculture-related parts in lending to trade and manufacturing. In Tanzania, published statistics do not differentiate between investment and seasonal loans.

Figure 7: Commercial Bank Lending to Agriculture (Outstanding Loans)



File h:\.projects\AgPER-TZ\calc\BankStat_BOT-QEB.xls – graphs
Source of data: Bank of Tanzania, Quarterly Reports.
Note: "Agriculture" in this chart is defined as agriculture, hunting and forestry, but without fishing.

Commercial banks' lending to agriculture (crops, livestock, hunting and forestry) stood at 7.9 percent of agriculture's contribution to GDP in 2013.[14]

3.2.2 Agricultural Credit Market

The three major banks (NMB, CRDB and TIB) all together provide about 80 percent of bank credit to agricultural sector. Only NMB and CRDB have a wide network of branches. NMB and CRDB have provided loans in particular to cash crops such as sugar, coffee, sunflower, tobacco, cotton, tailored to agriculture through outgrower schemes and the "Warehouse Receipt System (WRS; see below for details). CRDB has also provided micro-loans to small-scale farmers and traders through its associated SACCOS and the subsidiary CRDB Microfinance Bank.

The Tanzania Investment Bank (TIB) is a wholly government-owned development bank and has provided loans to agricultural producers through the Agriculture Window since 2010. Regrettably, no detailed data on TIB lending to agriculture could be obtained in the framework of this study.

[14] Loans outstanding at the end of December 2013 = Tsh 1,027 billion; GDP in current prices in 2013 = Tsh 13,034 billion.

Stanbic and the Kenya Commercial Bank (KCB) have also provided loans to agriculture although they do not have a wide network of branches.

Other minor players are the Diamond Trust Bank and Standard Chartered Bank, which together account for about 20 percent of leading to agriculture. The two banks mainly provide short-term working capital to commodity traders of coffee and cashew nuts and do not provide project finance in agriculture like three major three banks.[15]

Other initiatives that provide credit to agriculture include various interventions by development partners such as the "Small Industries Development Organization" (SIDO), the "Marketing Infrastructure Value Addition and Rural Finance" (MIVRAF) project, the government-run Agricultural Inputs Trust Fund (AITF), and the private sector through an initiative named "Private Agricultural Sector Support" (PASS). Unfortunately, the ASR-PER team could not quantify the amount of credit channelled to the sector from the development partners, due to lack of data.

There is a plethora of SACCOs which are used by the commercial banks to provide credit facilities to people without the necessary credentials to access formal loans from commercial banks. Most of these institutions target economic activities with low risk, such as trading, rather than actual farm production. However, the Agriculture Finance Market (AgFiMS) report shows that high risks facing the sector has prompted gradual innovation in insurance products in certain aspects of agribusiness. But these still remain in their incipient stage.

Main features of the current agriculture financing is limited access or affordability for small scale farmers. According to Finscope report of 2013, interest rate which is charged by formal financial institution ranges from 26.9 percent to up 115 percent, which is exceptionally high.[16] High interest rates reflect low levels of competition and difficulties in collecting debt from defaulting customers.

Agriculture sector financiers, especially for small-scale farmers, operate under a legal framework which fails to ensure quick and efficient enforcement of the contracts in cases

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15 Information taken from the Agro-industry Survey done in 2014.

16 See: International Development Center of Japan Inc. and Overseas Merchandise Inspection Co., Ltd., 2013, Data Collection Survey on Promotion of Agro-industry and Industrial Human Resource Development in Tanzania – Draft Final Report. On page 36, it states: "According to the enterprise survey, 40 out of 70 enterprises select 'high interest rates' as problem they faced when they applied for loans, followed by inadequate collateral provision, long procedures to obtain loans and inadequate approved loan amounts. 'High interest rate' issue needs be considered from two aspects. First, nominal interest rate is already as high as more than 20 percent which producers could not easily achieve from the production. Second, the interest rates applied for low credible enterprises tend to become far higher than the nominal interest rates taking into account of higher insurance fees, security deposits and taxes. Due to the additional payments, the interest rates would be from 26.9 percent to 29.4 percent in the case of NMB's SME loans to 109.1 percent to 115.5 percent in the case of FINCA's business loans which is one of the largest MFIs [Microfinance Institutions] in Tanzania."

of default.[17] The current regulatory framework is not efficiently working as it does not encourage easy client on-boarding and retention of low-income households, businesses and smallholder farmers in rural areas. These conditions compel banks and other financial Institutions to institute stringent "Know Your Customer" regulations and other high-security approaches when advancing loans. In addition, some lenders demand a compulsory loan insurance, which adds to cost of borrowing. Other financial institutions have opted to use accumulated deposits or savings as loan security and principle collateral to secure a loan facility; a good example is the National Bank of Commerce.

3.2.3 Using Outgrower Schemes

Outgrower schemes have become a successful approach for delivering financial services to smallholder farmers who are linked to a large scale farm. Under this arrangement, the central unit, which may be a large scale farm or a processing unit, provides inputs such as fertilizer, seeds and agrochemicals, machine services for cultivation and processing of produce. The central unit then becomes a buyer of the produce. Service and inputs delivery is facilitated by a financial institution through a financial loan which is provided to smallholder farmers via the central large-scale farm or processing unit. The financial underpinning of contractual arrangements improves the banks' prospect of recovering the loans.

The outgrower scheme model backed by bank loans has proven successful with sugarcane outgrowers and rice production in Kilombero. Located in a rice producing area, Kilombero Plantation Limited (KPL), under Agrica, has entered into a partnership with African Enterprise Challenge Fund and YARA international to provide loans in the form of inputs and machine services. KPL undertakes training on "System of Rice Intensification" (SRI) to farmers and provides market access. This approach facilitates improvements in product quality and facilitates smallholder farmers to access the high-end segment of the rice market.[18] However, its also worth noting that success in the two subsectors (rice and sugar cane) has been possible because of relatively high income generated along these value chains. The model therefore looks attractive to arrangements for combining production by many smallholders to serve the more sophisticated value chains which offer better prices for timely delivery and a premium for high quality.

Side-selling has often been the main problem of outgrower schemes and contract farming arrangements.[19] There is no information about how these successful schemes have approached the issue and which solution they have found.

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[17] Study on Financial Inclusion (2014).

[18] High-end markets prefer high quality rice (aromatic, ~20% broken, fresh and clean), which most smallholder producers cannot deliver in largely quantities. See: Developing Rice In Africa: Tanzania Assessment, July 2012 (commissioned by the Bill & Melinda Gate Foundation).

[19] Side-selling means that farmers do not honour the contracts with the central unit and sell their produce to another buyer. This behaviour prevents, of course, that outstanding debt is collected when the produce is sold.

3.2.4 Warehouse Receipt System

The Warehouse Receipt System (WRS) could be another mechanism to facilitate farmers' access to seasonal loans. Under this system, which became operational in the 2007/08 season, cooperatives deposit their produce with licensed warehouses. The produce is stored in bags labelled with the name of the cooperative. Of the three copies of the receipt issued when depositing produce, the cooperative gets two. One is then handed over to a participating bank which will advance loans to the cooperative against the produce as collateral. The loan, granted to the cooperative, is then distributed among the farmers on the basis of what they produced. The produce remains the property of the farmers and their cooperatives.[20]

When a buyer is found, he has to deposit the sales price with the bank that extended the loan and collect the receipt from the cooperative. With these documents, he can withdraw the produce from the warehouse.

The warehouses are privately owned and operated, but need to be licensed by the Warehouse Licensing Board. Obviously, the produce needs to be graded so that the value of the stocked bags can be assessed.

The idea of the system is two-fold. First, it allows farmers to store the produce and avoid selling in the immediate post-harvest months when prices are low, as the loan provides them with liquidity to meet living expenses. Second, the system enables farmers to earmark a certain amount of the expected revenue for the purchase of inputs for the following season. Calculations done by the Authors on the basis of price information provided by the Warehouse Licensing Board showed that, in effect, cashew farmers realised higher prices after the introduction of the WRS; these typically exceeded the indicative price, while they had remained significantly below before.[21]

Available statistics from the Warehouse Licensing Board indicate that a total of Tsh 581.3 billion was advanced to farmers via their primary cooperative societies in the period 2007/08 to 2013/14 ## check – source? ##.

Initially, this system was piloted in coffee and cotton but later implemented in other crops. Currently the system is operating in eight crops namely; cashew, cotton, sunflower, coffee, maize, paddy, pigeon peas and sesame. However, its usage for maize and paddy is insignificant: in peak years, only 2,813 tons of maize and 1,112 tons of paddy were stored in licensed warehouses (Table 7).

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[20] It remained unclear to the Authors of this report how the cost of warehousing and the risk of degradation or disappearance of the produce is covered. We presume that there is a warehousing fee charged to the cooperatives.

[21] In the calculation, prices realised were compared to indicative prices issued by government. The hunch is that the mechanism and philosophy of setting indicative prices may have changed over time.

Table 7: Quantities Received in Licensed Warehouses Under the WRS

Metric Tons

Season	Cashew nut	Coffee	Sunflower	Sesame	Maize	Paddy	Total	% Maize & Paddy
2007/08	60,803	1,488						
2008/09	54,745	632						
2009/10	71,141	7,177	3,981	289	0	1,112	83,700	1%
2010/11	120,052	7,236	9,508	628	590	263	138,276	1%
2011/12	158,521	5,642		888	2,223			
2012/13	119,386	3,475			2,813			
2013/14	129,460	5,208				712	135,379	1%
TOTAL	**714,106**	**30,859**	**13,489**	**1,805**	**5,625**	**2,086**	**767,971**	1%

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Source of data: Warehouse Licensing Board

While the WRS was apparently important and attractive to cashew farmer (and coffee to some extent), it has not been extended to any significant degree to other storable food crops such as maize, paddy, or beans or other cereals.

The options for extension to these crops and the impediments may be worth looking into.

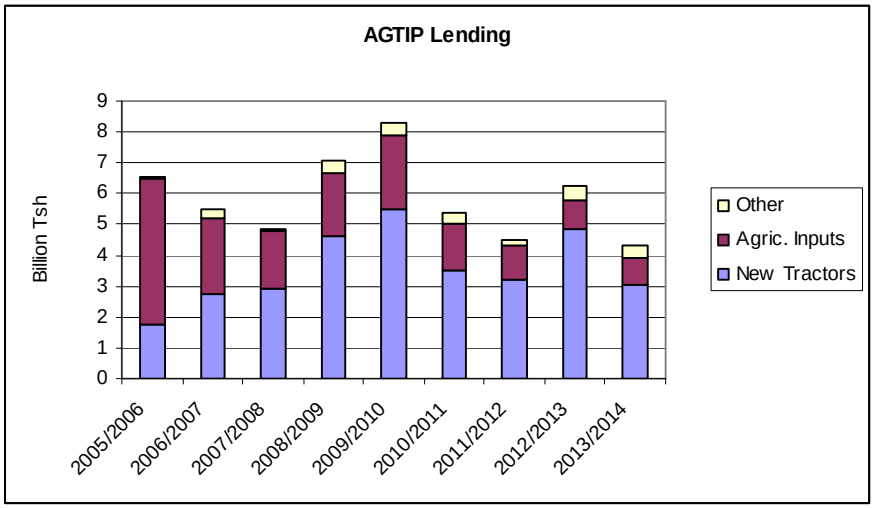
With regard to cashew and coffee, the WRS has allowed to improved statistics, and it has had positive effects on quality issues and standards.

However, problems and challenges exist. A low level of understanding by farmers of the mechanics of the system is reported; the role of government is also sometimes not clear to farmers. As a result, they often blame government when prices decline or payment delays occur. Inter-temporal price volatility is conceived by some as an outcome of the system. The Warehouse Licensing Board has undertaken efforts to educate the public about how the system works, but limited funds remain a constraint to scaling up the campaigns. The role of indicative prices is not clear, nor is it transparent how they are set. Fraud is also said to have occurred; complaints relate to non-calibrated weighing scales and unrealistic estimation of the loss of moisture content. Some financial institutions appear to delay disbursements of loans until a buyer has been identified, which defeats the whole purpose of the system.

3.2.5 Agricultural Inputs Trust Fund

AGITF, the Agricultural Inputs Trust Fund, was set up in 1994 in order to provide finance for the acquisition and repair of agricultural machinery. In 2013/14, it has lent Tsh 4 billion to farmers, roughly $2.4 million. Figure 8 below shows the evolution over time, which reveals fluctuations and a declining trend.

Figure 8: Loans Granted by AGITF



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Source: AGITF (2014)

The highest amount of lending occurred in 2009/10; this was the beginning of the Kilimo Kwanza initiative and its focus on mechanisation. In that year, a total of 151 tractors were distributed to farmer groups. Most loans (by value) are for the acquisition of tractors. Over the last four years, AGITF provided loans for an average of 92 tractors per year.

AGITF's loan facilities are available for seven categories of machinery, namely tractors, agricultural inputs for agro-dealers, tractor rehabilitation, power tillers, irrigation, processing machines and combine harvesters. The grace period differs across categories: tractor loans have a grace period of 6 months, agricultural inputs loans 3 months, and loans for the rehabilitation of tractors are payable within 3 months. Interest rates are subsidised; farmers only pay 7-8 percent. Loans can cover up to 90 percent of the equipment cost; farmers have to raise 10 percent by themselves.

Access to AGITF loans requires that an application form is channelled through the District Agricultural and Livestock Development Officer (DALDO), who would then introduce the applicant as a farmer or processor operating within the area and confirm that government at the district level is aware of all the fixed assets mentioned and provided as security.[22] For a group loan, cooperative officers are expected to assess the capacity of the applicant. Individuals, Savings and Credit Cooperative Societies (SACCOS) and or Agricultural Marketing Cooperative Societies (AMCOS) can apply.

[22] This procedure has a number of challenges. Firstly there is no formal arrangement between AGITF and LGAs whatsoever. Besides there is no guidelines provided by the AGITF which could be used by the LGAs to undertake a due diligence on assets owned under a customary title. As a result it has proven quite easier for some customers to indulge or spoil the system in return for a loan.

Borrowers have to offer fixed assets as collateral or (few cases) a guarantee issued by the Local Government Authority. In the past, AGITF was accepting land under customary title as collateral, but was compelled to stop after realizing that the Village Land Act prohibits disposal of land which is under the village; a bank can only utilize the land to recover the loan. When farmers who received credit against customary land titles defaulted, AGITF therefore could not claim the collateral.

The Trust fund was supposed to operate just like any other private financial institution, except that it charges a relatively low interest rate in order to ensure that farmers that can afford to borrow. However, AGITF was more lenient compared to commercial banks, especially on credit appraisal and conditionality, as witnessed by the high default rates mentioned above. ## where above? ##

The experience of the Agricultural Inputs Trust fund can provide lessons for the design of loan schemes that the proposed Agricultural Bank may offer; it should avoid repeating the same mistakes.

3.2.6 New and On-going Initiatives

Government is in the final process of establishing an Agricultural Bank, and has already started to recruit employees in year 2014. However details related to interest rate, credit guarantee, credit ceiling, targeted farmers (smallholder or medium and large scale), targeted crops and other conditions for accessing loans are not yet known.

It would be important that the new bank learns from the bad experience of AGITF and conceives and applies sound mechanisms for assessing the borrower's capacity to service the loans.

The new bank may be called upon to contribute to the operationalisation of the new agricultural input credit scheme that replaces NAIVS. However, designing robust mechanisms to provide credit to farmers through agro-dealers without a wide and dense network of branches will presumably be a challenge that cannot be met in a short period of time.

Lack of assets that can be used as collateral for securing bank loans is limiting access of smallholders to loans. The only asset they have is land, which is neither surveyed nor titled. The Property and Business Formalization Program (Mpango wa Kurasilimisha Rasilimali za Wanyonge Tanzania, famously known as MKURABITA) was initiated by government to address the issue and is still being implemented. The underlying thesis of this initiative is that the poor remain poor because their assets are in the form of land, housing, or micro-business activities which are informal and marginalized. Thus, the programme is an attempt to formalize these assets through adjustments of laws, procedures and economic institutions. Through this initiative, these assets and business undertakings of the poor can be integrated into the formal economy. However, this is a long-term programme, immediate benefits are not yet in sight.

3.2.7 Conclusions

From the scarce evidence available, it transpires that lending to the agricultural sector continues to remain at low levels and stagnant. Some interesting initiatives like the Warehouse Receipt System or the bundling of credit with value-chain initiatives exist, but their scope remains small. Existing and well-known constraints to farmers' access to seasonal or (especially) investment loans continue.

Financing issues in agriculture are often seen as a question of providing an essential input so that agriculture can take off. But there is also the other side of the coin: without profitable investment in agriculture and suitable technology changes for small-scale farmers, they will not demand bank credits, essentially because they would not be able to serve the debt. Demand for credit is a function of existing opportunities for expansion of potential borrowers and also a question of market prices for their produce. Attempts to provide soft loans in order to motivate investments that are not sufficiently profitable under current market conditions are bound to fail and would only lead to miserable repayment rates.

For this study, no special analysis of available of credit to processors, traders and storage was undertaken. It is suggested to dig into this area in more detail in a separate study or as a background paper for a future ASR-PER, because access to credit for these subsectors may be equally critical and open up more opportunities for agriculture growth than providing loans to smallholders.

Specific attention should be put on building and strengthening relationships between actors rather than concentrating on solving problems experienced by just one actor in the value chain.

3.3 Essential Routine Services for Agriculture: Are They Being Crowded Out?

As shown in Chapter 2 and, in more detail, in Annex 1, a significant share of the agricultural recurrent budget is allocated to input subsidies and support to the National Food Reserve Agency (NFRA). The share of these "big spenders" is exceptionally high in the 2014/15 budget, but has been substantial all along over the past five years.[23] Spending on agricultural services, i.e. excluding the "big spenders", stands at around two percent of total recurrent expenditure only.

The total of central-level recurrent expenditure without input subsidies and NFRA and all recurrent and development spending at district level that goes through the budget amounts to between 1.7 percent and 1.2 percent of agriculture's value-added.

[23] See Figure 2 in Chapter 2.2 earlier in this report and several tables and charts in the budget analysis part of Annex 1.

The big spenders' piece of the cake is extremely high when only the central ministries' budget are looked at. But even when the considerable spending through districts (LGA) is taken into consideration, the amount remaining for financing essential services is low, particularly in view of the significant role of agriculture in the economy, in employment and with regard to poverty reduction.

This leads to the following questions relevant for policy decisions:

a) Are the two issues related, are increasing allocations to subsidies and NFRA activities crowding out routine spending? Would more funds be available for routine public services to agriculture if the allocations to input subsidies and NFRA were reduced?

b) Are there any indications and evidence that sector performance suffers because of under-funded public services to agriculture?

3.3.1 Importance of Routine Public Services

The concern about the level of funding of routine public services is based on the fact that they are an essential input into the "production function" of agriculture. In order to ensure a certain level of production, a balanced mix of private inputs (like labour, land, seeds, fertilizer, marketing) and public inputs (like research, extension and policy) is required. The frequently encountered assumption that public spending on agriculture should lead to sector growth is misleading. Public services are required to allow private efforts to succeed; without the public services, private efforts will have a very reduced impact. Although it is true that increasing complementary public services will not automatically lead to more production and higher agricultural GDP, maintaining a certain level of production without continued and reliable public services is not possible.

Public services that are essential inputs into agricultural production are, among others:

- an adequate policy and strategies for its implementation,
- appropriate and enabling rules for international trade of inputs and produce,
- adequate rules that ensure fair competition,
- extension services designed to keep farmers up-to-date on technologies and farming methods, and training of extension agents; also the definition and development of extension methods,
- quality standards so that farmers and consumers can be assured that they buy what is written on the label,
- disease and pest control,
- some aspects of agricultural research: varieties tend to "expire" because parasites and bugs learn to like them, which points to the need to constantly develop new varieties to stay ahead of evolution of diseases and parasites just to allow the sector to maintain historic production levels.

In addition to the routine services, agricultural ministries design special programmes to provide some push to production levels and production technology. In practice, these activities absorb the minor part of an agricultural budget. This type of public services may include:

- efforts to introduce new, more productive methods and technologies with farmers, including the demonstration of the benefits that can be derived from using modern inputs,
- development and dissemination of high-yielding varieties,
- facilitation of machine services,
- improvements of access to financial services,
- support to farmers to find new and more rewarding markets,
- introduction of improved storage methods,
- programmes to attract investors for large-scale farming.

3.3.2 Extra-budgetary Funding Sources

Although the budget provides the bul of resources for basic public services to agriculture, other sources contribute.

Agricultural research receives direct funding from international vertical programmes. One such example is rice breeding research which is being conducted at KATRIN as a center of excellence and a regional cassava breeding project.

Through the Commission for Science and Technology (COSTECH), government had decided that 1 percent of the Gross Domestic Product (GDP) will be allocated for research and development in the country. Although this target has not being achieved yet, it is worth recognizing efforts which have been taken so far in this end. COSTECH has been financing research development through a competitive window, of which the National Agricultural Research Institutes (NARIs) have been receiving funds for purchasing research equipments and training of researchers.

3.3.3 Indications of Under-funded Routine Services

Although MAFC allocates a major share of its budget that remains after financing input support schemes and transfers to the NFRA (see Table ## in Chapter 2), the impact of research and training remains constrained because of lack of funds. They lack equipment and – in particular – staff. The recruitment freeze has affected the effectiveness of research in particular. More details are provided in Chapter 4 of this report.

The study on extension services undertaken in the context of the ASDP review points to iinsufficiency due to operational funds. The impact assessment of NAIVS points to a critical lack of accompanying extension services for farmers switching from low-input to more input-intensive production methods. Inefficient use of inputs facilitated through the

vouchers issued by NAIVS, resulting in less-than-optimal response of productivity to fertilizer.

Quality control of the seed trade is far less effective than would be desirable, mainly due to lack of resources.

It is an issue of debate whether the free provision of vaccines for animals to protect them from communicable diseases is a public good (which should be paid for via the budget) or a subsidy of private goods. In Tanzania, such vaccinations should be paid for by the State. However, the consulting team for this report received information from MLFD that coverage of vaccinations is extremely low because the budget does not make provision for the acquisition of adequate supplies of vaccines.

In a nutshell, there are indeed indications that routine public services for agriculture are under-funded and that their performance is constrained by low funding levels. If budget allocations to such services remain constrained, the country might run into a situation where the prospect of just maintaining current levels of production and productivity is compromised and where constraints in the availability of public services makes the sector increasingly unattractive for private operators and investors.

More difficult to assess are the effects of the BRN initative. BRN urges the agricultural administration to focus on specific products, among which rice, maize and sugar figure prominently. One could therefore expect research and extension to focus on these products at the detriment of others which contribute to the diversification of the sector and creation of new opportunities to increase income from farming. Evidence on effects of BRN on the provision of extension services could not be found. But it would be useful to look at the possible effects in this sense and avoid that minor products with high potential to increase incomes are neglected because of the BRN focus on just a few products.

3.3.4 Budget Preparation Dynamics

Should the agricultural ministries then scale down the “big spenders” in the hope to use the funds in order to improve funding levels of routine services? The answer is complex.

First, a shift of resources from the “big spenders” to routine services implies a shift from the central budget to the LGA budgets. Many routine services to agriculture are provided by district agriculture administrations, with special emphasis on extension services, quality control, and disease and pest control and surveillance. The shortage of funds occurs particularly at the district level. Given the autonomy of LGAs in defining their budgets, a mechanisms is required which ensures that funds released by central ministries by way of reducing the drain of the big spenders is used by LGAs for agriculture and not for “something else”.

However, central ministries also require additional funds in some of the following areas:

- agricultural research, which is under the responsibility of central ministries;

- preparation and dissemination of extension material and training of trainers who will provide support to district staff;
- procedures for the management of extension services at district level, including monitoring procedures and instruments.

Second, the budget preparation and negotiation process matters. When and if a reduction of the allocation of funds to the "big spenders" is proposed (or happens), it is not evident at all that the funds saved from reducing the weight of the "big spenders" will remain in the agricultural ministries and respective sections of LGA administrations. It is also not obvious that increases in special programmes will necessarily crowd out routine and essential public services.

Cautious and determined argumentation in the internal presentation of budget proposals and budget negotiations with the Ministry of Finance are necessary. The agricultural ministries need to present convincing arguments to show that stepping up expenditure on research, extension, regulation and quality assurance are likely to be beneficial to farmers, that they are likely to attract private investment in the sector and that this can be demonstrated to stakeholders. Wherever possible, the argumentation should be based on expected benefits rather than on needs, e.g. of personnel, fuel and per-diems.

3.4 Avoiding Fragmentation

Agricultural line ministries have witnessed a plethora of policy or implementation initiatives. However, the specific objectives or implementation modalities of these are not adequately aligned. Although "pluralism" in producing sector development is a good idea in principle, this can also send conflicting signals and messages to farmers and other stakeholders, and it complicates the management of the sector. On the basis of that, this section reviews selected initiatives that are currently implemented within the sector.

3.4.1 Tanzania Agricultural Sector Financial Investment Plan (TASFIP)

TAFSIP is a ten-year investment plan which identifies areas of investment needed to attain the CAADP target of 6 percent annual growth in agricultural sector GDP. Under CAADP, government has affirmed to pursue the growth target through the allocation of a minimum of 10 percent of its budget to the agricultural sector and create mechanisms for expediting implementation and achieving results. Preparation of TASFIP was an opportunity to seek the support of the international community and the private sector for bridging the funding gap between the funding requirements and the amount that can be provided from a variety of domestic, international, public and private sources. The main thrust is to "rationalize allocation of resources to achieve annual growth of 6 percent in agricultural GDP, consistent with national objectives to reduce rural poverty and improve household food and nutrition security".[24] TASFIP directs investment programmes to seven thematic areas,

[24] ## reference

namely, irrigation development, sustainable land and water management, production and rural commercialization, rural infrastructure, market access and trade, private sector development, food and nutrition security, disaster management and climate change adaptation and mitigation as well as policy reform and institutional support.

The TASFIP is well aligned and positioned within the national policy planning hierarchy. The plan accommodates all programmes or projects under the Agricultural Sector Development Programme (ASDP), other government-led sector programmes and projects as well as private sector-led investment within the agricultural sector. It is a sector-wide plan for coordinating and harmonizing the resources needed to accelerate implementation of existing initiatives and to launch new initiatives which address national, regional and sectoral development priorities; TAFSIP is not a new agricultural development strategy or programme. It is expected to provide a financing mechanism and framework for the implementation of ASDP. Further, it was resolved that any other emerging intervention would be incorporated in the ASDP in order to ensure proper alignment. Given this positioning of TASFIP in the policy context, any project or programme falling within the seven thematic areas will be implementing the programme.

3.4.2 SAGCOT

SAGCOT is a public-private partnership initiative seeking to promote sustainable agricultural growth in the Southern corridor using estate model. The main thrust of the initiative is to provide opportunities for smallholder producers to engage in profitable agriculture through incentivising strong linkages between smallholder and commercial agribusinesses, including hub and outgrower schemes that allow smallholders in the vicinity of large-scale farms to access inputs, extension services, value-adding facilities and markets. SAGCOT will also support smallholder producer associations, helping them to enter into equitable commercial relationships with agro-processing and marketing businesses. In many cases, irrigation will be made available through professionally-managed farm blocks. The approach adopted consists in building on existing operations and planned investments. The clusters are to bring together agricultural research stations, nucleus larger farms and ranches with outgrower schemes, irrigated block farming operations, processing and storage facilities, transport and logistics hubs, and improved 'last mile' infrastructure to farms and local communities.

From the design perspective, this model is well set to contribute towards attainment of the CAADP target and strategy, which calls for increased private investment in infrastructure and value chain. The initiative has been able to attracting large-scale farmers (also multi-national enterprises) and won support of inputs suppliers, credit providers, development partners (for resource mobilization), government and other business development services providers. In order to facilitate development of infrastructure such as irrigation, roads, storage facilities etc. within the focal area, SAGCOT is well linked to the Local Government Authorities (LGAs) through district-level partnerships which ensure mobilisation of ASDP support through District Agricultural Development Plans (DADPs).

SAGCOT is guided by the philosophy that commercial large-scale farms are likely to transform agriculture in this country. Although this may be the case, there is too much emphasis on attracting large-scale farmers, while little attention is paid to balancing the need to attract medium-scale farmers who may be graduating from the small-scale level.

3.4.3 Big Result Now (BRN)

This is a government initiative aimed at establishing a strong and effective system to oversee, monitor and evaluate the implementation of its development plans, particularly the Five-Year Development Plan I (FYDP 1) and programmes. Within the national policy hierarchy, BRN fits under the TASFIP. It was established based on Malaysia's Big Fast Results approach, which hinges on prioritization, detailed monitoring tools and accountability for performance.

BRN is mainstreamed with sector ministries through the establishment of ministerial delivery units. Initiatives which are implemented are part of the Annual Development Plans for the years 2013/14, 2014/15 and 2015/16, which is the channel through which FYDP 1 is also being implemented.

Although BRN is considered as an implementation tool, it has identified areas of priorities country-wide. Key but ambitious results areas for the agricultural sector identified include: 25 commercial farming deals for paddy and sugarcane, 78 collective rice irrigation and marketing schemes and 275 collective warehouse-based marketing schemes. A large part of the selected geographical area coincides with the SAGCOT initiative, which shows that the two complement each other.

The BRN initiative started in 2013/14. The initial two-year budget of TZS 14.3 trillion (to be financed from internal budgetary sources, Development Partners and the private sector) will continue to be implemented in 2014/15. The BRN initiative is likely to play a crucial role in the future funding of the agricultural sector. However, this analysis could not identify specific funds attached to this program because the level and modality of funding BRN activities are not yet clearly defined.

It is important to point out that the BRN initiative receives strong support from the Government and from Development Partners in respect to the provision of financial resources and in addressing some of the policy bottlenecks (e.g. export ban, import permit etc).

Although the concept of defining and focussing on results in a programme that works through existing institutional channels and just adds elements for monitoring and accountability is laudable, the focus also poses a risk: too many public resources could be allocated to the BRN priority areas while other areas are left without sufficient funds to implement their development plans and provide essential routine services to the agricultural sector.

3.4.4 Off-budget Interventions

In recent years, the relative weight of basket funding of the ASDP by Development partners to their overall support to agriculture has been declining. A number of bilateral programmes have emerged, some of which have very significant amounts of funds at their disposal. The programmes are aligned to elements of the ASDP, but are then administered outside the government's management framework, and the financial contribution is often not captured in the budget.

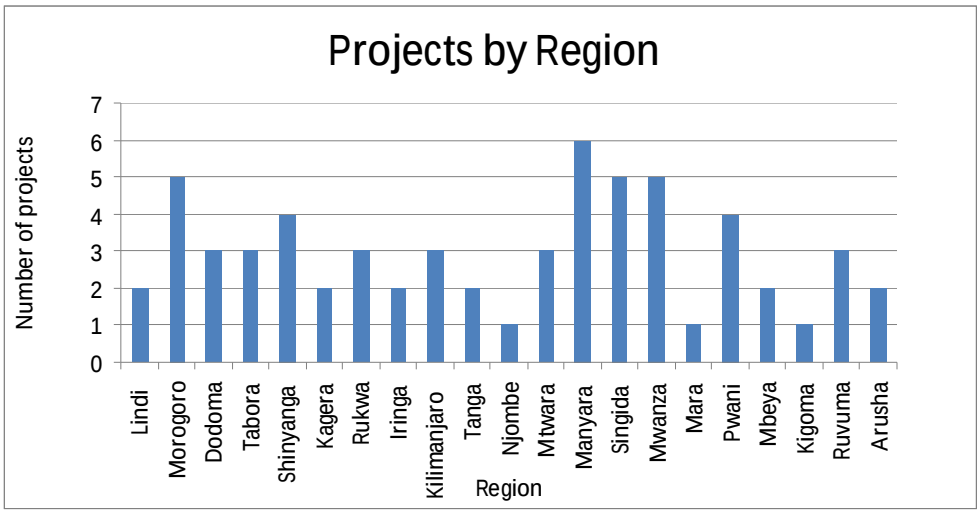
These new initiatives include: the Feed the Future programme (USAID), the Bread Basket Initiative (AGRA), and the Marketing Infrastructure Value Addition and Rural Finance Support Programme (IFAD). Other big project interventions outside of ASDP basked funding arrangement include MIVARF (AfDB/IFAD) under PMO again, and the AGRA (Alliance for African Green Revolution) supported project. In addition, there is a Great Lakes cassava initiative which focuses on improving the cassava value chain. These are some of the major projects with their own implementation arrangements outside the government system; several projects also focus on improving the agricultural performance using parallel implementation arrangements.

The activities of non-governmental organizations with funding for their own special projects is also increasing. The list of such projects is long and it was not possible to get their budget data.

The large number and diversity of off-budget interventions reflect how agricultural policy is fragmented. Most of these interventions are not aligned with District Agricultural Development Plans (DADPs) and lack coordination. Due to inadequate information sharing, the possibility of duplicating efforts is high. There are instances where different interventions focus on the same value chain, but since there is no coordination, projects end up being implemented in a piece-meal manner. In addition to that, one can observe a regional concentration of these off-budget activities, leaving out other geographical areas.

The uneven distribution of the number of projects in selected regions is shown in Figure 9 below. Morogoro region is leading in having a highest concentration of projects. This is the priority area of a number of projects, namely SAGCOT, BRN, Feed the Future, Competitive African Rice Initiative (CARI) under Kilimo Trust, and others.

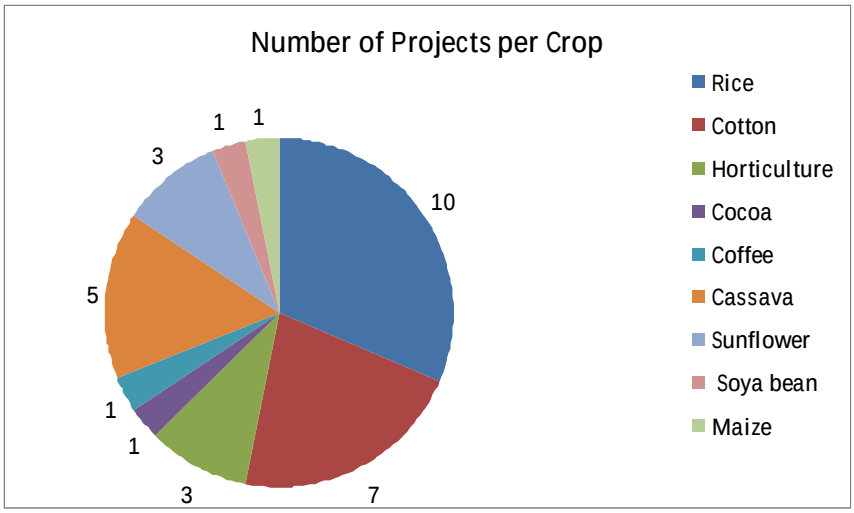
Figure 9: Number of Known Off-budget Projects and Initiatives by Region



Source: Authors on the basis of data collected from a variety of sources.

An interesting observation is that there is considerable focus on rice in these off-budget projects. Figure 10 shows the number of regions targeted by projects which could be identified. Projects focusing on the rice value chain can be found in 12 regions. Cotton projects exist in 6 regions, sunflower covers 7 regions. Maize and horticulture are addressed by off-budget projects in only 4 regions each.

Figure 10: Crop Concentration of Off-budget Projects



Source: Collected from various sources

There is no evidence as to whether and how these projects are coordinated in order to make use of synergies. Having many projects focusing on only one value chain is a reflection of a suboptimal allocation of resources.

3.4.5 Recommendations

Capturing projects and initiatives in the government budget is not a precondition for successful coordination of efforts, but it facilitates the task. Yet, coordination is required particularly at the district level, because LGAs are responsible for provision of the bulk of services to agriculture in the fields of extension and regulation.

This ASR-PER study has not looked at coordination issues at district level in detail. Is there a problem that needs to be addressed, are district-level agricultural administrations aware of what is happening on the ground in view of these various projects and initiatives? Do fora exist for sharing views, intentions and insights? At this stage, no answer can be provided, although the issue may be very pertinent.

Two observations may be of significance. First, it appears like focus on specific products is increasing, while attention to integrated rural development and farming systems involving several crops (and maybe some animal husbandry) is declining. This trend can be problematic because increasing rural income from farming also requires diversification of crops in order to spread climatic and market risks. It is well known that monocultures are not particularly ecology-friendly. Policy should not discourage intercropping and crop rotation.

The other observation is the high focus on value chains in some of the big projects. It is, of course, irrefutable that promoting production where markets are not available requires simultaneous efforts to develop markets. It is also clear that efforts to promote one element of the value chain while there are other gaps not addressed are likely to fail. Furthermore, innovation along value chains can raise efficiency and develop new markets, and agricultural producers can be assumed to also get their share of improved overall profitability and volumes.

Yet, the apparent hype about value chain approaches may be exaggerated. It is assumed that value-chain approaches are more effective, but specific evidence for widely planted crops (like maize and rice) is not readily available for Tanzania. The new breed of value-chain projects tends to be very expensive. Whether the benefits in particular for farmers can justify the expenditure is yet to be shown, and the assumption that value-chain interventions will lead to sustainable improvements has yet to be proven.

4. Performance of Agricultural Research and Extension

4.1 Overview

The new agricultural policy of 2013 reiterates the need to strengthen public agricultural support services in the areas of research, extension and training. This chapter first presents data on expenditure on agriculture research, training and extension during the period of the review. It then presents achievements made against set targets through the provision of public resources for crop and livestock research conducted at ARIs and Livestock Research Institutes (including use of ZARDEF funds and others), extension activities (including Farmers Field Schools - FFS) and training activities provided by the MATIs and LITA. The presentation is based on findings from review of relevant literature and a field visit to selected research institutions in the Eastern Zone, namely the ARIs of longa and Kibaha as well as Sokoine University of Agriculture (SUA). The ASR-PER team also visited MATI Ilonga and LITA Morogroro, as well as a Ward Agricultural Resource Centre and Farmer Field Schools in Kilosa.

4.2 Government Expenditure in Support of Research, Extension and Training

Agricultural research, training, and extension services are among the key functions of the two ministries MAFC and MLFD. The institutions for agriculture research are not autonomous and therefore their expenditure appears in the budget as expenditure by the respective departments rather than grants or subventions. However, some funds from these departments are handed on as grants to research institutions, e.g. Kibaha Agriculture Research Centre (Table 4.1 and Table 4.2). Expenditure on extension is included in the recurrent budgets of local government agencies and therefore difficult to disentangle. Since extension is financed through district budgets, for which no breakdown by components or type of activity is available, expenditure on extension cannot be analysed without going into internal financial data for each district. However, during the field visit, our team noted that extension services have suffered substantially following the removal of extension block grants.[25]

[25] Extension Block Grants (EBG) and Capacity Building Grants (CBG) were items in the allocation of funds to districts from the ASDP basked funds. They were merged with the general allocation to districts from FY 2012/13 onwards. Districts were then free to allocate the broader grant to activities as they saw fit. Many districts used less than previously for extension services.

Table 8: Grants for Recurrent and Development Expenditure of Agricultural Training Institutions

Million Tsh

	2009/10 Actual	2010/11 Actual	2011/12 Actual	2012/13 Actual	2013/14 Approved	2014/15 Approved
MAFC: Agricultural Training Institute (whole subvote)	5,677	5,031	5,548	9,813	8,429	7,769
MAFC Grants to Academic Institutions	5,226	5,639	5,564	5,441	6,154	6,672
of which under Research	-4,532	-4,894	-4,766	-4,299	-4,479	-5,148
MLFD Grants to Academic Institutions	2,583	1,571	2,544	3,097	2,984	963
MATI Development Expenditure			100	0	40	100
Total	8,954	7,346	8,990	14,051	13,129	10,356

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Source of data: Budget Estimates, various years. See Annex 1 for details.

Table 9: Expenditure on Agricultural Research

Million Tsh

Item		2009/10 Actual	2010/11 Actual	2011/12 Actual	2012/13 Actual	2013/14 Approved	2014/15 Approved
MFAC Plant Breeders Unit							
21xxxx	PE (no basic salaries highlighted years!)	19	20	69	77	66	36
271200	Current Grants to Households & Unincorporate Business	70	42	22	32	55	58
	Other	74	68	55	36	77	87
Subtotal Plant Breeders Unit		162	130	146	145	198	181
MAFC Research Programme							
21xxxx	PE	5,153	6,930	9,206	9,816	10,297	9,355
270200	Current Grant To International Organizations	7	14	0	17	36	36
270300	Current Grant To Academic Institutions	4,532	4,894	4,766	4,299	4,479	5,148
	Other	1,052	573	671	908	1,701	1,494
Subtotal Research Programme		10,744	12,411	14,643	15,040	16,513	16,033
Grand Total		**10,907**	**12,541**	**14,789**	**15,185**	**16,711**	**16,215**

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Source of data: Budget Estimates, various years. See Annex 1 for details.

Notes:

The Plant Breeders Unit shows no provision or expenditure for basic salaries in the highlighted years. The PE items relate to salary supplements only.

The table does not include spending on livestock research because it is not shown in the budget tables. However, some of the transfers may relate to grants to a research institute for livestock. ## check !! ##

Expenditure on research and training is low. For crops, research expenditure in the 2013/14 budget (approved estimates) represents a mere 0.19 percent of the crop sector GDP.

During field visits, our team learned that major sources of research funds continue to be the financed budget through the Agricultural Sector Development Programme (ASDP) and the National Fund for the Advancement of Science and Technology. There has been additional support from Belgium Technical Cooperation, Netherlands Fellowship Programme, AGRA, IARCs, EU, DIFID, ASARECA, USAID, and GTZ, which does not appear in the budget documentation – the support is off-budget.

As for Sokoine University of Agriculture (SUA), there is a limited government own fund allocated to agriculture research. Most of the research activities are funded by Development Partners; Norway is the main funder. There was no sense of danger that the research agenda is determined from outside Tanzania.

4.3 Performance of Agriculture Research, Extension and Training

4.3.1 Agriculture Research

Research Agenda Setting

The policy of agriculture research in Tanzania is Client Oriented-Demand Driven (CODD). Thus, at policy level, the agricultural research system aims at exploring practical and affordable options for engaging a broad range of individuals and institutions capable of contributing to the advance of agricultural technology and practices. Research priorities are identified through a participatory process, which involves stakeholders at zonal level in order to develop zonal priorities. The policy emphasises the need to capture farmers' and other stakeholders' concerns in participatory manner.

At the moment, national crop research priorities are categorized in groups. These are:

- First Priority: maize, rice, tomatoes, cassava, beans, sorghum, sunflower, groundnuts, sweet potato, banana and cashew nuts.
- Second Priority: cabbage, onions, cotton, mangoes, citrus, indigenous vegetables, pineapple, pigeon pea, avocado, sesame, cowpea, sugarcane, pearl millet, wheat, apple, spices, passion fruit trees, round/Irish potato, chick pea, coconut, sisal and grapes.
- Third Priority: pears, carrots, pyrethrum, finger millet, peppers, oil palm, soya, green gram, mushroom, lablab, cocoa, barley, cucurbits, pawpaw, sunflower, yams and bambara nut.

Research under each group is focused on breeding for improved crop varieties; agronomic practices under rain-fed and irrigated farming; crop protection in the field and in storage; processing and packaging; biotechnology; natural resource management (soil fertility and conservation farming); use of draft animals and technologies; as well as farming systems and socio-economic research. Ideally, each research includes aspects of technology transfer to stakeholders, e.g. through extension activities under the Zonal Information and Extension Liaison Unit (ZIELU).

Coordination of Agricultural Research Functions

The Division of Research and Development (DRD) – MAFC and the Division of Research, Training and Extension – MLFD are responsible for coordinating agricultural research in Tanzania. The mandate of the two departments is to oversee all matters related to agricultural research. Their main functions include: to conduct and co-ordinate agricultural research programs in Tanzania; to recommend the use of research findings; in

collaboration with extension services, to make sure that the research recommendations reach the farming community; to collaborate with other national, regional and international agriculture research institutions.

Actual research takes place in Agricultural Research Institutes (ARIs), which are organized in six zones reflecting the agro-ecological zones of the country. At the zonal level, is the Zonal Agricultural Research and Development Fund (ZARDEF), which is the research policy and agenda stetting agency. The Sokoine University of Agriculture (SUA) is considered as the 7th zone.

At present, Tanzania's strength in agriculture research lies in its large number of existing agricultural research institutions. However, as noted in the expenditure analysis, inadequate financing for research erodes this strength.

According to the ARI setup, the research function is structurally and institutionally, linked to extension services. Embedding the extension function in the ARIs aims to enhance collaboration in agriculture training and technology dissemination and intensifying the transfer of agricultural technology, information, and knowledge. Under the current setup, the research, extension and farmer linkages are the task of the Zonal Information and Extension Liaison Unit (ZIELUs).

During the field visit, the ASR/PER team noted that ZIELU is the most marginalized unit in the ARI, in terms of finances and staffing. The ZIELUs require sufficient manning and enhanced communication capability to ensure effective support to ARI extension services as well as dissemination of knowledge and technology to farmers.

Major Issues around Agriculture Research in Tanzania

The review of the sector reports and field visits point to several persistent issues constraining performance of agricultural research. Major issues are: low integration of formal and informal agricultural knowledge systems; weak coordination of research activities and poor research linkages with key stakeholders, both local and international; inadequate involvement of the private sector and weak Public Private Partnership (PPPs) in agricultural research services; inefficient management of research; and inadequate financing for agricultural research.[26] It is important to emphasize that weak coordination goes beyond research and manifests itself more in pervasive weak research-training-extension-farmer linkages.

Participation of the private sector in providing agricultural training is glaringly low. Up until 2011, private sector supported research was carried out only on coffee (TACRI), tobacco

[26] The long-term and basic research is rather limited, partly due to insufficient finances. Generally, there is limited engagement in modern/alternative research techniques and new areas for better solutions, e.g. areas of genetic engineering as well as bio-safety. Nonetheless, the current national agriculture development policy is more in favour of this research direction than ever before.

(TORITA), and tea (TRIT). Arguably, this has been facilitated by the existence of respective crop boards. However, many other crops with similar boards have not been able to attract private sector support to research.

The ARIs' staffing level is lower than the requirements as per establishment across all units. The zone information liaison unit is particularly starved. In Ilonga ARI for example, the ZIELU does not have any senior scientists. The technical support from Ireland to ZIELUs in 2014/15 is a good sign in addressing this bottleneck.

Strategies to improve Human Resource capacity for research has involved facilitating participation of employees of DRD in long and short-term training; training focuses in improving specific skills for researchers, field officers technicians. Specifically, during the period under review, there were 11 researchers under PhD studies and 5 at masters' level. COSTECH will be supporting training program for one PhD and 16 Masters in 2014/15. However, these efforts are considered inadequate given the existing shortage.

Insufficient government financing for the agricultural research activities goes hand in hand with late disbursement. By their nature, some of the agriculture research activities are seasonal and time-critical; delayed disbursements thus result in the poor implementation, including in response to feedback from farmers. ARI Ilonga noted the tendency of most of the funds disbursed in the last quarter of the fiscal year. An effective national agriculture system requires adequate allocation and timely release of funds for agricultural research. This is key for enhancing capacity in Tanzania's agricultural research system and to continuously identify and address emerging agricultural problems such as parasitic weeds, alien fruit flies, and effects of climate change.

The link between research and extension is weak due to inadequate funding which limit dissemination of new technology as well as getting feedback from users of research outputs, and farmers in particular. Outreach approach has been focusing ZIELU prepared television programs, mainly aired by Tanzania Broadcasting Corporation (TBC). Limitation of such a mode is severe given low access to electricity in many rural areas and failure to construct and/or run the Ward Agricultural Resource Centres. This mode requires augmentation with other models for effective extension outreach.

The demand for ARI output is also low. LGAs are supposed to bring their research issues to ARI to inform their research. For example, during the past two years, ARI Ilonga only received research issues from one LGA. The implementation of such projects like "Enhancing Pro-Poor Innovations in Natural Resources and Agricultural Value Chains " (EPINAV), demonstrates that the effectiveness of research-farmer linkage can be strengthened through community-based research. This has allowed direct feedback to researchers and immediate learning by farmers for own use or wider dissemination to others.

Coordination and monitoring of research and its impact have generally remained very weak. A forum for national agriculture research is lacking, yet essential in bringing agriculture researchers together in order to allow coordination and monitoring their activities. At present, therefore, the only common references across ARIs are the national

development frameworks such as MKUKUTA, FYDP and, in the long term, the Development Vision 2025. The ARI Director – Eastern Zone is of the view that coordination of agriculture research needs a more effective umbrella national institution - something like the Kenyan Agriculture Research Institute (KARI) in Kenya. The review team views that the on-going review of agricultural research provides an entry point to such suggestion.

4.3.2 Agricultural Extension Services

According to Tanzanian agriculture policies, extension services include a wide range of assistance to farmers in helping them identify opportunities, tackle problems, assess capabilities, and provide needed advice, such as on crop diseases, coping with droughts etc. The Agricultural Marketing Policy also mentions that extension services should support linking farmers to markets, but apparently there is too little emphasis in this aspect. Except for few crops and in few locations, where fully value chain approach exists, marketing concerns usually appear later when the output has already been realized, partly because advice on agricultural marketing provided by extension services was not available.

This notwithstanding, Tanzania agriculture policies increasingly emphasises the adoption of the integrated value chain approach to small-scale agriculture. With this policy direction, the extension tasks are not limited to "traditional" agricultural activity, but extend to a number of other interventions, including agro-processing and marketing (Anderson, 2007).[27] However, the fragmentation of the extension, cooperative and marketing functions present challenges in delivering extension services over the full length of the value chain.

The extension policies are based on the premise that, by enhancing farmers' technical knowledge, farmers can increase agricultural production and productivity hence their incomes. The current policies recognize that, unlike large-scale farmers, smallholders will continue to depend on publicly provided extension services, at least in the medium term. Thus, extension services are a key priority in implementation ASDP, where the focus has been on Farmer Field Schools (FFS), establishment of WARCs, increase the number of extension staff and provision of working tools, use of participatory approaches/methods and decentralization of extension service. The involvement of the private sector in extension delivery is also expected to gradually increase.

Extension Approaches and Methods

Delivery of extension services uses a combination of dissemination pathways such as demonstration plots and farmers field schools (FFS), farmer field days, exchange visits/study tours, technology transfer model, technical publications, training manuals/guidelines, radio/TV programs, cinema shows, agricultural shows/exhibitions, ICT facilities including mobile phones, website, use of WARCs (equipped with technical information accessed in various form, including through computers) as well as through

[27] Anderson J.R. (2007): "Agricultural Advisory Services, A background paper for "Innovating through science and technology", Background paper for the World Development Report 2008.

focus farmer groups and innovation and/or stakeholder platforms. Policies emphasizes that specific approaches and methods should be selected based on the local situation and the characteristics of the target group, while ensuring cost-effectiveness and maximization of the intended impact. Of recent, the following have been the common practices:

Farmer Field School Approach (FFS): The approach is an integral part of the DADPS and is therefore used throughout the country. The approach involves experiential learning and group approach. In this approach, key farmers train others.

It is estimated that there are 16,512 FFS with 345,106 farmers in 2013/14. This is a marginal increase from 16,330 FFS existed in 2013/14 and the ambitious plan to establishing 20,000 FFS (and demonstration plots) in 2014/15. This ambition is partly driven by BRN targets.

The FFS approach in Tanzania shows promising results especially in smallholders' irrigated rice farms, where production has increased from 1.5 ton/ha to 5-6 ton/ha. For maize, yield has increased from 1.63 to 4.75 ton/ha, for beans from 0.32 to 1.21 ton/ha, while coffee yield has increased from 1.88 to 3.5 ton/ha. Independent studies also reveal similar trends but argue for packaging extension services through complementing delivery modes for effective results.[28]

Farming System Approach (FSA): The approach builds on greater farmer influence and participation in technology development and transfer through a Client Oriented Research and Development Management Approach (CORDEMA). With CORDEMA, farmers' priorities are incorporated into the research agenda and user-friendly technologies are developed.

Farmer-to-farmer Extension Approach: This approach relies on training farmers (progress farmers/facilitator) who can train others. Of recently, the Kilimanjaro Agricultural Training Centre (KATC) has spearheaded the approach. The KATC Model has demonstrated positively, and cumulatively has trained 5,225 farmers. The approach is widely spreading to other institutions and implementation of 39 irrigation schemes under BRN will rely on farmer-to-farmer approach.

Innovation Platforms/Focus farmer groups: these facilitate extension delivery and can share new innovations and market information within the group.

*Nucleus and Out-growers Approach***:** This involves formal arrangement between a large commercial farmer (usually a company) and surrounding farmers (contract farmers). This is the approach where there is discernible private sector participation in AES, whereby the private sector/company facilitates farmers' access to credit, improved inputs, pooling of farmers' produce, processing and developing market links.

[28] See Kristin, Davis, et al. (2010): Impact of Farmer Field Schools on Agricultural Productivity and Poverty in East Africa. IFPRI Discussion Paper 00992 June 2010.

ICT facilities: The Government has also supported the LGAs through DADPs to construct Ward Agriculture Resource Centres (WARCs) and stock these with agricultural information resources including ICT.[29] There are currently more than 224 WARCs. The ASR/PER team visited one of them in Likosa LGA. However, the visited WARC still lacked even the most important facilities for it to function effectively, e.g. it did not have dormitories as required in WARC guideline. Furthermore many of the WARC are in rural locations without electricity, which undermines their effectiveness, particularly ITC delivery mode. The ASR/PER team was informed that there is an arrangement with Rural Energy Agency (REA) to install solar power for WARCs in off-grid areas. The ASR-PER team was not able to establish the actual implementation of the said arrangement.

There are efforts to also extend extension services via mobile phones, especially market-related extension services (e.g. crop prices, price and availability of inputs, etc.) Likewise, efforts to expand the use of radio, TV and other network/communication providers in extension services are on going. As such, ICT-based extension services is an area with high potential for PPP approach due possibility of outsources some aspects of extension service delivery. As such, MAFC contracted *NURU Infocom,* a private company to provide extension services. Review of the experience with NURU Infocom is required to assess its effectiveness and possibility of scaling up.

Issues Around Agricultural Extension Services

It is estimated that only 42 percent of small-scale farmers receive extension services, the quality of which is also questionable.[30] Agriculture extension services faces a number of constraints and problems which can be summarizes as: low budget allocated for extension services and also late disbursement of funds for time-critical activities; poor working environments including a lack of reliable means of transport to reach the farmers; limited financial support for carrying out demonstrations and field experiments on new technologies. In detail, the following shortcomings were noted:

i. Weak supervision and insufficient manning levels. It is noted that there is shortage of extension staff and working facilities leading to inadequate capacity to discharge extension services. Each of the 2,855 wards has an agricultural extension officer.

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[29] The Government implements the Agricultural Sector Development Programme (ASDP) through the Agriculture Sector Lead Ministries as well as District Agricultural Development Plans (DADPs) and District Agricultural Sector Investment Project (DASIP) were implemented by LGAs at local level. WARCs and extension service delivery are integral part of the implementation of these LGA level plans.

[30] Data on extension coverage vary accross studies and authors. The performance assessment of extension under ASDP, dated March 2013, found that 76 percent of sampled farmers had contact with an extension officer. The authors state, though, that this figure may be biased upward, as only 59 percent of Non-FFS farmers and Non-Group farmers confirmed contact with extension services. The National Sample Census for smallholder agriculture of 2007/08 found that 67 percent of households did receive extension advice. An important finding of both studies is that the percentage of farmers reached by extension services varies considerably across districts and areas.

Only 5,119 villages out of 12,227 villages have agricultural extension officers. Since the policy requires each village to be served by one extension officer, this gives a gap of 7,108 officers.

ii. Quality of extension services is low. Although the government policy requires each village to be served by one extension office, actual staffing levels are significantly below this target. In some LGAs, 70% of the villages have extension officers, e.g. Mbozi LGA. However, most of the extension offices do not have a work programme of what they should cover/introduce in a particular year. As a result, formal extension services ranks very low in the list of sources of information among farmers.

iii. Many DAICOs lack participatory leadership skills, which are key for effective extension service delivery. Many DAICOs would benefit from training on management skills, but no such courses are being offered.

iv. Extensionists fail to implement any credible work-plan (if any exists) due to lack of extension funds to run demonstrations. What they deliver are words in most cases. As a result, farmers hardly appreciate their services. Clear guidance and motivation and innovativeness are also missing.

v. Insufficient knowledge regarding technological advancements and weak coordination of agricultural extension services. The social welfare extension officer focus on Village Community Bank (VICOBA); the cooperative officer on SACCOS; irrigation on water user associations; and agriculture officer on farmers' field schools. But all these efforts go uncoordinated resulting only in confusing the farmers. A solution requires a full value chain approach. But this has mainly remained as directive and not actual installation of value chains systems on the ground. Till now these extension staff do not fully know what it takes to have a functioning value chain – from the farm inputs to markets for the produce. Moreover, corporative service remains the least mainstreamed function in the agriculture systems and operate in isolation from the other services

vi. Lack of strong research-extension-farmers linkage. Farmers are noted to seek quick fixes from private dealers. In some occasions, the agricultural inputs and protocols obtained from private dealers deviate from what the research would recommend. The emergency of private sector operators has brought new challenges, particularly in relation adherence to performance standards, regulations, and supervision of the services delivered to small-scale farmer.

vii. Low participation of the private sector in extension services delivery. However, the private sector has not evolved enough and the public sector has limited capacity to hire field officers to solve problems requiring technical assistance at various levels of the agricultural value chain. Where they have evolved, these services generally focus on large-scale commercial farmers, leaving the rural smallholder farmers underserved.

viii. The level of uptake of available recommended agricultural technologies and innovations by the intended farmers has remained low.

ix. The decentralised extension services at field level suffer from the lack of operational budgets, especially after the suspension of the extension block grant. The discontinuation of agricultural extension block grants [DO1]limits effective delivery of extension services. It also hinders timely vaccination. Funds for extension now come from the general capacity development grant

x. For crops that are under respective Commodity Boards, efforts have been made to finance research and extension services for the respective industry. These boards have been endowed with their own mini-extension services, and there are crop-specific efforts to disseminate relevant information to stakeholders in the industry. Although this sounds as a good practice, the authorities have often met resistance from farmers who are dissatisfied with their quality or governance.

xi. The field visits, particularly in Kilosa, revealed that there is increasing involvement of NGOs in the provision of extension services. However, their involvement is still in an experimental phase and not really coordinated.

xii. During the field visit, the ASR/PER team noted that extension services provided by private dealers/extensionists are growing in the livestock sub-sector compared to crop sub-sector. Moreover, farmers in their groups have shown readiness to contribute, e.g. to transport costs for vaccines. But so far, this has only been an informal arrangement. A proposal to formalize this through the establishment of LGA revolving funds has been considered but not implemented. The team is of the view that this is an area that merits further studies (e.g. by piloting the idea in selected LGAs).

Under the current practices of extension, e.g. FFSs, the value chain approach, etc., the link between research and extension requires robust farmers' organizations in the form of associations, cooperatives and groups. From the viewpoint of the farmers, the groups act as important vehicles for farmers to increase the weight of their demand for quality services, for improving their bargaining power in the input and output markets, etc. From the service providers' viewpoint, farmer groups also provide an avenue for cost-effective delivery of various services such as loans, inputs, extension services and market information.

However, farmers' organizations / groups / associations are weak, especially in the following areas:

i. Limited knowledge and skills in organization and business management;

ii. Poor leadership in farmers organizations; and

iii. Few members in farmer organizations.

Improving extension service delivery will thus require support for formation of viable and sustainable farmer organizations, equipped with strong organizational, leadership and

entrepreneurial knowledge and skills. It will also require revisiting the institutional setup for regulation and supervision of farmers' organizations

So far, there are no effective mechanisms to monitor the activities of extension services. Developing effective M & E for extension services is required. Strengthening the Open Performance Review Appraisal System (OPRAS) at this level is key to effective M&E of extension interventions.

4.3.3 Training of Agricultural Professionals

The Ministry of Agriculture Training Institutes (MATIs) and the Livestock Training Agency (LITA) together form a system for training of agriculture professionals (and field officers in particular) with certificates and diploma. Sokoine University of Agriculture (SUA) is the largest produce of professionals with bachelor degree and above. Through the Ministry of Agriculture Training Institutes (MATIs) and Livestock Training Agency (LITA), many extension officers have been enrolled, trained and deployed to the Districts throughout the country. Our team visited MATI Ilonga and LITA Morogoro and noted the following weaknesses:

i) Inadequate number of teaching staff, which sometimes is solved by borrowing instructors from other institutes. This has significant implications on operating costs of the institutes.

ii) Infrastructure, including classrooms, is not adequate due to recent growth in the intake. Resulting shortages are visible with regard to water supply and staff housing.

iii) Effective practical training, including field training, is impaired by inadequate facilities such as field buses (JICA had contributed one bus recently, but our team was informed that it is not sufficient). LITA Morogoro also expressed a similar concern; there are shortages of field buses, tractors, etc. The lack of transport and other equipment weakens the link between training and extension required by several on-going agriculture projects in the neighbourhood.

iv) Human resources, particularly the teaching staff (and mostly aged now), are inadequate in most of LITA institutes in other locations. Some of the courses have to be covered by experts from outside the institutes. LITA Morogoro is a slight exception because it benefits some experts linked to SUA.

v) In LITA Morogroro, infrastructure of the institute designed for 200 students now handles 360; it is therefore overly stressed. This has implication on the quality of teaching, especially practical training.

The MATI and LITA have an important role to play linking research and farmers. In the current arrangement, (i) the Agricultural Research Institutes (ARI) are the first-level in the line because they are able to absorb and partner on the development of new knowledge; (ii) the Agricultural Training Institutes (ATIs) come in the middle as they are mandated to

disseminate new knowledge particularly to extension officers; and (iii) LGAs and their extension offices as well as the learning centres with trained trainers, are at the other end due to their operational responsibilities and capabilities at farmers levels. This linkage would be restored if each layer were adequately funded.

It was noted that, generally the MATI have their own sources of financing from sells of the produces/livestock products. The team did not have access to their report since the substantive head of the institute was out of the office. Like MATI, the LITA institutes also have their own sources of funds. The team was assured that these funds are accounted for according to government financing procedures and regulations.

4.4 Concluding Remarks and Recommendations

Agricultural research and extension have not received adequate funding and the link between research-extension-farmers remains rather weak, with little feedback from farmers to research. For instance, the link between small-scale climate-smart agricultural practices and researchers' work for validation and latter scaling up by extension staff has remained weak.

The extension divisions of the ASLMs should be strengthened, and instruments for improving communication with the Research Department should be in place so that research findings are disseminated to beneficiaries more efficiently. This includes strengthening of the ZIELUs.

The government should allocate adequate financial resources to facilitate timely execution of research activities and support extension activities at district to village levels. More funding should be set aside to support and facilitate extension staff, also by providing them a conducive working environment.

As the agricultural policy stipulates, more extension workers should be deployed to village level. The current gap should gradually be reduced.

Continuing training and retraining of field officers should be stepped up in order to ensure adequate advice and making sure that extension services are need-driven. As noted, the FFS program has potential to be effective under various agro-ecosystems, livelihoods, and farming systems. It is important to support farmer organizations as a major vehicle for delivering extension services.

Efforts should continue to be directed to encourage NGO and private sector involvement in providing extension services, including building community and extension workers' capacity to apply creative interventions, value addition and marketing skills of farmers. As such, NGOs should be encouraged and guided to support village and ward extension services, and training of selected farmer representatives on potential technologies.

A holistic approach to extension services is recommended: With increasing usage of the value chain approach, it is high time that approach to extension, especially, its

coordination be reconsidered in order for it to also have full value chain approach. The approach known as: awareness-knowledge-adoption-productivity (AKAP) sequence, explained by Evenson (1997), is recommended.[31] The model emphasises that awareness is not knowledge and that knowledge requires awareness, experience, observation, and the critical ability to evaluate data and evidence. While knowledge leads to adoption, it is emphasised that adoption is not productivity because productivity depends not only on the adoption of technically efficient practices, but of market institutions for agricultural produce (Kyaruzi et al., 2010).[32] This will require packaging the extension services from the production stage to marketing stage. The current institutional setup, where agricultural extension is separate from the promotion of cooperatives and facilitation of agricultural marketing, makes attainment of this packaging complex, also because it merges activities and themes that are under the responsibility of several ministries.

[31] To enhance farmers' capabilities to raise productivity, reduce post-harvest losses and increase household income, the structural integration of agribusiness aspects in agricultural training and education is essential.

[32] Kyaruzi A.A.M., Mlozi M.R.S., Busindi I.M. (2010): "Gender Based Effectiveness of Agricultural Extension Agents' Contacts with Smallholder Farmers in Extension Services Delivery: A Case of Kilosa District, Tanzania", in Kimaro W.H, Mukandiwa L., Mario E.Z.J (eds.): Towards Improving Agricultural Extension Service Delivery in the SADC Region, Proceedings of the Workshop on Information Sharing among Extension Players in the SADC Region, 26-28 July Dar es Salaam, Tanzania.

References and Sources

– to be added –