

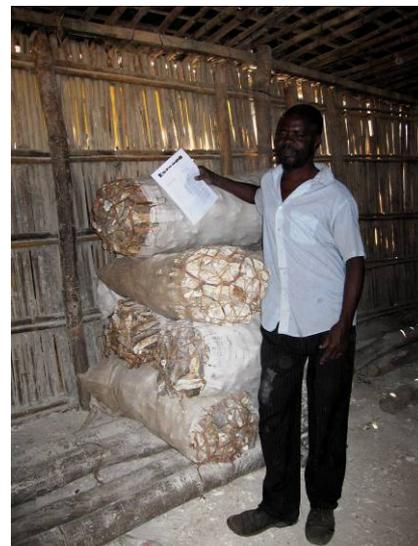
**MINAG**  
**IIAM DE**

**MICHIGAN STATE**  
**UNIVERSITY**



## **Strengthening Mozambican Capacity for Agricultural Productivity Growth, Policy Analysis, and Poverty Reduction**

**Quarterly Project Narrative Report - FY10 (Q1)**  
**October 1 – December 31, 2009**  
**Mozambique Associate Award / Food Security III LWA CA**  
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# **Strengthening Mozambican Capacity for Agricultural Productivity Growth, Policy Analysis and Poverty Reduction**

## **1. Introduction**

The national elections were held on 28<sup>th</sup> of October 2009 after one month of campaigning, which saw most senior government officials including Ministers participating in the campaign. The results were announced on a timely basis and as expected, the FRELIMO party won the elections by a strong majority, increasing significantly the number of seats in the parliament with a reduction of seats for the main opposition party, RENAMO. A recently created political party, MDM, was able to gain a few seats and becomes a third political party with representation in the parliament. Although the electoral process was peaceful, the opposition parties were not fully satisfied with the process. During this period, it was possible to work with colleagues on policy issues, although no major policy decisions can be expected with a government awaiting election results. Work on PEDSA continued and the Technical Council of MINAG discussed the agricultural expenditure report (AGPER) submitted to MINAG. The permanent secretary presented the comments which were to be submitted formally to the WB to be considered in the final report.

The following activities were planned and implemented for this quarter:

- Contribution to PEDSA conclusion and development of operational/investment plan
- Contributions to IIAM's strategic plan;
- Planning for the modernization of SIMA data system;
- Completion of TIA 2008 weights, based on Census results;
- Assistance to MINAG and INE in the ongoing Agricultural and Livestock Census
- Design of collaborative research with UEM on selected PAPA interventions
- Subsector and value chain analysis for selected commodities (cassava, maize, horticultural crops)
- Profitability of agricultural technology for selected commodities –Fact Sheet development for a range of crops with IIAM/CESE, including maize, cotton, and cassava
- Training of SIMA staff on systems for horticultural price and market information
- In-service training of IIAM staff on participatory rural appraisals

The rest of this report for the first quarter of FY 09/10 is organized by project objective. The activities were conducted during the period October 1 to December 31, 2009.

## **2. Objective 1: To assist MINAG in building institutional capacity to raise smallholder productivity and income through improved technology, markets and policies**

### *2.1. Strategic Plan for the Agricultural Sector (PEDSA) and Strategic plan for IIAM*

The main activity on PEDSA during this period was consultation with various stakeholders on the basis of the draft document. The draft document was presented to the PROAGRI group, private sector, academic institutions and civil society. To permit the participation of stakeholders from the provinces, three regional meetings were organized in Nampula (for the (Nampula, Cabo Delgado and Niassa), Chimoio (for Zambezia, Tete and Manica) and Bilene (Gaza and Inhambane). Gilead Mlay participated in the consultation meetings in Maputo and Nampula. Several key issues were raised by stakeholders for inclusion in PEDSA: 1) access

to land for commercial exploration, 2) financial services for agriculture, 3) water for irrigation; 4) management and land use in existing large scale irrigation schemes, 5) marketing; and 6) agro-processing. The PEDSA needs to be completed and presented to the Council of Ministers by the end of March 2010. In the next quarter, intensive activity on PEDSA and CAADP is anticipated.

The conclusion and approval of the strategic plan for IIAM and subsequent development of an investment were put on hold during the period as a result of developments with the new USAID-sponsored technology development platform. Under the platform, EMPRAPA will play a key role in helping IIAM in the areas of seed production and technology transfer; research in soil fertility; development of communication strategies; and institutional development. A mission from EMPRAPA visited IIAM in November, and based on a rapid diagnostic analysis of the current situation of IIAM and review of the available documents (including the draft document of the strategic plan), the mission recommended to the IIAM management to delay the submission of the plan to permit additional work on the document.

The delay in having the strategic plan approved meant that IIAM's investment in the context of the strategic plan will not be reflected in the Medium Term Expenditure Framework for 2010-2012 (MTF 2010-2012), thus delaying further the availability of investment resources for IIAM. As a short term measure, MPD staff recommended that IIAM review the Investment Plan prepared in 2006 and present it to the Directorate of Economics to ensure its inclusion in MINAGS MTF proposal and investment budget for 2011 in order to be considered by MPD.

## *2.2. The three-year Action Plan for Food Production (PAPA)*

### a) Technical fact sheets to support implementation of PAPA

The preparation of technical fact sheets is a collaborative activity involving IIAM, DE, DNSA, and the Faculty of Agronomy and Forestry Engineering of UEM (FAEF). The technical fact sheets provide information on crop calendar, input requirements (technical coefficients) including labor, mechanization; enterprise budgets and some explanatory notes on the actual application of inputs and implementation of the agronomic practices. The fact sheets are being prepared for maize, sorghum, rice, wheat, peanuts, sesame, sunflower, Irish potatoes, sweet potatoes, onions, cabbage, tomatoes and cotton. These are organized by agroecological zones (10 zones), production system (irrigation or rain fed), level of fertilizer use (none, low and high), and planting season. Data were collected from secondary sources including research to produce the basic sheets. The technical coefficients require validation to reflect the field reality. Field work was planned to take place in December 2009 but was postponed because of limited response from the provinces in providing feedback about their participation in the form of logistic support and provision of local staff to participate in field work.

### b) Evaluation of the impact of selected PAPA interventions

The PAPA has various activities in different phases of implementation, key of which are seed distribution, mechanization, and construction of silos for food reserves. Production support interventions have often been given priority with limited support measures on the marketing side. With increased surpluses in some districts after the 2008/09 crop year, the government is likely to speed up the construction of silos and possibly get involved directly in the

establishment of food reserves. In order to inform the policy makers on options for cereal marketing in Mozambique, the project is collaborating with the Faculty of Agronomy and Forestry Engineering (FAEF) of UEM in various activities among which is the preparation a policy brief on the role of the states in food staples markets, based on analysis of recent experiences in other countries as found in the literature. The terms of reference for this and other collaborative activities were concluded and agreed upon between MSU and UEM in Q1. The policy brief will be completed in Q2.

### *2.3. Agricultural and Livestock Census (CAP)*

Ellen Payongayong provided technical assistance to CAP on the design of the data entry application and methodological issues to ensure alignment with TIA. The interviews are to be conducted using CAPI (Computer-Assisted Personal Interview, small data entry machines) and is more labor-intensive in terms of design. In December, INE failed to address some of the technical issues that we and MINAG raised. With the lack of a clear demand on the part of INE for technical assistance, project involvement in CAP through Ellen Payongayong has been scaled down. She continues to support the MINAG technical staff directly when requested.

### *2.4. Implementation and Dissemination of TIA, and contribution to methodology for implementing TIA and Early Warning Crop Forecasts*

The official 2007 Population and Housing Census results were released on November 18, 2009. The delay in having these numbers created major delays in release of TIA 2008 as the census numbers were critical to generating the numbers of agricultural households correctly, and thus for estimating appropriate TIA weights for 2008. Before the availability of the population census results, MINAG had used preliminary numbers that resulted in a very high estimate of households represented by TIA. There has not been substantial forward movement on the Aviso Previo/TIA linkages during this period, partially due to the political environment.

### *2.5. Modernization of SIMA data system, including new data processing systems as well as extending commodity and inputs coverage by SIMA and modernization of communication system*

During Q2, Donovan met with SIMA staff to discuss the options for modernizing SIMA. Servitel was invited to demonstrate the system that they were developing, but it was a disappointing performance, suggesting that they did not have the capacity to move forward with such a major, national effort. The founder of TradeNet, Mark Davies, also met with Donovan and SIMA staff to discuss the cellphone/internet-based initiative that is launching here in Mozambique. TradeNet had some rough times and learned many lessons along the way, as it evolved into Esoko for sub-Saharan Africa. A local entrepreneur, Ali Deroua, is launching ESOKO/Mozambique as a basic platform for information exchange, based on the lessons of TradeNet and Esoko. The SIMA team is interested in pursuing linkages with Esoko and will be evaluating options in Q2 and seeking funding to move forward.

### *2.6. Outreach and Promotion of Policy Debates*

David Tschirley made a presentation entitled [\*Algumas Observações Sobre a Recente Subida de Preços Internacionais\*](#) (“Observations on recent rises in international prices”) on

November 13 at IIAM, to approximately 30 people from IIAM, Ministry of Agriculture, and elsewhere. The presentation reviewed cereal price behaviour in world markets over the past two years and highlighted the lack of any strong relationship between those price movements and internal movements in Zambia, Malawi, and Mozambique. It also explored the reasons for periodic price spikes in these countries, including the small-scale of most retail food trade. The presentation closed by putting these challenges in the context of rapidly growing urban populations and per capita incomes in Mozambique, and the need for increased productivity throughout basic food supply chains.

Steven Haggblade made a presentation entitled [“Lessons from Zambian Experience with Conservation Farming”](#) on November 18 at IIAM, with 16 people present, including IIAM research staff. The presentation described the conservation technology package used for the low rainfall regions (with less than 1000 mm) with clay and loamy soils) and its origin, the farm level impacts of the technology and identified the factors favoring adoption. The presentation ended with conclusions concerning technology transfer that Mozambican researchers and extension agents would find useful. It emphasized the importance of extension support for success, that changes in cropping calendar and management timetable will be necessary and finally that full benefits from conservation agriculture (CA) are achieved over time. The discussion afterwards highlighted a key point concerning soils. IIAM efforts on CA focus on areas in the south with sandy soils, yet the CA technology currently available is designed for other soil types with greater water retention. Participants acknowledged that CA is a potential response to climate risk, especially erratic and limited rainfall.

David Mather with Boughton and Donovan completed Flash 53 [“Measuring the Impact of Public and Private Assets on Household Crop Income in Rural Mozambique, 2002-2005”](#) available in both English and Portuguese. This is based on Working Paper 67. The Flash has been widely distributed in Mozambique and a presentation will be developed for further outreach in the coming quarters.

Cynthia Donovan participated as a facilitator in the PROMER workshop on value chains for poverty reduction and income growth. In addition, the project contributed materials to the “25<sup>th</sup> Anniversary of the US Government in Mozambique” exhibit held at the Fortaleza. The materials focused on the contributions to creating a market information system (SIMA) and to helping to improve data collection systems, establishing the TIA household surveys as a major source of reliable information on the smallholder agricultural sector.

### *2.7. Other activities contributing in strengthening DE capacity to provide supportive policy environment*

The MSU final report on “Trend and structure on agricultural expenditures” was submitted to RESAKSS. This work was funded by RESAKSS, but is seen to contribute to overall project activities with MINAG in priorities for agricultural spending. The executive summary is in Annex 1. The report will be translated to Portuguese to be more accessible by staff of MINAG, MPD and Ministry of Finance.

At the request of the Director of Economics, Victorino Xavier, MSU has begun working with MINAG/DE to support their hosting of a regional conference and training under the African Agricultural Markets Program (AAMP), a COMESA initiative with their ACTESA unit, concerning food price variability. Key policy debates on topics such as trade regulations,

food reserves and production subsidies are anticipated during this high profile conference, to be held in January of Q2. This will also be an opportunity to address issues related to CAADP Pillars 2 and 3 in an open forum. Many of the attendees have been involved in CAADP processes already.

### **3. Objective 2: To strengthen market research and production technology development and transfer by MINAG and IIAM**

#### *3.1. Sub-sector and value chain analysis for selected commodities*

MSU staff is involved in sub sector and value chain studies for maize, horticultural crops and cassava in collaboration with staff from DE and CESE. The studies provide a good opportunity to provide practical training to the young socio-economists from CESE and DAP. Gilead Mlay and Cynthia Donovan are supervising CESE staff in finalizing their protocols for their individual studies on maize, Irish potatoes and cassava value chains. Much of the work on cassava, maize, and horticulture reflects a leveraged effort between the USAID project in Mozambique and the regional GISAMA Project (<http://www.aec.msu.edu/fs2/gisama/index.htm> ) of the Food Security Group at Michigan State University.

- **Maize Value Chain**

David Tschirley and Duncan Boughton traveled to Mozambique in July 2009, teaming with DAP and SIMA personnel to carry out field research regarding the performance of the maize value chain in the center of the country. Mozambican personnel involved in this work included Helder Zavale and Sofia Manusse. Focus group interviews were carried out with farmers in nine localidades of Manica and western Sofala provinces. Small traders were also interviewed in each location, along with large agro-enterprises: Andre Vonk of V&M Trading, poultry producer Abilio Antunez, and representatives of the new agro-enterprise DECA. Finally, managers of the large trading groups Delta Trading and MEREK were interviewed in Maputo. The work highlighted the very rapid expansion of formal sector demand for maize grain in the region, the positive effect that this has had on ease of sale and prices paid to farmers, and the potential that this phenomenon presents for sustained increased in productivity, as long as government is able to design and implement appropriate policies and programs to support farmer investments in improved technology. The interviews also made it clear that demand for soybeans and sesame has boomed and represents major income earning opportunities for farmers. Horticulture has also boomed in some areas with good water control, serving urban markets in Chimoio and Beira.

- **Horticultural Value Chain**

David Tschirley made two trips to Mozambique in September and November 2009 to work with SIMA staff on a supply chain study of the fresh produce system serving Maputo. This study is part of a broader regional study under GISAMA that will allow Mozambique to be compared with Zambia, Malawi, and Kenya, and contributes to the USAID project efforts to improve SIMA's capacity to serve the private sector. This work consists of (a) detailed mapping of the flow of selected fresh produce items (tomato, onion, cabbage, and kale) from rural areas through wholesaling and on to retail markets in Maputo, including estimates of market shares of different production areas, wholesale markets, and retail markets, (b) detailed cost build-ups for these crops from wholesale to retail, (c) on-going price collection at wholesale and retail to estimate price variability and gross marketing margins, and (d) detailed retailer surveys to identify key constraints they face in running their businesses. All

field work (other than on-going price collection) was finished by mid-December and will be analyzed during the first six months of 2010.

- Cassava Value Chain

Donovan and Haggblade worked with CESE analysts Mudema and Salegua to diagnose key aspects of the cassava value chain in the north and the south. The preliminary field research will be followed up with additional farmer surveys and private sector interviews to understand the opportunities for growth in value added products from cassava including rale (gari) and cassava flour. While this work is mostly funded by GISAMA, it incorporates capacity building components and will generate USAID/MSU/MINAG output as well.

### *3.2. Profitability of agricultural technology for selected commodities*

Project staff (Gilead Mlay and Raul Pitoro) continued to work with IIAM staff on profitability studies for broilers, cotton, cashew, cassava and maize.

- Cassava

Mlay and Pitoro backstopped IIAM staff in implementing the FAO supported cassava production, marketing and processing in Zambezia. The PRA and field testing of the formal questionnaire were carried out in December 2009 and the report is being prepared.

- Broilers

Gilead Mlay assisted Custodio Amaral to complete profitability analysis of commercial broiler production based on a case study of the Faculty of Veterinary Medicine of UEM. The study shows that levels of technical efficiency are comparable with international standards; with mortality rate of 3%, slaughter weight at 35 days of 1.8 kg per bird and feed conversion rate of 1.94kg/kg. Despite the high costs for feeds and day old chicks which account for 67.3% and 19.9% of total production costs respectively, commercial broiler is profitable. However, the breakeven broiler price is only 8.7% below the current price. Increasing productivity and production of the principal feed ingredients (maize and sorghum) and removal of IVA on imported maize will improve the competitiveness of local broiler production.

- Cotton

Pitoro worked with Adelino Afonso, one of the CESE analysts stationed at the Northeast Zonal Center for IIAM in Nampula to carry out analysis on cotton profitability in twelve villages in Nampula. In each village, village leaders brought together farmers with at least 5 years of experience with cotton. Based on their stated yields for the 2007/2008 crop year, the farmers in each village were split into three even groups. Category 1 includes the farmers with the highest yields relative to the other farmers in their village. Category 2 farmers in a village had yields in the middle tercile and finally Category 3 comprises farmers with relatively lower yields compared to other farmers in the village.

During focus group discussion, Category 1 farmers indicated hiring more labor compared to the other two groups. This category hired greater than or equal to 230 mandays/ha in the crop season 2007/08, while the Category 2 farmers hired between 200 and 230 mandays/ha of labor, and finally the least productive category was not able to hire more than 200 mandays of labor per hectare in this season. The report will highlight other key differences in technology use between the categories.

The preliminary results indicate that farmers in the three groups have positive returns to cotton production, but these returns are low. The return to family labor varied from 5.50 meticaïs per manday for Category 3 to 11.00 meticaïs per manday for Category 1. Average Category 1 returns to family equity due to cotton production is 1,374 meticaïs/ha per crop season, compared to 877 meticaïs/ha for Category 2, and 679 meticaïs/ha for Category 3.

Although all categories have positive returns to their families' equity, the level of returns is low compared to the national income statistics. A key component affecting returns is the cost of hired labor, which represents about 70% of total variable costs. These results suggest that lower labor productivity results in relatively high labor hiring rates to perform farm activities. These results also indicate that farmers in Categories 2 and 3 would have higher incomes if they sold their labor to the Category 1 farmers, who tend to be more specialized in cotton. Finally, although Mozambican Cotton Institute (IAM) is encouraging cotton companies to promote more intensive technological packages, farmers are still using low yield and mixed seed varieties, lower number of insecticide applications, and late weeding. The late weeding, in particular, means greater demand for labor in peak periods and thus higher labor costs. The final report will be available in Q3.

#### **4. Objective 3: To Strengthen of Human Resource Capacity in MINAG and IIAM**

##### *4.1. Graduate training*

CESE analyst Ana Lidia Gungulo continued with her MSc training at the University of Pretoria and successfully concluded the first year of her program under funding from the Pulse Collaborative Research Support Program (CRSP). Her first year was considered a bridging year, focusing on building her English language skills and improving her economics and mathematics knowledge base. She has been accepted into the Department of Agricultural Economics and is expected to start the first full year of her course work in February 2010. Another CESE analyst, Isabel Siteo, continued with MS coursework in Australia with external funding.

Helder Zavale continues with coursework for his PhD training at MSU. His training is considered strategic by both MINAG and the University of Eduardo Mondlane as it will strengthen the collaboration between MINAG and the university in capacity building and analytical work to support decision making in MINAG. He continues to support the research agenda while completing studies, including the monetization analysis and aspects related to wheat and agricultural public sector spending.

##### *4.2. In-service training*

- a) Backstopping of IIAM staff on PRA methods to implement the FAO funded Cassava study (Mlay and Pitoro)

After developing the instruments for data collection, Raul and Mlay conducted a two-day training in data collection for quantitative survey using the recently developed questionnaire for this project. A total of 5 women and 3 men participated in the training. After the training, the IIAM staff responsible for the PRA was asked to pre-test the questionnaire while in field.

The PRA and pre-test were concluded and we have received the PRA report for comments and we are still waiting for comments on the questionnaire for quantitative survey.

- b) Backstopping of IIAM, DE and FAEF staff on field validation methods for the technical facts sheets

The project, through the in-country coordinator, assisted IIAM to prepare the data collection instruments for the validation of the technical fact sheets and conducted two seminar sessions in the first week of December for technical staff from DE (4), IIAM (4) and the Faculty of Agronomy and Forestry Engineering of UEM (2) who will be responsible in supervision of the field work in 23 districts. In total, the in-service training involved 6 men and 4 women.

- c) Training of SIMA staff on data collection methods (Horticulture)

David Tschirley worked with all SIMA staff (one woman and three men) in September and November, making market visits and training them in methods for routine price collection and for detailed survey work to identify the structure and costs of fresh produce trade in Maputo, under the GISAMA Horticulture component with additional in-country support. A total of 1 woman and 3 men were trained.

Q2 and Q3 efforts will focus on training of DE new staff on food systems and policy analysis, training of DE and IIAM staff on applied statistics and statistical packages, and preparatory courses for CESE staff to pursue long training.

## **5. Assistance to USAID-Mozambique and Title II partners to measure program impacts using Income Proxy Method**

This work has continued from the previous work plan, due to delays in data collection, data analysis, and lack of information from INE to establish sampling weights. Ellen Payongayong finalized the data sets for the INCPROX survey of the Title II partners and made a presentation at USAID to mission staff members as well as representatives from the various partners in early December 2009. Unlike the previous years, MSU had a more direct role in data collection and analysis, including responsibility for processing not only the agricultural questionnaires but the nutrition questionnaires as well. The presentation combined the datasets from different partners and demonstrated the positive effects on project participants, for both male and female headed households. Key aspects noted were the crop income benefits and benefits from income diversification among participants, depending on the zone. During the presentation at USAID, it was decided that MSU update the methodology used for INCPROX, based on results from TIA 2008, as soon as those results became available. MSU was also asked to calculate different nutritional indicators, to correspond with those more commonly used by USAID in Mozambique. There will be revised tables produced in Q2, both for each Title II partner as well as for the partners as a whole.

## **6. Additional USAID funded activities**

### *6.1. Monetization report for World Vision*

Under a contract with World Vision, funded by USAID, MSU conducted an analysis on the Title II Monetization Program 1998-2007. The draft report was submitted, comments

received in Q1 and the final report released in late 2009. Overall, the report found that the monetization of wheat and edible oil during the given period was relatively efficient and did not have shocks on local markets. The monetization program may have helped to generate competition and participation of new agents in processing, although it was likely to have reduced international imports of those commodities. In agreement with World Vision and USAID, it has been published as MSU International Development Working Paper # 103 and is available at the website <http://www.aec.msu.edu/fs2/papers/idwp.htm> . It will be made available in Portuguese as well, under the MINAG research Report Series.

## *6.2. Pulse CRSP*

In collaboration with IIAM's CESE and DE/SIMA, MSU faculty members have supported bean research to understand the value chain for common beans in Mozambique. Ana Lidia Gungulo, CESE analyst, is undertaking MS studies at the University of Pretoria under this program. A request for a two year project extension (Oct 2010- Sept 2012) with additional funding was submitted in December 2009 to the Pulse CRSP for this multi-country program.<sup>1</sup> More information on this research can be found at <http://pulsecrsp.anr.msu.edu/ProjectInformation/PIMSU2MichiganStateUniversity/tabid/106/Default.aspx> .

## **7. Activities of MSU staff in Mozambique under Food Security Group, with additional external funding**

The Food Security Group has developed various research and training efforts in Mozambique to leverage funding as well as to complement the activities under the USAID program. This includes the previously mentioned regional work with GISAMA (funded by the Bill and Melinda Gates Foundation, impact evaluation work under MCC, and baseline assistance to Cruzeiro do Sul for CLUSA Cotton Value Chain Project.

### *7.1. MCC/MCA*

Payongayong and Pitoro continued working in collaboration with MCA and their partners in preparation for the survey to be used as the baseline for evaluating the mapping and land inventory activities that will take place on or about September 2010. Working with Maredia and Jin, they also commenced work on constructing the sampling frame for the survey.

The FISP Coconut Sector Survey report was submitted December 2009, after incorporation of the adjusted TIA 2008 weights. Pitoro assisted with initial data cleaning and analysis; additional analysis and report were completed by Byron Reyes, Donovan and Payongayong. After receiving comments from MCC and MCA, the FISP Coconut Sector Survey Report will be revised for the final version.

For further information on the Mozambique Compact, see <http://www.mcc.gov/mcc/countries/mozambique/index.shtml> .

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<sup>1</sup> The project extension was approved in February 2010.

*7.2. Technical assistance to Cruzeiro do Sul for baseline survey for CLUSA Cotton Value Chain Project*

The draft baseline report was submitted to CLUSA by Cruzeiro do Sul. In Q4/2009, we recommended edits and examination of the data. We may yet be requested to evaluate sampling issues and the crop income estimates for this baseline work. The impact assessment work is part of MSU's initial effort to improve local capacity for such work.

# Annex 1 The Structure and Trend of Agricultural Public Expenditure in Mozambique

Helder Zavale, Gilead Mlay, Duncan Boughton and Adriano Chamusso

## Executive summary

### *Justification and objectives of the study*

The fight against poverty remains the key development goal for the Government of Mozambique (GoM). Success in the transformation of the agricultural sector is considered to be a necessary condition for meeting the goal because agriculture and poverty are closely related. About 80 percent of population heavily depends on agriculture as their primary source of livelihood and about 73 percent of the population lives in rural areas. Currently the level of agricultural productivity is relatively low compared to other developing countries, including Southern African countries. The low level of crop productivity is not surprising given the dependency on rain-fed agriculture and limited use of fertilizers and improved seed. Results of the National Agricultural Survey (Portuguese acronym TIA – *Trabalho do Inquerito Agrícola*) indicate that, in 2007, only about 4 percent of smallholder farmers use fertilizers, 10 percent used improved maize seed, and 4 percent used pesticides.

Investments in agriculture and complementary rural infrastructure, health, education, and institutional mechanisms are needed to promote a sustainable agricultural growth. According to the World Bank (2007), sustainable agricultural growth requires a holistic strategy consisting of policy reforms, institutional innovations, and well-targeted investments aimed at boosting agricultural productivity and stimulating competitiveness. Empirical evidence (Fan et al., 2000; Fan et al., 2004; Benin et al., 2008) has shown that expenditures in public goods are the major drivers of agricultural growth, competitiveness, and poverty reduction. Broad-based agricultural growth cannot take place without government commitment to provide agricultural research, extension services, institutional mechanisms, transport and market infrastructure that are essential to promote agricultural productivity gains and ultimately poverty reduction (David and Inocêncio, 2000; Haggblade, 2007).

In recognition of the importance of public investment in agriculture, the heads of state and governments of the African Union assembled in Maputo in 2003 resolved to implement the Comprehensive Africa Agriculture Development Program (CAADP) by committing to adopt sound policies for agricultural and rural development growth and to allocate at least 10 percent of the national budgetary resources to agriculture by 2008. This commitment, referred to as the “Maputo Declaration”, is expected to enable implementing countries to achieve a 6 percent annual growth in agricultural GDP.

This paper examines the trends in public expenditure on agriculture, the structure (composition) of public expenditure, and how the composition of public expenditure has changed over time. In addition, it makes a preliminary evaluation of the quality of public expenditure in terms of the functions of government and spatial allocation. The report also assesses the extent to which the structure of public expenditure is aligned to sector’s policies and strategies.

The specific questions to be addressed by this report include: What is the overall share of agriculture in total public expenditure and how is Mozambique progressing towards

satisfying NEPAD's Maputo declaration? How is the provision of public goods fair in the overall government expenditure in agriculture? Is the spatial expenditure in agriculture aligned with sector strategic targets and objectives?

### ***Methodology***

The public agricultural financing profile considered in this study comprises the following dimensions:

- Funding agents: Ministry of Finance, Donors, Agricultural Development Fund (FDA), and Local governments;
- Service providers: Ministry of Agriculture (MINAG), Ministry of Fisheries, National Directorate for Promotion of Rural Development (DNPDR) in the Ministry of Planning and Rural Development, Zambezi Regional Development Authority (GPZ), National Institution for Management of Natural Disasters (INGC), and Ministry of Public Works and Housing.

Economic classification and classification of the functions of governments (COFOG) are used for the analysis. The use of COFOG is limited to data collected from MINAG and is based on the following functions: support to production; extension, knowledge and information; research and development; small and large scale irrigation; marketing, food safety and food quality; sustainable land management; and food security and vulnerability. The national accounts are the principal source of data, complemented by data from public service providers whenever the disaggregation required is not satisfied by national accounts data. In order to minimize data inconsistencies the study only covers the period 2001 to 2007.

### ***Main results and policy implications***

1. For the period 2004 to 2007, the priority sectors in terms of public spending are education (19%), infrastructure (15.2%) health (11.8%), good governance (7.9%) and agriculture (7.8%). These sectors accounted for an average of 54% of total public spending per year. The budget allocation to agriculture has not maintained a consistent upward trend. The allocation was above 10% in 2003, 2004 and 2007 with an average of 9.7% per year. However in terms of actual spending, the share accounted for by agriculture has remained below 10% over the whole period with an average annual spending share of 6.8%. Between 2003 and 2005, actual spending accounted for by agriculture showed an upward trend rising from 7.9% in 2003 to 9.6% in 2005. Thereafter the share has declined, falling to 7.1% in 2007. The figures show that resource allocation and actual spending for agriculture have not maintained a steady increase in line with the Maputo Declaration of 2003, which commits member countries to increase the share of spending to reach the target of 10% by 2008.
2. While the level of spending is important, where the spending is effected will determine to what extent this will contribute to efficient resource allocation and growth. Trends analysis based on the classification of the functions of the government and special allocation was constrained by the lack of disaggregated data. The functional classification is based on data from MINAG, Ministry of Fisheries , DNPDR and GPZ, and covers the functions of research and development, extension, production support (include subsidies, emergency distribution of inputs and farm

implements, sanitary services ), institutional support, small and large scale irrigation land rights and management. The relative shares in spending among the above mentioned functions between 2005 and 2007 shows that that the largest share was accounted for by small and large scale irrigation (43% per year), followed by institutional support (25%), production support (14%), research (10%), extension (5%), and land rights and management ( 3%). The rehabilitation of Massingir dam and Chokwe irrigation scheme account for the large expenditure on irrigation. Although there has been a substantial increase in spending for research since 2004, when the national agricultural research institute (IIAM) was created, spending for technology development and transfer remain relatively low.

3. Investment spending on agricultural research has remained below 0.4% of Agricultural GDP between 2001 and 2005. Walker et al. (2006) recommended that public expenditure to agricultural research should be at least 2% of the agricultural GDP if Mozambique is to be able to generate/adapt technologies to sustain annual growth rates of at least 6%.
4. The financial records of MINAG show that between 2001 and 2007, an average of 53.2% of MINAG's total spending per year is accounted for by spending in the provinces, attaining a maximum share of 59.1% in 2007. The ranking of the provinces in terms of the average share of provincial expenditure per year of funds from MINAG between 2004 and 2006 is as follows: Nampula (14%), Niassa (11%), Inhambane (11%), Sofala (11%), Zambezia (10%), Gaza (10%), Cabo Delgado (9%), Manica (9%), Tete (8%) and Maputo (8%). In terms of expenditure per rural capita Maputo ranks first, followed by Niassa, Sofala, Manica, Inhambane, Gaza, Cabo Delgado, Tete, Nampula and Zambezia. Ranking in terms of expenditure per holding follows a similar pattern. Ranking by expenditure per unit of agricultural GDP, Niassa occupies the first position (3.2%), followed by Maputo (2.8%), Tete (2.1%), Gaza (2.1%), Manica (2%), Sofala (1.9%), Inhambane (1.6%), Cabo Delgado (1.5%), Nampula (1%), and Zambezia (0.6%). ***These numbers show that the provinces contributing most to total agricultural GDP or with largest rural population are least favored in terms of spending of funds from MINAG.*** Further analysis to better understand the underlying reasons for the observed patterns will help MINAG define objective criteria for provincial allocation of resources and or improve budget execution at provincial level.
5. The structure of budget allocation and spending are good indicators of “real” policy priorities and therefore help evaluate the extent to which policies are aligned to actual resource allocation and utilization. The projected budget for the implementation of the action plan for food production (PAPA) is analyzed to see how resources are matched with products and provision of public goods. The action plan budget for 2008 indicates that the 4 priority products are rice (39.3% of the budget), maize (38%), wheat (8.9%) and chicken (6.9%). According to Walker et al., the crops with highest total production value and highest potential to reduce poverty are cassava (30%), maize (29%), groundnuts (6%), sweet potatoes (4%), and rice (4%). The low priority given to cassava and the basis for identifying wheat as a priority crop for public resource allocations are not clear. In terms of budgeted funds by areas of intervention, extension occupies the second position behind irrigation. The two functions account for 56% of the budget. The budget for research on the other hand is only 2.6 % of the total budget. The allocation of this small research budget is only partially consistent with budget allocation by product. Rice has the largest share (48.4%) followed by

Irish Potatoes (38.8%). In terms of budget allocation by product Irish potatoes occupy seventh position with 1% of the budget.

6. If technology is to be an engine of growth as implied by the Green Revolution Strategy and the Strategic Plan for the Agricultural Sector (PEDSA), then the governments need to re-evaluate the criteria for resource allocation to guide public investment allocation between functions of the government. Specifically, there is a need to improve institutional capacity in the generation/adaptation and transfer of agricultural technologies. There is also a need to assess the criteria for spatial distribution of funds according to population and agricultural potential to optimize the rate of growth and poverty reduction from agricultural public expenditure.