

An Introduction to Agriculture Statistics

**Report on Mission to Mozambique to Provide
Training
On Agriculture Statistics
For
The Mozambique Ministry of Agriculture**

GDDS 2- Agriculture

**Polana Hotel
Maputo, Mozambique**

March 2009

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Draft: April 2009**

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An Introduction to Agriculture Statistics

Introduction

The origins for this mission arose from the work of the World Bank and the International Monetary Fund (IMF) who implemented a three-year project to support the more effective design, implementation, and monitoring of macroeconomic policy and poverty-reduction strategies. One of the major strategies to achieve this is helping to strengthen the capacity of national statistical systems in participating countries. It is structured around the IMF's General Data Dissemination System (GDDS) and is financed by a grant from the United Kingdom's Department for International Development (DFID).

Mozambique was one of the countries that participated at the GDDS agriculture statistics launch seminar held in Maputo in March 2007. The aim of the agricultural statistics module is to assist the participating countries to improve the coverage and quality of different aspects of statistics on agriculture, food and fisheries. Each country identified its own priorities to develop a work program for data improvements that will be implemented over the life of the module.

An initial mission to Mozambique in March 2008 identified the need for training in the area of agriculture statistics. An earlier mission (2007) headed by Prof. Kiregyera recommended and outlined such a course and this outline was used to plan a mission March 2009. This report summarizes the training mission which took place from March 1 to March 13, 2009.

Objectives and Purpose of the Mission

The overall objective of this mission was to provide training and orientation for up to 25 members from the Economics Division from the Ministry of Agriculture. The subject of the training was an overview of the role, purpose, production, dissemination, use and management of agriculture statistics in Mozambique. The participants included senior staff from the provincial offices of the Economics Division as well as junior/new staff who were recently hired in the central office of the Economics Division. As a result of this training, participants are expected to better understand the objectives of their work and to be better engaged in the planning and execution of their tasks.

Rationale for the Training Mission

The Mozambique Ministry of Agriculture (MINAG) is responsible for producing annual and special statistics for the agriculture sector. Based in large part on the strength of their provincial offices, MINAG has a strong survey program. The annual agriculture survey known as the TIA (Trabalho de Inquerito Agrícola) has been in existence since 2002. The survey is planned centrally with assistance from USAID and Michigan State University. The data are collected and captured in the field by teams of people working in the provincial offices. There has long been a concern that the provincial statisticians have only a limited exposure to the statistical process. For example they are not involved in questionnaire and sample design nor are they involved in the post data capture

activities. This training program was designed to give them an overview of the entire statistical process.

While the provincial staff were the main targets for the training, this same training was used to enhance the knowledge of junior staff and to expose new staff working in the central office in Maputo to the statistical process.

The list of people attending the training session can be found in Appendix A.

Terms of Reference

The terms of reference for this mission can be found in Appendix B

Summary of Daily Mission Activities

Date	Activity	Venue
February 28, 2009	Arrived in Maputo at 22:00 minus one piece of luggage	Maputo Airport/ Polana Hotel
March 1	Meetings with: <ul style="list-style-type: none">• Chris Hill, co-trainer,-to coordinate activities for the training• Aurélio Mate, Chief of Statistics Department-to review plans and logistics for the training session• Victorino Xavier, Director of Economics-to receive slides translated into Portuguese, plan the opening session for the next day• David Suaze, interpreter,- to brief him on the material and to provide background information	Polana Hotel
March 2	Opening session for the training program. Opening speech by Mr. Xavier and Ernie Boyko. Introductions, review of the program and daily procedures, overview of the course and the agriculture statistics process, explanation of basic terms and general content. Distribution of materials. Discussion with trainees as to their priorities. Presentations by Ernie Boyko	Polana Hotel, Bazaruto A
March 3	The survey process, questionnaire design, Presentations by Chris Hill; Meeting at Maputo Office of the World Bank; ice breaker reception	Polana Hotel, Bazaruto A Polana Hotel Terrace
March 4	Survey methodology, sampling and design; Presentations by Chris Hill; Presentation by Dr. Rafael Uaiene on the use of indicators for PARPA (program achieving structural change in agriculture, increasing productivity and using natural resources to achieve poverty reduction.	Bazaruto A, Polana Hotel,
March 5	Survey planning, documentation and payment of daily allowances by the World Bank to provincial attendees	Polana Hotel, Bazaruto A

March 6 Review of program to ensure all topics are covered, attendance plans for March 11, guest speaker (Monica Maqaua) from INE on the subject of agriculture's contribution to the National Accounts; data capture/processing Polana Hotel, Bazaruto A

March 9 Editing and estimation; verification, Polana Hotel, Bazaruto A

March 10 Data analysis, metadata and data management, Data dissemination, presentation of class assignments
Presentation of certificates to provincial attendees who were not present on March 11, Polana Hotel, Bazaruto A and courtyard

March 11 Wrap-up, review, assessment of further training needs, presentation of certificates to remaining attendees. Assembly of course material and presentations on flash drives, Polana Hotel, Bazaruto A

March 12 Development of recommendations based on the training and meetings with Mr. Diogo and Mr. Mate

March 13 Meeting with Mr. Xavier to present recommendations and to officially close the mission

Administration and logistics

The sessions started at 8:30am every morning and ended at 3:30pm with a break at 10:00 and lunch from 12:00 to 1:15. There were no breaks in the afternoon. Sign-in sheets were administered every day. Lunch was taken at the hotel terrace and coffee breaks were outside the training room. Over 2500 pages of material were reproduced, collated and distributed to the trainees. Maria Rosa Guambe, Carolina Guambe and Lorna Boyko assisted the trainers with logistical and administrative activities. After discovering that photocopying material at the hotel was too expensive, a less expensive alternative was used outside the hotel. It is estimated that this saved over \$1500 for the mission.

Two setbacks occurred during the mission. The first was \$400 US which disappeared from Ernie Boyko's safe at the Polana and the second was the loss of Chris Hill's computer due to a virus attack. Viruses also infected some of the flash drives on which material was being passed back and forth. New ones were purchased and the program was completed. Neither of the other 2 setbacks affected the delivery of the training.

Highlights of the Sessions

It was very appropriate to have Mr. Xavier, the Director of Economics officially open the session as all of the people being trained were part of the Economics Division, either in Maputo or in the provincial offices. He spoke of the relationship between the work done by the provincial staff and those in headquarters and the importance of providing training so that all participants understood the process. He expressed his wish to be able to participate in some of the sessions but admitted that this was a busy time for him as he prepared for meetings with program funders.

Setting the Stage

Ernie Boyko started the training session by explaining the objectives that had been set out for the mission and the relationship of this mission in relation to the General Data Dissemination System (GDDS) project organized by the World Bank (WB) and the International Monetary Fund (IMF) and financed by the Department for International Development (DEFID). He also provided a high level summary of the statistical process including the role of statistics in decision-making and the rationale for the different types of content/questions that are part of censuses and surveys.

To ensure that the course covered material of interest and relevance to the trainees, they were given an opportunity to identify the topics that would be of particular interest to them. The trainers concluded that the material as prepared by them would cover all the topics.

Overview of the Survey Process

Chris Hill presented a detailed outline of the steps involved in a survey and went on to provide an overview of questionnaire design. The TIA questionnaire was used as an example. This was appropriate as the TIA has been in existence for over 15 years and its questionnaire seems to work well. It was noted that the TIA questionnaire is quite long, (it takes an average of 69-91 minutes to complete depending on whether there is an income module). In the discussion, consideration was given as to whether this length of questionnaire was needed each year and whether all of the data coming from the survey was used every year. Had time permitted, the class would have been given an exercise to develop a questionnaire and/or to propose a short and long TIA questionnaire to be used on alternative years. This would be a way to reduce response burden and survey costs. As well, the content could be varied in order to cover a greater number of topics on alternate years.

Survey Design

Mr. Hill also covered survey design. This led to a discussion of the appropriateness of the TIA sample for providing good estimates for all agriculture commodities. A mission headed by Prof. Kiregyera in 2007 identified the need for adjusting the sampling procedure in order to improve livestock (particularly cattle) estimates. Various maps

showing the distribution of the TIA sample in relation to the areas (as determined by the 1999/2000 Census of Agriculture) that contain the most cattle were used to discuss sample design issues. A global analysis indicated that the cattle estimate for 2006 seemed too low in relation to the preceding and subsequent years. The discussion covered a number of possible reasons for this including the following:

- Processing errors
- Estimation and weighting changes
- Shifts in the survey period. It was noted that the data collection period for the 2006 survey was later than usual and this brought the reference period closer to December which is a month during which a larger number of animals are slaughtered. This also raised the question as to whether there were sources of slaughter data which could be used to validate the cattle numbers.

The trainers concluded by suggesting that the TIA sample could be redesigned, after the new Population and Housing Census frame was available, in such a way that areas with concentrations of large livestock are over-sampled for purposes of getting more reliable livestock data. For large animals, the arrolamento (administrative data) should be revived, perfected and used as a source of animal counts for local programmes. Later in the week it was learned that the 2008 TIA sample had been redrawn using the 2007 Census of Population and that the TIA sample had been adjusted. It was thus suggested that the 2008 TIA data should be reviewed with the aim of determining the adequacy of the cattle and other livestock estimates.

Survey Planning and Management

There was a great deal of interest in survey planning and the use of a cronograma [Gantt chart]. The latter was provided to the trainers by Ellen Payongayong who had developed a TIA survey plan for her own use and for discussion purposes. It had been noted by Mr. Xavier that implementing the TIA survey had become more difficult in the past year due to administrative changes. These involved changes in:

- the flow of funds to the provincial offices to pay for enumerators
- the process for acquiring equipment and
- the process for hiring enumerators

It was concluded that longer lead times will need to be built into the planning cycle for future surveys. The following page contains an example of one page of a cronograma.

DRAFT CALENDAR OF TIA 2008 ACTIVITIES FOR DISCUSSION (Prepared by Ellen Payongayong) Page 1 - Example

Wk	Start	Fin	TIA ACTIVITIES AT MINAG			Provinces/Regions	TIA ACTIVITIES IN PROVINCES
			Methodology / Operations	Informática	Logistics		
5	29-Jan	04-Feb		Data processing previous years TIA		South/Zambezia	Central
6	05-Feb	11-Feb					
7	12-Feb	18-Feb		Presentations			
8	19-Feb	25-Feb					
9	26-Feb	04-Mar		Data documentation			
10	05-Mar	11-Mar			Procurement starts		
11	12-Mar	18-Mar					
12	19-Mar	25-Mar					
13	26-Mar	01-Apr					
14	02-Apr	08-Apr	Commence coordination with provinces				
15	09-Apr	15-Apr					
16	16-Apr	22-Apr	Definition-methodology, sampling		Calibration and inventory of equipment		
17	23-Apr	29-Apr	Start: questionnaire revisions				
18	30-Apr	06-May	Pretest		Procurement		
19	07-May	13-May	Field-testing				
20	14-May	20-May	Finalize questionnaires	Reformat of questionnaires			
21	21-May	27-May	Preparation of manuals				
22	28-May	03-Jun	workplan, training		Questionnaire reproduction		

23	04-Jun-23	material			
24	11-Jun-24	Finalize documents	Design of data entry application	Preparation of survey equipment	
25	18-Jun-25				
26	25-Jun-26				
27	02-Jul-27			Distribution plan	
28	09-Jul-28		Training of Trainers		
29	16-Jul-29		Training of Supervisors		
30	23-Jul-30				
31	30-Jul-31				
32	06-Aug-32				Enumerator selection and
33	13-Aug-33				Enumerator selection and

Data Capture and Processing

There was a lively discussion on the subject of data capture. MINAG uses paper questionnaires to capture the data which are entered in the field by technical teams. They have a number of years of experience in doing so. It is understood that the Instituto Nacional de Estatística (INE) is planning to use Computer Assisted Interviewing (CAI) for the upcoming Census of Agriculture where the respondent information will be entered into a computer during the interview. This process will be tested in May. As the course participants had a great deal of experience in the area of field-based data capture, Chris Hill led a discussion on the pros and the cons of different approaches to CAI and what can be done to ensure the successful implementation of new technology. A summary of this discussion is contained in Appendix C.

Estimation and Verification

Chris Hill presented an overview of estimation and Ernie Boyko led the discussion on the process of verifying estimates. This was explained in the context of creating time series for each of the major commodities and assessing whether the changes are plausible. The table below showing the number of cattle by province and was used to demonstrate the process verification. The results of the 2006 TIA estimates provinces of Tete and Gaza seem out of line with the preceding and subsequent years. Situations such as this call for reviews of the survey processes and the use of external data sources to find corroborating evidence.

Guest Speakers

Three different guest speakers were invited to address the class as a way of connecting the statistics process with users. Each of the speakers was asked to briefly describe their area of work, indicate which statistics or data that they use and whether there are issues with the quality and/or supply of these data. A brief summary of each of their presentations is shown below.

Dr. Rafael Uaiene: He works with IIAM, the Agricultural Research Institute of Mozambique. He spoke about a program referred PARPA II - Action Plan for the Reduction of Absolute Poverty. They use statistics from a wide variety of sources (census, various household surveys and administrative data) in order to support the planning process, provide input to the public accounts, conduct food analysis, for monitoring and impact assessment (performance) of policies, programs and projects, and to support decision-making. The major issue that he raised had to do with a large disparity between different sources of data, in particular the differences between the TIA and the Aviso Prévio (the early warning system).

Monica Maquau: She works at INE in the National Accounts and spoke about the data used by the National Accounts to measure the contribution of agriculture to the Gross Domestic Product (GDP). She explained the procedures for estimating the output of the agriculture sector for GDP purposes. This included the definitions, the sources, and the

measures that are used. She concluded by indicating that the National Accounts were seeking better estimates for:

- annual food crop production including vegetables (For example, urban agriculture is common and not covered by the TIA)
- the production from permanent crops
- yield of crops (cotton, sisal, etc.)
- animal production (meat, milk and eggs). Better estimates for livestock are particularly important as it is known that there are underestimates especially in rural areas for the sales and consumption of chicken.
- the pricing for the valuation of agricultural production

Dr. Domingos Diogo: Dr. Diogo is a member of the Economics Directorate and is also involved in providing information for the Millennium Development Goals (MDG). He outlined the origins of the MDG and the integrative approach being used in Mozambique whereby various initiatives (for example, the PARPA described above) are mainstreamed across the issues. He outlined the various goals and objectives that are part of the MDG and gave examples of the indicators that are used to monitor progress towards meeting the goals.

Class Projects

The trainers wished to ensure that the class was able to understand and synthesize the material that they were exposed to during the training session. The class was given an assignment to complete and to present to their colleagues. The assignment was to outline the plans for a survey. The scope of the survey was to be regional rather than national. The class divided itself into working groups in order to complete the following assignment:

They were asked to develop a plan for a survey including the following:

- defining a topic (e.g., coconuts, potatoes, fruit, vegetables)
- identifying users
- identifying a sampling frame
- designing a questionnaire....what information would you collect?
- defining a tabulation plan
- creating a dissemination plan

Each group was required to make a presentation to their peers.

The following topics were selected:

- coconuts
- wheat
- potatoes
- cotton

The PowerPoint presentations are part of the package of slides submitted to the World Bank.

The trainers were very pleased at the extent to which there was broad discussion by all members of the working groups, the quality of the presentations (produced in a very short time period) and the quality of the plans. The single biggest challenge was for the groups to understand what was meant by “sampling frame”. This stemmed in part from the fact that we had difficulty in finding an appropriate Portuguese word to represent the term “frame”. “Moldura” was rejected and the word “estrutura” was used. This led three of the four groups to describe the project structure. Later, it was determined that INE uses the term “modelo”. Subsequent to the mission, some research on the Statistics Portugal web site would suggest that a more appropriate term would be “base de amostragem” or literally “sampling base”.

Graduation

The trainees were told at the beginning of the course that they would receive a certificate indicating their attendance at the course. Each participant received their certificate as part of the graduation ceremonies. Two ceremonies (on March 11 and 12) were held in order to accommodate the requirement for 8 of the provincial members to attend a key planning meeting on March 12. On March 11, participants were treated to a closing ceremony even though half the members returned next day.

Summary and Conclusions/Recommendations

Background

Chris Hill and Ernie Boyko delivered an eight-day training mission on agriculture statistics for the members of the Economics Directorate which included staff from each of the provincial offices as well as staff from the central office in Maputo. The course followed the outline that had been provided in advance of the mission. The course was well-attended and there was good interaction and participation by all members. The class was provided with an overview of agriculture statistics starting with the role and need for statistics through to survey design, data collection, processing, estimation, verification, analysis, archiving and dissemination.

In the process of delivering this training and interacting with the staff, the consultants received feedback from the staff regarding future training needs. As well, since the training program touched on all aspects of a survey and was discussed in terms of the TIA, the consultants are able to make some observations aimed at strengthening this key component of the Mozambique agriculture statistics system. The objective of this section of the report is to communicate recommendations/suggestions on future training and survey activities.

Training Needs

It was clear from the comments received from the trainees that this mission delivered what was required and possible during the time frame provided. The provincial staff is well-acquainted with data collection and data entry but less so with “downstream” activities such as data processing, estimation and analysis. They are however, involved

in disseminating the TIA data once they receive the TIA CD-ROM. The consultants polled the class members (who were divided into provincial representatives and central staff) on the final day and received the following comments regarding their views on future training:

Provincial staff:

- Practical (hands on) training on:
 - o data processing,
 - o data analysis,
 - o criteria for selecting samples and
 - o training in the use of statistical packages.

Central staff

- Creation of data bases in CPro, ACCESS, EXCEL and SPSS.
- Analysis of data in SPSS and STATA, creation and interpretation of tables and graphs
- Estimation

Recommendations for future training

1. Future training needs should be based on identified program priorities for the agriculture economics program.
2. Practical hands on training would need to be carried out in an environment with computers (or with the facilities to support the use of their computers) with SPSS, EXCEL, ACCESS and WORD. Full synthesis of this training would also require on-the-job mentoring.
3. The first priority should be to provide training on the use of the data files on the TIA CD-ROM. This would involve learning how to carry out basic analysis consisting of articulating a data need (such as a request from a provincial Governor) to producing a final report including tables, graphs and summary analysis.
4. Training on other parts of the survey process (questionnaire design, coding, data entry and cleaning) can also be provided in the environment described above.
5. The necessary expertise for carrying out this type of training should be sought locally (within Mozambique or Southern Africa) as this is less costly than is the use of expertise from Europe and North America. As a result, the training budget would cover a broader range of topics and participants.
6. It should be noted that practical training is time consuming and expectations on what can be achieved should be tempered accordingly. [The length of time required to provide training on the complete survey process (as is done by Statistics Canada) would require 6 weeks of dedicated effort.]
7. Consideration should be given to providing high-level training to the senior managers of the Economics Directorate in a developed country with a focus on managing statistical processes for quality and effectiveness.

Observations on the Agriculture Statistics Program (TIA and Other)

1. The sample design for the TIA should be reviewed with an aim to improving the livestock estimates, particularly for cattle which are mainly found in only five provinces. It is noted that the 2008 sample was redesigned and it is hoped that some of the livestock issues have been remedied. This will only be known once the data are analysed.
2. The TIA questionnaire is quite extensive. The need for this number of questions on an annual basis should be reviewed with the aim of carrying out short TIAs and longer TIAs. This could free up resources to carry out special surveys or to integrate TIA and Aviso Previo. Aviso Previo will be discussed below.
3. The estimates of meat production are an important component of the National Accounts and need to be strengthened. The solution here would appear to lie with better estimates from TIA combined with data from slaughter facilities as well as analyzing data from household budget/consumption surveys.
4. The survey planning and execution of the TIA appear to be well done and are not in need of major adjustments.
5. More emphasis should be placed on preparing consistent tables and time series from the TIA. Time series data on crops, livestock, and farm purchases/sales should be published as official estimates.
6. Time series for major items should be prepared from all available TIA surveys and reviewed for consistency. The initial set of estimates could be prepared by a consultant who would also train MINAG staff on how to continue this work on an annual basis.
7. A statistical data website/portal should be developed as a way of disseminating data and preserving data for all users to access. The initial content for this website could be generated from the TIA CD-ROM and the time series output described above.
8. The current system for crop information involves the TIA and Aviso Previo as two independent sample surveys. Consideration should be given to integrating these two activities in order to create a more effective system that provides both an early warning and final production estimates. The recommendations made by previous consultants (Kiregyera, 2007) should be followed.
9. During the session, some people mentioned the need for district level data from the TIA similar to that from the Census of Agriculture. Since this would require an increased sample size and would therefore cost more money, the consultants recommend that consideration be given to using a modeling approach. This would produce synthetic estimates which would be based on the census benchmarks and provincial estimates from TIA. The consultants will attempt to find a methodological approach to support this process.

Other

1. The census of agriculture was not discussed in detail. However, the consultants did use the knowledge and experience of the staff to discuss the pros and cons of different data entry approaches in the field. These notes can be seen in Appendix C.
2. The consultants came away with the impression that there is a need for a systematic process to preserve survey and census files for long term access. It is recommended that the Ministry of Agriculture and INE consider a strategy for implementing this process by taking advantage of the Accelerated Data Program/Integrated Household Survey Network tools and resources. See <http://www.surveynetwork.org/home/>

Appendix A: List of Participants

Nome	Local de trabalho	Cell Number	e-mail
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Appendix B: Terms of Reference

General Data Dissemination System, (GDDS phase 2)

Topic: Agriculture Statistics

For: The Mozambique Ministry of Agriculture (MINAG) and the Mozambique Instituto Nacional de Estatística (INE)

Background

With financial support from the Department for International Development (DFID) of the United Kingdom, the World Bank is implementing a project to assist 21 Anglophone Africa countries to participate in the General Data Dissemination System (GDDS). Participating countries are being assisted to participate in the GDDS through two separate, but linked projects both financed by DFID. The IMF provides project management and technical support in the area of economic and financial statistics, while the World Bank provides technical support in the area of socio-demographic statistics. Both projects run concurrently until March 2009.

Technical Assistance

Technical assistance is being supplied through the World Bank to help countries implement plans for improvement in population, health, agriculture, labor market, justice and security, management of statistical systems, GIS and small area statistics. The GDDS framework developed by the IMF provides the framework for the detailed elaboration of long-term statistical development strategies. Participating countries have already expressed their requests for technical assistance and both the IMF and the World Bank have developed their assistance strategies.

Mozambique was one of the countries which asked for technical assistance in the field of Agriculture Statistics.

Terms of Reference

Background

Mozambique attended the GDDS 2 Module launch workshop on Agriculture statistics in Maputo in March 2007. They drew up their Country Work Plan regarding the delivery of three technical assistance missions covering country-identified priorities. The first mission to Mozambique was carried out in March 2008 and it focused on building a dissemination plan for agriculture statistics. Since a separate mission focusing on the production of agriculture statistics was carried out by an international team in mid 2007, the priorities for the remaining missions has changed. The Ministry of Agriculture (MINAG) is in the process of hiring a number of new staff who will be entering MINAG from the outside and have little experience with agriculture statistics. The Ministry has requested assistance in providing training and orientation for new hires and existing staff. This is consistent with the recommendations that were made by the international study team headed by Professor Kiregyera. This training will be provided by combining missions 2 and 3 into a single mission involving 2 consultants for a 2 week period.

Objectives and Purpose of the Mission

The overall objective of this mission is to provide training and orientation for up to 25 members from the Agriculture Statistics Department from the Ministry of Agriculture. The subject of the training will be an overview of the role, purpose, production, use and management of agriculture statistics in Mozambique. The participants will include existing staff from the Statistics Department as well as those hired during the past year.

As a result of this training, participants will be expected to better understand the objectives of their work and to be better engaged in the planning and execution of their tasks.

Activities of the consultants

The consultants will be expected to complete the following work during the time allotted.

1. Prepare an outline of the course that will be delivered including the planned modules and information on which of the consultants will deliver the training.
2. The above outline will be submitted to the Mozambique Ministry of Agriculture, the Institute for Statistics and the GDDS project manager at the World Bank in Washington for review and comment.
3. Prepare a final training outline using the feedback received.
4. As appropriate, prepare work sheets for the participants and PowerPoint presentations to be used during the training session.
5. Deliver the training material at a venue in Maputo which will be identified by the GDDS coordinator's office.
6. Develop a method for assessing the degree of comprehension by the participants
7. Provide electronic copies of all the materials used during the course to the GDDS office in Washington.
8. Prepare a brief report for the GDDS office and the Ministry of Agriculture/Institute of Statistics on the activities and the outcomes of the training session paying particular attention to the feasibility of extending this training material for other purposes and for other missions.

Deliverables

The consultants are required to perform the following work:

- Prepare at least 50 pages (25 pages per consultant) of background material pertaining to the subject material of the training session.
- Prepare at least 16 power point presentations (8 per consultant) based on the background notes and the material to be delivered to the trainees.
- Present the prepared material in a classroom setting in Maputo.
- Prepare a final report on the training consisting of 20 pages.
- Prepare and administer 2 assessments of learning for the students.
- Leave copies of the material used for the training session on USB flash drives for the staff of the ministry of agriculture.
- Send copies of all materials to the GDDS office at the World Bank

Timetable and effort

The training material is to be prepared for delivery in Maputo during the month of March. Each of the consultants will be allowed 16 days for this work.

- 5 days of preparation time
- 8 days for the delivery of the material
- 2 days to brief the managers of the ministry and conduct follow-up evaluation on previous mission
- 1 day for reporting and making recommendations

The final mission report and deliverables are to be completed and submitted 2 weeks after the end of the mission

Appendix C

A Discussion of the use of Data Entry during Data Collection

Introduction

A training course on “An introduction to Agricultural Statistics” was given to 26 persons from the Ministry of Agriculture in March 2009. Participants in this training included all the provincial Chiefs of the Economic Directorate together with staff from the National office.

Two different forms of data entry during data collection were considered.

1. Data collection using a questionnaire with data entry taking place immediately after collection allowing the interviewer to return to the respondent to make any necessary correction
2. Data collection where the interviewer records the responses directly into a hand held computer. (Computer Assisted Interviewing CAI)

Data entry in the field has been implemented in Mozambique for two surveys:

1. The Annual Agricultural Survey known as TIA starting in 2002 and repeated every year. This survey is undertaken by the Ministry of Agriculture with technical support from Michigan State University
2. The Poverty and Social Impact Analysis PSIA of the World Bank. This survey was undertaken by KPMG Mozambique.

There is a proposal to use Computer Assisted Interviewing CAI for the forthcoming Census of Agriculture and Livestock (Censo Agro-pecuaria CAP)

Given the importance of using data capture in the field, the extensive experience of TIA and the plans for CAP it was decided to have a special session on this topic. This note is a report on that session.

The Use of Data Capture in the Field

Advantages

The course participants note a number of advantages of data capture in the field.

1. Data entry and verification in the field clearly improved the quality of data. Not only did it ensure that clean records passed to the central office, but it also greatly improved the quality of the interview process. Immediate feedback to the interviewers ensured that they worked more effectively. Interviewers quickly became very diligent in completing all sections of the questionnaire. They also acquired a stronger capacity to detect errors and inconsistencies
2. The use of data entry in the field ensures a standardization and greater control of the field operation
3. Data entry in the field reduces the overall survey time avoiding the need for data entry at head office and reducing the need to process errors
4. The system helps build institutional capacity both with respect to human resources and equipment. It also facilitates the decentralisation of skills.

Disadvantages

The application of data entry in the field also had some disadvantages.

1. Some problems with the application were discovered during the field work. When a problem was detected the logistics of making corrections and distributing them to teams in all 10 provinces was demanding.
2. Computer viruses caused some problem.
3. Data entry in the field is a demanding activity. It was costly to ensure that computers were constantly operational and that computer problems did not delay the process.
4. The distribution of skilled human resources is unequal across the provinces. Skilled and experienced data entry personnel are readily available in Maputo and Gaza provinces, but the same is not the case in some of the northern provinces.

Strategies to Optimize Operation

With experience, the TIA programme has established a successful field data entry operation.

1. The field data entry was tested in some areas in the first year before being extended to the entire country
2. The survey has been repeated annually so the high costs have been spread over a number of years
3. Efforts have been made to thoroughly test the application prior to implementation in the field.

The use of Computer Assisted Interviewing CAI for the Census of Agriculture

Advantages

The use of CAI could have essentially the same advantages as data entry in the field.

Disadvantages

This methodology also has the same disadvantages a data entry in the field. Further additional issues were also raised.

1. The problem of finding skilled resources is even more critical for CAI. The same person performs both the role of interviewer and data entry person. In Mozambique there are many local languages. In Cabo Delgado 5 different languages are used. Interviewers need to speak the local languages. The personnel who enter the data are normally selected from among the urbanized or city population. These persons tend to speak Portuguese rather than a local language. Finding persons who are both fluent in the local languages and can enter data may be especially difficult.
2. If data is entered directly into the computer it will not exist in a paper format. In the event of a computer going wrong, or being lost or stolen all the information will be lost.
3. Any problems of errors in the application will also be more serious as the data do not exist in another format.

Strategies to Optimise Operation

Ways must be found to introduce and optimize new technologies. Virtually all problems can be avoided or overcome through the use of appropriate implementation approaches.

1. Testing to prevent any errors in the application would need to be very thorough.
2. Once data have been entered they should be backed up immediately to another medium in order to avoid any risk of data loss.
3. It may be possible to train enough interviewers with the appropriate language skills to enter the data or to have two-person teams in certain high-risk areas.
4. The operation of CAI should be thoroughly tested. Note this means testing in the high-risk areas (for example remote parts of Niassa and Cabo Delgado). A test in Gaza would be appropriate as a first experience. It is probably the province with the lowest risk as one language is spoken throughout most of the province and there are many qualified persons suitable to work on data entry.

Appendix D: Certificate