

GENERAL DATA DISSEMINATION SYSTEM, (GDDS PHASE 2)

SOCIO-DEMOGRAPHIC STATISTICS PROJECT FOR ANGLOPHONE AFRICA: PROVISION OF TECHNICAL ASSISTANCE AS THE EXPERT FOR POPULATION STATISTICS

MALAWI MISSION REPORT #1

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1. SUMMARY AND MAIN FINDINGS

Issues Covered	Outcome
1. Develop detailed operational plan and schedule for each phase of the census	Began work of detailing each step in each census phase
2. Acquire software and train staff to monitor schedule performance	NSO to acquire and begin using MS Project for monitoring and control
3. Begin dissemination planning as part of questionnaire design and advocacy	Census manager agreed to begin dissemination planning.
4. EA delineation completed before the Census	Cartography Head confident that delineation will be completed.
5. Decision on scanning hardware and software	NSO to consult with the 2 other known government agencies who use scanning and, if desirable, contact ECZ.
6. Demography needs to prepare edit specifications for data processing staff	Demography agreed to begin developing edit specifications as part of questionnaire finalization.
7. Improve IT hardware and software capability	Taken under advisement for future action.

The NSO conducted its Pilot Census in September and is now processing the results using key entry. They wanted to switch to scanning for data capture but were dissuaded from doing so by their UNFPA consultant. Therefore scanning was no longer the first priority activity for this mission. The consultant and the census manager agreed that the mission would review the key entry operation, the mapping activity and quality control procedures.

The situation changed on day 2 when staff were advised that the Commissioner was given approval to undertake a Census of Malawi in 2008 under two conditions:

- That collection begin on June 8, 2008 rather than October 8, 2008; and
- That the first final estimates be released before the end of December 2009.

To meet these conditions NSO will need to advance its planning activities; install a detailed operational planning and monitoring system to keep NSO management advised of progress and of problems as they occur so that steps can be taken to keep the census on schedule.

Acting on the advice of an UNFPA consultant, NSO is using key entry as the method of data capture for its processing of the Pilot Census. However, it is unlikely that NSO could meet the December 2009 release constraint using this method, so NSO is being forced to consider data scanning as an alternative since this is the most likely action to allow it to be able to process the census in time.

The consultant's services were used to assess what NSO needed to do to be ready for June 2008 and to determine the safest data capture alternative. None of the alternatives are risk free but scanning seemed to be the least risky, assuming that NSO could get the equipment and training needed in time to test it prior to using it for the Census in June 2008.

The report which follows details the issues, observations, findings and recommendations made by the consultant.

2. SITUATIONAL ANALYSIS

The National Statistical Office of Malawi (NSO) is located in Zomba, a city in southern Malawi, 300 km. from Lilongwe, the political capital and 70 km. from Blantyre, the major economic hub. This means that it is not easy for NSO to routinely meet with government, statistical users and donors, a situation not faced by many NSOs.

It is mandated to periodically undertake a complete census of the population under the *Statistics Act* of 1967. Malawi conducted its first post-independence census in 1966. Subsequent censuses were conducted in 1977 and 1987 and 1998. The planned 1997 census was postponed until 1998 due to a lack of government funds. Government support is vital for the success of a 2008 Census and NSO has worked hard to assure that support. Since the Government cannot afford to fund the complete 2008 Census, donor support is vital for its success. Donors have been very helpful up to and including the 2007 Pilot Census, but more support is needed if the Census is to be completed on schedule. The 1998 Census was estimated to have cost \$12 ½ million . The estimate for 2008 is \$16.2 million. This increased cost is less than the estimated rate of population growth (30% increase in cost versus an estimated 37% increase in population). If one factors in the rate of inflation the cost increase is minimal. In addition, the estimated per capita cost for the 2008 Census is \$1.17 as compared to the average of \$1.74 for countries in sub-Saharan Africa (according to UNFPA estimates).

The NSO had hoped to use questionnaire scanning as its principal means of data capture but has recently decided to switch to key entry, instead, because its UNFPA advisor had recommended it as a more reliable, and less expensive, means of data capture, especially since NSO had not included the cost of scanning in its 2008 Census cost estimates. (Rationale for this recommendation is not available since the advisor has yet to file his mission report).

Key entry is currently being tested on the recently completed Pilot Census collection exercise. This experience will be used to estimate keying error and the length of time it will take to capture all the 2008 information.

On November 6, the NSO presented its Cabinet document asking for the authority to conduct the Census to Cabinet. They approved the plan but only after insisting on two major modifications:

- (1) advancement of the Census date by 2 months to June 2008 from September and,
- (2) release of the first final results after one year instead of the estimated 18 months.

In the afternoon of November 6, NSO swung into action to determine how it could meet those two conditions. The consultant was asked to modify his terms of reference to assist NSO in this determination. He agreed to do so.

3. MISSION AGENDA

Since this is the initial mission with an objective as broad as quality assurance, it is not easy to create a detailed agenda given the barrier of distance and poor communication facilities. The proposed, and accepted, agenda was one of first becoming familiar with each other, building a comfort zone, and follow it up with a strategy by which NSO can make use of the advice, skills and experiences of the consultant to achieve its objective of a high quality 2009 Census.

During this initiation week, NSO made an earnest effort to present the consultant with as much information, both written and oral, about its current state of (un)preparedness in the hope that he would be able to suggest improvements. What it got were first order recommendations, those that rise to the surface when an issue is first raised. Others may develop upon reflection and/or further knowledge of the situation. These will also be passed on.

The final agenda item is to ensure that the subsequent mission(s) are well planned so that more in-depth collaboration towards quality will ensue.

4. DETAILED OBSERVATIONS

With less than a year remaining before Census Day, NSO will have a difficult time adapting its plans to adjust their strategy to accommodate an earlier Census date and a much earlier final release date.

While it may be possible to meet these two conditions without compromising the quality of the 2008 Census, it greatly increases the risk of quality lapses due to time compression especially since the major testing vehicle, the Pilot Census, has already been undertaken. Any procedural or strategic changes ensuing from the Cabinet census conditions will be implemented for the 2008 Census without adequate testing.

4.1 ADVANCING THE CENSUS DATE

Taking the Census two months earlier than originally planned does not appear to be an insurmountable condition. It requires NSO to speed up its assessment of the just completed Pilot Census to determine what was done well and where improvements are necessary. More importantly, it needs to produce a detailed plan outlining all the steps that need to be completed (Appendix 2 is a listing of census activities identified during a census training exercise. It is illustrative of the many activities that need to be addressed for a census.) before Census Day and the resources that need to be marshaled for each. If the dependencies between each of the steps are linked, the resulting critical path and time lines can be determined. From this it is possible to assess how easy, or difficult, it will be to complete everything on time before Census Day. Assuming there is sufficient time, it is recommended that these critical path data be loaded onto a project monitoring software (e.g. MS Project or similar software) which needs to be continuously updated and monitored to ensure that inevitable negative changes to the estimated schedule are

caught early and timely alterations to the plan made so that the targeted end date does not go beyond Census Day.

A number of important decisions remain to be decided before the aforementioned detailed plan can be developed (although alternative plans could be created to cater to the main likely decisions). The two most significant are:

Content finalization, a precondition for Questionnaire creation;

Data Capture methodology, a major factor in Questionnaire design

Content finalization may be realized after a review of Pilot Census enumerator comments of difficulties with any questions and assessment of responses to the questions.

A decision on data capture methodology is linked to the second condition imposed by Cabinet, reducing the time needed to release final results. There are three possible methodologies:

Keyboard entry of responses - the method recommended by an UNFPA consultant;

Scanning – a method used by many countries assisted by this consultant;

Direct Enumerator entry – a method used by some statistical offices for sample surveys using tablets (micro-portable computers).

If using keyboard entry, the questionnaire should be designed to facilitate rapid and accurate keying of the information off each questionnaire.

If using scanning, the questionnaire must be designed to allow for the accurate transfer of information from the questionnaire onto a data file using the software that is part of the scanning hardware.

If using tablets, the questionnaire is programmed into the computer and there is no paper questionnaire. Each question appears on the screen, the response is recorded and filed. Consistency edits are built in to catch errors (either by the enumerator or the respondent). The data are downloaded onto a data storage device when the enumerator returns to base after completing the EA.

Upon review of the pluses and minuses of each alternative, NSO management determined that the most prudent action to take, which maximizes its ability to successfully undertake a June Census and a December 2008 release of the first final results, is to use scanning technology. Enquiries have begun to begin the process of acquiring hardware, software and training as well as questionnaire design specifications.

4.2 REDUCING THE PROCESSING INTERVAL

The only way to reduce the processing interval sufficiently to meet the release target of September 2009 is by careful time management. This requires meticulous planning, rigorous monitoring to identify problems and bottlenecks early, and quick decision-making to rectify problems and remove bottlenecks. Any time lost because an activity must wait for something

that should have been ready, but isn't, is irretrievably lost. It can only be made up by extra effort on remaining activities or by taking short-cuts which tend to compromise quality.

It is likely that decisions to improve flow will need to take priority over economy (e.g. questionnaire batches made need to be sent forward to the processing center before a truck is completely full so that the scanning operation can begin early and continue without running out of material).

Consistency edits need to be developed and tested in advance so that the editing process can get underway as soon as scanning batches are finalized.

A dissemination strategy needs to be developed to be ready to spring into action once the data are certified as clean.

Holes in the census organization have to be filled by hiring, borrowing staff from other parts of NSO or from other parts of the National Statistical System or other parts of government or from other national statistical agencies. Inadequacies in staff skills have to be identified, and realistic means by which NSO can address them, have to be established. Where training is the answer, training materials have to be developed or acquired, and staff trained, for each phase of the census process. Where the skill level required can not realistically be developed by training, in the time available, other strategies such as out-sourcing or borrowing, or hiring expertise, needs to be arranged in advance to prevent the schedule from slipping.

If NSO makes these preparations and develops a strategy and plan that shows how this schedule is to be achieved, it should be able to carry out the Census without major negative surprises and be able to deal with the unexpected minor surprises so that the release of results can occur in September 2009.

4.3 DECIDING ON THE DATA CAPTURE APPROACH

Key entry is the safest and least costly approach for data entry. However, it is also the most time extensive approach. While it is theoretically possible to do key entry as quickly as through scanning by using 3 shifts for round-the-clock processing, 7 days a week, with enough operators to complete the task for any specified time interval. However, operators are human and a continuous mindless task cannot be sustained without adverse impact on throughput and quality of work.

Data scanning has been shown to be effective in reducing data capture time dramatically (e.g. Zambia, Tanzania, Nigeria) but it can fail if there is inadequate training and skilled operational management. It is also capital intensive and imposes constraints on printing, paper quality and questionnaire design.

Direct enumerator entry using tablets is an untried technology for censuses although it is routinely used for household sample surveys in some countries. It is much more expensive than the other alternatives because it implies that every enumerator be provided with a tablet (unit

cost between \$500 and \$2000 times 12,000{number of enumerators}). Enumerator training needs to be much more rigorous because in addition to learning procedures and understanding the questions, (s)he will also have to learn how to use and care for the tablet; how to follow the logic of the pre-programmed question screens and what to do when the consistency edit subroutine identifies a potential error and, finally what to do with the information once the EA is completely enumerated.

When it works well, this methodology will reduce the post-enumeration processing to weeks rather than months. However, with 12,000 enumerators the chances of all of them working well is exceedingly remote. Unfortunately, since this is a census with a requirement for 100% completion, omitting the problems is unacceptable. Where a tablet is lost or broken, the only alternative is to re-interview since there is no paper record from which information could be salvaged.

The first alternative is unpalatable because the risk of missing the completion target is too high while the third is too dangerous, because untried, and inherently risky for a project that requires complete coverage by definition.

That leaves the second, scanning. It too is not without risk but other, comparable, statistical offices have been successful using it. Since there is no reason to suspect that NSO is not capable of managing that risk, it is the one recommended as the alternative most likely to allow NSO to meet its release commitment.

4.4 CONSISTENCY EDITING AND IMPUTATION

After data capture, the phase most likely to cause significant delay in data release is editing and imputation. No matter how careful the preparation, collection and response errors creep into the data. Because of the sheer size of the information collected, it is impractical to identify the relatively small number of “errors” and go back to the source to correct them. Instead statisticians have come up with a procedure that compares responses within an individual record and between individuals within a household to identify responses that are impossible or extremely unlikely (e.g. a blank entry; an invalid code; males responding to the fertility questions reserved for women; persons beyond a certain age; doctors with only primary education, etc.). Such potential inconsistencies are automatically flagged by the Edit Programme if they have been specified in advance by a subject specialist. These specifications have to be entered into the Edit Programme for it to be able to function. Imputation is the means by which inconsistencies are resolved. There are a number of different ways to do this and the subject specialist has to specify which approach should be used for every type of inconsistency.

Upon completion of this process the data file is internally consistent since it has passed through all the edits without generating a consistency flag. At this stage the file is considered clean and complete.

4.5 VALIDATION

Data on the file have to go through one more stage before they are considered safe to release. This is the validation stage. It is carried out by the review of test tables by subject experts who assess whether the information presented by the data is “reasonable”. Where new trends or unexpected results appear, subject experts have to determine if these reflect changing conditions or are the result of biases introduced into the census process. If they think it might be the latter, an investigation is necessary to find the cause. The most common is a programming error but others could be response bias (deliberate mis-statement by respondents) and enumerator bias (enumerators leading respondents to provide the wrong answer (usually because of a training mis-understanding)). This list is not comprehensive.

When subject experts determine that no unexplainable anomalies exist, they certify their component of the data file as ready for release. When all subject experts have done so, NSO can certify the census as ready for release.

4.6 DISSEMINATION STRATEGY

The traditional method of dissemination was to produce tables in an as disaggregated a form as possible, group them into themes, print and bind them and put them on the shelf as reference documents. The rationale for this action was that it was difficult to produce tabulations and, if data were not produced at this stage, it became less and less likely that they would ever be produced as time passed.

Census planners get so wrapped up in the intricacies of completing the current census that they forget that the results of previous censuses gain a new lease on life with every additional census, as long as it is possible to compare the results from each. A census provides information at a point in time. Two censuses provide for the addition of time as an additional variable and point out the direction of change. Three or more censuses allow for the addition of trends. No dissemination strategy is complete if it does not permit for the easy use of earlier censuses.

4.7 ADVOCACY, PUBLICITY AND PUBLIC AWARENESS

To be successful, the census must be accepted as important by the population, as respondents, citizens and taxpayers. They must understand why the government is willing to bear the expense of a census; how Malawi and its citizens benefit from the results; how the information they supply can be used (for research, policy formulation, monitoring change, focusing productive activity, etc) and how it will not be used (privacy concerns respected). Getting the public to listen to the message and to believe it, is not a simple matter of making a speech, preparing a brochure or splashing an ad on a billboard. The public tends to discount requests for cooperation that appear to benefit the requestor. Experience has shown that the public is more likely to listen to,

and believe, advocacy material transmitted by reputable and respected third parties. The existence of a Census Advocacy Committee made up of distinguished census users is much more likely to be appreciated than the same message sent out by the NSO.

Another way to promote the census is to attract the interests of students in the idea of a census (see: <http://www.statcan.ca/english/freepub/81-004-XIE/2005005/census.htm>). Their enthusiasm for such projects, teaches them the importance of a census. This tends to be transmitted to other family members when they discuss what they have learned.

Advocacy attempts to make the audience pro-census; someone sees how census benefits her/him, the community, the economy, the nation. Although only a minority may be converted to this view, their enthusiasm tends to be infectious and spreads to others who then lend their support even though they will not use the results and do not understand the benefits. In contrast, publicity is intended to increase public awareness to reduce suspicion and fear of why strangers are coming to ask a lot of questions thereby increasing response co-operation which increases data reliability and reduces collection time/costs.

Care must be taken when undertaking a publicity programme, if there are plans for paid advertising. Much Census publicity is provided free of charge as public interest stories by the media. However, if some media are paid for publicity, the amount of free material may shrink as those media cannot be blamed for also wishing to be paid for their census promotion.

It should be noted that satisfied census data users are willing advocates for an upcoming census. They know first hand why it is important. Conversely, unhappy census users are less easy to be persuaded of the need to support the effort. The Dissemination Unit is an important player in the development of support for a census. It should facilitate user access to data and make every effort to make information as accessible as possible.

4.8 INFORMATION TECHNOLOGY (IT) INFRASTRUCTURE

The six buildings of the NSO are linked together in an ethernet CAT5 Local Area Network (LAN). The LAN consists of a single server and about 60 PCs. However, the network needs to be significantly upgraded if it is to be ready for Census 2008. Currently, many nodes within the LAN are not functional. Internet service is provided via an antenna connection to the Internet Service Provider. This service is also not currently functioning.

NSO needs to have an IT assessment to determine how the IT infrastructure should be strengthened. Without prejudicing what the IT consultant might recommend, this consultant suggests that NSO create two networks – one, consisting of one or more servers and all the microcomputers with confidential data, with no connection to the outside world (the secure network); and another with one or more servers and all the remaining microcomputers (the open network). This second network would have internet access but staff would not be allowed to put confidential data on it. The 2 networks would be physically separate. This is the only way to guarantee that NSO census and survey databases would be protected from hackers, viruses, worms, etc.

Where there is a need to transfer files from one to the other, it can be done using data cartridges which need to be checked for viruses, etc. before the transfer is made. (As a corollary, the secure network will have to forbid the use of personal flashdrives and other storage media on the computers on the network).

Staff on the secure network would have to be given access to computers on the open network when there is a need to use the internet.

5. ACTIVITIES

The consultant helped NSO address the strategic changes it would need to make to advance the census date by two months and produce final results six months earlier than originally planned.

He arranged for DRS, the scanning company that had come to Zomba to discuss NSO's requirements earlier in the year, to return for a follow-up presentation. He suggested that NSO might benefit by talking to, and getting assistance from, Moses Mwale, the manager of the scanning operations at the Examinations Council of Zambia (the agency which processed the 2000 Census of Zambia) since he has the practical experience in scanning that NSO lacks and is located relatively closely to NSO.

6. DELIVERABLES

The NSO provided the consultant with their preparatory documents for the upcoming Census and asked the consultant to review them and provide recommendations so that they would be able to produce a quality census. These recommendations are being provided orally by the consultant during the meetings he held with KNBS staff and, in written form, in this report.

7. DESIGN & CONTENT OF THE MODULE

The consultant's over-riding objective was to assess where the NSO was in the 2008 Census planning phase and to provide whatever assistance possible to improve the likelihood of there being a successful quality census as an end product. During this first exploratory mission the consultant helped NSO adjust to a major amendment of its strategic census plan.

There was not sufficient time to discuss the next mission, but it is likely to include how NSO monitors and controls the preparations for Census 2008.

8. WIDER ISSUES

None, other than what has already been identified in this report.

9. INTENDED DELIVERABLES OF THE NSO

The NSO will review its plans for the remaining missions and decide whether to leave the plans as stated in Section 7, in which case it should determine when it wishes the consultant to return, or if it wishes to modify the plan, it will advise the consultant and the World Bank Module Coordinator.

10. PLANS FOR NEXT MISSION

See Sections 7 and 9, above.

11. WORKING RELATIONS

The consultant found that management and staff of NSO gave him full co-operation and ready access to their ideas, practices, worries and written material. He did his best to transfer knowledge and information to help NSO in its goal of advancing the date and first final data release of the 2008 Census. He believes that, by their words and actions, NSO staff recognize and appreciate his effort.

12. PREPARATION ISSUES

It would be easier, and more productive, if we could figure out how to establish a dialogue between the consultant and the client well before departure on the first mission. Since it would be presumptuous of the potential consultant (that's the situation until there is a contract, and that comes very late in the process) to contact the client. Perhaps GDDS should encourage the client to get in touch with the likely consultant, once it has agreed to receive her/him, and provide some elaboration on what they hope that the consultant will do/provide/undertake.

After the first mission, preparation, along with the agenda, becomes part of the plans for follow-up missions.

13. RECOMMENDATIONS

1. That the NSO prepare a detailed plan outlining all the steps that need to be completed before Census Day and maintain progress on a project management software system to ensure that everything will be ready for a June 2008 Census Day.
2. That this project management software system also be used to monitor and control all the steps necessary to produce final results by December 2009.

3. That scanning technology be adopted as the data capture process that is most likely to allow NSO to meet its ambitious release targets
4. That consistency edits be developed and tested so that it is ready when scanning begins so that scanned data batches can be edited as soon as they are available.
5. That NSO develop a dissemination strategy that takes advantage of developments in data warehousing technology.
6. That NSO develop an advocacy strategy that is more than a publicity campaign.
7. That an IT consultant be engaged to determine how the IT infrastructure should be improved to enable NSO to process the 2008 Census effectively.

14. OTHER DONORS

UNFPA to provide a resident Census Technical Advisor to assist NSO conduct its census.

15-18 no comments

APPENDIX 1 PREPARATIONS FOR MISSION

Consultant

In preparation for this mission the consultant read all the material sent to him over the three or four days after a contract agreement was reached. He also found the GDDS website and reviewed the material there.

He read the Malawi country report and country workplan from the Mombasa Workshop and began reviewing the material he had in his archives on the subject of data processing procedures particularly as it applied to the use of scanning technology. He reviewed all the material he had from the from Zambia Census 2000 and Nigeria Census 2005/6 scanning experiences. He also retrieved information about the scanning experiences of a number of national census organizations including those of less developed national statistical offices. Among the material found he selected the following which he thought might be of value for the Malawi mission to bring along with him:

Ken Congdon, "How To Test A Document Scanner," *Integrated Solutions*, October 2007

Kevin Orchard, "The Use Of Optical Mark Reading (OMR) For Census Data Collection", **18th Population Census Conference**, Program on Population, East-West Center, Honolulu,. Aug. 26-9, 1998.

Client

NSO provided the consultant with the following background information when he arrived:
"2008 Malawi Population and Housing Census: Project Document,"

"Malawi Census Advocacy Document for Resource Mobilization,"

"Census Cabinet Paper,"

APPENDIX 2 LIST OF CENSUS ACTIVITIES

(Illustrative, not necessarily comprehensive)

- 1) Administrative
 - a) Census Proclamation
 - b) Establishment of the Census Planning Group
 - c) Establishment of the National Census Committee
 - d) Establishment of the Census Management Office
 - e) Establishment of Census Technical Committees

- 2) Technical
 - a) Initial Development of a Census Workplan
 - b) Estimation of Requirements
 - i) Budget
 - ii) Personnel
 - iii) Equipment
 - c) Preparation of operational and quality control plans

- 3) Managerial
 - a) Recruitment and Secondment of Staff
 - b) Procurement of office related equipment
 - c) Procurement of field related equipment
 - d) Procurement of vehicles
 - e) Recruitment of drivers
 - f) Review of census workplan
 - g) Review of census budget

- 4) Workshops
 - a) Census planning
 - b) Collection
 - c) Data processing
 - d) Data Capture
 - e) Editing and Validation
 - f) Tabulation
 - g) Analysis
 - h) Dissemination

- 5) Training of Headquarters Staff
 - a) Network design and management
 - b) Sampling techniques
 - c) GIS
 - d) Census data analysis

- 6) Content determination
 - a) Meetings with users on census topics
 - b) Preliminary Tabulation Specifications
 - c) Review of definitions and concepts

- d) Review of finalised topics by National Census Committee
- 7) Questionnaire Design
- a) Preparation of draft questionnaire
 - b) Review of draft questionnaire by users
 - c) Questionnaire pre-test
 - d) Preparation of draft questionnaire for Pilot Census
 - e) Review of questionnaire by Census National Committee
 - f) Final approval of questionnaire by government
 - g) Final printing of questionnaire and distribution
- 8) Cartography
- a) Initial preparation of maps
 - b) Design mapping process
 - i) GIS
 - ii) GPS
 - iii) Satellite imagery
 - iv) Other
 - c) Procure hardware
 - d) Recruit, second and train mapping staff
 - e) Carry out field mapping
 - f) Process field updated maps and records
 - g) Delineate enumeration, supervisory and dissemination areas
 - i) "Custom Concepts" (e.g. administrative areas, electoral districts, school zones, hospital zones, watersheds, etc.)
 - h) Develop geographic database concepts and procedures
 - i) Benefits
 - ii) Database update and maintenance
 - i) Produce maps and listings
 - j) Prepare and distribute field maps
 - k) Construct geographic database
- 9) Data Processing
- a) Design data processing system
 - i) Headquarter system
 - ii) Regional system
 - b) Procure hardware and software
 - c) Install PC network
 - d) Design data dictionary
 - e) Design automated control system
 - f) Draft preliminary data validation specifications (computer edit and imputation)
 - g) Prepare data validation manual
 - h) Generate edit, imputation and tabulation programs
 - i) Test all systems and programs

- 10) Tabulation Design
 - a) Preparation of tabulation plan and table outlines
 - b) Design of preliminary tabulations
 - c) Review of tabulation plan by Census National Committee
 - d) Development of tabulation specifications
 - e) Computer design of tabulations

- 11) Preparation of Field Manuals
 - a) Draft all instruction manuals
 - i) Enumerator manuals
 - ii) Supervisor manuals
 - iii) Master trainers guide
 - b) Review all instruction manuals
 - c) Finalise all instruction manuals
 - d) Print all manuals

- 12) Preparation of Control Forms
 - a) Design control forms
 - b) Print forms for pilot census
 - c) Finalise control forms
 - d) Print final control forms

- 13) Design of Manual Editing and Coding procedures
 - a) Review occupation, industry and other codes
 - b) Draft editing and coding instructions
 - c) Finalise editing and coding instructions

- 14) Field Procedures and Activities
 - a) Develop enumeration procedures
 - b) Develop procedures for field staff recruitment and secondment
 - c) Develop field staff training program and procedures
 - d) Detail logistics for field training and enumeration
 - e) Recruit, second and train field staff
 - f) Establish field census offices
 - g) Distribute enumeration materials
 - h) Deploy field staff

- 15) Publicity
 - a) Develop a census information and education campaign strategy
 - i) for pilot census
 - ii) for main enumeration
 - iii) for post-enumeration survey
 - b) Prepare information and education campaign material
 - c) Implement information and education campaign
 - i) for pilot census
 - ii) for main enumeration

iii) for post-enumeration survey

16) Pilot Census

- a) Select sample EAs
- b) Prepare maps for selected EAs
- c) Recruit and train field staff
- d) Recruit and train manual editors and coders
- e) Recruit and train key entry staff
- f) Deploy field staff, equipment and materials
- g) Conduct Pilot enumeration
- h) Check-in questionnaires
- i) Manually edit and code questionnaires
- j) Enter and verify data
- k) Run data validation programs
- l) Generate tabulations
- m) Evaluate and report on Pilot census

17) Pilot Post-Enumeration Survey

- a) Design post-enumeration survey sample
- b) Develop post-enumeration survey matching and estimation procedures
- c) Develop post-enumeration survey reconciliation procedures
- d) Design post-enumeration survey questionnaire, forms and manuals
- e) Print post-enumeration survey forms and manuals
- f) Recruit and train pilot post-enumeration survey field staff
- g) Develop post-enumeration survey data processing system
- h) Conduct pilot post-enumeration survey
- i) Match pilot post-enumeration survey with pilot census
- j) Conduct field reconciliation of pilot post-enumeration survey
- k) Enter and verify post-enumeration survey data
- l) Run post-enumeration survey data validation, estimation and tabulation programs
- m) Evaluate pilot post-enumeration survey

18) Post Census Debriefings

- a) Logistics challenges
- b) Collection challenges
- c) Data capture challenges
- d) Questionnaire filing challenges
- e) Editing challenges
- f) Imputation challenges
- g) Validation challenges
- h) Certification challenges
- i) Tabulation challenges
- j) Dissemination challenges

19) Documentation and Recommendations for Future Censuses

APPENDIX 3

{ cover page only, available as separate attachment }



Republic of Malawi

2008
Population and Housing Census
Advocacy Document for Resource Mobilization

National Statistical Office
P.O. Box 333
ZOMBA

APPENDIX 4 NSO Strategic Plan 2007-2011 (August 2007)

as a separate pdf attachment }

APPENDIX 5 Persons Consulted

NAME	TITLE	Functional Area	E-MAIL	TELEPHONE	
				Landline	Cell
Charles Machinjili	Commissioner	NSO			
Jameson Ndlawala	Asst. Commissioner,	Economic Statistics		265 01 524 377	09 957 101
Deric Zanera	Chief Statistician	Demography & Soc. Stats		265 01 524 377	08 554 160
Dunstan Matekenya	Statistician	Demography & Soc. Stats.		265 01 524 377	
Mylen Mahobe	Principal Statistician	Demography & Soc. Stats.		265 01 524 377	
Sophie Kang'oma	Principal Statistician	Demography & Soc. Stats.		265 01 524 377	08 346 527
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Angela Msoa	Chief Statistician	Technical Support Service		265 01 524 377	