

**GENERAL DATA DISSEMINATION SYSTEM,
(GDDS PHASE 2)**

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

KENYA MISSION REPORT #1

Nov. 12 – 16, 2007

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1. SUMMARY AND MAIN FINDINGS

Issues Covered	Outcome
1. Monitor schedule performance	Began using MS Project for monitoring.
2. Begin dissemination planning as part of questionnaire design and advocacy	Director General agreed to begin dissemination planning.
3. Use titles for staff that identify the tasks that are their responsibility	Director General stated that discussions are underway to address this.
4. EA delineation completed in time for the Pilot Census	Cartography Head confident that delineation will be completed.
5. Pilot Census is a test to confirm that everything is ready not to test components	Senior staff acknowledged that earlier testing of components will be necessary.
6. Decision on scanning hardware and software	KNBS to consult with the 2 other known government agencies who use scanning.
7. Demography needs to prepare edit specifications for data processing staff	Demography agreed to begin developing edit specifications as part of questionnaire finalization.
8. Use the National Steering Committee for advocacy promotion	Issue to be raised at the next National Steering Committee meeting.
9. Develop IT hardware, software and security policies	Taken under advisement for future action.

The Kenyan National Bureau of Statistics (KNBS) is an autonomous agency of government replacing the Central Bureau of Statistics, a government department. It is still in the process of transition. One of the products leading to this conversion was a Strategic Plan that was planned for the 5 years 2003/4 to 2007/8. The KNBS is currently revising this plan for the next 5 years. The plan is a progressive and ambitious document that stresses quality.

The Census Project Proposal is a detailed document that covers every phase of the census from planning to dissemination. The consultant advised the KNBS that it was an excellent document that covered all the bases and that he would be hard pressed to create a better one. He had a few observations here and there but they would clarify the statements rather than correct them.

KCBS was well aware that the major failing in the previous census was the non-completion of the mapping programme. It also felt that it could have done better with their scanning effort. While it wanted to make improvements wherever possible it was determined to have a successful EA demarcation and data capture effort. The consultant was directed to particularly recommend how to improve the quality of those census phases.

Throughout the week the consultant was provided with plenty of evidence that KNBS was sincere in its determination to produce a quality census. Management accepted every suggestion and recommendation for improvement and began to implement them immediately.

The basis of quality improvement is good planning followed by monitoring by management and feedback to implementers. KNBS had already begun the former and was eager to institute the latter two. They accepted that they needed project monitoring software such as MS Project. The software was to be ordered and a staff member identified to manage the process of entering all the steps of the complex census plan and set up a reporting and feedback process.

Once this is set up KNBS will be able to monitor the progress of census preparation and have an early warning system for problems. This puts it in a good position to deal with unexpected eventualities early and allow it the maximum opportunity to take the wisest remedial action.

This leaves the issue of finances as the only significant stumbling block that may derail the KNBS off the track leading to a quality census. Approximately 90% of the anticipated budget has already been approved by the Government. While this budget has been approved, history has shown that there has been some difficulty in accessing these funds when they are needed. The new independent Board that oversees the KNBS may be called on to assist the Census if this type of situation arises and threatens to affect the quality of the Census results.

The remaining 10% of the budget is likely to be picked up by the donor community.

The only phase of the Census process that has not yet received the same degree of attention as the rest is dissemination. The consultant suspects that this is because there is no one manager with specific responsibility for this programme, as well as the fact that, because it is at the end, there is plenty of time to focus on it later. The consultant explained that it is just as necessary to focus on dissemination as on cartography. Efforts on dissemination now will pay dividends for advocacy. Data users provide the support that convinces government that such an expensive programme is worth supporting. Developing dissemination plans and capacity now will provide those developing an advocacy strategy with the tools to demonstrate benefits, utility and relevance. (See also Section 4.10)

2. SITUATIONAL ANALYSIS

The consultant found that KNBS is determined to have a quality census in 2009. The conversion to KNBS from CBS is undoubtedly a factor. The agency and the government are both likely eager to demonstrate that this shift to autonomy is deserved. Management and staff may be inspired to outperform because of a sense of opportunity for those who demonstrate superior ability and effort. There are likely other factors not so easily apparent to an outsider.

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 KNBS 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, KNBS 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

KNBS has developed a good first action plan for the 2009 Census. It appears to have skilled and well-motivated staff. What is not clear is whether those staff can work together in project mode where all have to work together to achieve a common goal. It is there for the big picture “conducting a quality census” but that can only be done if hundreds of smaller tasks, which mesh one into the other, are each well done. The first step, creating a task listing, task requirements and task monitoring has been recognized as necessary and has been started. Following it up by doing the same for each of those that remain will tax KNBS’s human resource mobilization capability. The consultant suspects (but cannot be certain without more in depth probing) that its primary staff hierarchy identification (rank not function) may be an impediment to good project team dynamics (working together as equals to achieve a common goal). This was raised with the Director General. He accepted the comment as valid. However, he and his senior staff had just concluded a meeting about KNBS re-organization from CBS. Actions leading from these meetings should address this problem.

KNBS has identified where it stumbled in the conduct of the 1999 Census and is giving those areas: mapping and scanning, priority attention. This is likely to lead to success in those areas but care must be taken to ensure that all the other phases receive equal attention or risk replacing one area of weakness for another. The area of material acquisition, distribution logistics and oversight (See 4.2) can add to, or detract from, quality just as much as mapping and needs as much attention. So does training (See 4.5). There are so many issues to manage that the regular management hierarchy will be hard pressed to manage it and it will test KNBS’s human resource depth.

4.1 CENSUS MANAGEMENT STRUCTURE

The 2009 Census has a well-structured management organization (see Appendix 2 for Chart) that combines political oversight (National Census Officer) and independent oversight (National Steering Committee) along with a plethora of oversight and planning committees at progressively lower areas of concern. They appear to cover the major areas of concern and, if they function well, will be a major contributing factor for the quality of the census.

4.2 LOGISTICS

This area is glossed over in the census project planning document. It may be that it is well under control so that the authors did not feel it necessary to give it much attention. Logistics is the supply line of the census and just as wars are won or lost because of the care taken in maintaining lines of supply, a census may be a success or failure depending on how well the distribution planning is executed and how good is the intelligence, that is being returned to HQ, of unexpected incidents that disrupt the plan and how quickly they are resolved.

4.3 MAPPING

The aim of the census is to cover the total population of the country. The strategy used to achieve this is to delineate the whole country into small units that a single enumerator can cover and clearly demarcate the boundaries of each unit so that the enumerator does not stray from his assigned territory. If done well the census achieves its goal of total coverage without duplication. Mapping serves not only as a means for coverage but also provides the frame for sample surveys and the structure for data processing, data storage and data retrieval. Deficiencies in the mapping activity generate a lower baseline above which the quality of all these other activities cannot rise, i.e. there are no ways by which the census can recover the quality ground lost due to deficiencies in the mapping process. Discussion with the Head, Cartography, suggests that EA delineation is well in hand and should be completed before the Pilot Census, if satellite imagery is supplied for the urban component.

4.4 QUESTIONNAIRE DESIGN

Questionnaire design is an art that melds the requirements of **subject matter** to obtain information on a concept from a respondent, in a standard fashion, efficiently; that is easy for an **enumerator** to transmit and communicates what is needed, simply; so that the **respondent** can provide the correct response, effortlessly; that is recorded simply and clearly, so that it can be **captured** onto a machine readable medium, accurately. Satisfying four distinct requirements simultaneously is not easy. KNBS has not yet begun to focus on questionnaire design although discussions on what questions to ask have been started. When it does, it should remember that while it will have spokesmen to cover the interests of data capture, the enumerator and subject matter, there is seldom a voice for the respondent at design meetings. If the respondent's needs are not adequately protected, the census will reap the return of less than ideal responses with its consequent effect on quality.

4.5 TRAINING

No population census can be undertaken without a massive infusion of temporary employees, whether hired or seconded for the brief period needed to cover their aspect of the census. These staff will not have had the indoctrination towards care and precision that regular KNBS staff

receive formally and through osmosis by contact with more experienced colleagues. This lack can only be overcome by training. Censuses tend to use the pyramid approach to training where higher order supervisors train each successive layer of lower supervisors until it is passed down to the enumerator. We know that no teacher can pass on all (s)he knows to a class in a brief period of time. That means that something is lost in transmission at each lower training stage. For the enumerator to be adequately trained, the initial training needs to be superb, and each subsequent layer at least good, for the enumerator to perform adequately. The surprise is, not that some enumerators perform badly, but that so many enumerators perform well! Attention to training is frequently left as an afterthought for subject matter to attend to after they have dealt with the more interesting and important aspects of census such as questionnaire design, edit specification and dissemination. Such an attitude will compromise the quality of a census.

The consultant has not talked to anyone currently developing plans for training or seen any documents on the subject, so he assumes that it has not yet begun. The preceding message should be communicated to those responsible before they begin.

4.6 TESTING

The census strategy includes plans for a Pilot Census Test one year before Census Day. This is a simulation of every phase of the census. A dry run to remove any last wrinkles in the process. A successfully planned Pilot will uncover no major flaws. If it did, then one would need another trial to see if the problem(s) had been corrected properly. Pilots are really quality assurance mechanisms to assure census management that preparations are complete and work was well done.

Prior to the pilot a myriad of tests both formal, and informal, are carried out on each of the components separately to ensure that instructions are being interpreted as intended and that function is operating as planned. This could be as simple as testing question wording on small samples including staff who are not connected with the census, or their families to more formal tests in the field using census staff as enumerators. By the time of the Pilot, component managers should be convinced that there are no problems with the internal workings of their part of the operation. They are looking for unanticipated difficulties where two operations merge or in their colleagues' components, not their own. If they are all right then the Pilot will have a smooth run.

4.7 ENUMERATION

This is what everyone thinks of as the "Census". This is where the proof of the efforts of planning and execution are harvested. Hopefully, the materials have arrived; the enumerator has been well-trained and well-briefed by his supervisor; (s)he has reconnoitred the EA and knows its boundaries; understands the questions; and knows how to enter the responses. The quality of the census depends on how true the foregoing is plus the conscientiousness of the enumerator to use it all to do a good job.

4.8 DATA CAPTURE

KNBS has determined that scanning is the technology that best allows it to capture the information from the millions of questionnaires quickly and accurately. From the presentation provided by the DRS representatives, KNBS learned that with neat data coding and proper questionnaire care, 3,000 to 3,500 questionnaires can be processed per hour. This would allow the capture process to be completed in less than 4 months. In comparison, Tanzania, with a comparable population, did theirs in 2 months in 2002.

DRS stated that several vendors provide comparable machines that could do the job. He claimed that his firm's major advantage is that they specialize in Censuses (along with elections and exam marking) and have a major presence in Africa. The Kenya Elections Commission and Examinations Board both use DRS equipment so that local expertise and knowledge is available. The price for this technology is approximately one million pounds sterling, not an inconsequential figure. KNBS is advised to consult the two other local users and other vendors to determine whether DRS apparent advantage is real and how cost competitive it is before making its decision on what company to patronize.

4.9 EDITING, IMPUTATION AND VALIDATION

The consistency edit specifications for 2009 have yet to begin. When it does, the consultant's suggests that KNBS revise the 1999 editing and imputation strategy since it was seriously flawed. In 1999 each question was being edited and imputed independently, frequently with certainty (i.e. there was only one corrective measure and it was always the same); this type of action generates bias which may become significant if there are enough cases. The preferred strategy is to complete the edits for a household record before any imputation is done. Once editing is complete an algorithm searches for the least change solution that removes all inconsistencies and then uses hot deck or nearest neighbour imputation to create consistency.

4.10 DISSEMINATION STRATEGY

The traditional method of dissemination is 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. While technology has removed this concern, the initial proposal for 2010 publication still follows this sterile, unimaginative, strategy. Researchers no longer go to publications to get their raw data if an electronic alternative is available. Casual users are so daunted by page after page of numbers that they shy away from even looking at such documents. So what purpose do these publications serve? If a good answer is not forthcoming, perhaps it would be a good idea to develop a better dissemination strategy.

The recommended one is the one used by many statistical offices, including all the leading ones: detailed information is made available from readily accessible data bases to allow for easy creation of user-specified electronic tables and databases. This facilitates analysts ability to massage these data through various software to test hypotheses and uncover trends, frequently leading to demand for more data to answer more questions that arose from the first study.

The more casual user is more satisfied with some of the many smaller, topical, publications covering specific themes or areas, which contain little undigested data, but a plethora of indicators, charts, graphs, and maps that allow the non-professional analyst to understand the topic of focus.

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 single census provides information at a point in time. Two censuses provides 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 since it limits the value of the current census.

4.11 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 Kenya 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 with no perceived benefit to the respondent.

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 the National Steering Committee (NSC) made up of distinguished census users provides Kenya with such a respected third party and the KNBS would be well advised to channel its advocacy messages through this vehicle rather than directly through the KNBS. If the 2009 Census strategic planners did not envision this role for the NSC, they might want to consider adding this function. The NSC could be identified as an independent voice speaking on behalf of the 2009 Census (rather than KNBS, itself). In contrast, an advocacy committee which is media oriented would be more of an implementing group determining how to best spread the message rather than dealing with message content.

Another way to promote the census is to get more grass roots people to understand what a census is for, by example. Many countries participate in the “census at schools” project where teachers get students to conduct a census of the class, or school, asking questions that are of interest to the

students. It is an exercise in teaching information assimilation, deduction and analysis that is usually well-received by students because it covers topics and a universe (their fellow students) that they understand and are of interest. They frequently bring this enthusiasm home with them and that appreciation for census is then transferred to others in the family. (see: <http://www.statcan.ca/english/freepub/81-004-XIE/2005005/census.htm>). Statistics South Africa promoted this project throughout South Africa before the 2001 Census and reported that it was so hugely successful that they had to put more staff on the project (StatsSA produced the questionnaires, captured the data and returned the results).

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 directly, 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. A successful advocacy programme is far more effective than a successful publicity programme, and almost always less expensive.

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 who may have done it for free, balk. They cannot be blamed for also wishing to be paid for their census promotion.

It goes without saying 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.

Therefore, the Dissemination Unit is an important player in the development of support for a census. It should facilitate user access to data, develop mechanisms for rapid turn-around of requests for information, and make every effort to make information as accessible as possible. Their role in census advocacy never stops since demand for data, although stimulated by the release of new census results, continues on and never ceases.

4.12 INFORMATION TECHNOLOGY (IT) INFRASTRUCTURE

KNBS is currently located in two buildings (Herufi House and Nyoyo House) about a kilometer apart. Each has its own LAN with no connection between the two except via the mail servers. There has been some talk of creating a wide area network (WAN) but there is no expectation that one will be up and running in time for the 2009 Census.

The Herufi House network consists of 2 data servers and a mail server linking all the KNBS workstations. Nyoyo House has 1 data server and a mail server linking all its work stations. Both networks have access to the internet.

Data Processing Division (DPD) believes that it has sufficient hardware to carry its 2009 Census responsibilities although an additional data server may be necessary, especially for dissemination.

CSPRO is the main software used for data capture, editing and tabulation by the census and many surveys. In addition SPSS and ??? are used for analysis. There is one SAS licence, presumably acquired for evaluation of its capability and utility for analysis, but it has yet to be used.

Policies for hardware and software acquisition do not exist but are needed to ensure compability with the existing infrastructure as well as to allow DPD staff to develop the skills to maintain equipment and provide software support without strain caused by having many different pieces of hardware and software that perform the same functions but each with itsr own idiosyncracies that support staff must learn in order to provide that support.

There has not been too much attention paid to security aside from the acquisition of anti-virus software. This should be corrected as soon as possible and definitely before 2009 data begins to be stored, to prevent these data to fall prey to malicious hackers. The most secure method that one can recommend (and the one adopted by Statistics Canada) is to create two networks. The first would consist of one or more servers and all the microcomputers with confidential data. This network would have no connection to the outside world (the secure network). The second would have one or more servers and all the remaining microcomputers (the open network). This second network would have internet access therefore staff would not be allowed to put confidential data on it. The two networks would be physically separate. This is the only way to guarantee that KNBS 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 secure network if they have also been used on insecure computers).

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 discussed KNBS's present planning and preparation of the quality control issues of the census. In Section 4, above, he reviewed and provided the current status of the quality control issues of each mayor domain of the census and, the challenges to be addressed, and the solutions contemplated.

6. DELIVERABLES

The KNBS 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 three country priorities, quality assurance, data processing and PES are not mutually exclusive since all are subsumed in a discussion about quality assurance. In this first mission the emphasis was from the perspective of quality. In the second mission, if data processing remains the principal problem to be addressed, KNBS and the consultant will work together to ensure a well planned and well executed data processing strategy.

This may include:

1. identifying alternate data capture hardware/software alternatives and the pluses and minuses of each so that KNBS may be able to make an informed choice in time for the 2008 Census Pilot;
2. helping prepare tendering specifications to meet the transparency requirements of the Government of Kenya and/or any donor who may be willing to provide assistance;
3. assessing the questionnaire implications of that choice;
4. planning the data capture process.

In preparation for this mission, the consultant, with the assistance of the Principal Statisticians, Demography and Data Processing (or their delegates) will identify several other scanning equipment providers who will be asked if they would like to make a presentation to KNBS similar to that provided by DRS.

The Post Enumeration Survey (PES) is the major quality assurance vehicle for a census since it is designed to measure under/over-coverage and assess response quality, question by question. If the PES is managed by the same people who manage the 2009 Census, there may be real, or imagined, conflict-of-interest in the execution of this survey. It would, therefore, be better if the manager of the PES were to be appointed by, and report to, a body independent of the 2009 Census line management. If PES remains the focus of the third mission, the consultant recommends that before the third mission:

1. KNBS consider delegating responsibility for PES to the Board of Directors to ensure that PES can be shown to be independent of the regular census management; and if so,
2. that the Board, after consultation with KNBS, appoint a PES project manager, with responsibility for planning, resourcing, and executing the PES; after which,
3. the PES Project Manager is to report progress to the Board at regular intervals; and,
4. at the conclusion of the PES, the Board releases the results.

The PES then becomes the main quality assurance vehicle by which the Kenyan public is informed of the quality of the 2009 Census. If the foregoing strategy is implemented, it will be seen as an independent, arms-length assessment which should be accepted as valid.

During the third mission, the consultant will work with the PES Project Manager to develop the PES plan and implementation strategy.

8. WIDER ISSUES

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

9. INTENDED DELIVERABLES OF THE KNBS

The KNBS will review their plans for the remaining missions and decide whether to leave the plans unchanged, in which case they should proceed as outlined in Section 7, above. If there are any modifications to these plans, KNBS will advise the consultant and the World Bank Module Co-ordinator.

10. PLANS FOR NEXT MISSION

There was insufficient time remaining at the end of this mission to make plans for the next. KNBS, in consultation with the consultant, will determine the timing of the next mission after giving due consideration to the items raised in Section 7, above.

11. WORKING RELATIONS

The consultant found that management and staff of KNBS 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 KNBS in their goal of improving the quality of the 2009 Census process. He believes that, by their words and actions, KNBS recognizes and appreciates this 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

Both KNBS and the Consultant found this first mission to be productive and useful. It is recommended that the second mission be approved for a time convenient for KNBS and the consultant.

14. OTHER DONORS

UNFPA

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 GDSS website and reviewed the material there.

He read the Kenyan country report and country workplan from the Mombasa Workshop and began reviewing the material he had in his archives on the subject of statistical operation quality assurance. Among the material found he selected the following which he thought might be of value for the Kenyan mission to bring along with him:

Quality Guidelines Senior Author: Harry Freedman, Statistics Canada, 1987

Quality Improvement Tools, Juran Institute, 1989

“Quality Control and Quality Assurance,” Appendix B, pp. 305-312 in *Zambia Survey Skills Manual*, First Edition, Statistics Canada, November 2003.

2001 Census Handbook, Statistics Canada, February 2003, Cat. #92-379-XIE

Census Management Guide to the 2001 Census, Statistics Canada, February 1999

2006 Census Management Guide, Statistics Canada, December 2004

Census of Population and Housing, Data Quality – Undercount Australian Bureau of Statistics, February 2003, Cat. #2940.0

Report on The Assessment of The 2000 Round of Population and Housing Censuses And Proposed Strategy for The 2010 Round of Population and Housing Censuses In the CARICOM Region, CARICOM Secretariat, May 2007

and

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

which he had for another mission but was of use for this one as well.

He also had 35 years of experience in Statistics Canada (including several as the agency’s quality assurance expert) plus 5 years of international work which he could draw on.

Client

The KNBS prepared the following material to allow the consultant to become familiar with the agency and where it was in the census planning process:

The Statistics Act, 2006;

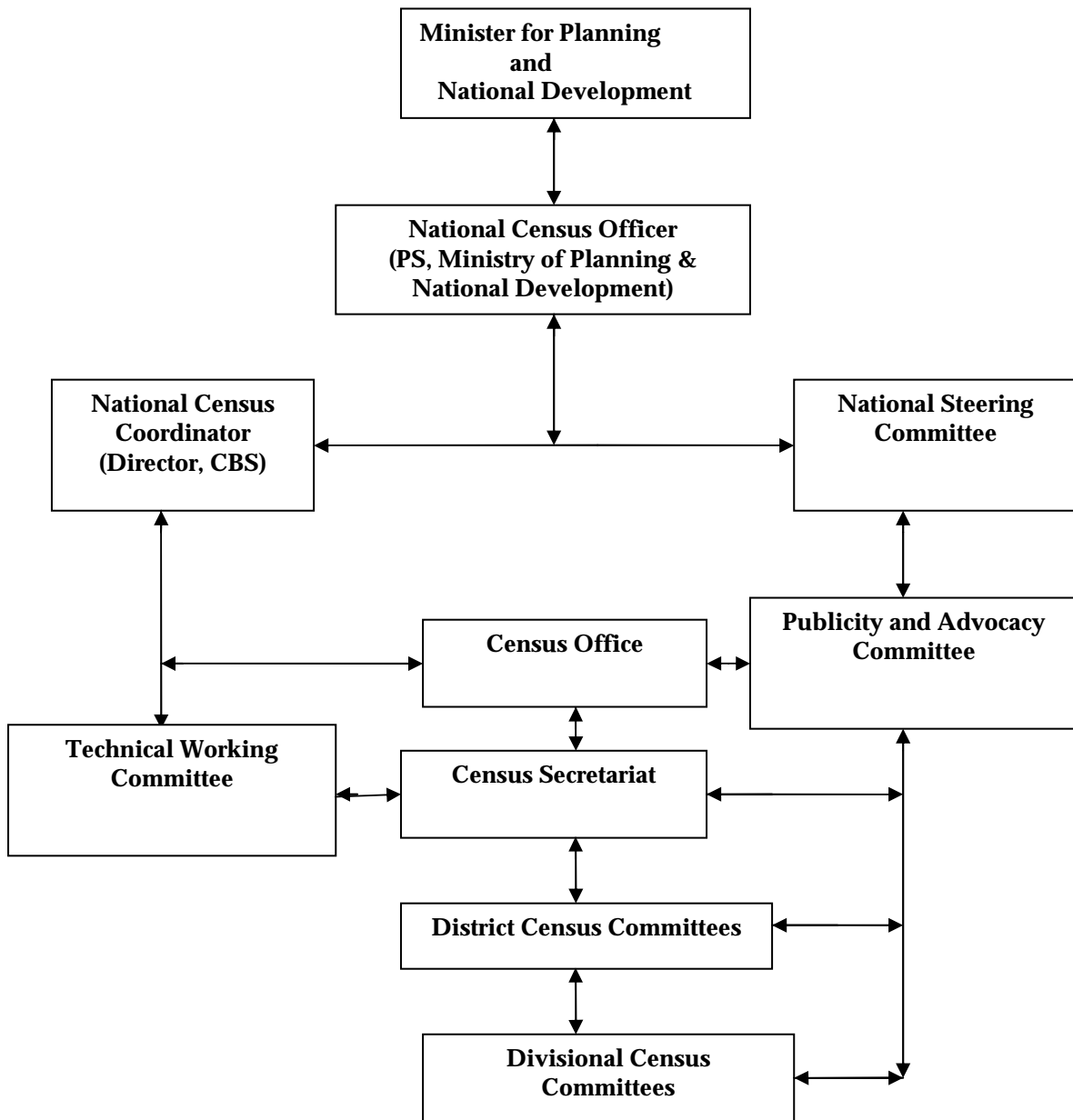
The *Strategic Plan for NSS 2003/4 – 2007/8*, and

the “*2009 Population and Housing Census Project Proposal*”, Jan. 2007.

Plus the Administrative Report from the 1999 Census that outlined the preparations and difficulties encountered in the 1999 Census process.

It also arranged meetings with various officers of KNBS and with its UNFPA programme officer.

APPENDIX 2 **Census Organization Chart**



Source: The 2009 Population And Housing Census Project Proposal, January 2007

**APPENDIX 3 “2009 Population and Housing Census Project
Proposal”, KNBS, Jan. 2007**

{ available as a separate attachment }

APPENDIX 4 RECORD OF DAILY MEETINGS

Mission to Kenya, November 12-16, 2007 with Kenya National Bureau of Statistics

Main Capacity Building Topic: Building Quality into the 2009 Census of Kenya

Day 1, Mon. Nov. 12, 2007

Draft Agenda

1. Status of the 2009 Census of Kenya – KNBS
2. Qualifications of the Consultant to assist KNBS
3. Quality Concerns of KNBS
4. Establishing the Agenda for the remainder of the week.

The consultant met with Christopher Omolo (Fred Otieno's deputy since he is absent until Wednesday). Christopher started by saying that KNBS is a new independent entity that replaces the CBS which was a government department. He provided the Consultant with a copy of the *Statistics Act, 2006*; a copy of the *Strategic Plan for NSS 2003/4 – 2007/8* and a copy of the "2009 Population and Housing Census Project Proposal", Jan. 2007.

He stated that producing a quality census was their major concern but that they also had some concerns about scanning.

The Consultant provided Christopher with his credentials including his Statistics Canada experiences particularly that of Quality Assurance Manager and as Census Technical Advisor in Zambia and Nigeria. (CV available, on request)

The consultant began with an overview of statistical quality and referred KNBS to one of his publications *Quality Guidelines*, which although 20 years old still is a useful tool for survey quality planning. Its main defect is that it was written before micro-computers revolutionized census and survey operations so that any comments on how to use modern technology to ensure quality are absent.

The meeting ended with the summarization that quality is ensured by **planning, monitoring, control** and **feedback** of every component operation of the census. He demonstrated by showing examples from the never completed Census of Eritrea.

Christopher suggested that it would be better if he spent the afternoon going over the Quality Guidelines and that the Consultant review the 3 KNBS documents.

They would both meet with the Director-General tomorrow morning and then would plan the remainder of the mission.

Documents Received for Review

”The Statistics Act, 2006”

Strategic Plan for National Statistical System 2003/4 – 2007/8, March 2003

“The 2009 Population and Housing Census Project Proposal,” January 2007

Day 2, Tues., Nov. 13, 2007

Meeting with A.K.M. Kilele, Director General, K.N.B.S. and C. Omolo

The Consultant thanked Mr. Kilele for taking the time out of his busy schedule to see him. He commended KNBS on the quality of its **Strategic Plan** and “The 2009 Population and Housing Census Project Proposal”. They are the best documents of their kind that he has seen in a very long time. They include very detailed discussions on quality assurance which are as complete as one could expect in those types of documents.

He thought that if they follow their own advice they could conduct a very good 2009 Census without the necessity of his advice.

Mr. Kilele admitted that they were falling a bit behind in their execution of their plans and that the consultant’s presence and advice would be very valuable in improving the quality of their census preparations.

When asked how the Bureau should proceed towards producing a quality product, the consultant suggested that the Census Secretariat’s role of monitoring progress was key. If staff knew that their work was being carefully observed they would be more conscientious. It was important that progress was tracked and slippage in scheduled activities be dealt with promptly. Another tactic for getting the best performance from staff is through recognition of the effort. Public acknowledgement of excellent performance through “Certificates of Excellence,” and rewards such as being given preference to attend conferences or training, etc., act as motivators for quality work.

Hall Encounter with Mr. Hesbon MacObong Ag. Head, Agriculture Division

Upon being introduced to the consultant, Mr. MacObong, urged him to convince the Population Census staff to include agriculture questions on the form. The consultant promised to discuss options with Mr. Omolo.

Meeting with Mr. P.W. Nyongesa, Principal Economist/Statistician, Data Processing

Mr. Nyongesa explained that the Data Processing Division had 5 senior level staff, 3 mid-level and 8 junior level. They worked well with the Cartography Division and used the Standard Geographical Code as a frame for their census data bases. They were readily conversant in CSPro but had no expertise in scanning. Mr. Nyongesa, himself had been seconded to Stats South Africa during their last census and was familiar with their scanning experience. When told

about the DRS rep's arrival in Nairobi, Mr. Nyongesa thought it would be a good opportunity to see what was on offer for scanning. He knew that the Elections Commission and the Examinations Board both used scanning. When asked whether contracting out scanning to one or the other would be a good idea if they were capable and able, he thought it might be a possibility given DP's lack of expertise and the volume of work that was coming.

DP does not have a copy of MS Project but he was aware of it and agreed that it would be useful for census monitoring. He would pursue acquiring a copy.

There was also a brief discussion on security and the benefits of having two separate networks, one isolated with confidential data and the other open to the world via internet but with no confidential data.

Meeting with Mr. Omolo

Upon return to his office, Christopher asked if he could make copies of the *Quality Guidelines* for use within KNBS. Agreed. Other documents, in soft form were also provided.

A detailed review of the Census Project document ensued. The Consultant reiterated that it was an excellent document, and asked if he could get a soft copy and send it to Zambia. They would find it very useful.

There were a number of picky points that might improve the proposal but only one serious omission in the workplan: while there was a task for DP to process the edits, there was no preceding task for Demography to provide specifications by which DP could do their task. Christopher said that that would be corrected.

A discussion on agriculture then ensued. Christopher said that there was strong pressure from Agriculture to include a number of their questions on the questionnaire.

The consultant thought that there could be a question at the end of the questionnaire asking if the respondent was a farmer. The yeses could be stripped off to provide a frame for a Census of Agriculture. Another alternative would be for Kenya to follow the Canadian practice of running the Census of Population and the Census of Agriculture concurrently – At the end of the household enumeration, the enumerator asks if any of the household members operates a farm/is a farmer. If the answer is no, the enumerator moves on to the next dwelling, but if it is yes, (s)he pulls out a Census of Agriculture questionnaire and becomes a C of A enumerator. This has one disadvantage – it lengthens the enumeration time but it has several advantages: it spreads the logistical preparation costs between 2 activities and reduces both proportionately (if C of P costs \$100 million and C of A costs \$70 million, running the 2 together would probably cost about \$125 million). In addition, the enumerator could be instructed to provide a link code for the 2 questionnaires and suddenly the C of A would have a host of socio-demographic information on the farm population to go along with the agriculture information.

The consultant was uncertain whether there was sufficient time for this to be done for 2009 but it would certainly be feasible for 2019. Christopher agreed to take the idea under advisement.

A discussion on advocacy then ensued after a comment that the population was very cooperative except for a few questions such as ethnicity, fertility, and mortality.

The consultant suggested that KNBS should not include any question on any survey unless there was an explanation of why the question was asked and the purposes to which the responses were put (and, if the question might be considered sensitive, also the purposes to which it would not be put). If the proposer of a question could not provide a good statement of purpose, perhaps it was not a good question to ask.

He then retrieved Statistics Canada's 2006 Census version of this document off their website for KNBS to use as a model. Christopher thought that this was an excellent suggestion which he would forward.

The final suggestion was for KNBS to apportion the total cost of the census to each question (fixed costs apportioned equally and variable costs apportioned to the questions share, eg. Sex is a binary variable, easy to ask, respond, and code. It takes little time and is the lowest cost question; labour questions are more difficult to explain and understand so take more of the enumerator's and respondent's time; they also need to be coded). The calculations of the relative costs are not difficult if some time measurements are taken during some tests or the census, itself.

As a corollary, once this is done, it is not difficult to estimate the cost of proposed questions. Frequently, it is easier to convince a proponent of a complex question(s) that it/they belong on a sample survey by using this method, than just by saying that it isn't appropriate because it is too difficult for the census.

Day 3, Wed., Nov. 14, 2007

Meeting with Frederick Otieno, Christopher Omolo & Rosemary Kongani

Mr. Otieno (Fred) asked the consultant what needed to be done to assure the quality of the 2009 Census. The consultant stated that it would be accomplished by good planning followed by careful execution. More generally, quality assurance was independent assessment or monitoring of the operationalization of the plans of each component part of the complex census process. It starts with developing good plans and resource requirements for each component and then putting them together on a flow chart that can generate the critical implementation path that is identified. Management, at various levels, must monitor how these plans proceed and then deals with each issue that develops that threatens to derail the plan. This can be done easily using project planning software such as MS Project which is a fairly inexpensive programme that is readily available where Microsoft products are sold.

Fred said that a demographer had just returned from taking a project management course. He then asked her to join the meeting. She expressed familiarity with the software (it was on her laptop) so Fred suggested that she benefit from the consultant's presence and chart one aspect of the census. Cartography was the first suggestion, but the head is in the field so other options were demography and logistical preparation. Rosemary went home to retrieve her laptop and she agreed to meet up with the consultant later.

Demonstration by DRS to KNBS

John Gomersall and Gabriel ? of DRS made a half hour presentation about scanning using DRS as an example but did state that there were other companies that also provided similar services. DRS is providing or has provided scanning services for censuses in Ethiopia, Sudan, Cameroun, Tanzania and Zambia. They also provide scanning services to many electoral commissions and examinations boards including those in Kenya. He digressed by stating that in Zambia the scanning operation was contracted out to the Examinations Board by the CSO and it worked very well. That model might also work for Kenya especially if KNBS worked with the Electoral Commission.

An approximately half hour presentation was followed by nearly an hour of questions. The presentation was very useful and provided the following estimation metric:

3,000 – 3,500 questionnaires could be scanned in an hour (much higher if the questionnaires were handled well and had no coding errors)

Ten scanners should be a reasonable number to do the job.

The cost for scanners, questionnaires, training and support should be ~ one million pounds (within 10% plus or minus).

Meeting with Mr. Hesbon MacObong Ag. Head, Agriculture Division

The consultant outlined the suggestion of running a Census of Agriculture as an extension of the Census of Population. The cost would then be solely the cost of questionnaire preparation, enumeration and processing since all the other costs (field preparation, transportation logistics, hiring of employees and training) were already being covered. Mr. MacObong was a bit uncertain whether a census was practical but wanted to derive an agricultural frame for future sample surveys.

The consultant then suggested that agriculture propose a question that would identify the types of farm(er)s that were needed to construct such a frame. He has already suggested that Demography produce a table costing each census question. This proposed agriculture question would also be costed and, if there was space on the questionnaire, and the additional cost was reasonable, there should be little difficulty to convince the Census Steering Committee to add the question.

Meeting with MacDonald Obudho, Acting Head, NASSEP & Field Administration

(NASSEP=National Sample Survey & Evaluation Programme)

The Consultant had a query about the budget estimate for NASSEP V Frame preparation in 2010/11 2010/12 which had a cost of KSh 180 million. This compares with KSh450 million for the mapping programme. The consultant couldn't think of anything that one would do for frame creation that could cost so much when the whole mapping programme which is one of the most expensive and time-consuming components of the census was less than 2 ½ times as much. Mr. Obudho said that this line item includes all the costs of frame creation, field verification and the cost of PDAs. When asked why he needed to go into the field and use PDAs for frame preparation, the consultant was told it was for stratification for characteristics such as EA status (high earnings, medium, poverty EAs). The follow-up question was why Census data wasn't used to do this. Mr Obudho responded that he didn't know that there was any census data he could use for this. The consultant showed him the housing characteristics portion of the Malawi census questionnaire and asked whether this questions would allow for status discrimination. The answer was yes. The consultant then advised Mr. Obudho to verify that similar questions were on the Kenyan questionnaire and, if not, he should lobby for the inclusion of the questions that he needed. Mr. Omolo was advised that his advocacy quality just took a substantial drop if he had not been able to educate an important part of KNBS that the Census had valuable information that could be used for frame preparation for sample surveys at the savings of millions of shillings. Mr. Obudho left with the new status of potential census data user.

Meeting with Rosemary Kongani

The consultant met with Rosemary to begin the process of creating the project chart using MS Project. He provided her with the itemized activities identified for the Census of Eritrea (which was never conducted) as an initial input and suggested that she then add all the activities (and date estimates) from pages 33-36 of the Census Project Proposal.

Of particular interest would be activities listed by the Eritreans and not found in the Kenyan plan. She agreed to assemble the material and there was agreement to meet in the morning to expand one of the component parts as an illustration of the utility of the activity.

Day 4, Thurs., Nov. 14, 2007

Meeting with Ms. Rosemary Kongani

The consultant met with Rosemary Kongani to begin loading the census activities from the project document onto MS Project and using the Eritrean census activities that the consultant had as a check for missing activities.

Despite following the MS Project instructions meticulously, it proved impossible to import the activities from Excel (saved in XML format) into MS Project. After several hours they determined that they would need to get assistance from data processing personnel. The consultant said that he would search the Microsoft website to see if he could find any assistance there. They agreed to meet and continue the effort on the following day.

Meeting with Ms. Zipporah Gathiti, UNFPA, Programme Officer

The consultant thanked Ms. Gathiti for taking the time to meet with him. He provided her with his assessment that KNBS was seriously attempting to produce a 2009 Census and that, so far, he was impressed with the plans it had made and the efforts of its staff to conduct a quality census. He told her that one of his major concerns was getting funding for the 2009 Census when it was needed. Although approximately 90% of the estimated budget had already been approved by the Government, he was concerned that the quality of the 2009 Census may be compromised if the release of the approved funds were delayed as had happened in the past. He hoped that, in the event of such delays, UNFPA would use its influence to keep any delay to a minimum by pointing out the adverse effects that the delay would have on the quality of the census.

KNBS was also counting on donor assistance to meet the 10% shortfall. UNFPA has been a staunch supporter of the Census and had frequently taken on the lead role to garner support for the census among donors. For example, during the 2000 Census in Zambia, UNFPA had created a Census Trust Fund to which a number of donors had pooled their census contributions. UNFPA expended these funds for census activities at the recommendation of the census technical advisor who provided a justification for the expenditures. All contributing donors were provided with regular updates of how these expenditures benefited the resulting census. If UNFPA were to undertake the same role in Kenya, the consultant offered to provide the same services as the census technical advisor, from Nairobi when he was here or from home via e-mail, if he was not if this would make it easier to get donor financial support.

Discussions with Christopher Omolo

The consultant raised the issue of questionnaire content with Christopher Omolo. Did respondent's understand why questions were asked? Where respondent's didn't know why, or suspected that there were reasons for questions that were different than those they were told, then, at best, it would take longer to get answers and at worst the census would get no answers or the wrong answers. It was important for each enumerator to know why questions were asked and what benefit these answers would provide to respondents directly or indirectly. He recommended that Kenya adopt the Canadian model that no question could be included on the census (or any survey for that matter) unless there was a good reason provided for that question including how the answers to that question would be used, whom it would benefit and how much it would cost. This requirement made it easier to demonstrate to proponents of complex questions, that it would their questions didn't belong on a census but would be better if reserved for a post-censal survey. Christopher was impressed by this strategy and agreed to produce justifications for all the proposed census questions.

The project document has an activity for data processing to process the edits after data capture but there is no preceding activity to produce these edit specifications for data processing to implement. If the intent was to reuse the 1998 edit specifications as presented in the Administrative report, the consultant suggested that demography should reconsider. The edit strategy described in that report was deterministic and therefore biased. For each identified

inconsistency a single corrective action was listed to solve that problem. A better strategy is to identify all the inconsistencies in a household and attempt to find a least change solution that would eliminate all the inconsistencies. This meant that no imputations are attempted until all the inconsistencies have been identified. Hot deck and nearest neighbour imputations would lead to “corrections” that were least likely to bias the data by changing the patterns generated by clean data.

Day 5 Friday Nov. 16, 2007

Meeting with Ms. Rosemary Kongani

The consultant met with Ms. Kongani to proceed with developing the activity chart using MS Project. They were no more successful than the previous day. The data processing assistant arrived but he was not able to provide any assistance. He returned to data processing division for advice from more senior personnel.

Meeting with Mr. Kilele, Mr. Otieno, Mr. Oliver Chinganya, Mr. Omolo, Mr. David Mboni, Mr. Peter Nyongesa

The consultant reported on his findings upon the completion of this five day mission. He was very impressed with the preparations for the 2009 Census. He thought that the effort being made to avoid the mistakes of 1998 regarding mapping and data capture were unlikely to be repeated. He stressed that equal care needs to be taken on each of the other census phases or KNBS risks just replacing one source of difficulty with another.

He was worried about KNBS being able to mobilize staff to work together in project team mode since there seemed to be an emphasis on rank as the principal identifier rather than role. The Director General reported that he had just come from a meeting with his senior staff and they were discussing this very issue as part of the re-organization from CBS to KNBS. He was confident that with the new work environment staff would work together to make the census a success. He agreed that stressing functional roles needed to be emphasized.

The phase that received the least attention in the project document was Dissemination. This could be because it was at the end of the cycle and people thought they had time to work on it later after all the difficult tasks were done, or because there was no specific area of responsibility for dissemination in KNBS. Regardless of the reason this was a serious error that would impact the quality of the 2009 Census. What you plan to produce from the census is an important input into questionnaire content and to advocacy. Advocacy should be built on the utility of the census. Census users should be encouraged to promote census co-operation and to sell the value of the census to the majority who do not appreciate why it is important.

The ease of electronic data presentation has made traditional print publications full of numbers, obsolete. Data users want to get their numbers in electronic form, arranged in a manner easy for them to manipulate to prove/disprove their hypothesis. Print publications need to be thematic and have a minimum of raw data with a maximum of processed higher order data such as indicators,

ratios percentages, etc, presented as graphs, charts and maps. Statistics South Africa's 2001 Census dissemination programme is an excellent example of this strategy in action.

The consultant then provided the DG with a copy of *The Monthly*, a publication introduced in Zambia some four and a half years ago. It was a marvelous innovation that created a great deal of respect and positive feedback for the CSO by the media. It also generated the discipline in the CSO to prepare results to be ready for release on the last Thursday of every month. KNBS generates more statistical output than Zambia and could produce something similar if it were to be part of its dissemination strategy.

Meeting with Ms. Emma A. Odhiambo, Head, Cartography Division

Ms. Odhiambo provided the consultant with an update on the progress of EA Demarcation. Work is progressing well. They have already finished the rural parts of two provinces and are now working in the third. She has 9 teams working in various districts. As each district is completed the team moves on to the next one.

They are waiting for satellite imagery to start work on the urban areas. If funds are released according to schedule she is confident that she will have the whole country demarcated by her April 2009 deadline.