

THE 2010 AFRICA ROUND OF POPULATION AND HOUSING CENSUSES

DRAFT IMPLEMENTATION HANDBOOK (A Guide for African Countries)

October 2008

Preface

This book has been written by the Africa Centre for Statistics of the UNECA to act as a guide to African countries in carrying out their Population and Housing Censuses during the World 2010 Round of Population and Housing Censuses. The report is intended to be used alongside the UN Principles and Recommendations for Population and Housing Censuses (Revision II) and the Africa Addendum to these recommendations. This report is a more practical guide to the Census Implementers in Africa.

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List of Acronyms

CSO	-	Central Statistics Office
EA	-	Enumeration Area
GIS	-	Geo-Information System
GPS	-	Global Positioning System
NCD	-	National Census Director
NSS	-	National Statistical System
P & R	-	Principles and Recommendations
PES	-	Post Enumeration Survey
SA	-	Supervisory Area

Dynamic time table

Chapter 1: Legal and Institutional Framework

1.1. Background

- (1.1) The UN's Principles and Recommendations (UN P & R) for Population and Housing Censuses define a population census as "*the total process of collecting, compiling, evaluating, analysing and publishing or otherwise disseminating demographic, economic and social data pertaining, at a specified time, to all persons in a country or a well-defined part of the country*". Population censuses collect information on every individual in a defined geographical area, and hence provide information on the size of the population as well as its distribution and characteristics. The uses of the population census data are equally diverse and include:
- a. formulation and monitoring of national development programmes such as poverty reduction, employment creation, etc;
 - b. apportioning seats in a legislative body;
 - c. planning residential developments;
 - d. Locating social infrastructure such as schools, hospitals, etc.
- (1.2) Other uses include policy making, planning and administrative purposes, research progress, business planning, industry analysis, labour market understanding, and electoral boundary delimitation. Census data make it possible to study the desired characteristics down to the smallest level of the geography of the country, which usually can not be done using survey data.
- (1.3) There are several types of population censuses adopted for the 2010 RPHCs. These include the traditional census, which a questionnaire being completed for everyone who is to be enumerated as by the set criteria. The information may be obtained through face-to-face interviews, self-completion questionnaires that are mailed out, or hand-delivered. This approach is used by most countries in Africa¹.
- (1.4) A population census may be for only population (as was the case with Egypt 2007) or Population and Housing as is done by many countries. The UN P & R have defined four essential features that characterise a census. These are:
- Individual enumeration;
 - Universality within the agreed territorial boundaries;
 - Simultaneity: conducted at the same time for all persons; and
 - Defined periodicity: most countries carry out a census every ten years.

¹ The other types include the register based census and the rolling Census.

- (1.5) Census taking in Africa started with ancient Population counts which were used to identify males eligible to be inducted into military service or for taxation. As such they were limited in content. Modern censuses in Africa were undertaken as early as the 19th century.

1.2. Legal Framework for Census Taking

- (1.6) A Population Census is a countrywide exercise and its implementation requires sufficient legal backing. The legal authority is required for fixing the primary administrative responsibility, determining the general scope and timing of the census, protecting the confidentiality of the information, obtaining the necessary resources and placing the legal obligation of the public to cooperate. Countries usually have a law governing data collection, which provides for among others authority to collect data, confidentiality of information collected and ways of dissemination of the information.
- (1.7) The Census law may be a general one covering census taking in general. This needs to be supplemented with periodic amendments to take care of the needs specific to a particular census. Although a general law may be harder to set up in the first place, it has the advantage in that it ensures regularity of the census taking. When a Census law is written to compliment an existing census/statistics law, it will only be required to address the unique features of a particular census such as:
- Appointment of the officials to undertake the exercise; and ensure that the Census officials carry out their roles faithfully
 - Stipulating the census process including setting the Census date, stating the questions to be asked, who will ask them, of whom
- (1.8) Another option is a new legislation specific to census in question. Such a law is easier to set-up and can be tailored to suit the conditions at the time. Usually, a combination of both approaches is used. Thus, a primary census/statistics law gives general rules, and the power to the government to undertake a census, and then a secondary legislation is issued which stipulates the detailed arrangements of a particular census, such as the date, coverage, content and institutional framework.
- (1.9) The census/statistics law should provide a guide to ensure that everyone understands their responsibilities to the data and guards against unauthorised disclosure. It is important for census law to specify the offences for which people may be prosecuted (such as refusing to answer the questions, giving wrong information, or improperly disclosing information) and also specify the penalties for non compliance. It is therefore crucial that the Census law is synchronised with any legal other existing laws in the country

(1.10) Often the cost of enforcement far outweighs the level of the fines recovered but if a law is to be made to work it has to be backed up by effective, and visible, sanctions. The threat of those sanctions alone is usually sufficient to get the cooperation of people who would otherwise have refused to do so.

1.3. The Institutional Framework

(1.11) The stages in implementation of a Population Census can be broken into: Planning and designing, Questionnaire development and testing, census mapping, pilot census, publicity and advocacy, enumeration, data processing and the Post Enumeration Survey (PES), Analysis and Dissemination, and documentation and archiving.

(1.12) Implementation of a census will require a lot of resources in form of human resources, financial and other non human resources. It is very important to know upfront what resources are needed, in what quantities or for which period of time. This will help not only in their procurement but also their management.

(1.13) A Population Census is a countrywide exercise employing large number of persons at different times. It is, therefore, very important that a proper institutional framework is set up to implement it. Because of the large numbers of personnel involved and the fact that most of them are employed for a short period (as is the case with the enumerators), it is essential that all persons have clear and well streamlined roles and reporting arrangements. A typical Census Secretariat will have a Secretariat to actually implement the census and committees to guide, monitor and supervise the Secretariat.

a) The Census Secretariat

(1.14) This will be responsible for the day-to-day implementation of census activities. There are several options of the Census Secretariat but the most common ones are:

a. A Secretariat setup within the Central Statistics Office (CSO) – where the department responsible for population statistics within the CSO becomes a central part of the Census Secretariat. The census being large exercise, this department will have to be supported by some temporary staff. These may be seconded from among the CSO staff, from other line ministries or persons hired specifically for the exercise. Whatever the case, whoever is seconded must be available at the time required. This is regarded as the most ideal option because it taps from and preserves the institutional memory of the CSO.

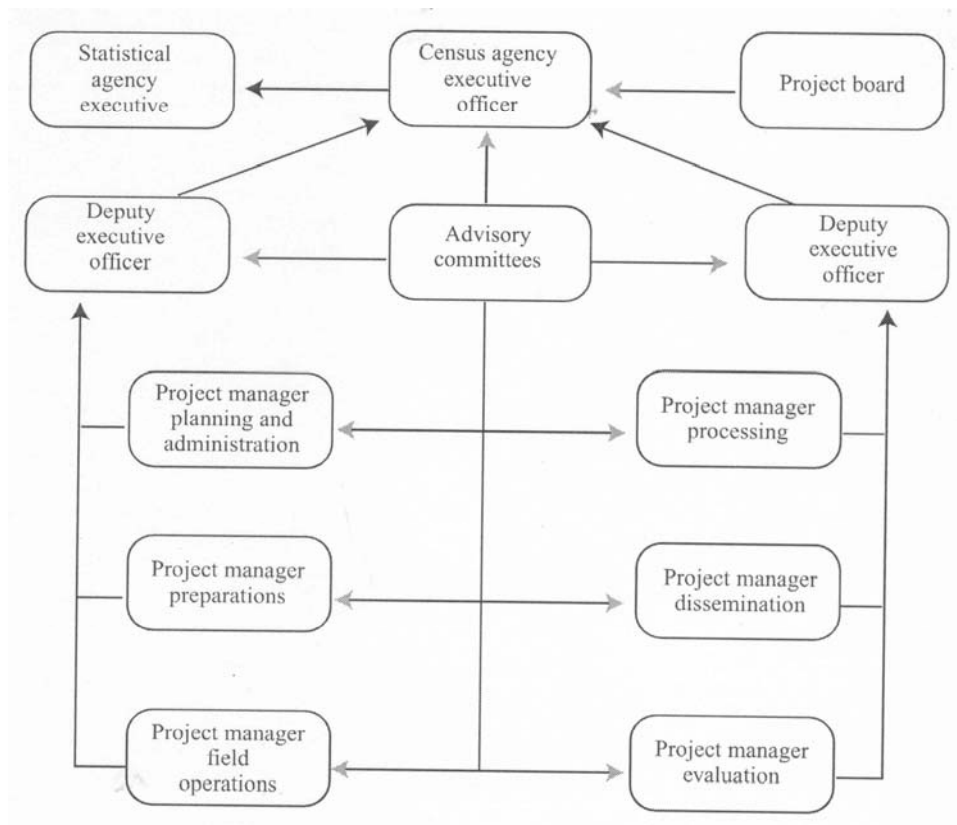
b. An Independent Census Secretariat – This is where the census is conducted by an independent office such as a National Population Commission or a temporary Secretariat specifically set up for the census. Such an office, though dedicated to the census activity, lacks linkages with the rest of the National

Statistical System (NSS) and will not benefit from the experience and institutional memory existing at the CSO.

(1.15) In the majority of countries, the department responsible for the census will be part of that country's CSO. Therefore, the management structures that are put in place for the census implementation will largely depend on the established management structures in the CSO.

(1.16) A typical Census Secretariat will have units responsible for planning, Mapping and GIS. Enumeration, Publicity and Advocacy, Data processing, data analysis and Data Dissemination. These need to be supported by a strong Finance and Administration Unit.

Figure 1.1: An example of a Structure of a Census Secretariat



(1.17) For purposes of this handbook, the overall head of the Census is referred to as a National Census Director. The National Census Director (NCD) is responsible for the day-to-day implementation of the census activities. In most cases, the National Census Director reports to the Head of the CSO. In some countries, the Head of the CSO takes direct responsibility for the Census implementation. If this approach is used, measures must be taken to ensure that neither the Census nor the routine CSO activities are disadvantaged.

(1.18) In fulfilling his roles, the NCD will be supported by several activity managers. In addition to the Activity Managers, several other staff will be required to implement the census. The actual number of staff to be employed by the Census Secretariat will vary depending on the level of activity and stage within the census cycle. However, not all units must be in existence all the time. When the level of activity of a particular unit is still low, its responsibility may be handled by another unit for instance the Field Operations Manager may take responsibility of the publicity issues before the fully fledged publicity unit is established. However, because of the high interrelationship among activities, there must be someone responsible for each activity at all times.

b) Sub-national Offices

(1.19) The census is a countrywide exercise which will have operations at all administrative levels in the country. At the peak of the Census activity, there will be Census personnel in all administrative areas in the country. It will be necessary to have temporary Sub-national Offices to coordinate the recruitment and training of field staff as well as the actual enumeration. The specific duties may include:

- i. Attend to the day-to-day matters relating to census implementation in that area;
- ii. Carry out recruitment, training and deployment of field staff including enumerators and supervisors;
- iii. Liaise with ((local administration)) opinion leaders in the area to publicise the census and sensitise the general public;
- iv. Take responsibility for the census enumeration in the area.

(1.20) If the CSO has already existing Sub-national Offices, their responsibility may be expanded to cover the Census activities. However, if they do not exist, temporary offices may have to be set up. These may follow the administrative structure of the country or may be created to suit the convenience of the Census Secretariat.

c) Census Committees

(1.21) A national committee needs to be set up to oversee and give policy guidance to the Census Secretariat in the implementation of the census activities². The national committee is usually the national supreme body responsible for the census and reports to a higher authority such as the responsible minister, parliament or cabinet. The committee is usually composed of representatives of organizations with a stake in the Population and Housing Census. These include relevant government agencies, Development Partners, NGOs, the media, etc. Care should be taken in its constitution so that the members are flexible enough can meet as planned and on short notice as circumstances demand.

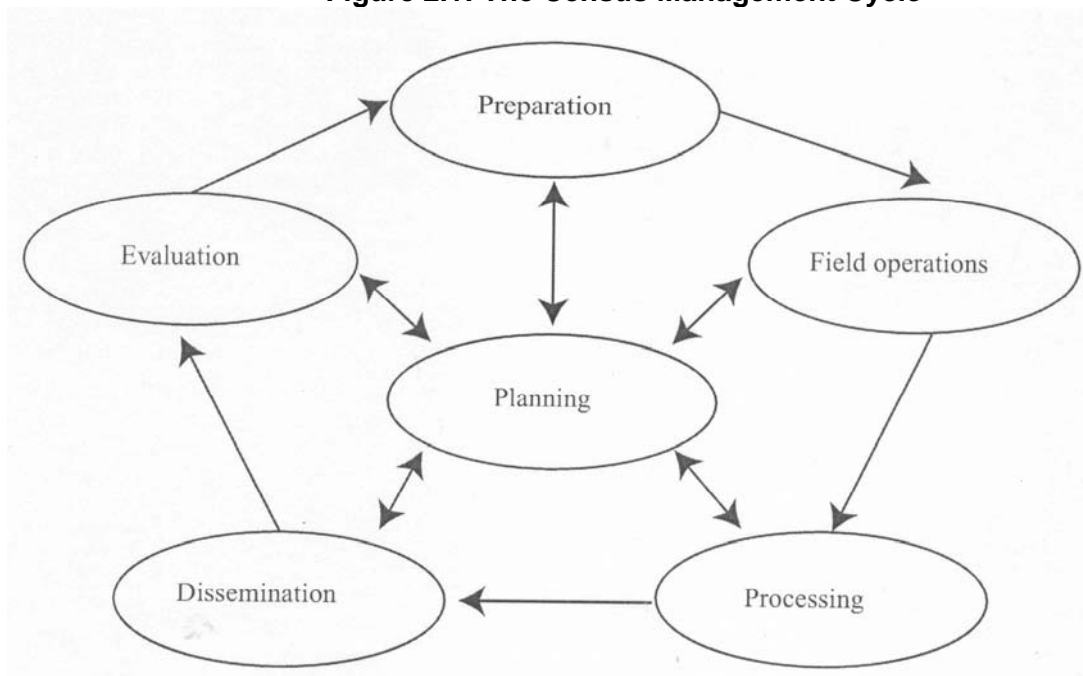
² The national committees go by different names in different countries such as MoC (Sudan, 2008), Census Commission (Ethiopia 07), Advisory Committee and Steering Committee (Liberia 2008).

- (1.22) In addition to the overall committee, several subject specific committees may be set up to offer technical guidance in specific areas. The most common of these are the Census Technical Committee which oversees the planning, instrument design through the A&D; the Census Publicity and Media Committee which oversees publicity and communication issues, and the Security Committee. These committees may be sub-committees at the national committee or may be independent committees but reporting to the national committee.
- (1.23) While constituting the committees, care should be taken to ensure that:
- i. There is no overlap between the roles of the committees/sub-committees and the Census Secretariat for instance the role of the overall national committee should be distinct from that of the National Census Director;
 - ii. The reporting procedures between entities are clear and in as much as possible minimize dual allegiance for instance, the Census Director should not be reporting to both the Census Committee and the Head of the CSO;
 - iii. Committees should be created only if they do have sufficient work to do. Idle bodies may create confusion in such a delicate exercise.
- (1.24) The Population Census being a countrywide exercise with Sub-national offices, it would be necessary to form similar committees at the sub-national level. These help to monitor the local implementation and enhance ownership and participation at those levels. The membership and roles of the sub-national committees should mirror counterparts at the national level. Committees may be set up to oversee implementation such as overall publicity, security, etc. However, it may not be necessary to have a technical committee at the sub-national level since all the technical issues would have been resolved at the planning stage and have to be implemented in a uniform manner.

Chapter 2: Census Planning

- (2.1) A population census is a huge undertaking and therefore requires good planning for it to be successful. Planning entails identifying what needs to be done, when and by whom. Planning is core in linking the different phases as shown the Figure 2.1. Therefore, census Planning can be regarded as the core of the census cycle and the process that is most critical to the completion of a successful census. The focus in the early stages of planning will be on setting strategic directions for the entire census programme. As can be seen in Figure 2.1, each phase of the census cycle is dependent on a preceding phase. The quality of the output from each phase has a direct effect on the success of the next phase and other phases downstream.

Figure 2.1: The Census Management Cycle



- (2.2) The planning process aims at ensuring that not only that each phase is properly resourced and organized but also that the output of each phase is of sufficient quality for all subsequent phases and that all relationships between the different phases are identified. Because of the long duration of the census cycle, planning should not remain static but be flexible to take into account changes that occur.
- (2.3) There are a number of issues that require careful consideration when planning a census. These include specifying the objectives of the census, defining the role of Government and other stakeholders, setting goals and targets, developing the overall project plans, monitoring project plans and developing a budget. Each task can be broken down into a number of smaller ones, allowing the complexity to be reduced as well.

2.1. The Overall Census Strategy

(2.4) The design of the Census objectives should take into consideration the national data and planning requirements. A Population Census should be demand driven. The content and timing of the Census should fit within the framework of the national development agenda. It should also take into consideration other data collection efforts in the country (both past and present) and avoid unnecessary duplication.

(2.5) *Linkage between Population Censuses and PRSP/MDGs.*

a) Census Date

(2.6) Although planning for the census is a long, iterative and protracted process, certain key decisions have got to be taken early. Such decisions include a decision on the enumeration date (month and year), method of enumeration, method of data capture, date when the results are needed. This is because everything else is dependent on and scheduled to these.

(2.7) Ideally, the enumeration should be carried out when it is easiest to reach as many people in the population as possible, and they are at their places of usual residences. Therefore, the choice of the date needs careful consideration. Ideally it should be a time of good weather (for the biggest part of the population), of limited social activities or festivals, and limited population movement. This will ensure a greater likelihood of people being at their usual place of residence, and so enumerators will be able to get to them. In some countries, the weather conditions can affect the ease of movement around a country, by both the general population and the Census Enumerators, and therefore these should be taken into consideration when setting the enumeration date. Similarly, countries which have a strong tourism/holiday culture, such periods should be avoided.

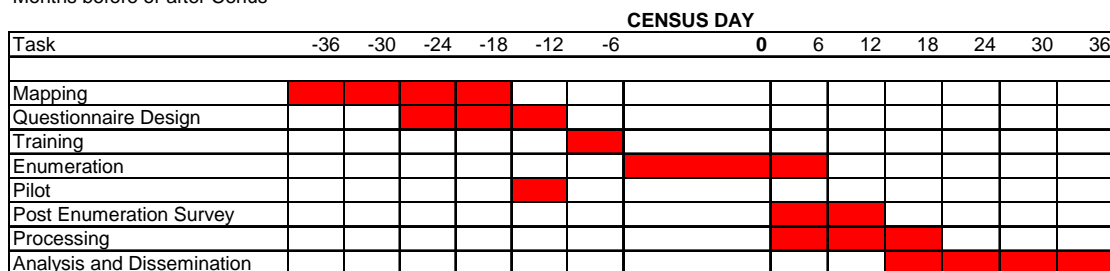
b) Timeline

(2.8) A Population Census has three major phases namely i) Pre-enumeration phase, ii) the Enumeration Phase and iii) the post-enumeration phase. After the date when results are needed has been set, planning for the other activities can begin. It is essential to develop a critical path so that from the onset key dates are known so as not to affect other activities. In general, a period of about three years prior to the enumeration date is generally recommended for the planning phase of the census. Another of two to three years is usually needed after the enumeration to carry out the data processing, analysis and dissemination of the findings. The Population Census activities are highly inter-related and therefore adhering to the schedule is one of the important aspects of a successful census.

(2.9) The phases should be broken down into specific activities and smaller tasks. A schedule should be created for each major task. Starting with planning in terms of months, can then lead to weeks and days as the tasks are broken down. A commonly used method is to use the Gantt chart which provides a visual perspective of the plan. It gives each task a name, duration, start, finish, and timescale. Figure 2.1 gives an example of a Census plan.

Figure 2.2: Gantt chart of Basic Census Activities

Months before or after Census



(2.10)

2.2. Resource Requirements

(2.11) In addition to a good plan, implementation of the census will require a lot resources including financial, human and other resources. The planning process should identify the categories and numbers of staff required, and when they will be required. This will help in their procurement as well as management.

2.2.1. Financial Resources and Budgeting

(2.12) A Population Census is the biggest and most expensive data collection activity that a Central Statistics Office will undertake. Therefore, it requires proper planning and budgeting. Whilst everything done costs money, the biggest cost is for the enumeration. Other costs include Census Mapping, Data processing, Office space (including storage), transport, personnel, printing, equipment, etc.

a) The Census Budget

(2.13) A well-structured, itemised, time-specific budget will help in any negotiations for census funding. It is therefore important to know what activities are going to take place, and when, so that a cost can be attributed to each and these then build them into the overall budget

(2.14) An example of the list of items to be considered to build up a budget is given in Annex III. For each item, one needs to know what quantities will be required and when. For many, the main cost is personnel – wages, training, expenses, and all other aspects of employing people. A contingency fund is vital for unplanned expenses and costs that are higher than expected. A reasonable level of contingency could be 10% of the total.

(2.15) A Population census is a long-term activity and its budget will be affected by inflation over time. To address this, one could make the budget at current prices and add an adjustment at the end to cater for inflation based on recent trends in price movements. The other alternative is to could forecast inflation and adjust the figures accordingly. Whichever method is used, it needs to be noted, and understood in any requests for funds.

b) Sources of Funding

(2.16) Past experience has shown that African governments have not been able to fund censuses in totality. However, the national government should be approached first as it is the leading beneficiary of the census data. Support could be solicited from development partners, who may provide grants or loans to carry out a census.

(2.17) In some countries, it has been possible to have successful private-public partnerships for census undertaking. This involves money being given up front for conducting the census, with the return being census data provided for the companies' use afterwards. Other cases have seen companies give equipment rather than cash, for a similar reward. But there is a need to consider if this will affect response rates, as this kind of trade could be open to bribery and is generally not acceptable.

2.2.2. Human resources

(2.18) Human resource is the biggest resource required for census taking. These include the Census Managers, professionals, Enumeration staff, Mapping Staff, and Data Entrants. These will be required in different numbers and at different times during the census implementation. The biggest number of staff will be required for the field based activities (mapping and enumeration) and during the data processing. The number of staff that will be required for census undertaking is highly affected by the method to be used for data collection (face-to-face interviews, self-completion mail interview, etc) and the method to be used for data-capture (key board entry or scanning). Therefore, these decisions need to be made early the planning process.

(2.19) The priority should be given to appointment of the National Census Director who will take charge of overseeing the entire operation, including the recruitment of all other staff. The NCD should have good combination of technical and managerial skills. A core team composed of professionals, administrators and support staff will be required to support the NCD. These are expected to remain in place throughout the entire operation.

(2.20) Since most CSOs in Africa have ever undertaken a Population Census or large scale surveys, persons who participated in these are a good source of core team members as they will have suitable skills. The number of people and skills mix in the core team will vary from country to country and is dependent on many factors including. As the

census activities intensify, more persons will have to be recruited. In order to plan the staffing levels, it can help to have a list of tasks that need to be done, and by whom.

- (2.21) Given that the Census activities are short term (2 – 3 years) and yet require a lot of skill, it is highly recommended that Census personnel are seconded from the skilled staff of the CSO or any other government agency rather than having to recruit fresh and inexperienced staff.

2.2.3. Other resources

- (2.22) Lots of other resources will be required for the census implementation. These will include space (office and storage), office equipment and furniture, stationery, transport equipment, among others. These also depend very much on the method to be used for the census enumeration as well as other

a) Office Space

- (2.23) A Census Secretariat needs to be up and running at the very beginning of the census-taking process in order for work to start. During the life cycle of the census, the office will have different uses, but the space is always needed. Office space will also be required for the sub-national census offices to carry out recruitment, training, storage and dissemination at a local level. However, these will only operate for a short period around the enumeration time. If the CSO already has Sub-national offices, they can be of help with expanded role. If they do not exist, then they need to be planned and budgeted for alongside the main office.
- (2.24) The Different stages of the Census will require varying amounts of space. The Data Capture stage will require the biggest amount of office space to accommodate the Coding and Data entry Clerks, as well as room for storage of the questionnaire. Using keyboard entry as an example, a Data Entry Clerk will require at least six (6) square meters of space.

b) Office equipment and Furniture

- (2.25) Office equipment and furniture will also be required. Office desks and chairs are obvious items, but also special furniture for office mapping. This include extra tables and even boards for displaying the plans. Computers, printers, faxes and phones will be needed as a minimum. More equipment may be necessary, depending on the method of collection and data capture to be used.

c) Storage Space

- (2.26) Safe storage of the census questionnaires is a big concern in any census operation. Space is needed for storage and packing before enumeration, during the data processing and final storage after processing, as the questionnaires have to be kept

for some time after processing to allow for any crosschecking. Paper is heavy, and there will be a lot of it, so suitably strong facilities are necessary.

- (2.27) While choosing the Census offices, a key consideration is Security and accessibility. Security is vital to ensure that no tampering or damage occurs to the census questionnaires, so that the results produced can be trusted by the entire population. Ideally storage needs to be within the Census office premises, which is why ground-floor, accessible office space is ideal. The security of the completed questionnaires is also very important, and this can be easier to monitor if they are in the same building.

d) Transport

- (2.28) Transport is an important component of the Census during the preparatory phase as well as the enumeration. The choice of transport to use depends on area specific considerations. While enumerators may be able to use bicycles for transport, supervisors of large areas will need another form of transport e.g. motor cycles or cars. Four-wheel drive vehicles may also be needed where the terrain is rough.

2.3. Quality Assurance in Census Planning

- (2.29) Quality within the context of the census refers to the output produced and covers areas such as:

- Relevance – degree to which the data meets the needs of users;
- Accuracy – how close are the estimates to the true value;
- Timeliness – duration of time between the data collection and availability of the results;
- Accessibility – ease of access for users.

- (2.30) Thus, a census is considered to be of high quality if the final figures produced are accurate and timely whilst also meeting the needs of users by providing the information they need in an easily accessible format. There is often a balance to be struck between these different aspects of quality. For example, obtaining accurate census data takes time and so there needs to be a balance between accuracy and timeliness.

- (2.31) No census will ever perfectly count everyone in the country but it is important that the census tries to reach as many of the people as possible, and where necessary, measures are implemented to adjust for undercounting and incompleteness.

- (2.32) Cost is another important factor that affects quality, so there may also need to be a balance between quality and cost. To ensure quality outputs are delivered, quality needs to be built into all the census processes from planning through to dissemination. It is generally more cost-effective to invest in activities that prevent

things going wrong, so that fewer things will go wrong and less checking will be required.

The Census Quality Management Plan

(2.33) A quality management plan (QMP) is a useful way to set out how quality will be achieved. This is broader than a work programme and would show how quality will be built into all parts of the census process to ensure that the end product is of the required quality. A Quality Management Plan could cover all or some of the following areas:

- **Commitment from leadership:** To achieve quality results requires commitment from the leadership team supporting the project as well as from others such as the Census Project Board. The QMP can show potential users of the data that the leadership team is committed to producing a high-quality product and that they will provide the leadership which is necessary to do this.
- **Training:** Training of staff is essential to ensure that they can carry out the necessary tasks. This can be an ideal opportunity to show staff the importance of quality in all aspects of the census process. It is helpful if staff can be encouraged to feel responsible for maintaining and improving quality. The QMP could set out the general approach to training and show how the training will be used to help staff to feel responsible for maintaining and improving the quality of the census.
- **Documentation:** The QMP could set out clear guidelines for implementing standard documentation of all processes. This should help to ensure consistency of approach as well as providing a set of clear standards against which the work can be measured.
- **Review and evaluation:** At all stages of the census it is important to check on the processes and then to make any necessary changes. This procedure is outlined below in the quality circle. This shows how work should be planned, then implemented, followed by a checking process, and then any necessary changes are made to the process. This should be continual, whereby improvements are constantly being made to the census processes. This could include provision for an independent audit or check of some of the work.

Potential Challenges to Census Taking

(2.34) Despite adequate planning, there are conditions that present big challenges to census taking. Below are some of the major difficulties that may be faced in a census undertaking.

2.4.1. National Policies

(2.35) The country may have legal regulations or restrictions on access to certain services that depend on the number of people in a household. People may therefore not wish to be counted at their place of usual residence, if at all. Ideally, the enumeration exercise is only used for the census, and this should be firmly reiterated to people,

and firmly enforced by the census director. But people may still be reluctant to answer if they fear ramifications from other official sources. This is very difficult to account for, and estimating such circumstances also difficult. The best way forward is to build public trust in the census, and then ensure it is upheld.

2.4.2. Census during and after conflict

- (2.36) People are more likely to move during times of conflict, the population may well increase with an extra military presence; the population may fall as people leave the country, etc. Census at a time of conflict has its own set of issues and challenges that will need planning and strategies to resolve.
- (2.37) Taking a Census after conflict also raises a lot of issues that will be particular to the country in the situation. The participation of post-conflict countries in census programmes is usually a critical component of peace building, reconstruction and establishment of the infrastructure of civil society.
- (2.38) Planning will be key, and further strategies will be needed to deal with all the ongoing changes.
- (2.39) Countries emerge from conflict under differing and unique conditions. Therefore, the priority, precedence, timing, appropriateness, and execution of the tasks in a census will vary with each case.
- (2.40) This situation is challenging, especially if a census has been quoted as a target of any political agreement. It may mean less time than usual is available for carrying out the census preparations and having high expectations.

2.4.3. Misuse of Census Data

- (2.41) Census results are required to make several key decisions such as being used to allocate seats in parliament or allocate resources to areas, in proportion to their representation in the total population. With this in mind, it is possible that, people will want to misuse results, or even tamper with them. To protect the reputation of the census activity, the National Census Director should ensure this does not happen at any stage in the census taking process.

Chapter 3: Developing the Census Instruments

Introduction

(3.1) There are several instruments that are required in census data collection. These include the questionnaire(s), Code lists, Instruction Manuals, Training Manuals, Work schedules, Calendar of Events, among others. The accuracy of the census data depends much on how well the instruments are designed.

3.1. The Census Questionnaires

(3.2) Prior to development of the questionnaire, it is essential to develop a tabulation plan, which is the set of tables that will be expected from the census data. These tables include those for direct publication, those for use in analysis and those to be used as reference tables. A detailed tabulation plan serves to ensure that all the desired information is collected (questions are asked), the information is coded in desired categories and disaggregated to the desired levels of geography. Thus, the tabulation plan guides the design of other instruments. An example of the tabulation plan is given in the UN P&R (Revision 2), Pages 226.

(3.3) It is usually not possible to anticipate all that tabulations that will be required from a Population Census. However, experience from past censuses/surveys and the census objectives would serve as a good guide. In many cases, tabulation plans have not been explicitly drawn in advance. This in some cases has created problems at the analysis stage when either the desired data were not collected or if they were collected, they were not coded in the desired way.

3.1.1 Content of the Census Questionnaires

(3.4) A questionnaire is the tool that is used for collecting information from the public. The type of questionnaire, its format and the exact wording and arrangement of the questions require very careful consideration, since the handicaps of a poorly designed questionnaire cannot be overcome during or after enumeration. Among the many factors that should be taken into account in designing the questionnaire are:

- i. the method of enumeration,
- ii. the type of data to be collected,
- iii. the most suitable form and arrangement of the questions, and
- iv. the processing techniques to be employed.

(3.5) Many decisions regarding the data processing are dependent on the final content, form and arrangement of the questionnaires.

- (3.6) The process of designing the questionnaire starts with a decision on the topics to be included³. The choice of the topics would be guided by the objectives set for conducting the census. The *UN Principles and Recommendations for Population and Housing Censuses* has a list of recommended topics (core and non-core), covering both housing and population (Annex II), which can act as a good starting point. In order to take care of the needs of the many stakeholders, the Census Secretariat should consult as widely as possible. This can be done through Meetings, seminars and workshops, emails or online inquires.
- (3.7) A Population Census is the only statistical exercise in which the entire population is covered at once. Therefore, there will always be a desire to collect as much information as possible. Once the list of topics (and reasons for inclusion) has been solicited, the Census Office's should prioritise on the topics to include. There are several criteria that can be used for the inclusion/exclusion of any topic:
- **Need:** the relevance topic needs to be well understood, and it that there are other ways of obtaining the data;
 - **Practicability:** the question needs to be easily understood, it should also be easy to phrase, and easy to code for data input;
 - **Acceptability:** some topics may not be acceptable on cultural or other social grounds, others due to fears of invasion of privacy of the population, and to include such topics may negatively affect overall response rates. Such topics should be left out of the census completely;
 - **Cost:** Every topic has a cost in form of interviewing, processing and storage time, as well as the impact on the overall quality of the data. If the extra topics add too much time to the process, or require additional pages in the questionnaire, this may result in the decision to exclude them.
- (3.8) Having decided on topics to be investigated, then next stage is to choose the questions necessary for each topic. It is the questions (not the topics) which will be asked to the respondents. The questions should be short, clear and concise, and with clarity of language so that they can be easily understood. Too many questions can lead to questionnaire fatigue from both the enumerator and the respondent, so topics should be chosen wisely. The primary choice is relevance to the UN's guidelines, and once they are met, other choices will depend on the expected output. As with topics, a process of checking need, practicability, acceptability and cost for each question can help the decision-making process.
- (3.9) The Census Secretariat should keep a list of all topics and questions considered, with their outcomes and reasons for rejection should be kept. This is a key piece of

³ There may be more than one question that can be used to solicit the information on topics such as Disability, economic activity.

documentation, and can be used as a starting point for discussion on topics during the subsequent censuses or surveys.

3.1.2. A built in sample survey

- (3.10) In addition to the topics and questions to be included, there are other decisions that have to be made that affect the design of the questionnaire. On such decision is whether to have a sample study within the Census, In order to minimise the cost of data collection. It entails have two (or more) types of questionnaires to be used.
- A '**Short Questionnaire**' containing the basic essential questions would be asked for the entire population and everyone will answer this. This is suited for questions related to the population distribution as well as for questions relevant to small areas, small sub-populations and
 - A '**Long Questionnaire**' is asked to a sample of the population. This is sometimes called a built-in Sample survey (BIS). This is suited for questions that are fairly homogeneous over a geographical area and hence do not need estimates at the lowest administrative level.
- (3.11) Many countries that have used a BIS have used varying sampling proportions for different areas such as complete enumeration urban areas and sample for the rural areas.
- (3.12) The choice of the sample size and unit of sampling depends on the level at which the detailed information is desired. If estimates are required for large civic/administrative areas, then an EA can be used as the unit of sampling. However, if the information is required for small administrative areas, then the individual household may be the unit of sampling.
- (3.13) In the case of the household as the unit of sampling, Systematic sampling is preferred because it is easy to be implemented by the enumerators with little knowledge of sampling theory and equally easy to verify to avoid falsification that may introduce bias.

3.1.3. The method of data collection

- (3.14) There are several approaches that can be used for collecting the data. These include face-to-face interviews, telephone interviews or self administered interviews. A self-administered questionnaire would have different requirements from a questionnaire filled in by an enumerator through a face-to-face interview. The self administered questionnaire requires a literate population and that all the questions to be clear and easily understood. On the other hand, a face-to-face interview questionnaire will benefit from the enumerator's training and the use of a detailed Enumerators' manual.

(3.15) The face-to-face interview approach is the most commonly used in Africa where the literacy levels are fairly low.

3.1.4. Unit of Recording

(3.16) A census entails enumeration of every individual in the country. However, a decision has to be made on the format of the questionnaires, as shown below:

- One option is to have a questionnaire per individual. This will require as many questionnaires as the total population in the country and hence costly to print.
- A combination of the above where there is a household questionnaire on which all the household members are listed as well as the common characteristics of the household, and a separate questionnaire is administered for every individual. This is very expensive as it requires as many questionnaires as the sum of individuals and households in the country.
- A single questionnaire per household – this has a provision for recording the characteristics of all household members on the same questionnaire. This approach requires fewer questionnaires thus reducing on the printing cost.

3.1.5. Questionnaire Layout

(3.17) The design/layout of the questionnaire is determined by several factors which include how is the questionnaire to be filled, the working conditions and the technology to be used for the data capture. It is preferable that the information of a unit of enumeration is kept on a single sheet of paper. Multiple pages are harder to handle in the field, and have chances of partial capture or information switching.

(3.18) A questionnaire larger than A3 paper size is very difficult to manage in the field. This is because enumerators are not likely to be having a large flat surface on which to place them when recording the answers. An A4 size questionnaire is easy size to manage, and that size of paper is widely available. The technology to be used for the data capture will also affect the decision on the paper size. Use of scanning technology dictates paper size as most scanners on the market read A4.

(3.19) Another consideration regarding the questionnaire is whether to have them as loose sheets or bind them in booklets. Loose sheets are easier to manage and are economical while dealing with contingencies, they are more difficult to manage in the field and stand a high risk getting lost with some vital information. Loose sheets also increase the burden of material controls at the enumeration and data processing stage since every sheet has to be tracked independently.

3.1.6. The language of the interview

(3.20) In most African countries, there is more than one language commonly spoken and therefore bound to be used during the enumeration. That requires the questionnaire to be translated into the many languages to ensure uniformity of the translation. The

problem is more serious in the case of non-written languages. Special provisions will have to be made if two or more languages are used in the country. Several methods have been used to deal with this situation, and these include:

5. A single multilingual questionnaire. This is only possible where the country has few languages, and even then, care is needed to ensure the questionnaire does not become overcrowded and subsequently unclear;
6. A version of the questionnaire for each major language. This is not viable if the languages are few;
7. Translations printed in the various languages in the Enumerators' Manuals or on separate translation cards. This is most feasible if there are many languages or if the people are so mixed.

(3.21) The procedures for recruitment and training of field staff should take language variations into account. Therefore, information on the distribution of languages in the country is important for sound census planning and; if not available, should be collected at some stage of the census preparations for instance during the mapping exercise.

3.1.8. Questionnaire pre-tests

(3.22) Questionnaire pre-tests are carried out with the objective of the suitability of intended census questions. Specifically, the questionnaire tests will test the following:

- i. The formulation of the questions and the instructions provided;
- ii. The suitability of the questionnaire design;
- iii. Whether people answer the question as you expect them to. If they don't, then you have to find out why, and decide how the question could be better phrased;
- iv. Adequacy and completeness of the codes provided;
- v. The duration of an interview and this then feeds back into the overall planning of the final census enumeration.

(3.23) Questionnaire tests involve using the draft questionnaire and administering it to a set of individuals. This may be done informally (by asking a few individuals) or formally in a field test. The magnitude of the test will vary with the complexity of the questionnaire. The longer the questionnaire, the higher the cases required to test it.

(3.24) Ideally, one questionnaire pre-test is deemed sufficient. However, if big changes are made to the questionnaire after the pre-test, especially those introducing new questions, then another pre-test should be carried. No question should be regarded as cleared without being pre-tested.

(3.25) In addition to the questionnaire-specific pre-tests, the questionnaires will be tested again as part of the pilot census. This is further elaborated in Chapter 5.

3.2 Code Lists

- (3.26) A Code list is a list of codes that are assigned to each possible responses to a census questions in preparation for data capture. Data is coded to ensure ease and consistency of data entry, and therefore coding has to be done before any data entry can take place. Numeric codes are generally preferred to the alpha-numeric (digits and alphabets) because they tend to be easier and quicker to data capture. The codes must be exhaustive (take care of all possible response categories) and mutually exclusive.
- (3.27) Coding may be manual or automated/computer assisted or a combination of the two. If coding is done manually, the codes are often written over the enumerators' entries on the questionnaires. They need to be clear, legible, and in a different colour pen from the original entry. This colour needs careful consideration as it must stand out, but it should not be too hard on the eye as the coder will spend hours working with it. In case the questionnaires are to be scanned, coding can be done at the same time as the data capture.

3.2.1 Code Lists for Geographical Identification

- (3.28) Census data on the size and distribution of the population will be required at various levels of geography including enumeration area, district, county, country, etc. It is necessary to assign codes that will uniquely identify and easily all administrative levels for which data will be need at the analysis stage e.g. administrative areas, electoral areas, planning areas, urban agglomerations, etc.
- (3.29) Because of the time difference between the mapping and enumeration, some new areas may come out during the enumeration process. The system should be flexible enough to incorporate them.

3.2.2 Code Lists for Person/Household Characteristics

- (3.30) While coding the individual characteristics, it is recommended to use international classifications where they exist as is the case with list of crops, education, occupation and industry codes. However, the need for international comparability should not completely supersede the national interests. A compromise position is to split the international codes in such a way that national concerns can also be addressed and international comparability obtained by aggregation of codes⁴. Development of code lists should also take into consideration the other coding systems in the country such as those from previous censuses or surveys to allow comparability for studying trends which will enrich the data analysis.

⁴ for instance one could divide have separate codes for street vendors and other retail traders is the former are very common and considered very important to the country .

- (3.31) It is recommended that a standard procedure is used for codes which are similar across questions e.g.
- i. Similar format (character size and arrangement of fields) should be used for coding questions that are similar e.g. Date of Birth and Date of most recent Migration should have the same format for similar fields. This minimises errors as Coding Clerks do not have problems of interchanging formats.
 - ii. Using 9s, or 99s, or 999s, etc. as the code for 'Not-Stated' category or 8s, 98s or 998s, etc for the 'Others, Not elsewhere classified' would ease the Coding Clerk's work and fewer mistakes will be committed. Care must be taken to ensure that very few responses are coded into the 'Others' or 'Not Stated' as this will render the data less useful for the analysis.
- (3.32) The more detailed the codes are, the better as they will give the analyst flexibility. It is also good for further analysis and research as this will always be thought of after the main tables (as defined in the Tabulation Plan) have been produced. The more flexible the coding, the more likely it is that any analysis, even that not originally planned, will be possible.

3.3. Instructions Manuals

- (3.33) One of the measures taken to assure the quality of the census is the use of standard tools. Thus, to ensure uniformity on understanding of the Census concepts, all field staff should be provided with a set of manuals that guide them in all aspects of census implementation, whether technical or administrative.
- (3.34) The ***Enumerators' Instructions Manuals*** is a step by step guide on how to undertake the census enumeration. It gives the enumerator guidelines on how to go about their work, how to handle unique situations, when and how to refer difficult cases and the administrative guidelines that are required to support the enumeration. An Enumerators' Manual is a must for all field staff at all levels
- (3.35) The ***Supervisors' Instructions Manuals*** is a guide to the Census supervisors on how to undertake their tasks i.e. guidelines should guide the supervisors on what to do during the supervision, how to do it and when. Such tasks include among others:
- Allocation of assignments to the Enumerators;
 - Areas to look out for during supervision;
 - Management of materials and human resources;
 - Supervision checklist and schedule.
- (3.36) The instructions should be clear on what roles are to be undertaken at every level to avoid omission of some roles or over-burdening of some individuals. All supervisors should be conversant with this guide as it's the key to their doing their work successfully.

(3.37) Because of the different levels of supervisors, the Census Secretariat has to develop separate guidelines for each level. However, the Senior Supervisor must be in the know of the roles of the Junior Supervisors.

Training Guides

(3.38) A Population Census will have many training Centres all operational at the same time. It is therefore important that clear guidelines on the training are developed so that the Census information is shared uniformly across the country. The Training guide should provide the trainers about the Training Timetable, objectives of a given training session, list of training materials required per session, areas that need emphasis, among others.

(3.39) The most comprehensive form of a training guide is a 'Verbatim Training Guide' whose contents are just read to the trainees.

3.4 Other Census Tools (develop each)

(3.40) Several other tools will be developed to support the census enumeration. These include:

- i. Calendar of Events
- ii. Household Listing Forms
- iii. Population Summary Sheets

3.5. The Pilot Census

(3.41) One of the measures undertaken to ensure that the census plans are adequate is to carry out a Pilot Census, which is a rehearsal of the main census activity. The Pilot Test is a final test, at which all the census processes including enumeration, processing and dissemination systems, and the interface between them, are given a final test to resolve any outstanding problems. This test also provides an opportunity to revise the costing estimates. In order for this to happen, all systems must have been independently tested beforehand.

(3.42) It is generally not recommended to consider the pilot census a source from which to derive usable substantive data. Apart from the sampling problems involved, such a use may detract it from the central purpose of testing the processes.

3.5.1 Size and Scope of the Pilot Census

(3.43) The Pilot census should test the entire census process including material distribution and retrieval, Post Enumeration Survey, Data Processing and tabulation, and report generation. Often times, the pilot census is used to test processes, up to the enumeration and does not test the post enumeration activities. This has the disadvantage that little is known/tested about the post enumeration activities and thus, may lead to delays in production of results after the main enumeration.

- (3.44) The size of the Pilot census will be affected by the diversity of the population, the method of enumeration and the technology to be used for processing. Since the Pilot Census is not aimed at generating estimates, the sample is usually purposively selected to cover all the crucial elements that need to be tested.
- (3.45) The choice of the size and geographical distribution of the EAs of the pilot census depends on the diversity of the issues to test. These include among others the diversity of urbanisation, population types (nomadic and sedentary populations), terrain of the country (flat, hilly, mountainous, island areas, etc), cultural and social groupings, languages
- (3.46) The size of the pilot census may be small-scale (a few enumeration areas) or large-scale – 5% of the enumeration areas as was the case in Nigeria (1991).

3.5.2 Timing of the Pilot Census

- (3.47) The pilot should be carried out early enough to allow enough time for subsequent revisions to be incorporated in the census planning process. The pilot census should be carried out at about the same time of year as the actual census is planned for so that weather conditions, holidays, agricultural seasons and people's availability will be as close as possible to the actual event. Thus it is recommended that, a pilot census is taken about one year before the planned census date so as to conform with the expected seasonal patterns of climate and activity.

3.6 Linking Population Census with Other Censuses/surveys

- (3.48) It may be desired to link the Population Census with other national censuses/surveys. This may be in sharing logistics (equipment and personnel), sharing information (maps or EA lists) or conducting the exercises jointly. The process of linking serves to enrich the data analysis and minimizing the cost of data collection. Examples of this include a Population Census and/or a Census of Businesses, a Population and Housing Census or a Census of Agriculture and Livestock following soon after the population Census. If this is to be done, it should be integrated at the planning stage and the census processes designed in such a way so as to take care of these needs.
- (3.49) The linking may take several options depending on the circumstances prevailing in the country:
- a Inclusion of some questions in the population census. This will generate some limited information on the topic of interest but from the universe of the population. Such data will allow some limited analysis on the topic;
 - b Population Census data may be used as a household frame for a subsequent censuses and surveys. For instance, Census data may be used to screen

households with PWDs and this is soon followed by a detailed survey on disability;

- c Carrying out joint data collection where the Population census information is used to identify the subjects of a different survey e.g. agricultural holdings;
- d Sharing field enumeration materials (EA maps, bags, and other semi-durable supplies) between the two censuses when the other census is carried out soon after the population census.

Chapter 4: Census Mapping

(4.1) Census mapping is y undertaken to update geographical boundaries of civic and administrative areas in the country and to demarcate the country into units referred to as Enumerations Areas (EAs) and Supervisory Areas (SAs). This will help in boundary identification to ensure manageable workload for the enumeration staff and help monitor census activities. Census maps help during data collection and hence minimise errors of duplication/omission, and are also used in presentation of census information in pictorial format which enhances effectiveness of the dissemination.

4.1 The Census Mapping Strategy

(4.2) The major objectives for census mapping are to update the administrative area maps and demarcate EAs for controlling the enumeration. The Census Office should make a decision on the types of products that are expected from the Census mapping programme. These include those to be used in support of the enumeration and those for dissemination of the findings.

(4.3) The following are some of the products are therefore expected to be produced on completion of the activity:

- Updated administrative unit list and area maps;
- List of EAs and SAs demarcated;
- Updated database of coordinates for the socioeconomic facilities.

(4.4) There are several decision that have to be made before the Census Mapping can start namely:

- Whether any previous mapping information (boundaries, EAs, etc) is to be used or not. If it is to be used, the work load is less but care must be taken not to get complacency from the mapping Team as this may disorganise the final enumeration;
- The EA sizes. This is critical bearing in mind the anticipated size of the questionnaire and the desired duration of the enumeration;
- Whether the EAs to be demarcated are exclusively for the purposes of Census enumeration or they will be used for other activities. For instance, household surveys prefer many small and homogeneous EAs;
- The technology to be used in the actual mapping i.e. whether the maps are to be hand drawn (produced manually) or produced in digital format. Hand drawn maps include topographic maps, maps of administrative units, town and city maps as well as thematic maps. On the other hand, digital maps can be obtained from Aerial photography, maps obtained using the Global positioning systems (GPS), remotely sensed image data and Digitization or Scanning of cartographic maps.

- (4.5) In the short-term, the traditional manual approach is recommended for producing census maps, especially in countries where labour cost is low. Although the hand-drawn maps may be lacking in the level of accuracy, they are a more viable option when no base maps are available, or are considered seriously out of date.
- (4.6) The use of geographical information system (GIS) technology can also bring enormous impact on digital mapping. Digital maps can be analysed manipulated and disseminated to suit the requirement of the many users. Digital mapping techniques ensure accessibility of data and geo reference information (relating information to geographic location) for the decision makers. In rapidly growing urban areas, remote-sensing techniques can enable census cartographers to quickly update city maps. New technologies can thus be useful to fill gaps that would be difficult to cover by traditional approaches.
- (4.7) The Census office may decide to select a mixed method approach: for example, coordinates that define EAs are determined using GPS, and buildings, roads and other features useful for orientation in the EA are added by hand. A country may decide, for example, to use GIS to map enumeration areas in the largest cities only, and use traditional hand drawn for the rural areas.

4.2 The Census Mapping Operations

- (4.8) The tasks and the timing of mapping activities are quite similar whether maps are digital or manual. A review of the existing electronic and hard-copy maps is essential to determine what needs to be done to achieve the required tasks.
- (4.9) The quality of geo-information including maps that are used in the census undertaking has a major influence on the quality and reliability of census data collected. Maps play a vital role in guiding enumerators to dwellings and other places where people are likely to be during the enumeration period. They are important in ensuring full and unduplicated coverage of geographic areas.
- (4.10) There are two major options of institutions that can be used to carry out the Census mapping. These include the Central Statistics Office - Census organisations in most countries establish permanent, Cartographic/GIS units. In some few cases, the unit is created for census purposes and it ceases to exist after enumeration is complete. Another option is to use a Specialist mapping agency – This may be a government or private
- (4.11) It should be noted that CSOs are not mapping agencies and should not, for the most part, try to duplicate the functions of one. Likewise, mapping agencies are not statistical agencies and often may not fully appreciate the statistical value of the information they hold or how best to present statistical information in map-based

products. Despite this, undertaking a census can provide a catalyst for the statistical and mapping agencies to work together to the benefit of both agencies and the community. For instance, the government body may be used to provide the base maps while the Census Cartographic Unit demarcates the EAs.

Timing of the Field Mapping

- (4.12) The timing of the mapping activities is critical in the overall census planning. Undertaking the census mapping too early has the risk of generating EA maps that may be outdated at the time of census enumeration, if major boundary changes take place after the mapping exercise. On the other hand, carrying out the mapping exercise too close to the enumeration has the risk of either failure to complete the mapping in time for the enumeration or failure to avail the mapping information early enough to be used as an input into the enumeration planning.
- (4.13) It is generally recommended that Census mapping activities should be started about two to three years prior to the planned enumeration census date and field updating completed at least 12 months prior to the enumeration.

Organisation of the Mapping Activities

- (4.14) In addition to the maps required for the census, a systematic, complete and up to date listing of localities is required. Such a listing is needed for the coding of place names and for determining to what extent data for localities will be tabulated. In some regions, the establishment of a definitive list of localities is a major operation because of difficulties arising from the frequent fragmentation, disappearance or combination of small localities, and from changes in name, variations in spelling, the existence of more than one name for the same place or the use of identical names for different places. This listing should be held as a formal data base or as an integral component of the data bases forming part of a Geographic Information System (GIS).
- (4.15) While in the field, the teams are expected to carry out the following tasks:
- To update the base maps to include all administrative boundaries and names, plotting area boundaries. Collecting feature points and their names.
 - To geo-locate socio-economic infrastructure such as schools, churches, mosques, industries and hospitals, parks as land marks using global positioning systems (GPS) sets.
 - To carry out tally counting of households and delineate enumeration areas (EAs) on the updated maps.

4.3 Post-enumeration Mapping Activities

- (4.16) Maps (especially in digital form) play an increasingly important role in the dissemination of information. Statistics compiled from census data can be geographically referenced and provide for methods of analyzing the geographic

characteristics of those statistics. Maps may then be used effectively to relate statistical data to the geographical area to which the census results refer. This makes the statistics easier to understand and more readily usable both by expert user and the general public. Where a digital base map is prepared this may be able to be used, in conjunction with GIS technology as the basis for coding information supplied in the census. This could apply to address of usual residence now and/or in the past; place of work and similar topics. Details on this are provided in the chapter on Census products.

Chapter 5: Census Publicity and Communication

- (5.1) The support and cooperation of the public of the general public is key to the success of any census operation. Although the census law makes it a legal requirement to participate in the census, this may in itself not sufficient enough to achieve full public cooperation that is desired for a successful census enumeration. Census publicity is undertaken to provide the public with information about why, when and how census is being undertaken since many members of the general public may not be aware of the specifics of the census exercise. Census publicity is also required in the post enumeration period to promote the use of census results as they become available.

5.1. The Census publicity Campaign

- (5.2) The primary goal of a census publicity campaign is to inform the general population about the census, and to obtain their full cooperation. It aims at ensuring that policy makers, opinion leaders and all citizens are aware that the census is going to be undertaken, what information will be obtained from it, how its useful to them and what is expected from them.
- (5.3) In order to achieve its objectives, the census publicity campaign should began integral part of the overall census planning. It should consider the target population, including their attitudes towards the census, identify issues that need to be addressed, such as the opinions of stakeholders, potential use of census information for non-statistical or inappropriate purposes, and concerns about potential government intrusion into private affairs; definition of target audiences such as influential people, e.g., religious leaders, teachers and unions, Heads of households , Opinion leaders and public figures who can endorse the census, Population groups (e.g. ethnic groups) with special geographical, social, communication or logistical disadvantages, Speakers of the national languages but also of other languages, Staff of the census agency, The media (print and electronic); and Users of census data; Identify segments of audiences or communities that require particular attention, including those who may have been under represented in the past; The strategies through which the publicity campaign will be implemented, such as the building of awareness through effective media advertising and an active media programme of information dissemination.
- (5.4) The implementation of a publicity strategy depends on a country's cultural, social and administrative circumstance, as well as the mass media, and should be directed at the following:
- The Census Office staff: they should be regularly briefed on publicity strategies or be given background information on the publicity campaign so that they are aware of the communications environments that will impact on their work;

- General external audiences: publicity should be greatest just prior to and during the enumeration activity;
- Other audiences that require particular attention and tactics when implementing the publicity strategy include people traveling on census night, the homeless, overseas visitors, and minority ethnic groups within a community.

5.2. Timing of the Census Publicity Campaign

(5.5) Census publicity will be required for all field based aspects of the census including census mapping, the pilot census, the main enumeration and during the post enumeration phase. However, the coverage and intensity will vary. However, publicity for the census enumeration requires the most intensive and widespread campaign. The publicity campaign must start well in advance of the start of enumeration. A period of six (6) months prior to the enumeration is considered ideal to prepare the population for the enumeration. However, the intensity should increase as the enumeration draws closer reaching a climax when the enumeration is actually on-going.

5.3. The Publicity tools and Media

(5.6) There are numerous channels of communication with varying levels of effectiveness in reaching different sub-groups of population. Therefore, the census campaign should use a mixture of methods to adequately target the various audience groups. Some methods that have been used in the past and include:

- (5.7) The census promotion materials (prepared in different languages). These include:
- Census posters – these must be clear, unambiguous and displayed in official places;
 - Information leaflets – may be distributed to every dwelling/household within a country some days before the enumeration;
 - A census song or drama, in all the main languages, composed and aired on radio station.
 - The Mass media (TV, radio and newspapers) - where Information about the census presented;
 - Lectures organised in various institutions (e.g., municipalities, universities, etc.)
 - Influential personalities such as politicians, village heads, religious leaders, industry leaders, sports people, popular entertainers making announcements about the importance of the census;
 - School are provided with resource materials about the census with a view to voicing the census messages to their students/pupils so that they in turn pass them on to their parents/communities.

- (5.8) In addition to publicising the census, it is necessary to have publicity support services to provide assistance to the public, and also to handle concerns or complaints by the public. Such support services include a census web page, e.g. on the census office's website; a telephone-based enquiry service or hotline providing standard answers; broadcasting radio messages; and engaging with community/opinion leaders so they have information to pass on to their communities.
- (5.9) The publicity campaign needs to be continuously evaluated from the beginning of the campaign – with regard to cost, content, target and impact.

Chapter 6: Census Enumeration

- (6.1) Census enumeration is the actual collection and recording of information about individuals and households. This is a very crucial stage in the census taking process, often the biggest cost, and the most manpower intensive. Chapter 2 discusses the different methods of enumeration. The most common method used in Africa is the face-to-face interview method. This involves trained interviewers moving from household to household interviewing its members and recording information about the characteristics of the household members. Thus, the rest of the discussion in this chapter assumes that method of enumeration.

6.1 The Field Staff

- (6.2) A Population Census is a massive exercise which requires a large number of field staff. These include Enumerators (who do the actual collection of the information), Supervisors (who monitor the enumerators) and administrators (who facilitate the exercise). The Enumeration is the stage when the biggest numbers of staff are required at the same time.

6.1.1. *Categories of Field Staff*

- (6.3) The enumerators are responsible for interviewing the people and recording the information on the questionnaire. Therefore, should be literate and socially acceptable to the communities they intend to work. Enumerators also need to be able to communicate easily in the language mostly spoken by the community.
- (6.4) Thus, many countries use school teachers or secondary school students as Census Enumerators/Supervisors because of the minimum level of education required to do the work. Using teachers restricts when the enumeration is carried out, because it the enumeration has to be done during in school holidays so as not to disrupt schooling. However, in some countries this may not be the best time to carry out enumeration as people may not be at their usual residence, due to holidays and family gatherings
- (6.5) In addition to enumerators, some other personnel are also needed to support and facilitate the enumeration. The most critical are the Supervisors of enumerators, who ensure quality of the data collected. In addition, Senior Supervisors, at district or regional levels, are required to carry out a more managerial role to ensure that the Enumerators and Supervisors are in place and adhering to their schedules.
- (6.6) In some countries, special persons have been recruited as trainers to support the Census officers. While this approach may be costly, it has the advantage of ensuring that there is someone dedicated entirely to the training of field staff and ensuring that Census concepts are clearly internalised.

6.1.2. Determination of Numbers of Field Staff

- (6.7) The number of enumerators will vary depending on how many households they one can enumerate in a day, and this is itself highly to be affected by area. In the rural areas which are generally sparsely populated, only a few households can be enumerated in a day due to the distance one has to travel between households. On the other hand, urban areas have a problem of getting the respondents at home to enumerate them. This is more so when the enumeration is extended over a long period of time. The Census Mapping exercise demarcates the country is divided into Enumeration Areas (EAs). This will be used to determine the number and location of enumerators.
- (6.8) The numbers of supervisors are generally obtained as a ratio to the number of enumerators. For technical supervision takes place, a ratio of six enumerators to one supervisor (6:1) is deemed the maximum acceptable for effective technical supervision. This ratio can be altered depending on other factors such as terrain of the area. At higher levels, similar ratios may be used, although the administrative hierarchy is usually taken as a simpler option.
- (6.9) An appropriate contingency of field staff at all levels will be needed to take care of incompetent persons or drop-outs or in cases where the work load was underestimated. A provision of one reserve Enumerator per Supervisor would suffice as contingency. However, the reserve Enumerators pose two major challenges to the census planning:
- (6.10) Sustaining their knowledge and morale throughout the period when not deployed;
- (6.11) The basis for their remuneration, especially for cases when the exercise ends without utilising their services.
- (6.12) It is recommended for he Census Secretariat to budget for them and assign them some other work but keep them ready for their deployment should the need arise.

6.2. Recruitment and Training of Field Staff

6.2.1 Recruitment of the Field Staff

- (6.13) Census Enumerators will be required to enumerate in all EAs all over the whole country. They should not be centrally recruited. The recruitment should be done as close as possible from the area of deployment to ensure social acceptability. However, if no competent persons are locally available, persons can be recruited from neighbouring areas. It would be easier to make such persons socially acceptable than to make incompetent persons competent.

6.2.2. Training of Field Staff

(6.14) Prior to participating into census activities, all persons who will be involved in the census exercise MUST undergo training on the census concepts, procedures and their respective roles. This will serve to ensure that the data are collected in a standard way. Given the high numbers of field staff, the training will require many classes being conducted at about the same time, which calls for careful planning.

6.2.3. Organisation of the Training

(6.15) It often proves efficient to train the senior personnel first, and then cascade down the line. Each group will have different training needs, but can pass on information to the next group. The Senior Supervisors (who participated in the planning of the census and the design of the questionnaire), managers and other senior personnel should be trained first. These in turn act as trainers for the Junior Supervisors and enumerators. Because of the cascading nature of training, all trainers need to have the same materials so that the same message is given. The most ideal situation would be to use a Verbatim Training Guide, such that everyone receives the Census information in exactly the same format. If this is not done, the Census Secretariat should prepare detailed Training manuals and programmes for all levels of training. The manual should specify the objectives of the session, recommended duration, reference materials and required teaching aids. This ensures appropriate training for all field staff

(6.16) The training of field staff (especially the enumerators and Junior Supervisors) should be undertaken as close to the actual enumeration as possible. This will aid to ensure that the concepts are not forgotten. A longer interval between the training and enumeration has greater chances of drop-outs. In as much as possible, the training should be continuous over the training period. However, in cases where the participants are mainly teachers and because schools are in session, it may not be possible to have a continuous training. The training can be spread over a long period, although this poses the challenge of recall when the training is interrupted.

(6.17) The ideal training class should not exceed 40 - 50 trainees. If a training group is bigger than 60, it should be split into different classes with different trainers and different trainers for the extra classes have to be obtained. It is advantageous for a single training venue to have more than one class, as this will allow sharing of information between trainers. A situation of ONLY one trainer at a training venue should be discouraged.

(6.18) Because much training sessions will take place, many training venues will be required around the same time. The Training venues should be chosen in such a way that they are centrally located to allow easy access by trainees and minimise travel costs. Sub-national offices (of the CSOs) or temporary offices set up for census purposes

could be used as training bases. If none of these does exist or are not sufficient, the resort is to hire spaces such as schools, church or Community Halls.

6.2.4. Content of the field staff training

(6.19) The most critical part of any census training is an explanation of census concepts and definitions, how to fill in the questionnaires, how to deal with cases of refusal or non-response and how to deal with special cases. Every person involved in census data collection will need this training. Confidentiality of the information collected needs to be adequately covered in training, because it's a key prerequisite of data collection for a census. Assurance of confidentiality serves to build the confidence of the public to provide accurate information. Apart from the technical aspects, training on logistical/administrative issues, staff remuneration and its modalities, distribution and retrieval of enumeration materials and reporting structure are aspects which need to be handled well during the training.

(6.20) The training of Census field staff is a combination of classroom lectures and some practical sessions in the field. The latter may be in the form of mock interviews within the class or trail interviews with selected translations. The trainers must make sure that the trainees have a chance of testing the language translations where they are to be used.

6.2.5. Training Materials

(6.21) At the planning stage, several training materials will be identified and developed to ease the training process. These include Instructions manuals, Training guides, Supervision schedules among others. These should be provided to everyone who is engaged in the exercise. They should be written in a simple and clear language, and made portable so that enumerators can take them with them all through the enumeration exercise to be used as an easy reference document while out in the field.

6.2.6. Duration of the Training

(6.22) The duration of the training should be such that there is enough for the lectures, question and answer sessions, mock interviews and field practice. However, it should not be too long to minimise the training costs. A period of at least 4 – 7 days (it seems short) is deemed appropriate for the enumerators training depending on the length of the questionnaire. The Managers/ supervisors will require slightly longer time to cover their extra responsibilities.

6.3 The Census Enumeration

(6.23) The enumeration process involves trained enumerators visiting all households within their area of jurisdiction and recording the characteristics of its members. All EAs in

the country are visited at the same time for the defined census period. This makes it highly labour intensive and the most crucial stage in any census undertaking.

- (6.24) The aim of the census interview is to obtain information about all members of the Household. However, it is not necessary to interview each of them. Usually, information about household members is obtained from the Household head, or any adult person who is most knowledgeable about the affairs of the household.

Method of Enumeration

- (6.25) The Population Census aims at counting everyone within the country or a designated territorial boundary. There are two common approaches of enumerating the population namely *de facto* and *de jure*. The *de facto* census counts people where they are found on census day, whilst the *de jure* counts them where they *usually* live. The *de facto* approach is desired because it ensures that everybody is counted only once.

- (6.26) It is becoming quite common to collect information using a combination of both approaches with the *de facto* information being used to provide the figures on the population size and distribution. On the other hand, while the *de jure* information is used to study the population characteristics. In such cases, a detailed description of the enumeration method used needs to be provided to the data users.

- (6.27) However there will always be people who are hard to find at home. The enumerators should be instructed to use different techniques aimed at getting them including calling back at different times of day, asking neighbours for help in contacting people, making appointments, etc. If all efforts fail, the enumerator should refer the case to this/her Supervisor. This is where the more senior personnel of the field team are needed.

Supervision of the Enumeration

- (6.28) Interviewers need to have adequate supervision to ensure all procedures are followed correctly. The supervisors should review the questionnaires for legibility, completeness and accuracy. Standards need to be set and questionnaires are then either accepted or rejected based on the set standard. Interviewers need to be provided with feedback to encourage improvement. The feedback and evaluation can start in the training process. If interviewers do not meet the set standard, they need to be retrained.

- (6.29) The supervisor is also required to re-interview some of the households. Re-interviewing allows supervisors to check the quality of the interviewers' work. The re-interviewing provides an opportunity to check interviewer errors as well as deliberate

falsification by enumerators. The re-interviewing can be done either at random or systematically.

Other issues to be considered

- (6.30) Each country will have its own specific issues that will challenge the enumerators. These may include *Unique Sub-populations such as* Homeless people and Nomads, People who are away from their usual residence at the time of the census, people living in areas difficult to access, Refugees, Military personnel and their families, Diplomatic personnel and their , Households/persons temporarily present.
- (6.31) Strategies for dealing with the above categories of persons need careful planning. This may mean using a different approach, recruiting special enumerators or even enumerating them at a different date. It is usually possible that the number of such persons are available from administrative records, easing any enumeration. Further, advance acquisition of permission for the interview in each group is crucial. For certain groups there may be a process of asking the chief or leader of the group to answer for all. This is likely to be cultural or country specific, so bear in mind any customs that exist in a country.

6.4 Field logistics

- (6.32) A Population Census uses lot of different types of materials and supplies including a bag (to carry all the materials and protect them from rain and/or dust), Questionnaires in sufficient quantities , Training and Instructions Manuals, Writing materials (pens or pencils depending on the method to be used in filling questionnaire), Material (chalk, markers) for identifying households, Map of their area of responsibility, staff Identification (such as Identity Cards, Appointment Letter, Badge, Apron) and Other logistics control forms. It is important to estimate the amounts required and their distribution among the different operational areas. The information from the Census Mapping is very instrumental because it will provide information on the distribution of households across the country. An optimal amount of contingency should be built in the estimate since there will be no time to procure and distribute more if a shortage is realised after the enumeration has started.
- (6.33) The enumeration materials need to be stored before enumeration, distributed to the enumerators and other field staff at the beginning of the enumeration process, and then retrieved and stored afterwards. There is also a need to ensure that the correct quantity of materials is in the right place at the right time. There will be storage needs at various locations, and for various times including storage before training, during training and enumeration and after the enumeration. These calls for careful logistics planning.

6.5 Remuneration of Field Staff

- (6.34) Payment of field staff is very crucial because it involves many persons and their remuneration constitutes a substantial part of the overall census budget. The target of the enumeration planning is to in as much as possible assign the equal workload to all enumerators. However, this is practically not possible because of variations in household sizes, population density, peoples cultures and terrain of the areas.
- (6.35) There are different methods that can be used in the payment of field staff. These include:
- Flat Rate – where the work load is pre-determined as almost equal and all the enumerators are paid the same amount of money for the work assigned. This is the easiest to plan for and implement.
 - Piece Rate – enumerators are paid for the amount of work done. This enhances the speed at which the work is done but is likely to compromise the quality. It is also very difficult to plan for and implement as one would not know where to despatch the funds to.
 - The work of the census enumerators could be encouraged by offering performance-related bonuses based on accurate and timely delivery of results. This is often a cheaper, quicker and more consistent way of ensuring the job is carried out correctly than having to ‘hire and fire’ people throughout the process. Whatever the case, payments should ONLY be made after completion of the work and certified by the respective supervisor.

6.6 Quality Assurance during Enumeration

- (6.36) Data collection is the only stage in a census undertaking where errors committed can not be corrected or are very expensive to rectify. Therefore, Quality assurance at this stage is absolutely essential. The quality-assurance processes should help to detect and deter interviewer errors and any potential falsification of results. The processes are:
- **Training of field staff:** The Population Census involves very many field staff. Therefore, the training needs to be adequate so enumerators clearly understand the census concepts and procedures (see Section 6.2).
 - **Household listing:** Some countries undertake household listing prior to the actual enumeration. This helps to prevent under-coverage or over-coverage. If the variation exceeds an acceptable limit then an area may need to be re-enumerated. However, because of its impact on the cost of enumeration, some countries do not carry out this stage.
 - **Supervision:** Enumerators need to have adequate supervision throughout the enumeration to ensure that all correct procedures are followed (see Section 6.3).
Monitoring reports: These can be used to track progress, and to identify any problems early so that steps can be taken to rectify them. The monitoring reports should define goals for each part of the process – for example, response rates and

productivity rates. The reports should be written in a way that assists management in reviewing the information and assessing the progress. They should show outlier values and consider reasons for possible outliers, as well as setting out the appropriate remedial action.

- (6.37) Monitoring reports can compare the accumulated data of each interviewer and show if any interviewers are performing significantly differently from the others. This information can be used to provide supervisors with a list of interviewers who may need further assistance.

Chapter 7: The Post-Enumeration Survey

- (7.1) Any population Census is bound to have errors of inaccuracy of the information collected and errors in the coverage usually under-coverage. Therefore, a post-enumeration survey (PES) is usually undertaken to check on the accuracy of the population census. The PES is carried out soon after the main census for the primary purpose of evaluation the quality of the main census with respect to completeness of coverage of the enumeration and accuracy of the content/information collected.
- (7.2) Although one enumeration is as likely as another to record errors, it is believed that the PES being small is better managed and hence more accurate. Thus, the PES is a tool for getting a better understanding of quality of the data and building confidence in it.

7.1 Planning for the PES

- (7.3) The PES is a very large scale survey and therefore required adequate planning. It is essential that the PES process is also piloted alongside the main census pilot exercise.
- (7.4) The PES is carried out as an evaluation of the main census exercise, and therefore is expected to be more accurate and be carried out independently. This calls for serious consideration of the institution to conduct it. Thus, It should be having a good combination of capability and independence from the main census secretariat. Thus, the body conducting the PES may be the CSO itself (in case it did not conduct the census), a different department of the CSO or a research/academic institution. Whichever institution is chosen, it must be one allowed by the census legal framework to access the main census microdata records as they will be required in the process of analysis.

7.2 The PES Process

- (7.5) It is very costly to conduct a PES in all EAs therefore it is conducted on a sample basis. A decision on the level at which estimates should be produced has to be made early in the PES planning. The PES should aim at providing reliable coverage estimates for each main stratum. The PES enumeration is done by enumerators going to a certain proportion of households to collect the same data again

7.2.1 Content of the PES

- (7.6) It may not be possible to re-interview for all questions in the main census questionnaire. Therefore, only a few elements from the main census questionnaire will be retained. The questionnaire will be designed such that it captures main elements for measurement of coverage including Full names, Relationship to Household Head, Sex and Age.

- (7.7) Other questions will be included to check on the accuracy of the data. However, these need to be questions which don't change significantly in a short period of time such as Educational Attainment. Questions such as '*Economic Activity Last Week*' are not suitable for the PES since variations may be due to enumeration error or real change of activity status.

7.2.2. PES Field Staff

- (7.8) Ideally, The PES field staff should be different from the main census field staff. However, this may not always be possible. Therefore, PES field staff can be drawn from among the good Census Enumerators and Supervisors. It is important that the PES exercise is better conducted than the census hence the better-qualified staff will be selected from among census enumerators to conduct the exercise. However, in order to reduce bias, the PES organizers should ensure that the enumerators are not deployed in the same areas as for the main census enumeration.
- (7.9) Like in the main Census Enumeration, the PES field staff should undergo through training on the PES concepts and procedures. In particular, care should be taken to ensure that field staff do not confuse procedures for the main Census with those for the PES.

7.2.3. PES Enumeration

- (7.10) The PES process involves trained enumerators administering the PES questionnaire to all households in the sampled EAs. Given that coverage measurement is one of the objectives of the PES, it is important to ensure that there is complete coverage of all the households in the EA. Use of EA maps is very essential in this regard.
- (7.11) The PES enumeration should be as close as possible to main census enumeration so that cases of persons who moved away from or moved into the household are minimized. However, it should not be too close to interfere with the main census operations. In particular, when enumerators from the main census are to be used for the PES, they should be allowed ample time to complete the census operations (and hand in all materials) before they can start the PES training. In general, the PES should be conducted within three (3) months from the end of the main census enumeration.

7.2.4. PES Data processing

- (7.12) The PES processing involves three major steps namely
- Matching of households and individuals

- Field reconciliation of partially matched and unmatched records
- Data capture and tabulation

(7.13) During the 'Matching' stage, Trained clerks will compare the census records and PES records and determine match their status. The matching records will be done for each individual household and for household members within the matched household. The PES Team needs to develop matching guidelines and rules to be used.

(7.14) There may be cases of erroneous and correctly enumerated population such as:

- Households/persons enumerated in the census but not in the PES
- Households/persons enumerated in the PES but not in the census
- Households/persons enumerated which show a partial non-match

(7.15) Questionnaires with such problems shall be taken back to the field for further interviews and reconciliation. The number of such cases is expected to be minimal (less than five percent of the questionnaires). However, if they are many and their field verification is likely to inflate the PES budget, then the field verification can be done on a sample basis.

(7.16) All PES questionnaires from the field will be checked for completeness and legibility. The Data for all matched cases, PES and census, will be captured on computer for tabulation and estimation. Formal editing, as is usually done, should not be undertaken because it will impact on the main survey objective of assessing the level of accuracy of the data. However,

7.2.5. Estimation Procedures

(7.17) Estimates will be required for the following: census population, PES population, census omissions, coverage rate, erroneous inclusion rate, true population, gross error rate and census adjustment factor. For measurement of inconsistencies or agreement, Net Difference Rate (NDR) and Index of inconsistency (II) will be used.

(7.18) There are several types of methods used for estimating figures from the PES. However, the two most common methods are individual record matching and comparing of aggregate figures.

- Comparing aggregate figures – assumes that the PES is correct and compares aggregate figures from the PES with those from similar areas in the main census. Appropriate weights need to be applied on the data to get the estimates. For example, the number of households with four rooms can be considered for each data set, and if the proportion is the same, or within a set tolerance, the census results can be said to be validated.

- Individual record matching – individual household/person records from both the main census and PES are compared. Non-matching records would then be classified as erroneous inclusions

7.3 Utilisation of PES Results

(7.19) The PES is undertaken to assess the quality of the Census data. There are basically three types of decisions that can be made following based on the findings from the PES:

(7.20) Make no adjustments - is used when no major discrepancies have been found. It is the easiest option and the majority of countries that carry out a PES do not adjust their census figures.

(7.21) Do not adjust the official figures, but provide a separate adjusted data set - allows any relevant data to be used, and for data users to understand any discrepancies. It has the disadvantage in that two figures may create confusion to the users.

(7.22) Adjust the official census figures - it combines all the data available to give the best estimate of a country's population. The main drawback is the time this takes, as all coverage and accuracy results need to be available. Quite often any resulting figures only have minor adjustments, and it can damage the reputation of the figures, and the statistical office.

Chapter 8: Census Products and Dissemination

- (8.1) The objectives of a population census can not be achieved until the information is made available to the users, and in a format that suits them. This section discusses the analysis of the data, generation of products and dissemination of findings to the users.

8.1 Data Analysis

- (8.2) Population censuses are conducted after every five or ten years and therefore a lot is expected to have changed during that period. It is therefore important to study and understand those changes that would have taken place.
- (8.3) Data Analysis can take many forms and yield many types of output, ranging from simple descriptive analysis that gives a single number to the total population, to complex cross tabulations of two or more variables or maps showing the economic activity of either sex in every enumeration area. Census data can also be used for making inferences or for modelling although these are rarely done as part of the CSO activities.
- (8.4) The census office will be responsible for carrying out the main analysis and key figures. However, in order to save time and also benefit from existing competences, the census office may hire other experts to generate the main analysis report. Interested users may be allowed access to census data to produce further analysis. Such access must be strictly controlled so that there is no threat to the confidentiality of the data.
- (8.5) Census data can be used make numerous analyses. It is important to decide on what is important, what can be produced, and how long it will take. The kind of the analyses to carry out should have been elaborated at the planning stage. Consultations with key stakeholders on their key requirements would guide in planning the analysis.
- (8.6) A count of the total population broken down to lower geographical and administrative levels should be the first set of information that should be produced. This should be done as soon as possible after enumeration. Often quick preliminary counts based on summaries compiled by the enumerators, verified by the supervisors, can allow an estimate to be given within a few weeks of the census date. This can then be analysed and adjusted as work progresses. Care should be taken to ensure that the high levels of accuracy. A big variation (over 1%) between the preliminary and final count may affect the confidence the users have in the census and its products.

(8.7) More in-depth analysis, such as on migration, is likely to take longer as this requires more careful checking of the data, and a greater proportion of the data to be captured. It is here the real worth of a census, in terms of understanding the population and planning for the future can be realised. Ample time and financial resources to carry out the desired in-depth analysis of the data should be provided for At the planning stage.

8.2 Census Products

(8.8) The analysis process will produce many numbers a choice on the way to display them has to be made. Given the wide range of census data users, there is no single product that can suit all users. The CSO should devote time to package several products so that all categories of users are served. Using tables, maps, charts, or commentary to describe the figures are all options. Usually, the Results of the census are released in stages starting with summary information and moving into the complicated analyses and presentations.

(8.9) The CSO should aim at producing summaries of key data, using a variety of these tools. These are cheap to produce. relatively easy to read and can be widely disseminated so that everyone can gain a general understanding of the census results., is an excellent starting point and aim for any office. These can be supplemented by longer and more detailed papers, and specifically focused publications for a more informed audience.

8.3 Data Dissemination

(8.10) One of the duties of the Census Publicity unit would be the dissemination of census data is to make the best use of:

- Traditional dissemination methods, e.g., published reports
- New dissemination methods, which are more readily available with the advance of new technologies, e.g., providing internet access to summarised data, or to raw data files, for further analysis

(8.11) There are many different ways of disseminating the results of the census. The type of product and method used should be appropriate for the targeted audience. Below is an example of a list possible census products.

(8.12) It is ideal to start the census dissemination with a high-profile and well publicised means of communicating key figures such as the total population count. This could be a news item on national television or radio, or an item in national newspapers. Using all such methods helps raise the profile of the census as an event of national importance even further. This allows everyone to hear the results, and know that their taking part has made a difference. Using seminars and conferences to present

findings can be useful for lesson sharing, and would perhaps attract a different audience from the other media used.

- (8.13) Bound hard-copy publications and papers have been the traditional means of data dissemination. However, the recent advancements in technology have further eased the dissemination of information. Census results can now be disseminated via the internet. The development of high capacity storage devices, for example, CDs, DVDs, and flash drives, have made it possible to disseminate large volumes of electronic data.
- (8.14) There is still a need for hard copies to be produced to ensure access for everyone, and some users still prefer this method. Examples of such works are one-page summary papers, longer, more academic papers, and full publications, allowing in-depth results and analysis to be presented.
- (8.15) Maps are a good tool for Dissemination of Census Results. GIS makes it easy to produce these maps and the Census Office will usually want to produce publication-quality maps that illustrate census results and accompany published census reports. However, It is very costly for the Census office to produce all maps of interest for users.

8.4 Sharing Census data

- (8.16) There may be stakeholders who wish to carry out their own analysis on the census data. This could be because they have specific questions they wish to answer for their own research, to allow them to plan use of their resources. Care must be taken to ensure confidentiality, as discussed later in this chapter, when giving any data to anyone outside of the census office.
- (8.17) There are now a range of electronic media that allows large amounts of electronic data to be easily distributed to those asking for it. The internet can provide an interactive service where customers can produce their own tabulations on line. This can mean the security of data is easier to control, than if datasets are actually given out for individual analysis.
- (8.18) There is certainly a strong argument to allow it outside of the census office so that the full richness of the data can be exploited. However, Census data are highly sensitive because they contain the details of all individuals in the country. Therefore, a lot of precaution should be practiced when sharing the data to keep the confidentiality of the respondents. One key reason for the importance of maintaining confidentiality of census data is the public's trust.

- Since the data can still give personal details, it is worth considering options of anonymising data, or only providing aggregate data, or a sample, to users outside of the organisation.
- Datasets maybe shared outside of the organisation, but strict access controls and rights to this data must be employed. Password-protected files, signed agreements and secure means of transportation are just some ways to ensure security.

8.5.5 Cost Recovery

(8.19) Data publishing is one area where the Census Office can try to recoup some money to offset the huge cost of the census. The selling-on of data and analysis to interested parties can often raise significant levels of revenue.

(8.20) It would be inappropriate to charge for all outputs, as the collection of data is recognised as a public good, for which the census has been conducted. This would include such data as the main population counts, and key tables of age, gender and geographic area.

(8.21) A decision on what data to charge for, and how much should be considered at the planning stage, as budgets can be affected by this.

Census Documentation and Archiving

(8.22) Along with good planning, keeping good documentation will ease the process the next time around. Keeping notes of decisions made and actions taken, with reasons and outcomes, will provide a sound starting point for the next census. Some of the areas that need documentation include:

- Instructions Manuals
- Choice of the Method of enumeration (and its justification)
- Editing rules and the changes introduced to the data.
- Data that are requested and by whom.

Appendix 1 : Roles and Responsibilities of the Census staff

The National Census Director:

- (a) Establishing strategic directions for the census programme;
- (b) Setting expectations and outcomes;
- (c) Taking on responsibility for assessing and ratifying the census programme's feasibility and achievement of outcomes;
- (d) Ensuring that the census programme's scope aligns with the requirements of the stakeholder groups;
- (e) Providing those directly involved in the census exercise with guidance on strategic issues;
- (f) Ensuring that effort and expenditure are appropriate to stakeholder expectations;
- (g) Keeping the census programme's scope under control as emerging issues force changes to be considered;
- (h) Reconciling differences in opinion and approach between stakeholders and resolving disputes arising from them;
- (i) Communicating expectations and critical decisions to the executive management of the CSO;
- (j) Soliciting and allocating project resources;

Addressing any issue that has major implications for the census programme.

Census Activity Managers:

- (a) Developing and maintaining project plan(s);
- (b) Managing and monitoring project activities through the use of detailed plans and schedules;
- (c) Managing stakeholder expectations;
- (d) Liaising with all project stakeholders;
- (e) Fostering communication among all project stakeholders;
- (f) Negotiating the resolution of technical issues;
- (g) Completing the project on time and to budget;
- (h) Ensuring the quality of the deliverables.

Annex 2: Population census topics from *UN's Principles and Recommendations*⁵

1. Geographical and internal migration characteristics

- (a) Place of usual residence
- (b) Place where present at time of census
- (c) Place of birth
- (d) Duration of current residence
- (e) Place of previous residence
- (f) Place of residence at a specified date in the past
- (g) Total population
- (h) Locality
- (i) Urban and rural

2. International migration characteristics

- (a) Country of birth
- (b) Citizenship
- (c) Year or period of arrival

3. Household and family characteristics

- (a) Relationship to head or other reference member of household
- (b) Household and family composition
- (c) Household and family status

4. Demographic and social characteristics

- (a) Sex
- (b) Age
- (c) Marital status
- (d) Religion
- (e) Language
- (f) Ethnicity
- (g) Indigenous peoples

5. Fertility and mortality

- (a) Children ever born alive
- (b) Children living
- (c) Date of birth of last child born alive
- (d) Births in the past 12 months
- (e) Deaths among children born in the past 12 months
- (f) Age, date or duration of first marriage
- (g) Age of mother at birth of first child born alive
- (h) Household deaths in the past 12 months
- (i) Maternal or paternal orphanhood

⁵ Principles and Recommendations for Population and Housing Censuses
http://unstats.un.org/unsd/demographic/sources/census/docs/P&R_%20Rev2.pdf see page 128

6. Educational characteristics

- (a) Literacy
- (b) School attendance
- (c) Educational attainment
- (d) Field of education and educational qualifications

7. Economic characteristics

- (c) Activity status
- (e) Occupation
- (f) Industry
- (g) Status in employment
- (h) Time worked
- (j) Income
- (k) Institutional sector of employment
- (l) Employment in the informal sector
- (m) Informal employment
- (n) Place of work

8. Disability characteristics

Disability status

9. Agriculture

10. Housing Characteristics

- (1) Type of living quarters
- (2) Location of living quarters
- (3) Occupancy status
- (4) Type of ownership
- (5) Number of rooms
- (6) Number of Bedrooms
- (7) Water supply system
- (8) Main source of drinking water
- (9) Toilet facility
- (10) Sewerage disposal
- (11) Bathing facilities
- (12) Availability of kitchen
- (13) Fuel used for cooking
- (14) Type of energy used for lighting
- (15) Main solid waste disposal
- (16) Occupancy by one or more households
- (17) Number of occupants
- (18) Type of building
- (19) Construction material of outer walls
- (20) Year of construction
- (21) Age and sex of household head/reference person
- (22) Tenure
- (23) Information and Communication Technology (ICT) Devices – availability of

Annex 3: An Example of list of items to be considered for a census budget

1. Head Offices

Staff Salaries
Travel and Allowances
Rental and Utilities
Operation and maintenance of equipment
Purchase of office Equipment and furniture
Mapping equipment
Computing equipment
Transport equipment
Consumable items needed in storage

2. Publicity

Air time on radio and TV
Campaign costs – staff and equipment
Production of publicity materials
Printing costs (Newspaper adverts, Leaflets, Posters)
Seminar and conferences
Travel to brief people

3. Field Mapping operations

Staff salaries
Travel and subsistence
Vehicle purchase/hire and running costs
Other Equipment (Mapping tools – compass, clipboards, notebooks, etc).

4. Field Enumeration

Temporary field staff – pay, travel, training, etc.
Extra cost of reaching the special groups (Special provision – other people may be needed to help mobilise the team)
Pilot census – at least 1% of total enumeration cost
Training costs
Transport
Post-enumeration survey – at least 1% of total enumeration cost