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ACRONYMS

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<td>CSA</td>
<td>Central Statistical Agency of Ethiopia</td>
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<tr>
<td>CST</td>
<td>Country Support Team</td>
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<td>DfID</td>
<td>Department for International Development</td>
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<td>DHS</td>
<td>Demographic and Health Survey</td>
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<td>EA</td>
<td>Enumeration Area</td>
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<td>ETV</td>
<td>Ethiopian Television</td>
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<td>FDRE</td>
<td>Federal Democratic Republic of Ethiopia</td>
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<td>GIS</td>
<td>Geographical Information System</td>
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<td>GPS</td>
<td>Global Positioning System</td>
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<td>JICA</td>
<td>Japan International Cooperation Agency</td>
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<td>NCC</td>
<td>National Census Commission</td>
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<td>OMR</td>
<td>Optical Mark Reading</td>
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<td>PES</td>
<td>Post Enumeration Survey</td>
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<td>PHCCO</td>
<td>Population and Housing Census Commission Office</td>
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<td>SA</td>
<td>Supervision Area</td>
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<td>UNFPA</td>
<td>United Nations Population Fund</td>
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<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
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PREFACE

The success of the 2007 Population and Housing Census of Ethiopia was the outcome of the collaborative efforts of the Government, various Development Partners agencies and the people of Ethiopia. The Ethiopian Constitution requires that a population census be conducted every ten years and had given the responsibility of conducting the census to the National Census Commission (NCC). The Commission is chaired by the Deputy Prime Minister with representation from the highest echelon of Government. This indicates the importance accorded by the Government to population censuses and the level of commitment to ensure the success of the census by providing the very highest level of political and administrative support. Special gratitude goes to His Excellency Mr. Addisu Legesse, Deputy Prime Minister of the Federal Republic of Ethiopia and the first Chair of the NCC, whose leadership has contributed substantially to the success of the census. The Regional States, Zones and weredas administrations have also contributed to the success of the census. The collaboration of the media, and the publicity and educational committees, at all administrative levels had made a difference in creating awareness and educating the public on the census.

Our profound appreciation goes to the United Nations Fund for Population Activities (UNFPA) for providing technical assistance and materials throughout the implementation of the diverse phases of the census. Special recognition goes to Dr. Benoit Kalasa, Country Director of UNFPA, his predecessor Ms. Monique Rakotomalala, and the capable staff of UNFPA for their unwavering support. Exceptional gratitude goes to the Department for International Development (DFID) for the substantial contribution at different stages of the census. The use of the satellite imagery technique for counting the pastoralist region would not have been possible without their support. The cooperation of other Development Partners, in particular the Governments of Japan and Ireland, the Netherlands, UNICEF, United Nations Development Fund (UNDP), and the Italian Cooperation has made the census a success. The contribution of the international consultants and the researchers from
the Addis Ababa and the Hawassa Universities at different phases of the census is acknowledged.

The 2007 Population and Housing Census is the third in the history of the country but this is the first time the census practice, challenges and lessons learnt was documented and disseminated. The report gives a bird’s eye-view of the census experience, from planning to final dissemination and archiving. It is not easy to narrate the whole census experience in one volume; however a more comprehensive digital documentation is available in Amharic for internal use of CSA. This report marks the end of the 2007 Population and Housing Census activity, and it is expected to be the first reference document for the planning of the next census, expected to take place in 2017.

This report was prepared by Mr. Yacob Zewoldi, UNFPA consultant, in collaboration with a CSA Team comprising Mssrs. Gebeyehu Abelti, Hailemariam Teklu, Girum Haile, Alemeshet Ayele, Akaleworq Bezu and Edmealem Abateneh. Useful input for the Report was also made by Mr. Tesfaye Kebede, Head of the Adama Branch Office and by Mr. Berhanu Hailu, Head of the Hawassa Branch Office. The CSA senior management had reviewed and provided useful input to the draft report.

This census had been rated a success in terms of contents and coverage and this was possible, first and foremost, through the cooperation of the people of Ethiopia for providing the requisite information. It is the sincere hope of CSA that the data collected in this census has been useful to users.

Samia Zakaria
Director-General
Central Statistical Agency of Ethiopia
CHAPTER 1: BACKGROUND

1.1 Introduction

The main sources of demographic and social statistics are population and housing censuses, household surveys and administrative records. In an integrated programme of data collection, these three sources should complement each other. In Ethiopia, censuses and surveys are the primary source of data on demographic, social and economic matters, and on human settlements. The administrative records in the country are not well developed to be of use for statistical purpose, and civil registration system is practically non-existent. Therefore, as in most developing countries, there is no substitute for continuing to conduct decennial population and housing censuses, complemented by an ongoing programme of household sample surveys to obtain information that cannot be collected through censuses.

A population and housing census is the total process of collecting, compiling, evaluating, analyzing and disseminating data on the demographic, economic, and social characteristics of all persons and the characteristics of their living quarters in a country or delimited part of a country. The census consists of a series of inter-related steps from planning and collecting to finally analyzing, disseminating and archiving data on all individuals and living quarters in a country. Thus the census is the most extensive and expensive statistical operation that any country undertakes. Since censuses are massive statistical undertakings, they are usually conducted every ten years or so. Sample surveys provide data in the intercensal period.

---

1 The United Nations defines 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 in a well-delimited part of a country” and a housing census as “the total process of collecting, compiling, evaluating, analysing and publishing or otherwise disseminating statistical data pertaining, at a specified time, to all living quarters and occupants thereof in a country or in a well-delimited part of a country.” See United Nations (2008), paragraphs 1.4 and 1.6.
1.2 Use of the Population and Housing Census

The population census gives a complete and comprehensive picture of the size, composition and distribution of the population, which is a basis for evidence-based development planning, decision making and good governance. It also provides basic data for demographic, social, and economic analysis of the population, including population estimates and projections. The census provides detailed statistics for small areas and small population groups for efficient governance at all levels. It provides the basic data required for allocating government funds among various regions and districts for education, health, and other services, and delineating electoral districts at the national and regional, district, and lowest administrative regions in both urban and rural areas levels. Similarly, the housing census provides characteristics of the living quarters of the population. When population and housing censuses are carried out together, they provide a higher value since data on housing conditions could be analysed in association with the demographic and social and economic characteristics of the occupants and vice versa.

The Ethiopian census provides information on the number of people living in a given Region, Zone, Wereda (district) and Kebele (lowest administrative region). The census provides answer to such questions as: how many children are there in the country or region; how many are of school age; how many women are there in a given kebele; how many are old enough to vote; what kind of jobs they are doing; what is the level of education in a given wereda. The census is useful to provide these information and many others.

Another important use of the population and housing census is that it provides a sampling frame for household surveys in the intercensal period. Census statistics are used as benchmarks for statistical compilation and for research and analysis. Population censuses are the principal sources of records for use as sampling frame for surveys during the intercensal period. Population projection is one of the most important analytical outputs based on census data, such projections can be done at national and sub-national levels.
1.3 Essential Features of a Population and Housing Census

The international census recommendations (UN, 2008) emphasize that a population and housing census should fulfil the following essential features: individual enumeration, universality within a defined territory, simultaneity and defined periodicity. Individual enumeration means that each individual and each set of living quarters is enumerated separately and that their characteristics are separately recorded. Universality within a defined territory refers enumeration within a well defined territory, the total country or a well-delimited part of it, that includes all persons present and/or residing within its scope, and every set of living quarters irrespective of type. Simultaneity is that each person and each set of living quarters should be enumerated within a well-defined reference period. Defined periodicity indicates that censuses should be taken at regular intervals and it is recommended that a national census be taken at least every 10 years.

The 2007 Ethiopian Population and Housing Census, 2007 Census for short, meets the three recommended essential features: individual enumeration, universality within a defined territory, and simultaneity. The country had conducted its first census in 1984 and the second census 10 years later in 1994. It was the intention of the Central Statistical Agency of Ethiopia (CSA) to conduct a census every decade, as per the Constitution of the Federal Democratic Republic of Ethiopia (Federal Negarit Gazeta, 1995) and as recommended by the United Nations (UN; 1998, 2008), but it was deferred to 2007 because of reasons beyond the control of the Agency, one of the main reasons being to avoid overlap with the general election which took place throughout the country in May 2005.

1.4 Brief History of Population and Housing Census Taking in Ethiopia

There are records of sporadic population censuses conducted throughout human history dating back thousands of years, in Babylon, China and Egypt. However, conducting of
modern censuses began at the turn of the 19\textsuperscript{th} century in countries such as Sweden, United States, United Kingdom and France. Censuses were also conducted in several African countries in the pre-independence era, although not all of them could be considered scientific undertakings. Ethiopia, on the other hand, is one of those countries that did not have long history of census taking. So far, only three national population and housing census were conducted: in 1984, 1994 and 2007.

The first population and housing census was considered as technically sound since it followed the United Nations guidelines on conducting a modern census. The 1994 and 2007 Censuses followed the methodological guidelines developed for the 1984 census, with some improvements based on lessons learnt from their predecessors. All three censuses largely meet international standards set as laid out in the United Nations Principles and Recommendations for Population and Housing Censuses and thus allowing for comparability at international levels (UN, 2008).

The 2007 Census differs from its predecessors in that it introduced state of the art technology in cartography and data processing. For the first time Global Positioning System (GPS) technology was used in delineation of enumeration areas. In the 1984 and 1994 censuses data were entered manually into computers using keyboards, whereas scanning technology was introduced to capture data in the 2007 Census. As to coverage, it was more complete than the previous censuses by counting almost 100 percent of the total population. The 1984 and 1994 census coverage were about 81 percent and 98 percent of the population, respectively. The 2007 Census also had additional questions and extended scope for housing census that made it a more comprehensive source of housing data. The results of the 2007 Census, which are of higher quality than the previous censuses, were released in a relatively shorter time than was the previous experiences and served as an important source of data for the Government and a wide range of users. Several statistical and thematic reports were published from both the 1984 and 1994 censuses; however this is the first an administrative report, which aims at documenting the census experience and lessons learnt, was prepared.
1.5 **Legal Authority for Conducting the Census**

Legal basis for a census is necessary for fixing administrative responsibility, for obtaining the necessary funds, to fix the census date, to make it obligatory for respondents to provide the required information, to ensure individuals’ right to privacy, among others (United Nations, 2008). The 1995 Constitution of the Federal Democratic Republic of Ethiopia, Article 103, states that a national population’s census shall be conducted every ten years. A National Census Commission is given the responsibility of conducting the population census periodically. The Commission would be accountable to the House of Peoples’ Representatives (see Annex 1).

At the early stage of preparation for the 2007 Census, from 2003 to 2005, the overall planning and preparation for the mapping activities were carried out by the Population and Housing Census Commission Office (PHCCO), established by Proclamation No. 442/2005 (Federal Negarit Gazeta, 2005a) It was later realized that there was a need to re-organize the management and operation of the population census, and consequently the House of Peoples’ Representatives re-established the Commission in May 2005 by Proclamation No. 449/2005 as National Population Census Commission, a permanent autonomous body, and assigned the Central Statistical Authority as Secretariat to the Commission and empowered it to conduct population censuses (Federal Negarit Gazeta, 2005b).

1.6 **The National Population Census Commission**

The 1995 Constitution stipulated that members of the Commission would be appointed by the House of Peoples’ Representatives upon recommendation of the Prime Minister; and that the Commission would be headed by a Secretary General. According to Proclamation No. 449/2005, the composition of the Commission shall be from Federal Ministers, National Election Board, the House of Federation, the Nine Regions, Addis Ababa and
Dire Dawa City Administrations. Consequently, the members of the Commission are the Federal Ministers; the Head of the National Election Board; the Speaker of the House of the Federation; the Deputy Administrators of the Nine Regions; and the Deputy Mayors of the Addis Ababa and Dire Dawa Administrations. The Commission was first chaired by His Excellency Mr. Addisu Legesse, Deputy Prime Minister of the Federal Republic of Ethiopia. The Director-General of CSA is a member and Head Secretary of the Commission. This indicates the importance accorded by the Government to population censuses and the level of commitment to ensure the success of the census by providing the very highest level of political and administrative support.

1.6.1 The members of the National Census Commission

1. H.E. Mr. Addisu Legesse, Deputy Prime Minister and Minister of Agriculture and Rural Development  
   Chairperson
2. H.E. Mr. Sufian Ahmed, Minister of Finance and Economic Development  
   Member
3. H.E. Mr. Tefera Walwa, Minister of Capacity Building  
   Member
4. H.E. Dr. Sintayehu Wolde Michael, Minister of Education  
   Member
5. H.E. Mr. Siraj Fegessa, Minister of Federal Affairs  
   Member
6. H.E. Mrs. Hirut Dilebbo, Minister of Women’s Affairs  
   Member
7. H.E. Mr. Degife Bula, Spokesman of the House of Federation  
   Member
8. H.E. Mr. Berhan Hailu, Minister of Information  
   Member
9. H.E. Mr. Abadi Zemu, Vice President, Tigray Administrative Region  
   Member
10. H.E. Mr. Mohammed Tahirol, V/ President, Affar Administrative Region  
    Member
11. H.E. Mr. Demeke Mekonnen, V/President, Amhara Administrative Region  
    Member
12. H.E. Mr. Muktar Kedir, Vice President, Oromia Administrative Region  
    Member
13. H.E. Mr. Abdulahi Hassen, V/President, Somali Administrative Region  
    Member
14. H.E. Mr. Murad Abdulahi, President, Harari Administrative Region  
    Member
15. Mr. Sisay Ayalew, Deputy Mayor, Dire Dawa City Council  
    Member
16. H.E. Mr. Tsegaye Mamo, Vice President, S.N.N.P. Administrative Region  
    Member
17. H.E. Mr. Rashid Mohammed, Vice President, Benishangul-Gumuz Administrative Region  
    Member
18. H.E. Mr. Guaner Yer, President, Gambela Administrative Region  
    Member

---

2 Ethiopia has nine regions: Affar; Amhara; Benishangul-Gumuz; Gambela; Harari; Oromia; Somali; Southern Nations, Nationalities, and People's Region (SNNP); and Tigray; and two city administrations: Addis Ababa and Dire Dawa.
1.6.2 Important decisions made by the National Census Commission

The National Census Commission held five regular and two extraordinary meetings between June 1, 2006 and May 15, 2009. At these meetings, the Commission had made several decisions, among which the major were the following:

(i) Fixing the Census Night to be 28 May 2007 for most of the country and 28 November 2007 for the pastoral regions of Affar and Somali;

(ii) Endorsing the Census Work Plan;

(iii) Establishing Census Commissions and Committees at the different administrative hierarchy of the country;

(iv) Approving the use of scanning technology for census data capturing;

(v) Deciding that elementary school teachers should serve as enumerators and high school teachers as supervisors;

(vi) Endorsing the census budget, which was then approved by the House of Representatives;

(vii) Ensuring that free and ample TV and radio air time on national stations be allocated for the census education and publicity campaign;

(viii) Instructing that census cartographic work should accommodate the revision of enumeration area mapping resulting from administrative rearrangements until the end of 2006; and so that the CSA should not take such administrative rearrangements in its mapping activities thereafter;

(ix) Instructing CSA to look into the possibility of adding more response categories for the question on religion for the next census; and

---

3 1st meeting, June 1, 2006; 2nd meeting, 22 January 2007; 3rd meeting 24 August 2007; 4th meeting, 7 October 2008; and 5th meeting, 15 May 2009.
Evaluating and endorsing the census results, which were then submitted for approval to the House of Representatives.

### 1.6.3 Regional, Zonal and Wereda Census Commissions and Committees

Census Commissions and Committees were established at Regional, Zonal and Wereda administrative levels to facilitate the implementation of census activities. Their membership was more or less a replica of the NCC. The main functions of these Commissions and Committees were:

(i) To collaborate with CSA in the general administration, coordination and execution of census activities, within their respective administrative areas;

(ii) Work out publicity strategies to educate the public on the importance of the census;

(iii) Make security arrangements for all census personnel;

(iv) Ensure that all census documents were secure before and after the census enumeration;

(v) Support CSA’s branch offices by cooperating in the arrangements of facilities for the training of temporary census field staff;

(vi) Provide logistic supports such as transport; and

(vii) Approve and monitor utilization of funds, in their respective administrative areas.

### (a) Regional Census Commissions Composition

1. President or Vice President of the Region Chair
2. Head of Finance and Economic Development Bureau Member
3. Head of Information Bureau Member
4. Head of Regional Works and Urban Development Bureau Member
5. Head of Bureau of Education Member
6. Head of Transport Bureau Member
7. Head of Administration and Security (Police Commission) Bureau Member
8. Head of Agriculture and Rural Development Bureau Member
9. Head of Women’s Affairs Bureau Member
10. Head of the Youth and Sports Affairs Bureau Member
11. Head of the Regional Census Commission’s Office (Staff of CSA) Member and Secretary
(b) **Zonal Census Commissions Composition**

1. Chair of the Executive Committee of the Zone Administration Office (Sometimes referred to as Zone Administrator)  
   Chair
2. Head of Finance and Economic Development Office  
   Member
3. Head of Information Office  
   Member
4. Head of Regional Works and Urban Development Office  
   Member
5. Head of Office of Education  
   Member
6. Head of Transport Office  
   Member
7. Head of Administration and Security (Police Commission) Office  
   Member
8. Head of Agriculture and Rural Development Office  
   Member
9. Head of Women’s Affairs Office  
   Member
10. Head of the Youth and Sports Affaires Office  
    Member
11. Head of the Zone Census Commission’s Office (Staff of CSA)  
    Member and Secretary

(c) **Wereda Census Commissions**

1. Chair of the Executive Committee of the *Wereda* Administration Office  
   Chair
2. Head of Capacity Building Office  
   Member
3. Head of Finance and Economic Development Office  
   Member
4. Head of Information Office  
   Member
5. Head of Urban Development Office  
   Member
6. Head of Education Office  
   Member
7. Head of Transport and communication Office  
   Member
8. Head of Administration and Security (Police Force Office)  
   Member
9. Head of Agriculture and Rural Development Office  
   Member
10. Head of Women’s Affairs Office  
    Member
11. Head of the *Wereda* Census Commission’s Office (Staff of CSA)  
    Member and Secretary

At the *kebele* level, the Executive Committee of the *kebele* administration collaborated with supervisors in coordinating census activities in their respective areas.
Figure 1. Structural Organization of Regional and Zonal and Census Commissions and Wereda Committees

Regional Census Commission Bureau

- Publicity and Educational Committee
- Technical and Field Operations Officer
- Audit Service
- Administration and Finance Service

Zonal Census Commission Office

- Publicity and Educational Committee
- Technical and Field Operations Officer
- Audit Service
- Administration and Finance Service

Wereda Census Commission Office

- Publicity and Educational Committee
- Technical and Field Operations Officer
- Rural Kebele Census Committee
- Urban Kebele Census Committee
- Supervisor

Enumerators
1.7 Population Census Secretariat and Committees

By Proclamation No. 449/2005, the Director-General of CSA is a member and Head Secretary of the NCC and CSA serves as Secretariat of the NCC. The CSA was responsible for undertaking day-to-day professional, technical and administrative work. By the same Proclamation, the Authority was gazetted as accountable to the National Census Commission concerning population censuses. Consequently, to implement the duties bestowed on it by the Proclamation, the CSA had established several committees to conduct the census smoothly. The main committees in CSA were; (i) Census Technical Committee; (ii) Publicity and Educational Committee; (iii) Census Mapping Technical Committee; (iv) Logistics and Transport Committee; and (v) Budget Committee. An ad hoc Manpower and Material Committee was also formed and its functions ended just before the main census enumeration. The then Deputy Director of the Population and Social Statistics Office served as the Census Coordinator, reporting directly to the Director-General of CSA.

Figure 2: CSA’s Main Census Committees
1.8 The Census Calendar

The census calendar or timetable is an indispensible planning instrument which lays out the sequence and estimated duration of each of the elements in the census operations. The census operation can be broadly divided into three inter-related phases: (i) the pre-enumeration phase; (ii) enumeration phase; and (iii) post-enumeration phase. In many of the activities, the tasks can overlap to a large extent as regards the time frame. The broad tasks within each phase are as follows:

(i) the pre-enumeration phase: developing project document; legal basis; budget; census calendar; administrative organizations; user consultations; publicity materials and campaign; mapping; census instruments; tabulation plan; editing and coding manuals; pilot census; plan for enumeration; plans for census outputs and dissemination; printing of census questionnaires and other documents; living quarters and household listing; recruitment and training of staff.

(ii) Enumeration: method of enumeration; timing and length of the enumeration period; supervision; and applying sampling in the enumeration, if using short and long questionnaires.
(iii) Post-enumeration: data capture, data validation and cleaning; tabulation; analysis; and dissemination of results.

The Strategy and Implementation Plan for the 2007 Census of Ethiopia was prepared in February 2006, taking the above into consideration. It also provided a provisional calendar of selected key activities and dates as part of an overall framework for the census. The calendar was subsequently revised and made more detailed, also establishing final dates as soon as practicable. The final revised calendar of events is given as Annex 2.

1.9 Funding of the Census

The Strategy and Implementation Plan, which was prepared in collaboration with United Nations Population Fund (UNFPA) Country Support Team, outlined all components of the census operation, along with cost estimates for the different phases of the census (CSA, 2006). The 1995 Constitution has made it an obligation to conduct a national population census every ten years; hence the Government of Ethiopia had committed to providing support and funding for most of the estimated expenses. Given that a census is a massive statistical operation a country could undertake, there was need for additional support and funding to the budget allocated by the Government. This additional funding for the census was extended by a consortium of Development Partners. The major donors were UNFPA and DfID, with additional funds from the Governments of Japan and Ireland, the Netherlands, UNICEF, United Nations Development Fund (UNDP), and the Italian Cooperation. The pooled fund was administered by UNFPA, with the exception of the support provided by UNDP and Japan International Cooperation Agency (refer to Section 4.2.2(a)).

The final census cost usually change in a number of respects as compared to the estimates at the planning stage, as the development of the census budget is a process where initial
estimates are replaced by more detailed and precise statements of resource requirements. Throughout the census operation, the budget had to be re-examined and performance compared with plans. Thus the total cost of the 2007 Census was estimated at around US$ 73,300,000 (CSA, 2006), however, the final cost was around US$ 74,000,000. The larger portion of the total budget, 73 percent, was covered by the Government of Ethiopia, amounting to US$ 54,000,000. The balance was covered from the contributions of the Development Partners.
CHAPTER 2: CENSUS PREPARATORY ACTIVITIES

2.1 Introduction

As mentioned in Chapter I, the census operation can be broadly divided into three inter-related phases: (i) the pre-enumeration phase; (ii) enumeration; and (iii) post-enumeration phase. In many of the activities, the tasks overlap to a large extent regarding the time frame. This chapter reports on the following pre-enumeration activities: census listing; tabulation plan; census instruments; concepts and definitions; and other census forms used in the census.

2.2 Census Technical Committee

A Census Technical Committee (CTC) was set up in 2005. The members were drawn from the professional staff of the Population Statistics Department, Social Statistics Department, Methodology Department, Vital Statistics Department, Field Operations Department and other departments of CSA. These professionals, with experience in field work, were constituted into the CTC under the chairmanship of the Deputy Director-General of the Population and Social Statistics Department. The main functions of the CTC were to develop census concepts and definitions; design and finalize the census questionnaires and control forms; prepare enumerators and supervisors manuals; and the like.

2.3 Census Instruments

The development of the census forms and accompanying manuals was initiated in September 2005. The CTC was responsible for the development or updating of the census instruments. The census instruments and the manuals used in the 2007 Census were the following.
2.3.1 Census questionnaire preparation

A series of meetings were held by CTC, involving the relevant CSA professionals, to work on the content and layout of the census questionnaire. Teams of interviewers were sent to specifically selected areas in Addis Ababa to test the questionnaire among a cross-section of few households. Before the field test, officers were given a brief training; and after the field test, a general review session was held to discuss their findings. This exercise proved very useful as it provided insight into concepts and definitions applied, and appropriateness of language, presentation of questions and adequacy of interviewers’ instructions.

When the preliminary draft questionnaire was ready, CTC members held one-on-one discussions with professionals from relevant line ministries, Government departments, and research institutions. This was followed by a two-day seminar organized by CSA in Feb 2006. Two groups of potential stakeholders were invited to participate in the seminar. The draft questionnaire was sent to seminar participants two weeks in advance so that it will give them lead time to prepare their comments and suggestions. The first day of the seminar, which was conducted in English, was devoted to the group comprising the donor community, universities and research institutes, and non-governmental organizations. The participants of the second day of the seminar were from line-ministries and relevant offices from the 9 Regional States and the 2 city administrations. Discussions were conducted in Amharic4.

Selection of topics for inclusion in the final questionnaire in general involved the review and consideration of the topics covered in the 1984 and 1994 population and housing censuses; recommended topics from the United Nations principles and recommendations for the 2010 round of Population and Housing Census Programme; and data requests and suggestions from users during the consultations and seminars. Ultimately, topics for

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4 Amharic is the official language of the Federal Democratic Republic of Ethiopia.
inclusion in the final draft were based on the relevance of topics and the data needs of the country as well as practical considerations of application of concepts. The final draft questionnaire was ready for testing in the Pilot Census by end of April 2006.

As in the 1994 census, long and short forms were prepared for use in the 2007 Census. The long questionnaire, administered to 20 percent of randomly selected households, contained both population and housing topics. The long form consisted of questions on population characteristics, covering the following areas: Geographical and internal migration characteristics; Household and family characteristics; Demographic and social characteristics; Fertility and mortality; Literacy and educational characteristics; Economic characteristics; and Disability characteristics. There were 16 questions on housing characteristics (see Annexes 3 and 4).

All the questions in the short form had been incorporated in the long form. As a result, the short questionnaire was designed to collect information from the entire population. Both short and long questionnaires were used to collect information from households, individuals in institutions (hostels/student dormitories/residential hotels/guest houses), and the institutions themselves. Only the short questionnaire was used for the homeless and the resident foreigners. Unlike the previous two censuses, disability and orphanhood questions were included in short questionnaire of the 2007 Census.

The short and long forms of the 2007 Census questionnaire were finalized after they were tested in the pilot census conducted in May 2006 (non-pastoralist regions) and June 2006 (pastoralists regions). See Annexes 4a and 4b for the topics investigated in both the 1994 and 2007 Censuses.

2.3.3 Other Census Forms

Monitoring of the movements of census documents to and from the field is essential to the success of any census operation. In this connection, various control forms were developed
and used for record keeping, recording of movement of documents and progress reporting. All forms were prepared for scanning. Descriptions of some of the forms are given below:

**Enumeration Area Control Form:** The form was prepared for recording completed and incomplete questionnaires and it has two parts: The first part is the Enumeration Area Identification (Region, Zone, *Wereda*, Town, Supervision area, *Kebele*, Enumeration Area, and bar code label). The second part, intended for office use, is record of the Enumeration Area Identification as indicated above, and has space for the names, signatures and dates of recording for both the enumerator and supervisor. This form was prepared in Amharic only.

**Call-back Sheet (Form 2):** This form had two parts. The first part was for the Area Identification (Region, Zone, *Wereda*, Town, Supervisory area, *Kebele*, and Enumeration Area), while the second part contained households listed for re-visits (Dwelling serial number, name of head of household, reason for the re-visit, revisit date and appointment time, and outcome of the re-visit).

**Enumeration Area Summary Form (Form 4):** This form was used to summarize household sizes by sex for each EA. It had two parts. Part one was where the Enumeration Area Identification code (Region, Zone, *Wereda*, Town, Supervisory area, *Kebele*, and Enumeration Area) was penciled in and it had space for the names, signatures and dates of recording for both the enumerator and supervisor. Part two records household dwellings, hotels, hostels, and other collective quarters with their serial numbers; living arrangements; names of heads of households, and names of hotels/hostels/collective quarters; number and sex of members of households, and those residing in hotels/hostels/other collective quarters and the homeless.

**Community level form for collecting agricultural and environmental information (Form 0):** The objective of this form, which was applied only to rural areas, was to collect some pertinent information on agricultural and environmental issues at EA level, to facilitate futures surveys on health and other related issues, and for the purpose of the agricultural
census planned to be conducted in 2013/14. The form had two parts. The first part was for the Enumeration Area Identification code (Region, Zone, *Wereda*, Town, Supervisory area, rural *kebele*, and Enumeration Area). The second part was on main agricultural and health information in the area (environment; harvest time; type of crops; *Belg* (Small Rains Season) crops; experience in producing cash crops, irrigation, main diseases and informant name and signature).

### 2.3.4 Census manuals

Well developed and tested manuals are essential to ensure uniformity of application of concepts, definitions and other instruction at different stages of the census exercise. The 1994 census documents were used as the basis for preparing the supervisors, enumerators and editors manuals discussed below. These documents, prepared in the Amharic language, were revised to reflect changing conditions and new technology. The updating of these manuals was made early on in the census preparation stage so that they were ready and printed before May 2007, in time for the census. All manuals were available only in the Amharic language, except enumerators’ manual which was also available in English.

*Enumerators’ Manual.* The manual outlines in details what was expected of the enumerators, in terms of the procedures involved in the actual enumeration of the households. The manual also gave very specific instructions with respect to the various questions within the 2007 Population and Housing Census questionnaire. The manual served the enumerator as reference for the concepts and definitions of the variables in the questionnaire, provided hints on how to ask questions, etc.

*Supervisors’ Manual.* The success of the 2007 Census did not depend solely on the enumerator; to a large extent it also depended on good field supervision. The manual provided the complete descriptions of the roles and responsibilities of supervisors, including guidelines for supervising enumerators. It was intended for use as a training and reference guide during the course of the work of the supervisors in their designated supervisory areas.

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Trainers' Manual: The 2007 Census was a large-scale undertaking that required the training of over 100,000 enumerators and supervisors for the fieldwork in 160 centres. A training manual was prepared to ensure uniformity of application of the training for all trainers at the national, regional and wereda levels. The manual included examples reflecting the country’s situations and solutions to possible questions that could arise during enumeration. To maintain uniformity, common practical exercises were included in the manual for use in the training throughout the training centres.

Editing specifications manual: Despite the very best effort to collect quality data, errors still occur at different stages of the census process. The editing specifications and the computer programme applied to deal with data gaps and inconsistent responses in the 1994 Census data were updated for the 2007 Census, taking into account the scanning technology to be used for the first time. An editing team worked on the updating of the editing procedures and programming.

2.4 Tabulation Plan

To help with finalizing the census questionnaire and as part of the census dissemination programme, a tabulation plan was elaborated at the earliest stage of the census development phase. The development of the tabulation plan was done from September to December 2005 starting with a review of the experience in the 1984 and 1994 Censuses. The preliminary draft of tables was discussed with potential users from line ministries, research institutes, non-governmental organizations and others so as to make the 2007 Census output demand driven. The tabulation plan was revised and finalized by incorporating new demands from users, considering limits imposed by practical circumstances and taking into account the United Nations recommended tabulations for international comparison (UN, 2008). The tabulation plan also indicated the order of the table preparation so that data were processed and disseminated in stages without delay.
A team of professionals prepared the final tables following the tabulation list by identifying variables to tabulate and cross-tabulate, title of the tables, geographical designations, what appears in the rows and the columns, body of the tables, source, and notes. The first set of over 100 tabulations was revised again after the census questionnaire was approved. The final plan contained about 70 tables at national and regional level (see Annex 4). The number of tables at national level and regional level, and among regions could differ depending on the population size and other considerations.

### 2.5 Census Concepts and Definitions

The population and housing census questionnaires together with the concepts and definitions employed determines both census coverage, who would be included in the census; and census scope, what users would get from the census. The concepts and definitions used in the 2007 Census, prepared in the Amharic language, were part of the Enumerators’ Manual. Some of the main concepts and definitions were included in the census statistical reports. The concepts and definitions were based on UN Principles and Recommendations for Population and Housing Censuses, except the concept on the urban and rural dichotomy which was defined taking the peculiarities of the Ethiopian situation into account (UN, 2008).

There is no international definition or standard that distinguishes urban from rural areas that would be applicable to all countries. Thus countries must establish their own definitions in accordance with their own needs (UN, 2008). Accordingly, CSA has used the following definition reflecting the situation in the country in the 1994 Census and all its other data collection activities: *Urban centre was defined as a locality with 2,000 or more inhabitants. Moreover, all administrative capitals (Region, Zone and Wereda), and localities in which urban dwellers’ associations were established were considered as urban centers, irrespective of the population size.*

### 2.6 Historical Calendar
In Ethiopia, a substantial proportion of the population lack knowledge of their date of birth. This would result in a substantial age-misreporting in the population census, thus distorting estimates such as fertility and mortality based on children ever born and children living cross-tabulated by age of the woman. In cultures where there was little awareness of individual age and no interest in it, criteria for making estimates should be provided in the instructions for the enumerators (UN, 1998). A historical calendar was prepared with events of national or regional significance to be used either in probing questions or in identifying the event closer to the respondent’s date of birth or birth year. One set of historical calendar was prepared for each of the regions, focussing on the events of importance for the respective region. The enumerators were given training in the application of this technique to help respondents make a reasonable estimate of their age. This historical calendar was tested in the Pilot Census and found to be useful.

2.7 Challenges and lessons learnt

(a) The third census was deferred from 2005 to 2007, mainly to avoid overlap with the general election which took place throughout the country in May 2005.

(b) The preparations for the 2007 Census was started by PHCCO which was later on dissolved and CSA was re-established by Proclamation 449/2005. This process contributed to the delay in the cartography. Since the CSA is the Secretariat of the NCC, such delay because of restructuring is not expected in future censuses.
CHAPTER 3: CARTOGRAPHY AND CENSUS MAPPING

3.1 Introduction

Ethiopia is a large country with a land area of over 1.1 million square kilometers. As mentioned in Chapter 1, it has nine regions and two city administrations. At the time of the 2007 Census, the regions and the city administrations were further subdivided into 73 zones; 731 weredas; 10 Sub-cities in Addis Ababa; and 14,850 rural and 1,478 urban kebeles. Mapping of the whole country and its sub-divisions constitutes a vital part in conducting a modern census.

Geographical area maps at the different administrative levels are essential to census managers for conducting censuses and other statistical inquiries, for planning and monitoring progress as the census proceeds, and for processing and disseminating the final results, among other things. Census maps that had been used for the 1994 Censuses were available; however, these needed further updating because almost a decade had elapsed since the maps were prepared and during this period the size and distribution of the population had changed considerably.

3.2 Objective and Purpose of the Census Mapping

Cartographic preparations constitute a vital part for the implementation of a modern population and housing census. In the pre-enumeration phase, the whole country had to be demarcated for census purpose into clearly defined small geographical areas called Enumeration Areas (EAs). The proper delineation of EAs ensures that there is no duplication or omission of persons or households at the time of enumeration. Thus census mapping work is one of the basic and most vital census operations requiring a considerable amount of time and resources.
Since the 1994 census, many changes had occurred in the country. Some of the weredas and kebeles had been redrawn; new settlements had sprung up where there were none before; some rural kebeles and urban settlements had grown bigger; while some localities had merged or split. This meant that the 1994 Census maps needed to be updated for planning and controlling the 2007 Census operations effectively and efficiently.

Specific objectives of the census mapping exercise were:

(i) To update and correct the maps used in the 1994 census by including all administrative boundaries, geographical features, towns, villages, roads, etc.;
(ii) To uniquely identify all the important land marks using GPS;
(iii) To delineate EAs on the updated map by taking its coordinates and transfer it on to the top sheets which were obtained from Ethiopian Mapping Agency (EMA), assign geographical codes; and carry out listing of households;
(iv) To produce EA and Supervision Area (SA) maps for census enumeration;
(v) To assess the number of enumerators and supervisors required for the census, and to provide comparable workloads during enumeration;
(vi) To collect information on the number of questionnaires and other materials required for the census;
(vii) To tabulate, analyse and disseminate thematic census results at different levels of administrative regions; and
(viii) To create a statistical frame for future socio-economic and demographic surveys.

3.3 Application of New Technology in the 2007 Census Mapping

Major technological advances had happened in the last decade which was favourable to census taking in developing countries. These included the widespread availability of personal computers, hand-held computers, global positioning systems (GPS), geographic information systems (GIS) software and low-cost aerial and satellite imagery. The CSA management took steps to adopt some of these new technologies in the 2007 Census
programme so as to collect more accurate and timely information about the country’s population. The new technologies used for the mapping phase were GIS, GPS and satellite imageries.

### 3.3.1 Geographic Information System (GIS) technology

This was the first time a full-fledged Geographic Information System (GIS) technology was utilized to demarcate EAs instead of the traditional methods of using analogue and sketch maps. A comprehensive digital spatial information database was created from several data sets acquired from government departments such as Ethiopian Mapping Agency, Regional Administration Offices, and others. The data sets included topographic maps, master plan, administrative boundaries, aerial photography, and satellite imagery. In areas where base map was not sufficient, Global Positioning Systems (GPS) were used to collect information in the field. Special attention was focused on areas that were difficult to demarcate, particularly the pastoralist areas of the Affar and Somali region. This large spatial information database provided most complete and current spatial information to create EAs.

### 3.3.2 Use of Global Positioning System in 2007 Census mapping

The EA maps for the first two censuses depended on traditional methods of using analogue and sketches maps in many areas due to the lack of base maps. The accuracy and completeness of the census cartographic work for the 2007 Census had been improved by the use of Global Positioning System (GPS) satellite receivers in the field, which allowed plotting of features within a few meters of their true positions. The 2007 Census maps were well geo-referenced with map coordinates and transferred to a Geographical Information System (GIS) for further analysis. The mapping team had also geo-coded the coordinates of all existing administrative units and socio-economic infrastructures, such as schools, churches, mosques, buildings and bridges.
3.4 Preparatory Activities for the Census Mapping

Census mapping operation is a time consuming, strenuous and expensive exercise requiring vast human and financial resources. It requires a systematic preparation of various interrelated activities ranging from taking inventory of existing maps, preparation of instruction manuals to canvassing the whole country to produce EA maps. The mapping work was started by PHCCO before it was subsumed into the newly restructured CSA. A Census Mapping Technical Committee was formed to develop mapping manuals, technical guidelines and to oversee the implementation of census maps.

To initiate the cartographic and mapping work, the Committee took inventory of existing maps in the office to explore the feasibility of using them. This task took over 4 months, from January to May 2003. The major tasks accomplished by the Committee were: the preparation of the census mapping instructions manual, training of the mapping workers, and starting digitization of maps for use in the pre- and post-enumeration phases.

3.4.1 Procurement of cartographic equipment and other supplies

To ensure that the extensive human and material resources were effectively mobilized for the census, an assessment of the equipment and materials needed to conduct the mapping exercise was carried out in November 2003. Based on this assessment, the required expendable and no-expendable materials were itemized. The expendable materials were drafting films, tracing paper, topographic sheets, stationery, drawing pens, and other drawing equipment. The non-expendable materials list included all weather vehicles, computers, digitizers, plotters, printers, photocopiers, topographic maps, software, GPSs, satellite images, and GIS software. UNFPA donated most of the non-expendable materials from the country support programme and fund for the 2007 Census. Some of the items were obtained from the Government.
3.4.2 Recruitment and training of census mapping field staff

The 1994 Census mapping manual was updated while preparing the administrative arrangements for the recruitment and training of census mapping staff. The revised census mapping manual, which was issued in November 2002, covered the basics of census mapping work, such as geographic concepts, map reading, and the delineation of enumeration and supervision areas in rural and urban areas. A new section on the use of Global Positioning System (GPS) was also incorporated in the manual. To ensure consistency in the training, standardized examples and exercises were used in the revised manual.

Census mapping field supervisors and geographical assistants were recruited between Feb and March 2003. The minimum requirement for recruiting a census mapping supervisor was a bachelor degree in geography, mathematics, statistics, economics, sociology or related areas. The minimum requirement for qualifying to be Geographical Assistant was the Ethiopian Schools Leaving Certificate with high grades in Mathematics, Geography and English. Recruitments were made through the 25 branches offices of CSA, under temporary terms of appointment.

Training the CSA regular and temporary staff involved some form of cascade training, whereby selected few were trained using the mapping instructions manual on the mapping process, and in turn they train further groups of people, and so on down the line. A one-month train-the-trainer course was conducted for professional staff of CSA from headquarters and all its branches; and professionals of the then PHCCO. The trainers in turn conducted a 2-month hands-on intensive training to field supervisors and geographical assistants simultaneously in all CSA branch offices from March to May 2003. The mapping workers were deployed to the field immediately after the training.
3.5 The Census Mapping Field Team

The census mapping field workers were organized into teams. Each mapping field team consisted of a field supervisor, six geographical assistants, a driver, and a cook/camp guard. A Coordinator was assigned to organize the fieldwork of about four field teams. Each team was provided with a four-wheel-drive vehicle; enough number of tents; a folding cot and a sleeping bag for each member of the team. The team was also provided with the necessary kitchen utensils, silverware, plates, cups and so forth.

Initially, 130 mapping teams were deployed to the field in May 2003 in all parts of the country. However, because of financial constraints and logistical problems, the work was suspended after one month in the field. Later that year, the work resumed with a release of limited funds by the Government, which enabled the redeployment of 45 teams with 25 vehicles to continue on the census mapping. This phase of the mapping exercise lasted from August 2003 to July 2004.

The Government released additional funds again in July 2004 enabling the then PHCCO to recruit more mapping workers, raising the total number of teams to 92. CSA provided PHCCO with 24 field vehicles to support the mapping exercise. After CSA took over the responsibility to conduct the census, it was able to secure supplementary fund to bring the number of mapping teams to 130. It also secured additional 50 new 4WD vehicles from the Government for the field mapping exercise to speed up the mapping activity. The mapping teams were energetic, diligent and courageous workers and managed to complete the field mapping and EA map production tasks by December 30, 2006 well ahead of the main enumeration which took place in May 2007.

The Coordinators checked the completed EA maps and provided administrative, technical and logistical support to their teams. The Supervisors monitored the work of their Geographical Assistants on a daily basis in the camps; make on-the-spot checks in the field and complete field Report Forms for the Coordinators. The Coordinators and the field teams worked closely with local wereda and kebele officials. In addition, the Census
mapping Technical Committee, the Census Technical Committee and the Senior Management of CSA carried out periodic monitoring field trips to ascertain quality and comparability between teams and to ensure that deadlines are met.

### 3.6 Demarcation and Mapping of Enumeration and Supervisory Areas

The mapping activities started at the *wereda* level in most places. The mapping teams were dispatched to their assigned *weredas* in all Regions in May 2003. The mapping activity encompassed all urban and rural *kebeles*, including special enumeration areas, such as national parks, forest reservations, and collective quarters with more than 100 individuals. The mapping exercise was started in the Somali Region along with the rest of the country but it had to be interrupted for reasons discussed in Section 3.7.

In general, the mapping activity included the following:

1. Updating new features on the topographic maps produced and printed by EMA, and master plans of towns obtained from the Urban Planning Institute and EMA by transferring the GPS coordinates of *kebele* boundaries and landmarks on top of it. Current boundaries of *kebeles* were shown on the base maps which carried the main ground features of the regions. Then followed the delineation of EAs and SAs; and

2. Preparing sketches for urban areas, including those rural areas which have been incorporated into the urban areas in some places, which did not have large-scale master plan by using GPS geo-locating method.

In demarcating EAs, the basic consideration was that it should be of a size that an enumerator could complete within the specified period of 10 days for the enumeration. The following general rules were applied in deciding the size of an EA in rural, urban and in the pastoral areas with slight variation in some aspects:

1. EAs should contain 150-200 households, depending on its terrain and density;
(ii) In sparsely populated places an EA could be made up of 150 households or less; and

(iii) In densely populated areas, the number of households in an EA could be 200 or more.

In mapping the EAs the mapping field team was also guided by the following factors:

(i) EAs were delineated within kebeles; and that they should not cross the boundaries of a kebele.

(ii) Institutions such as boarding schools, university dormitories, police camps, correctional facilities, orphanages, and hospitals were delineated separately as special enumeration areas;

(iii) Areas such as national parks, forest reserves were delineated as special enumeration area; and

(iv) To the extent possible, the boundaries of EAs were made identifiable by delineating along visible physical feature such as roads, tracks, footpaths, rivers and streams, ridges, streets etc. Where such features are non-existent, imaginary boundary lines were drawn and identified with reference to prominent buildings such as schools, hospitals, or other benchmark features, followed by a full verbal description of the EA.

3.6.1 Demarcations of enumeration areas in Rural Areas

When a mapping team reached its assigned wereda, it presented letters of introduction from CSA and/or Zonal Census Commissions to the wereda administration. The team then briefed the officials on the objectives of the mission and solicited their cooperation in the mapping exercise. The team identified the wereda boundary with the help of the officials and roughly delineated the boundary on the topographic maps. The mapping team then collected the list of the kebeles and communal living quarters within each wereda from the administration and transcribed the kebele information on Form R-1 and that of the communal living quarters on Form R-3. The team also identified the number of
topographic sheets that cover a wereda with the assistance of the local officials. The mapping team undertook similar task at the kebele level in collaboration with the officials.

Rural enumeration area maps contained the following information: name of the region, zone, wereda, and kebele; name of the chairperson of the kebele; code number of the enumeration area; size of the enumeration area (in square kilometres); and number of households in the enumeration area. The EA maps also showed important landmarks, such as schools, health institutions, churches, mosques, roads and rivers, in the area and in its boundaries. Moreover, a description of the EA, particularly of its boundaries, was also attached with the EA map.

3.6.2 Demarcations of enumeration areas in urban areas

In urban areas EAs were delineated within the boundaries of the kebeles indicated on existing master plans. Where there was no master plan for an urban and/or sub-urban area, the mapping team used GPSs to geo-locate and collect information on important landmarks to prepare sketch maps in the field.

Each mapping team was dispatched to the field with a base map that would cover their assigned area. As in the rural areas, when the mapping teams reached the assigned wereda, they introduced themselves to the wereda and kebele administration. The team then identified the wereda boundaries with the help of the officials and collected the list of the kebeles from them and transcribed the information on Form U-1 and that of the communal living quarters on Form U-3. These forms were then stamped with the wereda’s seal to show that they were authentic. The team also obtained from the wereda officials a letter addressed to the urban kebele officials requesting that they collaborate with the team in carrying out the census mapping work in their respective areas.

At their assigned urban kebele, the mapping team requested that the local officials verify the authenticity of the information on Forms U-1 and U-3 by comparing them with their office copies. The mapping team then walked around the border of the urban kebele and
geo-located the boundary with GPS and recorded the information on Form U-6, Section 2. Then the team sketched the boundary on the base map. Following this, the team listed all dwellings and households, and communal living quarters with less than 100 residents on the appropriate forms. They also used GPS to geo-locate important land marks such as schools, churches, mosques, industries, and hospitals with the assistance of the local authorities.

3.6.3 Demarcation of enumeration areas in Addis Ababa

The mapping exercise for Addis Ababa was different from the rest of the country. It was based on an existing master plan with a scale of 1:2000 with UTM coordinates, which did not have land marks like buildings, schools, churches, mosques, industries, hospitals, etc. The kebele boundaries were geo-located and existing administrative units and all socio-economic infrastructures within it was updated on topographic sheets. After all urban kebele maps were prepared, the Sub-city maps were built up wards. After all the process was completed, all EAs were assigned 2 digits identification within each Sub-city starting from 01. Communal living quarters such as boarding schools, university dormitories, police camps, correctional facilities, orphanages, and hospitals were assigned numbers from 91 to 99.

Final urban area maps containing the following information: Name of Sub-city; code number of kebeles; code number of the enumeration areas; and important landmarks, such as schools, health institutions, churches, mosques, roads and rivers, that are found within its boundaries were recorded on form U-7. The map and the completed form were deposited on the EA’s folder. At the bottom of the EA map there was a legend which identified the roads, buildings, North arrow marker, and the codes for contiguous EAs. The EA folder also contains Form U-5, that explains the EA boundaries; Form U-2, for the recording of housing and households; Form U-4 Collective living quarters; and Form U-6, for GPS coordinates. Finally, SA folders were arranged by putting together the folders of the EAs within its boundaries.
3.6.4 Special enumeration areas

National parks, forest reserves and other special areas were mapped as separate entities in the weredas where they existed and are assigned enumeration numbers. For the purpose of the census mapping, other special areas encompassed collective living quarters such as boarding schools, university dormitories, police camps, correctional facilities, orphanages, and hospitals where people were living under the supervision or care of others. Information on existence of collective living quarters were obtained from the wereda and kebele offices and verified in the field. In the case of collective living quarters mentioned above, if they had a population of 100 or more persons then they were demarcated as a “Special EA”.

3.6.5 Delineation of supervisory areas

A Supervision Area (SA) is made up of a group of contiguous EA’s, usually four or five, that would be under the mandate of a supervisor. SAs were formed after all EAs are delineated. SAs do not cross wereda boundaries. SA was made up of a group of EAs depending on the population sizes, dwelling density, terrain, etc.

The supervision area map contained the following: The name of Region, Zone and wereda; the SA code; the EA codes contained in the SA; Important landmarks; a map scale; a north arrow; and a legend. The EAs in the SA were arranged in such a way that they were adjacent to each other. The supervisor was required to know boundaries of the supervision areas of all the enumerators under his/her control as well as EA and the wereda boundaries. Supervisors worked closely with Wereda Census Committees as they were supposed to have good knowledge of the extent of their administrative areas.

3.7 Mapping in the Somali Region

The Somali Region is predominantly a pastoral area. It was not easy to locate the pastoralists in the Region in one place as they are characterized by movement from place to place. Special arrangements were therefore needed to enumerate this group. The 1994
Census counted the pastoralist population using a combination of the water-point approach and listing of households about 3 months before the census date, hence the Region was not well delineated into EAs then. The field mapping work for the 2007 Census, which was started simultaneously throughout the country, could not proceed as planned in the Somali region because of the following reasons:

(i) there was no 1:50,000 topographic maps that covers the whole Region;
(ii) the Region’s area was too large and the road network too few to enable easy mobility for recording GPS coordinates;
(iii) Kebele boundaries were not well delineated to be of any use for the census purpose; and
(iv) there were no sufficient documentation in the Zonal administrative offices that illustrate existing boundary demarcations at lower administrative levels.

Taking the above into consideration and to facilitate the census mapping of the Region quickly and at a reasonable cost, it was decided to utilize satellite imagery for the census mapping of the Somali Region. The satellite imagery enabled CSA to make estimate of the number of persons living in the Region and their geographic distribution. This information was used for delineation of EA boundaries. The following satellite imageries that cover the entire country were acquired with the fund provided by DfID from the pooled fund administered by UNFPA: Spot5 Imagery, IKONOS and QuickBird Imagery for 928 towns. LandSat Imagery and 30m DEM form ASTER were also obtained from other sources. Although the initial cost of satellite imagery was high, it resulted in a saving of countless hours of fieldwork because there was no longer a need to reach each boundary points physically and prepare individual sketch maps. Ground-truthing work could not be done because of accessibility problem and lack of time. Instead GPS coordinates were included on the EA maps and that served as a means of identifying EA boundaries. EAs were finally delineated according to the general rules applied to urban and rural areas in other regions (see Section 3.6).
3.8 Summary of the EAs Mapping Exercise

For the 2007 population and housing census a total of 86,805 enumeration areas were delineated, of which 69,462 were in rural and 17,363 were in urban areas, including the Somali Region. The distribution of the EAs by region and rural and urban is given below.

Table 1: Number of Zones, Weredas and Urban/Rural Kebeles Covered in the 2007 Census by Region

<table>
<thead>
<tr>
<th>S/N</th>
<th>Region</th>
<th>Number of Zones</th>
<th>Weredas</th>
<th>Urban</th>
<th>Rural</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tigray</td>
<td>6</td>
<td>47</td>
<td>92</td>
<td>611</td>
<td>1,507</td>
<td>4,112</td>
</tr>
<tr>
<td>2</td>
<td>Affar</td>
<td>5</td>
<td>30</td>
<td>49</td>
<td>338</td>
<td>251</td>
<td>812</td>
</tr>
<tr>
<td>3</td>
<td>Amhara</td>
<td>11</td>
<td>139</td>
<td>348</td>
<td>3,074</td>
<td>3,335</td>
<td>17,899</td>
</tr>
<tr>
<td>4</td>
<td>Oromiya</td>
<td>20</td>
<td>278</td>
<td>546</td>
<td>6,484</td>
<td>4,972</td>
<td>25,613</td>
</tr>
<tr>
<td>5</td>
<td>Somali</td>
<td>9</td>
<td>54</td>
<td></td>
<td></td>
<td>608</td>
<td>5,211</td>
</tr>
<tr>
<td>6</td>
<td>Benishangul-Gumuz</td>
<td>3</td>
<td>20</td>
<td>29</td>
<td>417</td>
<td>174</td>
<td>785</td>
</tr>
<tr>
<td>7</td>
<td>SNNP</td>
<td>14</td>
<td>145</td>
<td>270</td>
<td>3,666</td>
<td>2,086</td>
<td>14,412</td>
</tr>
<tr>
<td>8</td>
<td>Gambella</td>
<td>3</td>
<td>12</td>
<td>17</td>
<td>211</td>
<td>133</td>
<td>327</td>
</tr>
<tr>
<td>9</td>
<td>Harari</td>
<td>1</td>
<td>1</td>
<td>19</td>
<td>17</td>
<td>169</td>
<td>98</td>
</tr>
<tr>
<td>10</td>
<td>Addis Ababa</td>
<td>10⁵</td>
<td>99</td>
<td></td>
<td></td>
<td>3,779</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Dire Dawa</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td>32</td>
<td>317</td>
<td>128</td>
</tr>
<tr>
<td>12</td>
<td>Special enumeration areas</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
<td>32</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>Total Country</td>
<td>83</td>
<td>731</td>
<td>1,478</td>
<td>14,850</td>
<td>17,363</td>
<td>69,462</td>
</tr>
</tbody>
</table>

3.9 Challenges and Lessons Learnt

Several problems were encountered and successfully overcome during the cartographic work. Some of the major problems were as follows:

(a) The main problem facing the mapping office work was lack of office space. There was insufficient space for staff to undertake the preparation of base maps for the field teams, for the digitization of field-updated wereda maps, and the development of

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⁵ The total reflects the 10 Sub-cities in Addis Ababa and 73 zones in other regions and in Dire Dawa city.
There was also a lack of adequate space for storage of maps and other important census documents.

(b) The main problems faced by the mapping exercise in the field and the steps taken to resolve them:

(i) Lack of continuous fund at the desired level had disrupted field work schedules. As a result the number of teams had to be cut from 130 to 45 in July 2003. The Ethiopian Government approved supplementary budget so that the work could continue. It took two years to get back to the desired number of teams (see Section 3.5).

(ii) The most serious difficulty that affected the pace of the fieldwork was the shortage of 4WD vehicles. As a result the fieldwork had to operate at a reduced capacity, which increased time and cost. The problem was solved when the Government provided additional 50 field vehicles in 2005.

(iii) The base maps for some of the rural areas were prepared in black and white. This had made reading of the maps difficult. The problem was resolved by inviting professionals from the Ethiopian Mapping Agency to provide additional training to the Geographical Assistants on-site in the problematic areas.

(iv) As the mapping exercise had taken longer than expected, mainly due to financial constraint, the turnover among the mapping workers particularly the field supervisors was high. The supervisors were college graduates who had better employment opportunities. Quick training sessions were organized for new recruits so as to replace those who left with minimum disruption of the field work.
(v) In some weredas and kebeles contentious boundaries occurred during the demarcation work. This slowed the work. It was resolved by bringing the concerned weredas and kebeles officials and the community elders to resolve the issue.

(vi) Many of the beds for the field staff to sleep on had broken down few months after the beginning of the mapping field work and some of the tents could not withstand heavy rains.

(vii) The delay in delivery of sufficient number of batteries for GPS receivers somehow slowed down the field work. Poor quality or defective batteries were found in several of the pre-packed boxes.

(viii) Updating of newly restructured weredas, in places where merging and/or splitting had occurred, resulted in unexpected lose of time and additional costs.
CHAPTER 4: LOGISTICS AND OTHER SUPPORT SERVICES

4.1 Introduction

It is necessary that the wide-ranging census operations leading to the enumeration phase and beyond occur in a timely manner and in their proper succession. Hence, a well planned administrative and logistics support is crucial to the success of the field operations and subsequent phases of the census. The field operation is a complex task, which includes transportation arrangements for data collection staff; distribution and retrieval of census materials, and arranging adequate storage facilities from the field to the central storage at headquarters. Several teams were formed for the different tasks of the census operation to work with the Logistics and Transport Committee (see Chapter 1, Section 7), among which were the Logistics Team and the Procurement Team. This chapter provides insight into how the activities were implemented, procedures deployed, and the challenges and lessons learnt.

4.2 Major Tasks Accomplished

It should be noted that the main census enumeration was conducted in two rounds. The first round of enumeration took place in seven Regions and the two city administrations (Addis Ababa and Dire Dawa) in May 2007; and the second round was enumerating the population in Affar and Somali Regions, in November 2007. The census enumeration is discussed in Chapter 6. The field operation took all this and other major milestones into account. The Logistics and the Procurement Teams were aware that a minor oversight in planning and implementation of the field operation could lead to serious problems with possible domino effect, and could thus compromise the census results and end up being costly to the whole census operations.
The pre-enumeration administrative support services provided include: Office accommodation, procurement, storage facilities, and security arrangements. These are discussed below.

4.2.1 Office accommodation

The 2007 Census was a massive operation and as the preparatory work progressed, the need for more staff and consequently office space was becoming crucial for its successful implementation. However, with the recruitment of the additional staff, the space at the CSA headquarters was inadequate to accommodate all of them. The lack of office space was partially resolved through the National Census Commission, after the Chair of the Commission visited the CSA premise and gave directive that CSA should use the Government office contiguous to its compound on a temporary basis. He further instructed CSA to provide its other office (formerly PHCCO’s) located in another part of Addis Ababa in exchange to the Government office which vacated its offices. This decision enabled CSA to house the Population and Social Statistics Office; Finance and Audit Directorates; the questionnaire scanning and storage rooms; and the Cartography and other Directorates within its headquarters premise.

4.2.2 Procurement

The timely procurement of goods and services was necessary to facilitate the 2007 Census exercise. These included stationery, cardboard boxes, report forms, summary sheets, enumerators and supervisors’ badges, publicity materials, furniture, data processing equipment, cartographic materials and equipment, vehicles, etc.

The budget allotted by the Government of Ethiopia was not enough to cover the estimated total cost of the 2007 Census. The balance of the census cost was supplemented by Development Partners. Purchase of materials was carried out by the Procurement Committee working closely with the Directorate of Finance and the General Service Section of CSA and in accordance with the Government procurement regulations in
consultation with the Procurement Agency. UNFPA and UNDP also procured some of the items and donated them to the Government of Ethiopia in kind. This actually speeded up the delivery of goods on time.

The main procurements activities were as follows:

a) Census forms, optical mark scanners and software

Two teams of CSA Senior Management visited the national statistical offices of Ghana and Tanzania simultaneously to learn from their experiences in the use of scanners for data capture in their 2000 and 2004 population and housing censuses, respectively. The Team observed that scanners, with their accompanying package, purchased from DRS Data Service Limited, a UK based company, had performed quite satisfactorily in Tanzania. The experience of Ghana was found to be mixed. However, this company had operated in Ethiopia for more than 20 years working with the National Examination Agency of the Ministry of Education of Ethiopia; it had a local agent that provided technical support to its clients; and the one scanner used in the pilot census purchased from this company had performed well. Based on the good reputation of the company within the country and the positive experience shared by the national statistical office of Tanzania, CSA finally decided to work with DRS Data Service Limited. CSA then expressed to UNFPA its wish to work with DRS Data Service Limited for the main census. Hence, UNFPA waved its open bid process and purchased one high-speed PhotoScribe® PS900 Series optical mark scanners and bespoke software.

The experience of using the scanner in the pilot census was encouraging. Based on this affirmative experience, CSA obtained the following items through the UNDP Country Office, which waved the open bid process and procured them directly from the same company:

(i) ten additional high-speed PhotoScribe® PS900 Series optical mark scanners and bespoke software;
(ii) twenty million long and short census questionnaires were designed as per CSA’s specifications for scanning, translated into Amharic and printed in the UK by the DRS Data Service Limited including about 2 million other related forms; and (iii) on-site and remote technical services.

The scanners and the census booklets were shipped to Addis Ababa in three consignments by ship in time for the main enumeration exercise. The costs of printing and transportations of questionnaires as well as the costs of software, training, technical supports and procurement of 10 scanners was covered by the fund obtained from the UNDP.

b) Computers and printers

UNFPA procured and supplied nineteen laptops and over 100 desktop computers for activities related to the whole census operation from the pooled fund administered by the Country Office.

c) Cartographic equipment including GPS

Procurement of mapping equipment such as tracing papers, rotering pens, printing papers for maps, GPS (for mapping and enumeration), GIS and software and hardware were purchased by UNFPA.

d) Vehicles

The existing fleet of vehicles of CSA was not sufficient to conduct the mapping exercise and the main census. UNFPA supplemented the existing fleet by providing initially 25 Toyota Land Cruisers for the mapping activity, and an additional 50 similar vehicles for the main census enumeration were supplied by the Government of Ethiopia. Moreover, UNFPA had donated 21 4WD field vehicles to support census and inter-censal demographic survey and preparatory activity of the upcoming census.
4.3 Transport

Ethiopia is a large country comprising mountainous regions and lowlands. Despite the lately improved road networks in the rural areas, not all EAs could be easily accessed by vehicles. Hence several modes of transport had to be planned to transport census materials to from EAs. The Logistics/Transport Committee had arranged for enough vehicles, and distributed to training centres all over the country.

*Vehicles:* More than 300 four-wheel drives were employed from line ministries, Regional office, and CSA fleet of vehicles; additional vehicles purchased by the Government; the support provided by UNFPA, and rentals from the private sector.

*Mules, donkeys and camels:* These animals were used during census mapping and the main enumeration in places which were inaccessible by vehicles in areas such as Affar Region and other remote rural areas during the deployment of enumerators and supervisors.

*Boats:* These were used to reach places around the Lake Tana and in the Gambela Region during census mapping and enumeration.

4.4 Storage Facilities and Security Arrangements

Population and housing census is a sensitive exercise and hence requires adequate storage facilities with satisfactory security arrangements put in place to ensure that the completed census forms and equipments are well stored protected. The image of CSA will be tarnished if a single completed form is lost. The public would also lose confidence in the census exercise and it could compromise any future data collection activity in the country.

A large warehouse made of corrugated iron sheets was constructed within the premise of the CSA headquarters for assembling and packing of the census materials before they were dispatched to the *weredas*. This storage space was found not to be large enough for the task
and it was supplemented with additional tents. The storage rooms also served as receiving centre for the returned completed questionnaires, during and after data capture.

Since it is a legal and ethical responsibility of CSA to protect the confidentiality of individual responses, the best possible measures were taken to keep completed forms and other records containing personal information secure and confidential by implementing strict security arrangements in and around the storage facilities. At the Census head office in Addis Ababa, the Police Force provided a 24 hours security service at least until forms were totally scanned. This supplemented the CSA security guards. When the data processing was started, more stringent security arrangements were put in place. Official at different levels of administration from *wereda* to Regional level also provided the necessary security protection to ensure that no incidence occurred within their jurisdictions. As a result, no serious security breach had been reported on the census returns. Administration offices and Census Commission/Committee Offices at each level have provided continuous supports in ensuring census documents safety.

4.5 **Challenges and Lessons Learnt**

(a) Amongst the items purchased in bulk, particularly some of the enumerators bags and notebooks, were found to be defective or of poor quality products. As the quantity of the materials were delivered in large bulk, it was difficult to spot-check quality of the items. The problems were identified during assembling and packing for dispatch to the field. The lesson learnt was that procurement of large quantity items should begin early enough and quality assurance mechanism should be put in place in advance to avoid or minimize delays in field work.

(b) There was rain at the time when census documents were being assembled, and it was challenging to do the job in tents and the warehouses with old corrugated metal sheets.
CHAPTER 5: PILOT CENSUS

5.1 Introduction

The main objective of the 2006 Pilot Census was to assess the adequacy of preparation for all aspects of the 2007 Population and Housing Census. The specific objectives of the Pilot Census were the following:

(i) To check if there was easy communication and understanding between enumerators, interpreters and respondents. Final census questionnaire was prepared only in the Amharic language. Enumerators working in non-Amharic speaking areas had either to interpret the questions into the local language and in some cases they have to use local interpreters.

(ii) To test whether enumerators have understood the questions, concepts and definitions and applied them properly.

(iii) To assess duration of completing the time taken to complete the questionnaire and other forms.

(iv) To review technical appropriateness of census instruments i.e. questionnaires, manuals, code lists, etc.

(v) Effectiveness of EA maps and other materials.

5.2 Preparatory Activities

The overall objective of the Pilot Census was not only to test the technical and logistical procedures for the census, but also to test whether new technology should be applied for data capture. The final draft of the Pilot Census questionnaire was prepared from Feb to April 2006 in two formats: (i) the conventional approach where the coded and open-ended responses for occupation and industry were supposed to be manually entered into
computers for processing through keying-in the data; and (ii) questionnaires designed for scanning of the completed forms.

The Pilot Census questionnaires prepared for scanning were printed by a company in the United Kingdom that had also been contracted to supply the data scanning equipment. About 25,000 forms were re-designed for scanning purpose, printed and air-lifted to Ethiopia in June 2006. It was not possible to print these questionnaires in-house because the local printers did not have experience in designing and printing such questionnaires for highly sensitive scanning machines. The conventional questionnaire for manual data entry, the various manuals, and all other documents were printed in-house in CSA.

The two formats were tested independently in selected areas of Ethiopia from May to August 2006 as follows:

(a) Questionnaires for keyboard data entry were applied to 150 EAs that were purposefully selected from more than 100 weredas from 7 Regions other than the Affar and Somali Regions. Students that completed Grade 12 in the Ethiopian old schools system and Grade 10 in the new schools system were recruited as enumerators.

(b) Questionnaires for scanning were applied to a different set of 100 EAs that were again purposefully selected in about 100 weredas again from the 7 Regions other than the Somali and Affar Regions. Teachers were used as enumerators and supervisors in this exercise. Enumerators were selected from Elementary School Teachers, and High School teachers served as supervisors.

The selected EAs for the Pilot Census represented urban and rural settings, different ecological zones and multilingual areas. Each exercise lasted 10 days. The pilot census therefore presented an opportunity to test the effectiveness of the two data capture approaches besides content of the questionnaire, EA maps, and logistics, among others.

The main observations of the Pilot Census were:
(a) Regarding concepts and definitions used in the census, the absorption and retention capability of high school graduates, especially those who completed only 10th grades, was found to be below expectation. On the other hand the teachers did a good job with the forms prepared for scanning;

(b) Scanning using Optical Mark Reader (OMR) technology was far better than keyboard data entry because of two major considerations: (i) data capture took shorter time; and (ii) it required less number of operators; thus reducing the total cost of the census.

Based on the outcome of the Pilot Census, the use of OMR technology for data capture and employing teachers as enumerators and supervisors for the main census were proposed to the National Census Commission, and both were approved. The format of the final 2007 Census questionnaire was a departure from that of the two earlier censuses as it was modified for scanning technology for data capture.

5.3 Packing and Distribution of Pilot Census Materials

Materials required for the fieldwork included EA maps, questionnaires, forms, manuals, stationery, and others. The task of putting all these materials for each of the EAs required experienced and committed staff to work on it. A group of experts in the Population and Social Statistics Directorate were responsible for assembling, packing and distribution of pilot census documents to the CSA branch offices. Each enumerator and supervisor then received a bag containing census materials listed below to help them with their duties.

(i) Contents of a supervisor bag for a supervisory area

<table>
<thead>
<tr>
<th>S/N</th>
<th>Items</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Supervision area map</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Form for collecting data at community level (Form 0)</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>An identification card (ID Card)</td>
<td>1</td>
</tr>
</tbody>
</table>
(ii) The Enumerator’s bag for one EA in the pilot census was arranged as follows:

<table>
<thead>
<tr>
<th>S/N</th>
<th>Items</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Batch Header form(^a)</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Households and living quarters listing form (Form 1)</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>Short questionnaires</td>
<td>44</td>
</tr>
<tr>
<td>4.</td>
<td>Long questionnaires</td>
<td>168</td>
</tr>
<tr>
<td>5.</td>
<td>Enumeration Area Summary Forms (Form 4)</td>
<td>5</td>
</tr>
<tr>
<td>6.</td>
<td>The Enumeration District Map and description of the boundaries.</td>
<td>1</td>
</tr>
<tr>
<td>7.</td>
<td>Call-back Forms (Form 2)</td>
<td>3</td>
</tr>
<tr>
<td>8.</td>
<td>Enumeration Area Control Form</td>
<td>1</td>
</tr>
<tr>
<td>9.</td>
<td>Laminated code sheets for Regions and Zones, and codes for questions</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>on education</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Rubber</td>
<td>1</td>
</tr>
<tr>
<td>11.</td>
<td>Pencils</td>
<td>2</td>
</tr>
<tr>
<td>12.</td>
<td>Marking chalks</td>
<td>4</td>
</tr>
<tr>
<td>13.</td>
<td>Pencils</td>
<td>1</td>
</tr>
<tr>
<td>14.</td>
<td>An identification card (ID Card)</td>
<td>1</td>
</tr>
</tbody>
</table>

The required numbers of enumerators and supervisors bags for each *wereda* were put into card board containers, with the necessary information on the content labeled on it. A total of about 50 field vehicles were assigned for distribution of these documents and for deployment of field staff to their assigned areas.

5.4 Publicity and Public Education for the Pilot Census

\(^a\) The batch header form or batch control sheet contained columns for entries of batch, box, EA and geographical codes. The records were used for reference in case of missing EAs, rescanning and verification during cleaning.
Education and publicity programme is one of the major activities that contribute to a successful census. Public education through radio and TV was launched at the time of the pilot census but the intensity of the programme was rather low at this stage. The message basically included the objective of the pilot census, its contribution towards the main census to be carried out in a year, coverage, type of cooperation expected from households, different levels of administration, government offices and so on.

5.5 Challenges and Lessons Learnt

(a) For the pilot census using the conventional approach, 10th grade complete students were recruited as enumerators. Many of them were found having difficulty to cope with the task adequately. Many of them were also too young for this task. The situation was resolved when the National Census Commission decided that elementary schools should be enumerators and high-school teachers serve as supervisors.

(b) It was found that training without adequate examples created problem, and that training days were not sufficient. To enhance the understanding of enumerators and supervisors, training manuals for the main census were strengthened by additional examples and elaborated explanations. Training days were also increased.

(c) During train-the-trainer sessions, it was observed that some of the would-be trainers had difficulty understanding the concepts and definitions used in the census, especially those related to classifications of occupation and industry. This was not surprising given the diversified types of small businesses in the country. It was therefore decided to drop occupation and industry from the questionnaire.

(d) It was realized that trainers assigned in training centres in regions where they did not speak the local language had problem in transmitting their messages. Recommendation was made that trainers for the main census should be assigned, to
the extent possible, in areas where they spoke the language of the majority of the trainees.

(e) Use of only one set of historical calendar for all regions was found to be not that useful as it did not reflect local events of more significance to the residents. To assist enumerators collect reasonable data on age, important events of relevance to the regions were collected and incorporated to the existing list.

(f) Codes annexed to the manuals were found not to be user-friendly. It was suggested to use separate laminated cards for the main census, as it would be easily accessible and sturdy.

(g) Some enumerators were found wrongly collecting certain information at household level rather than collecting them for individual members. The enumerators were re-trained in the field. Lesson learnt was to look into the matter so similar mistakes are not repeated in the main census. Special attention was given to this issue during training for the main census.
CHAPTER 6: CENSUS PUBLICITY AND PUBLIC EDUCATION

6.1 Introduction

Education and publicity programme is another of the important tasks in the census operation. The public awareness programme was intended to inform the people that they have a key role to play by giving their full support to the entire census undertaking. Early in the census planning, consideration was given to the importance of sensitizing the public on the upcoming population and housing census through an effective and comprehensive publicity campaign. It was necessary to build a wide base of support that would give ownership of the census to the people and ensure the widest possible participation. A well organized publicity and census education was therefore launched focusing on the objective of the census, the type of information to be collected, the intended uses, census timing and coverage, type of cooperation expected from the public, etc.

6.2 Census Publicity and Education Committees

In 2007, a National Census Publicity and Education Committee was formed consisting of senior level representatives from relevant public and parastatal institutions in the field of communications. The Committee was chaired by the Minister for Information, who was also a member of the National Census Commission. The Committee reviewed and endorsed the publicity and educational programme. CSA served as Secretariat for the National Census Publicity and Education Committee. Similar committees were replicated at the regional, zonal and wereda levels to work as operational wings of the Census Commissions operating at these administrative areas. At the kebele level, the Executive Committee of the kebele administration collaborated with supervisors in organizing the celebration of the Census Night, promoting public awareness, and providing the necessary security arrangements to ensure a smooth implementation of the census.
The Publicity and Education Committees formed at the regional, zonal, wereda and kebele levels coordinated the implementation of the census publicity and educational guidelines within their administrative areas, and tailored the publicity package to the peculiarities of each level, without altering its essential message. The programme was designed to motivate all stakeholders to work together in bringing about maximum participation and support for the census. The publicity and education blueprint also provided guidance to the regional, zonal and lower administrative committees on how to create general awareness among the population and to elicit the support and cooperation of the general public.

6.3 The Census Publicity and Education Strategy

The strategy was developed with the objectives of creating awareness about the census dates and duration; educating the public on the importance of information obtained from the census; and popularizing the census by dissipating people’s fears about the possible misuse of information collected; and other pertinent issues. The strategy involved the development of publicity and education materials; effective involvement of the media; and the participation of stakeholders in various activities.

The first task of the National Census Publicity and Education Committee was to develop publicity guidelines which was issued in the “Key Advocacy Document” prepared in Amharic. This was accompanied by a publicity and education manual. The documents contained, among others, the objectives of the advocacy campaign, materials to be developed and distributed to publicize the census and educate the public on its importance; and defining the role of the public, the media and other stakeholders. The Committee had also developed a work plan with time lines and milestones which were achieved as planned.

6.4 Census Logo

A census logo was developed by an artist and it was endorsed by CSA management to give the 2007 Census a brand image. The logo showed a couple with children and as a
background a traditional tukul and a modern house. The hands of an enumerator demonstrating counting as used traditionally by many demonstrated that the census exercise is about population and housing characteristics and everyone should be counted only one time. The logo was simple, easy to understand and interpret.

6.5 Intensity of Census Publicity and the Count Down to the Census Night

Public education through radio and television started at the time the pilot census was conducted in 2006 but the intensity of the programme was rather low. The message basically included the objective of the pilot census; its contribution towards the main census to be carried out in a year; coverage; type of cooperation expected from households, different levels of administration, government offices and so on.

The publicity and education campaign gathered momentum as the main enumeration period got nearer to the census day, 28 May 2012, when the enumeration was started in most part of the country. The intention was to educate the public on the following: the importance of census and the uses of data collected; timing of the census enumeration; the importance of confidentiality by all those engaged in the census operations, and that individuals should not be omitted or double counted, etc.

A countdown was initiated starting a month from the Census Night of May 28, 2007 through television and radio programmes. A countdown on the days that remained, information about the census, Census Day celebrations, and messages for people to participate was transmitted in several languages. In the weeks before the census series of short census publicity films developed during various stages of the census operation were broadcasted on television each day.

6.6 Multi-media Campaign

The media is an important stakeholder that could easily disseminate the census message faster and wider effectively to every corner of the country. Partnership was formed with the media by forming a Media Committee comprising the Ethiopian Radio and Television
Agency (ETV), Ethiopian News Service, Ethiopian Press Agency, Radio Fana, Walta Information Center, and CSA. The responsibilities of the Media Committee were to coordinate the national census campaigns propagated through the various media; develop census media programme and monitor implementation; and ensure wider coverage and timely delivery of census news.

The NCC had given directives that the census should be given free and ample air time (see Section 1.6.2). Therefore, ETV and the various radios were highly instrumental in publicizing the upcoming Census and in educating their audiences. Radios, televisions and newspapers played a key role in enlisting the interest of the general public in the upcoming census and soliciting its cooperation. Radios were an important tool for increasing the awareness of hard-to-reach groups.

On the first day of the census, the enumerators paid a televised visit at the homes of the President, the Prime Minister, the Deputy Prime Minister and the Speaker of Parliament. The demonstration that the highest level of Government was taking an active part in the census contributed to the warm reception and eager cooperation of the public.

CSA Senior management, members of the CTC, Regional census technical officials, opinion leaders, etc., addressed issues on radio, on television and in newspapers. This generated a lot of interest from the public. Daily census updates and briefings were also run by the media for 10 days during the census enumeration starting on May 28, 2007. A series of panel discussions were broadcasted through television and radio, where contents of the questionnaires were fully explained by CSA professionals to create awareness among the public on what type of questions they should expect during the enumeration.

News items on the Census were widely covered including all preparations that were being made throughout Ethiopia on the 2001 Census. The daily papers such as Addis Zemen, Ethiopian Herald, and Berissa, also covered several news items on the 2007 Census operations such as key census messages as headlines and progress of census enumeration.
6.7 Other Census Education and Publicity Activities and Materials

Several publicity and educational materials were also produced for the distribution throughout the country.

(i) Brochure: A census brochure, produced in Amharic, Afan Oromo, Tigrigna, and Affarigna, and Somaligna, was widely distributed down to the kebele level to be used in local publicity campaigns. Enough copies were also circulated to donors and schools. Enumerators and supervisors distributed them during the listing exercise conducted few days prior to enumeration.

(ii) Posters: More than one hundred thousand colour posters prepared in five local languages were printed and distributed down to the kebele level. They were displayed at places where people gather, including schools, hospitals, post offices, banks, shops, and markets.

(iii) Other materials with the census logo: car door sticker and date calendar with census logos were distributed.

Other census publicity activities were the following:

(i) Short songs with census message lyrics and entertaining and educative dramas were broadcasted in different languages thorough radios and televisions on fixed times and days of the week.

(ii) Several census slogans promoting the importance of participating in the census were disseminated through flyers and broadcasted through radios.
6.8 Challenges and Lessons Learnt

(a) No serious challenge was observed regarding this activity. The impact of the publicity and public education effort was noted during the enumeration exercise since the public showed that it was ready for the enumeration. The public was aware of what was expected of them and the importance of participating in the census.

(b) Even after the census is done it may be important to retain public interest in the census and how it would contribute to national well-being.

(c) Investigate the possibility of use of social-media, especially to attract the youth to participate in and educate others on the census activity.
CHAPTER 7: MAIN CENSUS ENUMERATION

7.1 Introduction

Enumeration is the culmination of the census activities under taken so far. It is one of the most extensive and critical phase of the census operations that involves mobilizing large number of manpower at huge cost in a short period of time. Due to this nature of the activity, preparatory activities such as budget, timing, human resource management, enumeration procedures and methods, operational aspects need to be well planned ahead of time and managed properly. Census taking is not an easy task given Ethiopia’s its vast surface area and large population size, and due to some other pertinent and peculiar issues to the country, such as the pastoral way of living in some areas and accessibility problem in others. These posed challenges which required new measures, such as utilization of new mapping technologies, and improved field procedures.

7.2 Timing and duration of the 2007 Census Enumeration

Fixing enumeration date is very important in determining the implementation period of the subsequent activities as well as for resource mobilizations. Several issues were taken into account when determining the timing for the 2007 Census enumeration. The most important were: maintaining similar timing with previous censuses; selecting the driest month in the year for easy vehicles movement in rural areas; and choosing the most convenient period where the movements of people are relatively low in most part of the country. Though an ideal situation is to have one census period for a country as a whole, in the case of Ethiopia prevailing situations had dictated to fix two enumeration periods: one for the sedentary or non-pastoralist population and another for the pastoralists. The first census reference day, which was May 28, 2007, was found to be convenient for most part of the country where the population is non-pastoralist (seven regional states, and the city
administrations of Addis Ababa and Dire Dawa), as the majority of the rural populations in these regions were expected to be at their places of residence, because it was the beginning of preparation for agricultural activities.

On the other hand, in the Affar and Somali regions, which are predominantly pastoralists, the month of May is generally a dry season and as a result most of the people usually move out of their place of usual residence to the neighboring regions in search of grass and water for their cattle. Hence, it became necessary to set a separate date, November 28, 2007, for these two pastoral regions, when the population is at or near their usual place of residence. The delayed census enumeration day for the latter was fixed after consultative meetings held with representatives from the regional, zonal and *wereda* administration offices, community and religious leaders at the respective regional capitals.

Not only were enumeration dates different for the non-pastoralist and pastoralist populations but also, the length of enumeration days were different: 10 days for the first group of regions and 15 days for the Affar and Somali regions, not including household and housing units listings, which were done three days before the actual enumeration. The dates and durations of the enumerations were endorsed by the National Census Commission, the highest body responsible for guiding and coordinating population and housing censuses in Ethiopia.

### 7.3 Assembling and Dispatching of the 2007 Census Documents

This is one of the tasks that required great care, well organized team, adequate space, and sufficient time. Misplacement of census document usually results in additional costs and disrupts work flow by creating unnecessary duplication of efforts. Taking into account the huge size and taxing nature of the activity, proper planning and due attentions were given by the CSA management to this task.

As mentioned in Section 4.4, a temporary storage was arranged for to house the questionnaires and forms when they were received from the printer. Assembling and packing of the census documents begun about five months before the census date.
Materials required for the field work included EA maps, questionnaires, various forms and manuals, stationery, and others. The Manpower and Material Ad hoc Committee worked out the details of what and how many census documents and materials had to be dispatched to each wereda, kebele and EA.

Assembling and dispatching over twenty million long and short census questionnaires, about 2 million other forms, and related materials to each of the 160 training centre, for further distribution to the surrounding weredas, was a colossal task. It required experienced and committed staff to work on it as this operation was crucial for the success of the field work. Initially, 3 teams comprising 5 to 6 regular staff of the CSA were assigned to assemble and pack the materials. The teams worked diligently for a month and a half; however the work progress was less than satisfactory. In order to meet the deadline for field work, it was found necessary to bring additional 315 staff organized in 27 teams to help with the task. It took another three and half months to make the materials ready for dispatch to the field. The contents of an enumerator’s and a supervisor’s bags were the same as that of what was assembled for them in the pilot census (see section 5.3).

The Logistics and Transport Committee carefully planned the organizational and administrative arrangements and procedures for the distribution of the materials up to the wereda levels. The Committee had 67 vehicles at their disposal for this purpose, of which 12 were heavy trucks. It took 89 round-trips to distribute all the census documents to the selected EAs. Besides this, at least one vehicle was assigned to each Zone to facilitate the distribution of materials and coordinate the census activities.

7.4 Recruitment and Training of Field Staff

Adequate training of supervisors and enumerators is a prerequisite for improving the quality of data collected in the field. Hence, due attention was paid in the recruitment of field personnel for the enumeration. As mentioned before, based on the positive experience obtained from the pilot census, the NCC had decided that high school and elementary schools should be used as supervisors and enumerators, respectively. Teachers are well
acquainted with the way scanning technology works. They also needed shorter period of training time on how to shade on the sensitive questionnaire prepared for scanning and conduct the enumeration.

Training the CSA regular and temporary staff on census enumeration was an enormous logistical task. The training was cascaded, where selected few were trained first using the enumerators and supervisors instructions manual, and in turn they trained other groups of trainees, and so on down the line. The training was carried out in three rounds as follows:

Round 1: Training of the regular staff of CSA - 350 staff from headquarters and branch offices were trained in Addis Ababa for 10 days. These trainees were used as trainers for the second round of the training exercise.

Round 2: High school teachers were selected through Education Offices of the Regions. A total of 3,828 were trained by the CSA staff trained in Round 1. These trainees also served as supervisors in the pilot census. Some of the CSA staff members were also trained in Round 2, who later on served as trainers and/or as technical coordinators at the wereda level.

Round 3: This round was dedicated for training of elementary school teachers, who later on served as enumerators. The training was conducted for 10 days in 160 training centers.

It should be noted that a larger number of enumerators and supervisors were recruited and trained than the number of EAs because a certain amount of attrition was expected between the time of the training and the completion of the fieldwork. From experience of previous census, the reserve field work was 10 percent of the total force.
### Table 2: Number of Enumerators and Supervisors Trained by Region

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of training centres</th>
<th>Number of class rooms</th>
<th>Number of trainers</th>
<th>Number of enumerators</th>
<th>Number of supervisors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tigray</td>
<td>10</td>
<td>115</td>
<td>230</td>
<td>6,990</td>
<td>1,012</td>
</tr>
<tr>
<td>Amhara</td>
<td>26</td>
<td>432</td>
<td>864</td>
<td>25,910</td>
<td>3,685</td>
</tr>
<tr>
<td>Oromiya</td>
<td>61</td>
<td>622</td>
<td>1,244</td>
<td>37,730</td>
<td>5,399</td>
</tr>
<tr>
<td>Gambella</td>
<td>2</td>
<td>10</td>
<td>20</td>
<td>730</td>
<td>107</td>
</tr>
<tr>
<td>SNNP</td>
<td>39</td>
<td>332</td>
<td>664</td>
<td>19,958</td>
<td>2,796</td>
</tr>
<tr>
<td>Benishangul-Gumuz</td>
<td>2</td>
<td>23</td>
<td>46</td>
<td>1,218</td>
<td>199</td>
</tr>
<tr>
<td>Harari</td>
<td>4</td>
<td>70</td>
<td>140</td>
<td>329</td>
<td>45</td>
</tr>
<tr>
<td>Affar</td>
<td>2</td>
<td>30</td>
<td>60</td>
<td>1,422</td>
<td>356</td>
</tr>
<tr>
<td>Somali</td>
<td>3</td>
<td>160</td>
<td>320</td>
<td>7,510</td>
<td>2,001</td>
</tr>
<tr>
<td>Addis Ababa</td>
<td>10</td>
<td>90</td>
<td>180</td>
<td>4,656</td>
<td>613</td>
</tr>
<tr>
<td>Dire Dawa</td>
<td>1</td>
<td>9</td>
<td>18</td>
<td>550</td>
<td>77</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>160</strong></td>
<td><strong>1,893</strong></td>
<td><strong>3,786</strong></td>
<td><strong>107,003</strong></td>
<td><strong>16,290</strong></td>
</tr>
</tbody>
</table>

#### 7.5 Listing of Household and Housing Units

The household and housing unit listings were conducted in every EA in nine regions, from 25 to 27 May, 2007 three days before the May 28, 2007 Census reference date. Similarly, the same listing activity was carried out from 25 to 27 November, 2008 in Affar and Somali regions. The main objectives of this listing were to collect necessary information that enabled the selection of 20 percent of households to whom the long questionnaire was administered, and to get relevant data that was used to constitute sample frame jointly with the information obtained from the census cartographic mapping. Following the completion of this listing, each enumerator with assistance of their respective supervisor, had made household selections for the administration of the long questionnaires. The exercise was successfully completed within 3 days as planned.

#### 7.6 Census Night

Census night was celebrated in all rural and urban kebeles as part of the census publicity programme. On the night of the Census Reference Date of 28 May 2007 for the non-pastoralist regions, and 28 November 2007, for the pastoralist regions, enumerators and
supervisors jointly with the Kebele Census Committees and the community of each kebele celebrated the night as part of the public awareness drive and to mark the start of the enumeration period beginning on the morning of 29 May 2007 and 29 November 2007, respectively.

On the census night celebration, which was simultaneously conducted in all regions, enumerators and supervisors assigned to each kebele introduced themselves to the community and presented the objectives of the census, its scope, the need for cooperation from households, individuals, the community and religious leaders for a successful enumeration within the given period. These celebrations of the census night had contributed to helping the households and their members to remember the reference date during interview.

7.7 Main Census Enumeration

The results of the census enumeration determine the total population of a country and its spatial distribution. A population may be counted in two different ways: de jure or de facto count. A de jure census counts all usual residents of the country, while de facto covers all persons present in the country at the time of the census. In the 2007 Census, both the de jure and de facto approach were used. The enumeration was done through direct interviews of each and every individual household at their dwelling. If no one was present callback visits were made.

7.7.1 Enumeration in most parts of the country (non-pastoralist regions)

(a) Enumeration of household population
The actual census enumeration in the first round, conducted in 7 regions and 2 two city administrations, started on May 28, 2007, in almost all enumeration areas and was completed within ten days as planned. However, in 200 enumeration areas (20 in Benishangul-Gumuz, 109 in SNNP and 71 in Oromia regions) due to some administrative issues mainly related to boundary cases, census enumeration had been extended until the end of June 2007.
(b) **Enumeration of persons in collective living quarters**

The 2007 Census collected data from persons living in collective living quarters such as hotels, hostels, and boarding schools using the long questionnaire. As census enumeration method followed both de facto and de jure approaches, for instance, all visitor or non-resident aliens who spent May 28, 2007 night in hotels and those resident aliens who have been living in the hotels as their place of residence were covered.

(c) **Enumeration of homeless persons**

In the 2007 Census, data were also collected from the homeless. Supervisors and enumerators had been trained that all people residing in Ethiopia at the time of census should be covered during the enumeration including the homeless. They were instructed to identify, with assistance from *kebele* officials, the places where homeless people usually spend the night and to get their estimated number. The date for the enumeration of the homeless was not made public knowledge until one day before the enumeration of this group so that the homeless would not change the place where they usually congregate.

Homeless people are usually found in urban areas. They were simultaneously enumerated in all urban EAs on the night of 3 June 2007, in the evening of the seventh day after the beginning of census enumeration. For security reasons, enumerators and supervisors were escorted by police forces, because some of the homeless might be vagabonds or persons with mental problem who could possibly attack them. Since it is not convenient to do listing and make selection for the administration of long questionnaire to 20 percent of the households, data from the homeless was collected using the short questionnaire only.

7.7.2 **Enumeration in the pastoralist regions**

The enumeration conducted in Affar and Somali regions, started on November 28, 2007 in the Affar region and in the majority of EAs in Somali region. Due to transportation and other problems in some parts of Somali region census enumeration started late and as a result of this the completion of enumeration was delayed by a couple of days.
Enumeration of household members and persons in collective living quarters followed the same procedure as for non-pastoralist population discussed above. The pastoralist population who were away from their regular place of residence but were found in the same zone or *wereda* were enumerated by deploying enumerators to the place where they were staying at the time of the census enumeration, based on information obtained from the assessments conducted during mapping and on current information obtained from local authorities.

In Affar and Somali regions, about 7,647 enumerators and 2,308 supervisors were deployed. There were no enough teachers in these two regions to serve as enumerators and supervisors. Most of the teachers were deployed from the Harari and SNNP regions and the Addis Ababa and Dire Dawa city administrations. It was necessary to use interpreters in many places. Relevant demographic and socio-economic data were collected using short and long questionnaires. Enumerations were successfully conducted in all areas, with the exception of eight *kebeles* in the Affar region along the border of Eritrea because of security reasons.

### 7.8 Control of Fieldwork

A system of quality control measures was established for the main census enumeration to ensure that census procedures were properly followed and to see that serious problems were resolved speedily. This ensured high census coverage and accurate responses. The important control measures include ensuring high-quality census mapping for use during the census enumeration and the household and housing listing.

Most important were the layers of supervision established during the fieldwork. High school teachers were recruited as supervisors. One supervisor was assigned to four to five enumerators. Supervisors conducted close supervision in order to ensure the data collection activity was conducted properly as per the set guidelines and to assist, facilitate and resolve administrative issues where there was lack of cooperation by some respondent.
To ensure the collection of quality data, proper implementation of the fieldwork were further strengthened by rounds of visits made by the experts from the CSA head office, regional, zonal and wereda Census Commission offices. The CSA staff also traveled widely to provide support and supervision to as many zones as possible, particularly at the wereda level. Any useful observation made by these groups was shared with the supervisors and enumerators to help them avoid repeating the same types of mistakes.

The various commissions and committees at zone and wereda level, and kebele levels played an important role in implementing the census. The Kebele Census Committee in particular provided an important network penetrating to the lowest level. They accompanied field workers when needed and served as local advocates to ensure that cooperation of the people was at a high level.

7.9 Challenges and Lessons Learnt

(a) A few weredas and kebeles had problems with boundary issues, see Section 7.7.1

(b) Few enumerators had difficulty reading the EA maps. Cartographers were sent to the field to help address mapping difficulties.

(c) Supervisors were expected to visit their enumerators and help them resolve their problems, but very few were not committed and therefore did not visit enumerators in the field as directed. As a result, several errors which could have been corrected in the field showed up later at the editing stage in the office.

(d) Few of the enumerators and supervisors were elderly persons and had shown difficulty coping up with the work.
CHAPTER 8: DATA PROCESSING

8.1 Introduction

Census data processing is one of the key activities that require utmost attention given the large size of completed census forms gathered from the field as well as the complex nature of the job. At this stage of the census operation, the data collected from individuals would be converted into meaningful and useable results. The data processing activity encompasses various interrelated activities such as content editing, structural editing, generating and testing of weights, preparation of edit programs, production of statistical tables based on tabulation plans.

A plan for data processing usually should begin early as an integral part of the overall plan of the census. Subject-matter experts and data-processing experts should work together from the inception of the planning process, because the type of data capturing method planned to be used determines the type of questionnaire used, the number and type personnel to be trained, the number and type of data capturing equipment to be purchased, the data processing software to be procured, etc.

8.2 Data processing Plan

When the initial plan of the data processing scheme for the 2007 Census was being drafted, the proposal was to use the same type of manual data entry and processing as was used in 1984 and 1994 censuses. Accordingly, the first version of the Census Implementation Strategic Plan was based on a traditional type of census questionnaire that would require a relatively larger number of computer for data entry and a large number of data entry clerks.

7 In this report, subject-matter experts include persons who are working in population and housing census and other related fields.
However, in the 1984 and 1994 censuses, it had taken two and half years to complete the data processing. Considering that the data processing of the two last censuses took a long time to complete, it was expected that it could take even longer time for the 2007 Census as population size was expected to be much larger than what was enumerated in 1994. Taking this into account and cognizant of the fact that several developing countries were using new and tested data capturing methods, the CSA management decided to explore the applicability of the new technology for the Ethiopian situation.

With support from UNFPA, two teams, led by senior CSA management and composed of data processing, population and sampling methodology experts visited the national statistical offices of Ghana and Tanzania, simultaneously, to learn from their experiences and understand challenges they faced in the use of scanning technology for census data capturing. The CSA management was encouraged by the lessons learnt from the study visits and decided to conduct a pilot census using a questionnaire designed for scanning. The experience of the pilot census, conducted in August 2006, reaffirmed the lessons learnt from the study visits on the suitability of the scanning technology for the 2007 Census.

Thus, final decision was made to use scanning technology for the 2007 Census data capturing based on the lessons learnt from the visits and pilot census experiences. To avoid the challenges experienced by some countries such as the sensitivity of the scanners to questionnaire wrinkles and dust, and incompatibility of paper type and colour with the scanning machines, the whole packages of scanning technology service consisting of questionnaires, forms, software and scanners were procured from the same company, DRS Data Service Limited (see section 4.2.2 (a)).

8.3 Receipt of Completed Census Materials at CSA Head Office

In the 2007 Census, the following questionnaires and forms were prepared for scanning: Short questionnaire; Long questionnaire; Batch control sheet; Listing form (Form 1); Enumeration area summary form (Form 4); and Community level questions administered in rural areas only (Form 0). Each had unique barcode on them. These documents were counted and inserted into enumerator’s bags before they were dispatched to the field as
discussed in Section 5.3. A tracking system was set by the Logistics and Transport Committee and the Manpower and Material ad hoc Committee for locating and accounting for materials. The EA was the unit for tracking the dispatch and receipt of EA books. After enumeration, all the used, cancelled and unused materials were accounted for and sorted for each enumeration area and packed in a card box which was put in a bag by enumerators and then handed to the supervisors.

The supervisors checked the enumerators’ bags for completeness and when they were satisfied they in turn handed over these bags to the wereda Technical and Field Operations Officer. The documents were then dispatched to the Zone Census Commission Offices, which in turn stored the materials in safe places until all the bags were received from all weredas. The materials were then forwarded by the Zone Census Commission Offices either to the Regional Census Commission Offices or directly to CSA Head Office in Addis Ababa. The Regional Census Commission Offices forwarded whatever has reached them from the zones to the CSA Head Office in Addis Ababa. All census questionnaires and control forms were received at Headquarters within two weeks time after the completion of enumeration in May 2007 and within few days for the November 2007 enumeration.

8.4 Census Materials Storage Management

An ad hoc archiving team was formed for receiving and accounting of materials from the field. Two temporary warehouses were arranged in the CSA premise for storing the census materials dispatched from the field. For security reasons, the warehouses were declared out of bounds for unauthorized persons. Although it was planned to have arrivals of materials from the Zones uniformly staggered over a two weeks period, several truck-loads started arriving from many of the Zones at the same time making accounting of the documents cumbersome. Since accounting of materials was on a wereda by wereda basis, the ad hoc archiving team had to wait until late in the night to receive the materials. The immediate impact was that there was no time to check the contents of the boxes.
CSA made final arrangements to retrieve and deliver these materials to the Scanning Centre, which was close to the warehouses where they were stored. As all of the documents for each enumeration area could not be scanned concurrently, sorting out the filled in questionnaires and forms by type and arranging them in orderly manner according to pre-set priorities were done before the commencement of scanning.

Unfortunately, most of the boxes used by enumerators to pack the questionnaires and forms were damaged by the time they were delivered to the CSA warehouses. Hence, CSA had to buy about 80,000 additional boxes to replace the damaged ones in order to avoid further damages to the questionnaires due to folding and/or wrinkling. Noting that these activities required great care, senior staff and editing coding clerks were assigned to carry out the task. Each box was labeled clearly with EA identifiers and then repacked with set of completed questionnaires and related control forms. The unused and cancelled questionnaires and control forms were indentified and stored separately. The EA boxes were put on shelves according to the region, zone, *wereda*, *kebele* and EA so that the document could easily be accessed. This operation was done twice, first for the May 2007 and then for the November 2007 Census documents.

8.5 Data capturing

All of the 2007 Census questions were pre-coded and hence coding activity was not necessary. As mentioned before, for the first time in the Ethiopian census history, the 2007 Census data was captured with Optical Mark Reading procedure of the scanning technology. Eleven scanners were used for the data capture (see Section 4.2.2 (a)). Forty-four scanning operators, two supervisors, two senior database administrators, and two network administrators were engaged in the scanning of the completed questionnaires and control forms, working in two 8-hour shifts, six days a week.

For this purpose, a separate well furnished house with three rooms had been built well ahead of time. One additional waiting room, where the required questionnaires would be kept after they were retrieved from the shelves in the warehouses, recorded and then
delivered to the requisitioning scanning supervisor with a delivery form detailing the quantities and broad geographical identifier of the materials.

Training on basics needed for operating scanners, how to manage some common problems, store and retrieve image, exporting of data to ASCII files, etc was given by the DRS Data Service Limited experts to scanning operators, supervisors and senior data processing experts before the commencement of scanning of filled in questionnaires. The scanning process of all census documents, including the second round enumeration in Afifar and Somali regions, was done from July 2007 until Mar 2008. During the scanning processes questionnaires that needed minor corrections were flagged for key-correction on screen based on the programs prepared for this purpose.

8.6 Data Editing

Censuses are huge and complex statistical operations. It is likely that even under a very well planned and implemented census, errors of one kind or another could occur at any stage of the operation. These errors may lead to coverage or content errors, which would result in unexpected cost or major delays in completing the census. The content and coverage or content errors that had escaped the field quality control are usually subjected to office editing. To deal with such errors, editing specifications and programmes for the 2007 Census were developed, prior to enumeration, by a team of subject matter and data processing experts from the CSA based on experiences from the last two censuses and using the UN guidelines given on census data editing (UN, 2010a).

Unlike the previous two censuses, manual data editing was not conducted in the 2007 Census. Instead key-correction, an activity that was carried out immediately after the completion of data capturing process using scanning technology was done. Though it seems similar to the conventional method of manual data editing, it cannot fully substitute manual editing. The main differences were that in key-correction process, as its name implies, editing of items were done by entering the correct value using computer key-board as opposed to manually replacing old values by new ones on the questionnaire itself. Secondly, key corrections were carried out for the flagged variables only whereas in
manual editing all items were expected to be edited. Key correction activities were done on both census data sets collected in May 2007 and in November 2007. The whole process of key correction was completed by May 2008. Following the completion of these activities, content and structural editing was carried out and the main activities accomplished are briefly highlighted below.

8.6.1 Structural Editing

According to a provision in the Proclamation of the Census Commission Re-establishment (Federal Negarit Gazeta, 2005b), disaggregated basic results of population size by age, sex, urban and rural, and by the administrative hierarchy up to the lowest structure, which is *kebele*, must be presented to the Census Commission for evaluation, and when endorsed to be submitted to the House of the Representatives. Hence, structural editing were carried out to ensure that all the census enumeration areas were found within their respective administrative structure i.e. the results of all EAs should fall within their respective *kebele*, in turn the results of all *kebele* need to be within their respective *wereda*, every *wereda* must be accounted within its respective zone, and that all zones fall within their regions.

Thus, before presenting the basic population data to the National Census Commission, rigorous structural editing was carried out to verify the exact location of records of an enumerated person or household at a designated location. In the process, the subject matter and data processing experts identified that the results of some enumeration areas were missing. Hence, physical inventory of census documents and cross-checking with other supporting evidences was carried out to investigate why the missing EAs have occurred. Among other things, the process involved:

i) Confirmation of the physical presence of the filled in questionnaires in the warehouses;

ii) Verifying whether questionnaires of those missing EAs were scanned or not; and

iii) Cross-checking with an independent data obtained during census mapping.
This activity was done manually because it was not possible to match the data obtained from census cartography with the scanned results using computer program. It was found that (i) some enumerators failed to record the correct geographical identifications of enumeration area to which they have been assigned; and (ii) there were incorrect completion of the Batch Header details causing batches of forms to be scanned under the wrong EA.

Furthermore, it was not also possible to develop computer programme that could fix the problem even after they have been identified. Hence, after correctly identifying the problems, possible solutions were proposed to fix the problem by hand which was found to be a lengthy and cumbersome process that took months to complete. Unfortunately, after completion of this task when production of statistical tables began the results of some EAs were again missing. This was due to partly the fact that the system followed in filtering mixed cases was not working perfectly for all cases. Because of this, the initial processing of statistical tables was halted.

To resolve the structural problem, DRS Data Service Limited was requested to assist CSA data processing experts in identifying how many EAs were mixed, for total country and by region; and provide support in developing a programme that could fix the problem. Accordingly, DRS Data Service Limited identified the total number of EAs that contained mixed geographical identifications. The number of EAs with different identification particulars on questionnaires captured as image from that of the geographical identifications recorded on the Batch Header form was found to be over 6,000 spread across all regions. The extents of the mixing varied from one EA to another, ranging from less than 10 percent in some to 100 percent in others. However, this mixing of EAs was confined to within a region as scanning of forms was done region by region.

Developing a programme that could fix these mixed cases according to their correct area identifications, by first filtering those EAs from where the forms were wrongly merged with some other EAs and then assigning them to the correct geographical identification was not possible. Hence, once again resort was made to manual verification of the correct
geographical identification by physically observing the geographical identification filled in questionnaires and then counter-checking with similar geographical identification information gathered independently during census cartography.

The fixing of the geographical identification problems carried out for the second time using manual verifications and fixing activities as follows:

(i) In the processes of identifying the correct geographical identifications of these mixed EAs, completed questionnaires from more than 6,000 EAs, stored in the warehouse, were scrutinized one by one and then the geographical identification information was copied from the questionnaires on a form designed for this purpose, and compared with geographical identifications that were obtained from the images captured during the scanning process. Considering that enumerators could also make mistakes while filling the area identifications of EAs, further verifications were found to be obligatory.

(ii) Hence, before any decisions were made using the geographical identifications obtained from the two sources, the findings were sent to the Cartography Division to verify which of the information was correct according to the census cartography results.

In summary, the process involved comparing the geographical identifications obtained from forms with that from the hard copy of the questionnaire for each EA. If they do not agree decision was based by comparing the two against the independent source of geographical identifications from the listing form of the census cartography work. Once the proper geographical identifications of each EA were determined, it was given to the data processing experts to make the necessary corrections. The verification and correction process took about seven months to complete.
8.6.2 Content editing of the 2007 Census data

Content errors arise from the incorrect reporting or recording of the characteristics of persons, households and housing units enumerated in the census. Content errors may be caused by poorly phrased questions or instructions, or enumerator errors in phrasing the census questions; inability or misunderstanding on the part of respondents in respect of answering specific items; deliberate misreporting; errors due to proxy response; data entry mistakes, and so forth (UN, 200). Therefore data editing needed to be an integral part of the data processing process, as key correction dealt with only few items. Edit trails must be properly developed and stored at each stage of the process to ensure no loss of data.

The edit specifications and programme mentioned before were further improved and tested by a UNFPA consultant, in collaboration with subject matter and data processing experts of the CSA. Edit programme was based on CSPro (Census and Survey Processing), which is a generalized free software package developed by the US Census Bureau to assist countries in keying, editing, and tabulating census and survey data. The revised editing programme resolved inconsistencies such as the issue of the number of housing units and households mentioned earlier.

Validity and consistency of individual data records and relationships between records in a household were run. In the initial editing process priorities were given to selected data items that had to be presented to the National Census Commission, which were required by the Proclamation on Censuses (Federal Negarit Gazeta, 2005b).

Consistency checks were conducted twice because the first set of tabulations did not give satisfactory results. For instance, it was found that housing units and households were exactly the same for total country and all the regions implying that there were no households sharing the same housing units. This was contrary to evidences from the past censuses and the listing information of the 2007 Census. Though the issue of mixed EAs had been resolved in the structural editing, some inconsistencies had persisted even after these cumbersome tasks. In order to avoid further delay in the data processing and assuming that the inconsistencies observed between number of household and housing unit
would not affect the results of other tables that do not contain information on household size and housing units, decision was made to make consistency checks while proceeding with the formatting of tables containing other statistical data. As the data processing continued, the issue of the unexpected ratio between household and housing became a big concern. Thus, decision was made by CSA management and UNFPA Country Office to make data validation check using the service of an experienced international data processing expert.

8.7 Compilation of Basic Population Data

Immediately after the completion of content editing for variables contained in the short questionnaire, the basic data on population characteristics such as population size by sex, age, ethnic group and religion disaggregated by region, zone and wereda were evaluated and compiled in accordance with the Proclamation on Censuses (Federal Negarit Gazeta, 2005b). During the tabulation and consistency checks of the census data, it was found that the counted population for the Amhara Region was relatively lower than the projected population size by a large number, 2.4 million.

The data was submitted to the National Census Commission with detailed explanations on procedures followed in evaluating the reliability of the data. After thorough discussions on each of the 2007 Census results, the NCC unanimously accepted the results to be presented to the House of the Representatives, along with a recommendation that the Amhara region census results need to be assessed in order to be able to explain why the counted population figure had fallen short of earlier population projections based on the 1994 Census data. The House of Representatives approved the 2007 Census results in December 2008, taking note of the recommendation of the NCC for further evaluation of the Amhara Census results. CSA posted these basic data on population characteristics on its web-site on the same day that it was approved by Parliament, so as to make it available to users quickly.
8.8 Evaluation of the 2007 Census Data of the Amhara Region

CSA’s experts, working with national and international consultants provided by UNFPA, looked into the possible reasons for the difference between the counted and projected population figures of the Amhara Region. The work done in this respect included a comprehensive evaluation of the 2007 Census of the Region and assessing the reliability of the assumptions of the population dynamics used for the population projections.

The conclusion reached was that there was no need for re-enumeration and adjustment of the results of the 2007 Census of the Amhara Region. In order to be able to determine the effects of migration and other population dynamics on the population projections, the experts recommended that migration survey and inter-censial surveys be conducted. The recommendations were endorsed by the Census Commission.

8.9 Challenges and Lessons Learnt

The formatting of statistical tables was prolonged as it involved dragging of rows and columns to make each table fit into one or more pages, depending on its size, and to put it within the printable margin. This took a considerable amount of the experts’ time. Especially, this activity was found to be tedious for the large tables. The main reason for this manual work was the fact that the CSPro version used at the time lacked automatic table formatting option.

(a) Wrongly recorded geographical identification particulars, which could have been corrected while in the field caused missing of EAs during scanning. Manual editing is essential as it is difficult to fully ensure that all filled in questionnaires are free from errors. In particular geographical identifications need to be edited before scanning as it was found out that it is difficult to resolve the problem later on.

(b) Lack of capacity to compare scanned EA geographical identifications against completed questionnaires captured as image using computer programme resulted in manual
inventory of forms. Failure to develop a computer programme that could fix the problems of mixed cases stretched out the process of structural editing by several months.

(c) Scanning should be done under close supervision of subject-matter experts to avoid modifications by operators who would not know its impact down the line.
CHAPTER 9: ANALYSIS, DISSEMINATION AND ARCHIVING

9.1 Introduction

To ensure the fullest possible utilization of census results by users, a detailed census analysis plan was produced by the CTC based on the experience from previous censuses and taking into account the tabulation plan it had developed before. The target audience were national, regional, zonal, and wereda administrations, academic researchers, international agencies, and other users. The analytical work was phased over a period of several years, starting with statistical reports, followed by the production of thematic reports and finally in-depth analysis of selected priority topics. The priority was set by considering the important policy needs of the line ministry stakeholders and others who were involved in the design of the census questionnaire and the availability of expert service for the analytical work.

9.2 Analysis of the 2007 Census

In the process of the analytical work, the data of the current census was also examined in relation to earlier censuses, in order to obtain a broader context and establish trends. While the analysis of the 2007 Census data was prepared to meet first and foremost national needs; effort was made to facilitate international comparisons by using internationally recommended concepts, definitions and classifications. The statistical and analytical products produced for the 2007 Population and Housing Census are given below.

9.2.1 Statistical reports

Twelve statistical reports were produced, one for each region and one for the total country.
For larger region the statistical reports had several volumes, as opposed to smaller regions which had only one volume of the statistical report. The contents of the statistical and analytical reports followed similar pattern and covered similar topics on population size and characteristics; ethnic group, mother tongue and, religion; marital status; disability; orphan hood; literacy and educational characteristics; economic activity status; migration, fertility and mortality; and housing characteristics. The statistical report for the country-level was released in July 2010, while the reports for the eleven regions were issued in August 2010. Summary reports of the 2007 Census result that show trends, comparing with previous censuses, were also prepared at national and regional levels to help policy makers in using the census data.

9.2.2 Thematic and in-depth analysis reports

Prior to the beginning of the analytical work using the census data, it was found important to build the capacity of the professional staff on this. CSA approached UNFPA and the United Nations Statistics Division (UNSD) to provide support in training the staff. Several CSA professional staff were trained in-country and abroad in the art of census data analysis and on report writing. These workshops were sponsored by UNFPA and the United Nations Statistics Division (UNSD).

(a) Thematic reports

A team of 20 CSA analysts worked with an international consultant and 3 researchers from the Addis Ababa University in producing the thematic reports. As part of the capacity building exercise, each of the volumes were prepared by paring two or three CSA experts with a subject matter expert from the local universities. International consultant provided expert advice and over all guidance.

The teams produced the following policy-oriented descriptive analyses in 2012:

(i) Population Size and Characteristics;
(ii) Orphan hood and Disability Characteristics ;
(iii) Economic Activities of the Population;

(iv) Housing Conditions and Characteristics.

(b) In-depth analysis reports

In many developing countries, the voluminous data collected through censuses is only partially analysed and disseminated, and often quite late, resulting in its underutilization. To address this challenge, UNSD in collaboration with the Italian Government had initiated a project to strengthen national capacity to analyse, present and disseminate census data. Ethiopia was one of the project countries. Based on the needs of the country, it was agreed to produce monographs on the following topics: Fertility, Family and Household; Mortality; Housing; and the Situation of the Elderly. Three international and four national consultants, with strong technical and practical background in demographic data analysis, worked with CSA experts on four areas: Housing conditions, the situation of the elderly, fertility, and mortality. The following two monographs were in print at the time of the write up of this report for wider distribution: (i) Housing Conditions in Ethiopia; and (ii) The Situation of Older Persons in Ethiopia.

The monographs on fertility and mortality were being finalized. The later would be available only as internal working papers for CSA current and future professionals. It would not be printed for wider distribution as it suffered from errors inherent in census data on fertility and mortality topics and in the application of indirect techniques. Besides, the 2011 Demographic and Health Surveys results was released recently and it was found important to rely on the results that reflects the current situation. This was important as the country was going through a fast and dramatic socio-economic transformation since the 2007 Census.

(c) Census Atlases

For the first time, CSA produced several volumes of atlases using the 2007 Census data that showed spatial distribution of the population as part of the overall census publication programme. The publications include maps depicting population and housing characteristics as well as other socio-economic data. The census atlases were aimed at
policy makers, the general public, schools and other non-expert users. The publications were the following:

(i) **ATLAS OF ETHIOPIA: 2007** prepared by CSA in collaboration with Ethiopian Development Research Institute and International Food Policy Research Institute; and

(ii) **ATLAS 2011 Ethiopia’s Rural Facilities Services**: one volume for each region.

### 9.3 Dissemination of the 2007 Census results

Census results may be published as statistical tables and reports for general distribution, produced as tables in unpublished form for limited distribution or stored in a database and supplied upon request either on magnetic or optical media, or on-line. In whatever form the result is published and whatever the media of dissemination, it is important that the results are made available in a timely fashion. “A census is not complete until the information collected is made available to potential users in a form suited to their needs” (United Nations, 2006; paragraph 1.237). Conscious of this, CSA had used several media of dissemination for the census results to reach the wider possible users in as short time as possible. Before the results were disseminated they were reviewed for internal consistency and possible disclosure of information about identifiable respondents. CSA levies a nominal cost recovery amount on its products.

One of the missions of the CSA was to ensure adequate dissemination of census results to satisfy the needs of different users by creating many products from census data and disseminating these products using different channels and media, such as printed copies, website, electronic summaries etc. In Ethiopia, data confidentiality was guaranteed under the provisions of Proclamation No. 449/2005. The CSA ensured that the data that it provide to users would be anonymized. In carrying this out, identifiers such as names of respondents, names of establishments, addresses were removed and some geographic areas are collapsed (see Annex 6 on accessing raw data).
CSA used several media of dissemination of census and other products discussed below. The following dissemination media used by CSA complemented each other and provided effective ways to reach out to as many users as possible.

9.3.1 *Printed publications*

As in most countries, printed publications were the preferred choice for the dissemination of the main census results to the largest number of potential census users. Printed publications are easy to use and do not need special equipment or technical skills. CSA printed most its publications in-house. Over 40 thousand copies were printed and most of them were disseminated to regional, zonal and *wereda* census commissions and committees for further dissemination to relevant offices. Enough copies were also disseminated to line ministries, over 20 university and college libraries. The publications disseminated were:

- Statistical Reports for each of the 9 Regions and 2 City administrations;
- Statistical Report: Country level
- Summary of Basic Population Data
- Summary of National Statistical Report
- ATLAS OF ETHIOPIA: 2007
- ATLAS 2011 Ethiopia’s Rural Facilities Services, which was based on the 2007 Census and other data sources.

The thematic reports on four selected areas and the in-depth Analysis mentioned earlier were in press at the time of this report.

9.3.2. *Dissemination on computer media*

CD-ROMs are used by many countries for disseminating census results, as they have a very large storage capacity, they are durable and they could be produced inexpensively. In addition to traditional methods of printing, the 2007 Census results were disseminated
using standard read-only CD-ROMs. As the results of statistical inquiry such as a census were supposed to be final, dissemination on a read-only CD-ROMs should be satisfactory.

9.3.3 On-line micro data dissemination

As part of its dissemination plan, CSA had provided on line 1 percent of the 2007 Census micro data for students and researchers free of charge. To ensure confidentiality the micro data was anonymized so that individuals would not be identified by researchers during the manipulation of data.

9.4 Archiving

In the course of a census operation vast amounts of data and information are generated, including sample frames, editing and tabulation programmes, statistical and analytical reports, administrative and methodological documents, and maps. These assets represent a considerable investment and comprise valuable and irreplaceable resources. Archiving encompasses actions undertaken to ensure that completed questionnaires, control forms, manuals and other relevant documents, data and accompanying metadata collected were managed and maintained in formats that ensure their utility for current and future uses. CSA has taken measure to ensure that all these are reserved in paper and digital formats. Enough fire-proof safes had been purchased by CSA for this purpose.

Census digital data are also vulnerable to media failure, degradations and damages. Computers components and media can physically fail due to human error, natural events, infrastructure failure, malicious destruction and even just the passing of time. Taking this into account, CSA had taken measures to increase the longevity of data. Information in digital form is also at risk of being inaccessible or loss from obsolescence of technologies. Hence, as technology upon which digital content relies is replaced by a new one, effective upgrading or archiving in formats such as ASCII could help manage the impacts due to obsolescence.
Other considerations for minimizing loss of and maximizing longevity of data include issues related to data handling protocols, data storage, data security, disaster recovery and emergency rescue of digital content. In addition to technological concerns, CSA had a backup and data security policy and procedure which were embedded in its ICT Policy.

Documentation is also an essential component of archiving that is critical for ensuring that census data and information are preserved and remain accessible in the long-term. Metadata explain the content and structure of data, provide contextual and explanatory information necessary for proper understanding and using data, and facilitate the exchange, archiving and preservation of data.

CSA had two data backup procedures. One is Disk-to-Disk backup which was taking backup from working to a storage server; and the other was from server to other storage media devices, such as CD or DVD for application software, Plug in external tape drive(size ranges 50 to 500GB) for data, Networked (using iSCSI connection) HP 1/8 G2 Tape Autoloader for data, and Networked Dell PowerVault MD3000i for data Storage.

Recently, CSA had acquired a data backup infrastructure, as part of its ICT system infrastructure improvement. This would ensure proper documentation and avoid loss of backup data due to natural disasters and other causes.

### 9.5 Challenges and Lessons Learnt

(i) Aside from the studies that were part of the overall census programme, additional analyses carried out on their own initiative by research organizations, universities or other experts should be encouraged.

(ii) To address the challenges of digital archiving, CSA needs to monitor technological developments and systematically consider potential preservation applications.

(iii) Any editing or transformation done on the census data should be accompanied by a complete documentation.

(iv) Keep a back up of the unedited data before any changes are made to the original data set.
(v) Lack of off-site back up in case for any damage on the Data Storage Room(s).

(vi) Staff turnover is to be expected among IT experts, although it should not be as severe as in the case of subject-matter experts because they have a better salary scale.
CHAPTER 10: RECOMMENDATIONS FOR NEXT CENSUS

The 2007 population and housing census of Ethiopia was a massive undertaking that took several years from the planning phase to the dissemination of final results. It is obvious that challenges are to be faced in such a huge operation which mobilized over 100,000 enumerators and supervisors, utilized new technologies in cartography and data capture for the first time, and processed some 20 million questionnaires. This chapter presents some recommendations for future censuses based on the challenges faced and lessons learnt during the implementation of the 2007 Census.

10.1 Strategic and Implementation Plan

Careful planning, appropriate organizational and administrative arrangements and procedures are critical to ensure that each census phase is properly resourced and organized; and that the output of each phase is of adequate quality for all succeeding phases and that dependencies among the different phases are identified. It is critical that a strategic and implementation plan for the next census be developed well in advance to encourage more participation of Development Partners; and minimize the risk of delays in any of the census phases or risk postponement of the census. As the census cycle is usually of very long duration, the UN had suggested that such a document should be a “living plan” where initial plan is flexible enough to take into account changes that could occur and assumptions should be continually updated throughout the census cycle (UN, 2001).

10.2 One Census Date for the whole country

The 2007 Census was conducted in two different periods, May 2007 for most of the country and November 2007 for the pastoral regions of Affar and Somali. It is recommended that the possibility of having only one enumeration period throughout the country should be explored for the following reasons:
(a) There would be a unified publicity and educational campaign;
(b) It would be easier to launch a Post Enumeration Survey;
(c) Delay in release of data for the whole country as a result of the late enumeration of the pastoralist regions could be avoided; and
(d) It would enhance the comparability of the data among the regions and facilitate analysis.

10.3 Census Cartography and Mapping

Several challenges were experienced during the cartography and mapping phase. (a) The most serious difficulties that affected the pace of the mapping exercise were: lack of continuous fund to maintain the desired number of mapping teams to do the field work; shortage of all weather vehicles forcing the fieldwork to operate at a reduced capacity; and continuous updating of newly restricted weredas, in places where merging and/or splitting had occurred. It is therefore recommended:

i. to put in place mechanisms for smooth flow of funds from the Government and from Development Partners for this and other phases of the census operation; and

ii. to create awareness among governmental authorities at an early stages of the census on the need to freeze boundary changes few months before the census date until the enumeration is over to minimize chances of omissions or duplications. As was done for the 2007 Census, CSA should continue to maintain a cut-off date at least six months before the enumeration date after which any new merging and/or splitting of administrative units should not affect the census mapping work and reporting of the results.

(b) to procure recent imageries captured in the month in which the enumeration is to take place, if satellite imageries are to be used for the Somali Region in the next census. Sufficient ground-truthing information needs to be collected before or during EA demarcations for effective utilizations of maps.
(c) The duration of future cartographic and mapping work would be expected to take shorter lead time than was the practice before, due to the gain from the application of new mapping technology in the 2007 Census. CSA should continue to initiate cartographic work sufficiently early to ensure that EA maps would be available three to four months before the census date.

10.4 Management of Movement of Questionnaires and Control Forms

For the 2007 Census, the Logistics and Transport Committee had carefully planned the organizational and administrative arrangements and procedures for the distribution of the materials up to the wereda levels and retrieval from EAs to Head Office in Addis Ababa. The dispatch of census documents down to the EA level had worked well. After the enumeration, census documents were received from the field in bulk arriving at Head Office within few days. Hence, it was difficult to ascertain if all forms sent to the field were returned.

Therefore, to ensure that material flows smoothly and with minimal delays it is recommended:

(i) to reduce the heavy traffic and congestion at Head Office at the time when census documents are received from the field by staggering the dispatching of same from the Zones uniformly, as per an agreed schedule, over a period of time. The CSA Branch offices and Zone Census Commissions could play an important role by arranging appropriate and secure temporary holding place for the census documents until such time they are asked to send them to Head Office.

(ii) to have adequate storage at Head Office ready well ahead of the enumeration. This is very important as the population of Ethiopia is expected to be much larger at the next census.
(iii) to implement a computerized Management Information System to monitor the flow of documents and materials to and from the field; between questionnaires storage and scanning rooms; etc.

10.5 Questionnaires and Control Forms

(a) Content of census questionnaires
The 2007 Census had more questions than its predecessors. Overburdening the census questionnaire is likely to adversely affect response rates and the quality of data. Another problem of collecting too many questions is that all the data would not be exploited fully, for one reason or another. Therefore, it is recommended to ensure that data collected in the census be kept to a minimum. Topics that would overburden the enumerator or require specially trained interviewers are better collected through surveys such as the Demographic and health surveys and welfare monitoring surveys.

(b) Control forms
A number of control forms were used during the census field work, such as Forms 0 and 1, which were not processed. There is need to make use of the forms or to assess their utility and decide whether it would be necessary to use them during the next census.

10.6 Data editing and processing

(a) To avoid some of the problems faced in the data capture phase of the 2007 Census, light manual editing of the census questionnaires and forms would be necessary before scanning. This would include checking and manually correcting missing or incorrect EA geographical identifications, and the space indicating continuation of forms for large households; and transcription of damaged forms if necessary.

(b) It is also recommended that
   (i) programmes related to scanning be developed and tested during Pilot Census;
   (ii) subject-matter experts should be trained along with data processing experts,
on the concept and application of the scanning technology, on basics of reading and understanding edit programs, generations of tables, etc. to create easy communication between the two groups;

(iii) before any change is made on the captured data, it is critical that a copy of the unedited dataset is stored in a safe place;

(iv) when errors are flagged during scanning, decision to make changes on the data should be that of subject-matter experts; and

(v) a system of edit trails should be put in place to track automatic editing and imputation made to values in any field; and statistics of changes made should be produced as the work progresses to be reviewed by subject-matter experts and decision taken whether the number of changes made is sufficiently low or not. Such statistics generated during editing should be documented as part of future administrative reports.

10.7 Post-enumeration Survey

Errors occur at different phases of a census operations arising from many sources. One of many methods of evaluating the census results is the use of post enumeration surveys (PES). The PES is a complete re-enumeration of a representative sample of a population and matching each individual enumerated in the survey with information obtained from the main census enumeration to measure census coverage and content errors. Coverage error refers to housing units and people missed or those erroneously included in the census; whereas content error assesses the quality of the characteristics that are reported for the enumerated persons or housing units (UN, 2008; 2010b).

The methodology of a sound PES is complex. To be valid, a PES has to function within a number of operational and statistical constraints. These include the requirement that the PES be carried out within a few months of the end of the census to ensure that the impact of natural population changes and lapses in respondent recall do not complicate the exercise.
In the 2007 Census there was a plan to carry out PES, however it could not be implemented because the second round of census enumeration in the pastoralist regions of Affar and Somali, was scheduled to take place in November 2007, 6 months after most of the country was enumerated; and hence the delayed activity would have overlapped with that of the PES. Conducting the PES after November would have violated one of the requirements of a PES, that it should be carried out few months after the end of the census enumeration.

For the next census,

(a) It would important to conduct a PES.  
(b) Given the complexities of the PES and considering that it will be a first experience, it is advisable to focus on evaluating coverage error only as some countries do, to assess the level of under or over enumeration of individuals and dwellings. Content errors can be minimized by investing on quality assurance measures in the main census.  
(c) Sufficient budget should be allocated for the exercise, and it should be carried out within few months after the main census enumeration by teams independent of those that were involved in the census.  
(d) As mentioned in10.2 above, having one census enumeration period for the whole country would facilitate the conduct of a PES.

10.8 Training programme

CSA had experienced a relatively high staff turnover of experienced middle level management and subject-matter experts in the last 5 years or so. There is need for continuous and sustained training to maintain a critical number of well trained cadre of experts. Training would be important for many reasons, the major ones being: (i) to

8 The conduct of a PES was also recommended by a team of UNFPA consultants to assess both coverage and content errors of future surveys and censuses immediately after the completion of the operations (Assefa Hailemariam, Butte Gotu, Eshetu Gurmu, Nigatu Regassa, Rogelio Fernandez-Castilla, and Michael J. Levin, 2009).
prepare those who would be managing the next census; and (ii) to keep-up with new developments in the execution of the different phases of the census.

Hence it is recommended that,

(a) CSA, in collaboration with Development Partners and local training institutions, develop a programme to empower the census staff through study tours to share experience with other developing countries, and arrange for short and long term training opportunities in academic institutions.

(b) an on-going training for IT staff and GIS experts would provide them with the necessary platform for perfecting their skills through surveys being conducted in the intercensal period without waiting for the main census.

(c) involve the national statistical system in the training programme, especially experts from line ministries and research institutes who would participate in the drafting of tabulation plans and questionnaires, and later on collaborate with CSA in the analytical work in their areas of expertise.

10.9 Other Issues

(a) Use of multiple languages questionnaires and manuals

The 2007 census and its predecessors, had used enumerators and supervisors, to the extent possible, that were conversant with the languages or dialects of the area in which they worked. This had facilitated the interview. However, the census questionnaires and manuals were prepared in Amharic and one cannot be certain how much of the concepts and definitions were lost in translation. Some countries that had several languages spoken in the country deal with the situation by preparing (a) a single multilingual questionnaire; (b) one version of the questionnaire for each major language; or (c) translations printed in the enumerators’ manual in the various languages (UN, 2008).
In the case of Ethiopia, option (b) could be the best approach where census materials and training could be prepared in 4 or 5 of the major languages. This effort would contribute to the collection of a better quality data.

(b) Urbanization

Ethiopia is undergoing a fast economic growth which is also changing the urban landscape. Addis Ababa is becoming a metropolis, conurbation is taking place in some of the urban centres, rural suburban areas have found themselves in the middle of cities and towns as the latter have grown big, etc. This calls for a revisit of the definition of “urban areas”, for statistical purposes, to reflect the current Ethiopian context.

(c) Housing census

We are witnessing the mushrooming of several thousands of condominiums, and residential and commercial high rises in Addis Ababa and other urban areas. This would have impact on how the cartographic work, listing and enumeration would be handled during the next census. Assessment of the impact of the changing urban housing patterns on the cartographic work, listing and enumeration is recommended at the early stage of the planning for the next census. Study tours to learn from experience of other countries that had passed through this process would be advisable.
ANNEXES

Annex 1. Article 103 of the 1995 Constitution of the FDRE

1. There shall be established a National Census Commission that shall conduct a population census periodically.

2. Members of the National Census Commission shall be appointed by the House of Peoples’ Representatives upon recommendation of the Prime Minister.

3. The Commission shall have a Secretary General and necessary professional and support staff.

4. The annual budget of the Commission shall be submitted for approval to the House of Peoples’ Representatives.

5. A national population’s census shall be conducted every ten years. The House of the Federation shall determine the boundaries of constituencies on the basis of the census results and a proposal submitted to the House by the National Election Board.

6. The Commission shall be accountable to the House of Peoples’ Representatives. It shall submit to the House periodic reports on the conduct of its programs and activities.

Annex 2. 2007 PHC calendar of planned events

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<tr>
<th>Activity</th>
<th>Period</th>
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<tbody>
<tr>
<td><strong>PUBLICITY and ADVOCACY</strong></td>
<td></td>
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<tr>
<td>Publicity and advocacy (P&amp;A) campaign for the cartographic fieldwork</td>
<td>Aug 2004 onwards</td>
</tr>
<tr>
<td>Establish national Census Publicity Committee</td>
<td>Sept. - 06</td>
</tr>
<tr>
<td>Census Awareness and Attitude Survey (CAAS)</td>
<td>Jan - Mar 2006</td>
</tr>
<tr>
<td>Prepare and print publicity materials for Pilot Census, main enumeration and PES</td>
<td>Dec 2005-Oct 2006</td>
</tr>
<tr>
<td>Establish and brief regional, zone and wereda publicity committees for Pilot Census areas</td>
<td>Jan 2007- Feb 2007</td>
</tr>
<tr>
<td>Assemble, pack and distribute census publicity materials</td>
<td>Mar - Apr 2007</td>
</tr>
<tr>
<td>Conduct intensive publicity campaign for main census enumeration</td>
<td>Feb - May 2007</td>
</tr>
<tr>
<td>Establish and brief regional, zone and wereda publicity committees for remaining areas</td>
<td>Jan -Feb 2007</td>
</tr>
<tr>
<td>Hold data dissemination seminars in Addis Ababa and the regions</td>
<td>2008 onwards</td>
</tr>
<tr>
<td><strong>CARTOGRAPHY</strong></td>
<td></td>
</tr>
<tr>
<td>Formulate programme and budgets for cartographic fieldwork</td>
<td>Nov - 00</td>
</tr>
<tr>
<td>Order extra GPS receivers and other field equipment for EA demarcation</td>
<td>Sept - 01</td>
</tr>
<tr>
<td>Order and receipt of Xerox map reproduction equipment</td>
<td>Oct-Dec 2001</td>
</tr>
<tr>
<td>Field trips to determine methodology of cartographic fieldwork, particularly with regards to GPS use and development of training manual (Teji, Beke and Addis Ababa)</td>
<td>May-July 2002</td>
</tr>
<tr>
<td>Discussions with ECA on technical assistance for GIS development</td>
<td>Aug - Sep 2002</td>
</tr>
<tr>
<td>Inventory of existing rural and urban base maps and acquisition of the same</td>
<td>Jan - May 2003</td>
</tr>
<tr>
<td>Finalize and print cartographic field manual and control forms</td>
<td>Dec - 02</td>
</tr>
<tr>
<td>Recruit, train and deploy field staff</td>
<td>Mar - May 2002</td>
</tr>
<tr>
<td>Start of cartographic fieldwork with 130 teams in all parts of the country</td>
<td>May-June 2003</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redeployment of 45 teams</td>
<td>Aug 2003-July 2004</td>
</tr>
<tr>
<td>Mission by UNFPA/CST Consultant in Census Cartography to assess quality and progress of fieldwork</td>
<td>Nov. 2003</td>
</tr>
<tr>
<td>Mission by Consultants from General Data Dissemination System (GDDS) and UNFPA/CST to examine the need for satellite imagery and assess the quality and progress of cartographic fieldwork</td>
<td>(Mar 2004)</td>
</tr>
<tr>
<td>Increase from 45 field teams to 100 field teams (each with 4WD vehicle) for timely completion of EA demarcation</td>
<td>Feb. 2005- Nov 2006</td>
</tr>
<tr>
<td>Print and distribute wereda maps, SA and EA maps for census enumeration</td>
<td>Mar 2006 – Feb 2007</td>
</tr>
<tr>
<td>Calculation of land areas (in sq.km) of all regions, zones, <em>weredas</em> and urban areas</td>
<td>Apr 2007-Mar 2008</td>
</tr>
<tr>
<td>Prepare census report maps</td>
<td>June 2007-July 2008</td>
</tr>
<tr>
<td>Prepare a population and development atlas</td>
<td>Aug 2008-July 2009</td>
</tr>
<tr>
<td>One-month training for one person in GIS at the Regional Centre, Nairobi</td>
<td>Aug 2002</td>
</tr>
<tr>
<td>Training of about 100 trainers (ToT) for cartographic fieldwork</td>
<td>Feb-Mar 2003</td>
</tr>
<tr>
<td>Training of about 1,000 Field Supervisors and Geographical Assistants (GAs) for cartographic fieldwork</td>
<td>Mar-May 2003</td>
</tr>
<tr>
<td>Initial order and receipt of GIS hardware, software and GPS receivers</td>
<td>Sep 2000-May 2001</td>
</tr>
<tr>
<td><strong>CENSUS and SURVEYS</strong></td>
<td></td>
</tr>
<tr>
<td>Procure printing equipment, stationery and supplies</td>
<td>Nov 2005-Apr 2006</td>
</tr>
<tr>
<td>Prepare initial drafts of tabulation plan, and outline of expected analysis and publication programme</td>
<td>Dec 2005</td>
</tr>
<tr>
<td>Determination of quality control procedures</td>
<td>Jan 2006</td>
</tr>
<tr>
<td>Prepare draft questionnaires and manuals for the Pilot Census</td>
<td>Feb-Apr 2006</td>
</tr>
<tr>
<td>Submit Questionnaire to Census Commission for approval</td>
<td>Mar 2006</td>
</tr>
<tr>
<td>Print questionnaires and manuals for the Pilot Census</td>
<td>Mar-Apr. 2006</td>
</tr>
<tr>
<td>Prepare final tabulation plan and analysis and publication programme</td>
<td>Jan - Apr 2006</td>
</tr>
<tr>
<td>Prepare and print trial PES questionnaires and PES manual</td>
<td>July-Nov 2006</td>
</tr>
<tr>
<td>Select EAs for inclusion in Pilot Census and PES</td>
<td>Feb - Mar 2006</td>
</tr>
<tr>
<td>Recruit Supervisors and Enumerators for Pilot Census</td>
<td>Mar - Apr 2006</td>
</tr>
<tr>
<td>Distribute EA maps and other documents for Pilot Census</td>
<td>Apr 2006</td>
</tr>
<tr>
<td>Activity</td>
<td>Period</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Train Supervisors and Enumerators for Pilot Census</td>
<td>Apr 2006</td>
</tr>
<tr>
<td>Pilot Census</td>
<td>May 2006</td>
</tr>
<tr>
<td>Prepare Calendar of Events</td>
<td>June-July 2006</td>
</tr>
<tr>
<td>Prepare standard occupational and industrial classification code lists</td>
<td>Aug - 06</td>
</tr>
<tr>
<td>Prepare Supervisor’s and Enumerator’s ID cards</td>
<td>Apr - 06</td>
</tr>
<tr>
<td>Print questionnaires, manuals and other documents for the census</td>
<td>Jan-Apr 2007</td>
</tr>
<tr>
<td>enumeration</td>
<td></td>
</tr>
<tr>
<td>Establish regional, zonal and wereda census commissions and kebele</td>
<td>Dec 2006-Apr 2007</td>
</tr>
<tr>
<td>census committees</td>
<td></td>
</tr>
<tr>
<td>Recruit, train and deploy census Supervisors, Enumerators and other</td>
<td>Mar-Apr 2007</td>
</tr>
<tr>
<td>field staff</td>
<td></td>
</tr>
<tr>
<td>Pack and distribute census materials</td>
<td>Feb-Mar 2007</td>
</tr>
<tr>
<td>Census Enumeration</td>
<td>May - 07</td>
</tr>
<tr>
<td>Assemble completed census questionnaires, EA maps and other materials</td>
<td>May - 07</td>
</tr>
<tr>
<td>at census field offices</td>
<td></td>
</tr>
<tr>
<td>Assemble census materials to CSA</td>
<td>May - 07</td>
</tr>
<tr>
<td>Basic edit, compile summary totals, and preparation of preliminary</td>
<td>Apr-June 2007</td>
</tr>
<tr>
<td>report</td>
<td></td>
</tr>
<tr>
<td>Select sample EAs for PES</td>
<td>Mar - Apr - 07</td>
</tr>
<tr>
<td>Train and deploy Supervisors and Enumerators for PES</td>
<td>June - 07</td>
</tr>
<tr>
<td>Pack and distribute PES materials</td>
<td>June - 07</td>
</tr>
<tr>
<td>PES Enumeration</td>
<td>June - 07</td>
</tr>
<tr>
<td>Dispatch of PES materials from CSA</td>
<td>June 2007</td>
</tr>
<tr>
<td>Assemble PES questionnaires, EA maps and other materials at field</td>
<td>July - 07</td>
</tr>
<tr>
<td>offices</td>
<td></td>
</tr>
<tr>
<td>Prepare preliminary report</td>
<td>July-Sept 2007</td>
</tr>
<tr>
<td>Prepare census administrative report</td>
<td>July-Oct 2007</td>
</tr>
<tr>
<td>Prepare explanatory notes on statistical tables</td>
<td>Oct 2007-Sep 2008</td>
</tr>
<tr>
<td>Evaluate and basic analyse census data</td>
<td>2008-2009</td>
</tr>
<tr>
<td>Print census reports</td>
<td>2008-2009</td>
</tr>
<tr>
<td>Conduct research and produce reports on special populations</td>
<td>Apr 2006-May 2007</td>
</tr>
<tr>
<td>Conduct further analysis Census and PES data</td>
<td>Jul 2008 – Dec 2010</td>
</tr>
<tr>
<td>Establishment of the Census Technical Committee (CTC)</td>
<td>Oct - 03</td>
</tr>
<tr>
<td>Determination of census scope and strategy by CTC</td>
<td>Nov-Dec 2003</td>
</tr>
<tr>
<td>Activity</td>
<td>Period</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>Arrival and tenure of Consultant in Sampling</td>
<td>Nov-Dec 2006</td>
</tr>
<tr>
<td>Arrival and tenure of Consultant in Census Analysis</td>
<td>Jan - Apr 2007</td>
</tr>
<tr>
<td>Counterparts for In-Depth Analysis, in Ethiopia and counterparts’ home country</td>
<td>2008-2010</td>
</tr>
<tr>
<td>Short-term external training for two persons each in Gender Analysis, Labour Force Analysis, Population Dynamics &amp; Population Projections</td>
<td>Feb 2006 onwards</td>
</tr>
<tr>
<td>Prepare Pilot Census report</td>
<td>July - 06</td>
</tr>
<tr>
<td><strong>DATA PROCESSING/INFORMATION TECHNOLOGY</strong></td>
<td></td>
</tr>
<tr>
<td>Install first computers and digitizers for GIS laboratory</td>
<td>May - 02</td>
</tr>
<tr>
<td>Produce first digital wereda map by the GIS laboratory</td>
<td>Dec 2003-Jan 2004</td>
</tr>
<tr>
<td>Further development of geographic database, computerised mapping and GIS</td>
<td>Jan 2004 (ongoing)</td>
</tr>
<tr>
<td>Order and receipt of extra GIS hardware and software for expanded production of digital EA maps</td>
<td>May - June 2006</td>
</tr>
<tr>
<td>Edit, code and analyse of Pilot Census</td>
<td>Mar-Apr 2006</td>
</tr>
<tr>
<td>Prepare data processing plans</td>
<td>Feb-Mar 2006</td>
</tr>
<tr>
<td>Procure hardware, software, stationery and supplies for Pilot Census</td>
<td>Mar - May 2006</td>
</tr>
<tr>
<td>Procure equipment and supplies for Census Enumeration</td>
<td>Apr-Dec 2006</td>
</tr>
<tr>
<td>Prepare data processing sites</td>
<td>Oct 2006-Jan 2007 (4 months)</td>
</tr>
<tr>
<td>Recruit and train coders, editors and data entry staff</td>
<td>Mar - Apr 2007</td>
</tr>
<tr>
<td>Computer editing and automatic correction</td>
<td>July 2007-Dec 2008</td>
</tr>
<tr>
<td>Evaluate computer editing</td>
<td>2008</td>
</tr>
<tr>
<td>Tabulations</td>
<td>2008-2009</td>
</tr>
<tr>
<td>Review of tabulations</td>
<td>2008-2009</td>
</tr>
<tr>
<td>Establish EA Database as national sampling frame</td>
<td>Jun 2003-Dec 2007</td>
</tr>
<tr>
<td>Establish the 2007 Census Database including metadata</td>
<td>Jan 2007 - Sept 2008</td>
</tr>
<tr>
<td>Establish a comprehensive Population Database integrating data from the 2007 Census and other sources</td>
<td>Jan - Jun 2009</td>
</tr>
<tr>
<td>Organize seminars for national and regional population atlases</td>
<td>Jan. – Dec. 2009</td>
</tr>
<tr>
<td>Activity</td>
<td>Period</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Set-up Internet connections including bandwidth maintenance and</td>
<td>On going process</td>
</tr>
<tr>
<td>development of website</td>
<td></td>
</tr>
<tr>
<td>Coordinate maintenance on the website</td>
<td>On going process</td>
</tr>
<tr>
<td>Train 8 persons in the website design</td>
<td>June – July 2009</td>
</tr>
<tr>
<td>Arrival and tenure of Data Processing Adviser</td>
<td>Jan - Feb 2007</td>
</tr>
<tr>
<td>Arrival and tenure of Data Processing Adviser</td>
<td>Feb 2007</td>
</tr>
<tr>
<td>Arrival and tenure of Data Processing Adviser</td>
<td>Feb 2008</td>
</tr>
<tr>
<td>Three-month training of two persons in GIS at the Regional Centre for</td>
<td>Jan - Mar 2002</td>
</tr>
<tr>
<td>Mapping of Resources for Development, Nairobi</td>
<td></td>
</tr>
<tr>
<td>Masters-level training in data analysis, sampling and GIS for two staff members in South Africa</td>
<td>Feb-Dec 2004</td>
</tr>
<tr>
<td>Local training for 10 professional staff in computerised mapping at the</td>
<td>Dec 2006</td>
</tr>
<tr>
<td>Ethiopian Mapping Authority (EMA)</td>
<td></td>
</tr>
<tr>
<td>Local training for 10 middle-level cartographic staff in computerized</td>
<td>Dec 2005 – Jan 2006</td>
</tr>
<tr>
<td>mapping at EMA</td>
<td></td>
</tr>
<tr>
<td>Short-term training in website development for three persons</td>
<td>Sept-Dec 2006</td>
</tr>
<tr>
<td>Short-term training in data dissemination for two persons</td>
<td>Nov-Dec 2006</td>
</tr>
<tr>
<td>Short-term training in database management for two persons</td>
<td>June-Sep 2006</td>
</tr>
<tr>
<td>persons</td>
<td></td>
</tr>
<tr>
<td>Training in GIS management for two persons</td>
<td>Sep 2007 – Aug - 08</td>
</tr>
<tr>
<td>Data entry</td>
<td>June 2007 - Nov 2008</td>
</tr>
<tr>
<td><strong>LOGISTICS</strong></td>
<td></td>
</tr>
<tr>
<td>Order and receipt of 25 x 4WD vehicles for cartographic fieldwork,</td>
<td>Sep 2002 – Jan 2003</td>
</tr>
<tr>
<td>pilot census, main enumeration, PES and inter-censal survey programme.</td>
<td></td>
</tr>
<tr>
<td>Order and receipt of 5 x saloon cars for local running (Addis Ababa and</td>
<td></td>
</tr>
<tr>
<td>Gibraltar)</td>
<td></td>
</tr>
<tr>
<td>Requests to eight government departments for supplementary used vehicles</td>
<td>Jan - 04 (1 month)</td>
</tr>
<tr>
<td>Order and receipt of extra 100 x 4WD vehicles for cartographic fieldwork,</td>
<td>Feb - June 2006</td>
</tr>
<tr>
<td>pilot census, main enumeration, PES and inter-censal survey programme.</td>
<td></td>
</tr>
<tr>
<td>Order and receipt of satellite imagery for pastoralist, rural and urban</td>
<td>Sept 2006 - Mar 2007</td>
</tr>
<tr>
<td>areas without suitable base maps</td>
<td></td>
</tr>
<tr>
<td>Order and receipt of offset printing press and other printing items</td>
<td>Sept.-Dec. 2006</td>
</tr>
<tr>
<td>Operation and maintenance 124 vehicles</td>
<td>Aug - Nov 2006</td>
</tr>
<tr>
<td>Activity</td>
<td>Period</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Organization of Donor's Meeting</td>
<td>Feb 2004 – Mar 2006</td>
</tr>
<tr>
<td>Hold Census Donor’s Conference</td>
<td>Mar - 06</td>
</tr>
</tbody>
</table>

**Annex 3a: 2007 Census short questionnaire**
Annex 3b: 2007 Census long questionnaire
### Annex 4a: Population topics investigated in the 1994 and 2007 Censuses

<table>
<thead>
<tr>
<th>Topics investigated</th>
<th>1994 questionnaires</th>
<th>2007 questionnaires</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Short</td>
<td>Long</td>
</tr>
<tr>
<td><strong>Geographical and internal migration characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place of usual residence</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Duration of residence</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Place of previous residence</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Place where present at time of census</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Household and family characteristics</strong></td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Relationship to head or other reference member of household</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Demographic and social characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Age</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Marital status</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Religion</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Language</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Fertility and mortality</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children living with you</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Children elsewhere</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Births in the past 12 months</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Children dead</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Deaths in the past 12 months</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Maternal or paternal orphanhood</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Pregnancy related death</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td><strong>Literacy and educational characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literacy</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>School attendance</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Educational attainment</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td><strong>Economic characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity status</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Industry</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Status in employment</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Institutional sector of employment</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Informal employment</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td><strong>Disability characteristics</strong></td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Disability status</td>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>
## Annex 4b: Housing topics investigated in the 1994 and 2007 Censuses

<table>
<thead>
<tr>
<th>Topics</th>
<th>1994 Census</th>
<th>2007 Census</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Urban</td>
</tr>
<tr>
<td>Living quarters - type of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ownership - type of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rooms - number of</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Drinking water - main source of</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Toilet - type of</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bathing facilities</td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Kitchen - availability of</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Fuel used for cooking</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Lighting and/or electricity - type of</td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Solid waste disposal - main type of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupancy by one or more households</td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Construction material of outer walls</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Year or period of construction</td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Construction material of floors, roof</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Tenure</td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Information and communication technology (ICT) devices -</td>
<td>Y (Radio)</td>
<td>Y</td>
</tr>
<tr>
<td>Other</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>
Annex 5: Tabulation Plan

POPULATION SIZE AND CHARACTERISTICS
2.1 Population by Urban-Rural Residence and Sex: 2007
2.2 Population of Towns by Sex: 2007
2.3 Population by Type of Resident, Sex, and Five Year Age Group: 2007
2.4 Population by Type of Resident and Sex: 2007
2.5 Persons, Households, and Housing Units for Conventional Household and Persons and Households for Non-Conventional Households, with Households per Housing unit for Conventional Households: 2007
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Annex 6: Directive no. 1 /2004 on access to raw data

DIRECTIVE no. 1 /2004 ISSUED TO ESTABLISH PROCEDURES FOR ACCESSING RAW DATA TO USERS

Importance

• Whereas, the Agency has been collecting socio-economic data and there by processing, analyzing, preparing and publishing the reports, and have been allowing access to users, however, in order to enable the Agency to allow access to these data on the basis of the demand of the users and in a more comprehensive manner;

• Whereas, the Agency has been and is allowing access to raw data free of charge to government agencies, researchers in higher educational institutions, and to donors who have supported the survey or the census operations financially and technically, however, it has been realized that there should be a procedure for accessing the raw data by all users through a legal basis;

• Whereas, the demand for raw data has recently increased and to entertain this demand to be made by the researchers and other data users who request for the raw data or for additional cross classification of variables, it is also realized that there is a need for cost sharing approach;

• Whereas, in order to entertain these users who request for raw data or detailed data that has not been published, there is a need for a clear procedure; and

• Whereas, to make the necessary arrangements to access the survey or the census reports not only through publications (hard copy) but also through electronic media such as diskettes, CD-ROM, …etc.;

Now therefore, in accordance with article 303/1972 of the proclamation provided to define the powers and the duties of the Central Statistical Office, this procedure for accessing the raw data has been issued.

CHAPTER ONE

GENERAL

1. SHORT TITLE

This Directive may be cited as the “Directive to Establish Procedures for Accessing Raw Data to Users”

2. DEFINITION

In this directive unless the context otherwise requires:
1. ‘Raw Data’ shall mean a mass of numerical facts pertaining to households or establishments, collected by counting or measuring; coded or not coded, processed or unprocessed, at enumeration area, Kebele, Woreda, Zone, Region or Country level;

2. ‘Agency’ shall mean the Central Statistical Agency;

3. ‘Census’ shall mean a complete enumeration of units in a well defined territory at specified time which includes: population, housing, agriculture, industry, trade, and other similar sectors;

4. ‘Sample Survey’ shall mean a method of data collection in which a representative portion of the population, household, dwelling, holding, or establishment, …etc., selected from the total units. Then, data pertaining to social, housing, agriculture, industry, trade, household budget and prices, …etc. are collected, compiled, processed, evaluated and the resulting data are published and disseminated;

5. ‘Administrative Record’ shall mean the statistical data collected and compiled from records that are by-products of the day-to-day administrative exercises of government and non-government agencies;

6. ‘Country level raw data’ shall mean raw data collected from Urban and/or Rural areas at country level;

7. ‘The budget prepared for the study’ shall mean the capital budget allotted to collect and process the data for a specific census or survey;

8. ‘The lowest reporting level’ shall mean the lowest administrative hierarchy at which the data from the study is processed and the result is released (this include: Kebele, Woreda, Zone or Region);

9. ‘Limited Variables’ shall mean a part or some of the different variables (data) collected in the processes of conducting a census or a survey;

10. ‘A form for Requesting Access to the Raw Data’: This is a form to be filled out by those who request for accessing the raw data and it indicates the type, reason for requesting and procedures for utilizing the raw data; and the rights and obligations of the users in utilizing the raw data; and

11. ‘Kebele’ is the lowest administrative hierarchy within a wereda/district in the country.

CHAPTER TWO

ACCESSING THE RAW DATA

3. CONDITIONS FOR ACCESSING THE RAW DATA

1. The Agency can access to users only the primary data that it has generated from censuses or surveys that it has carried-out. Censuses and Surveys include data generated through:
   a. Household census or survey approach, and
   b. Establishment census or survey approach;

2. Raw data are accessed to users only without possible identification of individuals, households or establishments:
3. Raw data are accessed to users only after the Agency has processed, analyzed, and published and disseminated the data generated through censuses and surveys;

4. Though the procedure indicated in 3.2 above is valid, however raw data can be also accessed, before the publication of the results, to those agencies (donors) who have supported the census or the survey financially or technically, particularly if these agencies participate in the preparation of the report;

5. Concerning the raw data generated through the censuses, users can have access to no more than 1-10 percent of the total data; and

6. Though the procedure indicated in 3.4 is valid, however if the users request the raw data at Kebele level, it is possible to let them have access to all the data at Kebele level.

4. AGENCIES HAVING ACCESS TO RAW DATA FREE OF CHARGE
   1. Policy making Government Institutions/Organizations;
   2. Students of higher education institutions who request access to raw data to fulfill their first or above degrees in various areas;
   3. Those Organizations/Institutions that have financially and technically supported the operation of the survey/census from which the raw data has been generated;

5. AGENCIES OR PERSONS NOT ENTITLED TO HAVE ACCESS TO RAW DATA
   1. Those who are not willing to fulfill the prescribed procedures in utilizing the raw data indicated in the “Form for Requesting Access to the Raw Data”;
   2. If there is a prior information that the agency/person requesting access to raw data could use it un-ethically or un-professionally;
   3. If the Agency decided not to provide the raw data due to the size of the survey/census data or if the type of survey data requires special consideration;

6. OBLIGATIONS OF ORGANIZATION/PERSON REQUESTING ACCESS TO RAW DATA
   1. The organization/person requesting access to the raw data should submit a brief written proposal that shows how the data will be utilized and for what purpose;
   2. The organization/person requesting access to the raw data should not summarize and produce any information below the intended reporting level other than indicated in the survey design;
   3. The organization/person requesting access to the raw data should not transfer the raw data it obtained with or without fee to third party;
   4. The organization/person requesting access to the raw data should not use the data it obtained with possible identification of individuals or households or establishments;
   5. The students of higher education institutions and researchers who are allowed to have access to the raw data without charge are obligated to provide a copy of their report presenting the analysis of the data;
7. PROCEDURES FOR ACCESSING RAW DATA TO USERS

1. The Data Processing Department of the CSA shall make the necessary preparatory arrangements to access raw data supplemented with the data dictionary as well as other essential information.

2. The Raw Data shall be accessed through the CSA's Public Relation Services after the necessary protocols are fulfilled, that is after filling-in the “Form for Requesting Access to Raw Data” and is authorized. Then, the Form shall be submitted to the Data Processing Department.

3. Except those organization/person who access raw data free of charge, others will be charged a certain fee that is levied by the Councils of Ministers of the Government of the Federal Democratic Republic of Ethiopia.

CHAPTER THREE
AMOUNT TO BE PAID FOR STATISTICAL RAW DATA

8. AMOUNT TO BE CHARGED FOR RAW DATA

1. The amount to be charged for accessing the raw data of specific survey/census shall be on the basis of the decisions made on 23 Apr 2004 by the Council of Ministers as indicated in the table below.

2. For an organization/person requesting raw data at Regional, Zonal and Wereda level, the total fee for more than one lower reporting level shall be obtained by multiplying the amount to be charged for one reporting level with that of the total reporting levels requested.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Budget for the Survey/Census</th>
<th>Amount to be charged including Diskettes</th>
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</thead>
<tbody>
<tr>
<td>a</td>
<td>Country Level</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Below 5 million Birr</td>
<td>7,550 Birr</td>
</tr>
<tr>
<td></td>
<td>5 million Birr and above</td>
<td>15,100 Birr</td>
</tr>
<tr>
<td>a</td>
<td>One Reporting Level or Limited Variables</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Below 5 million Birr</td>
<td>550 Birr</td>
</tr>
<tr>
<td></td>
<td>5 million Birr and above</td>
<td>1,100 Birr</td>
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</table>
References


