



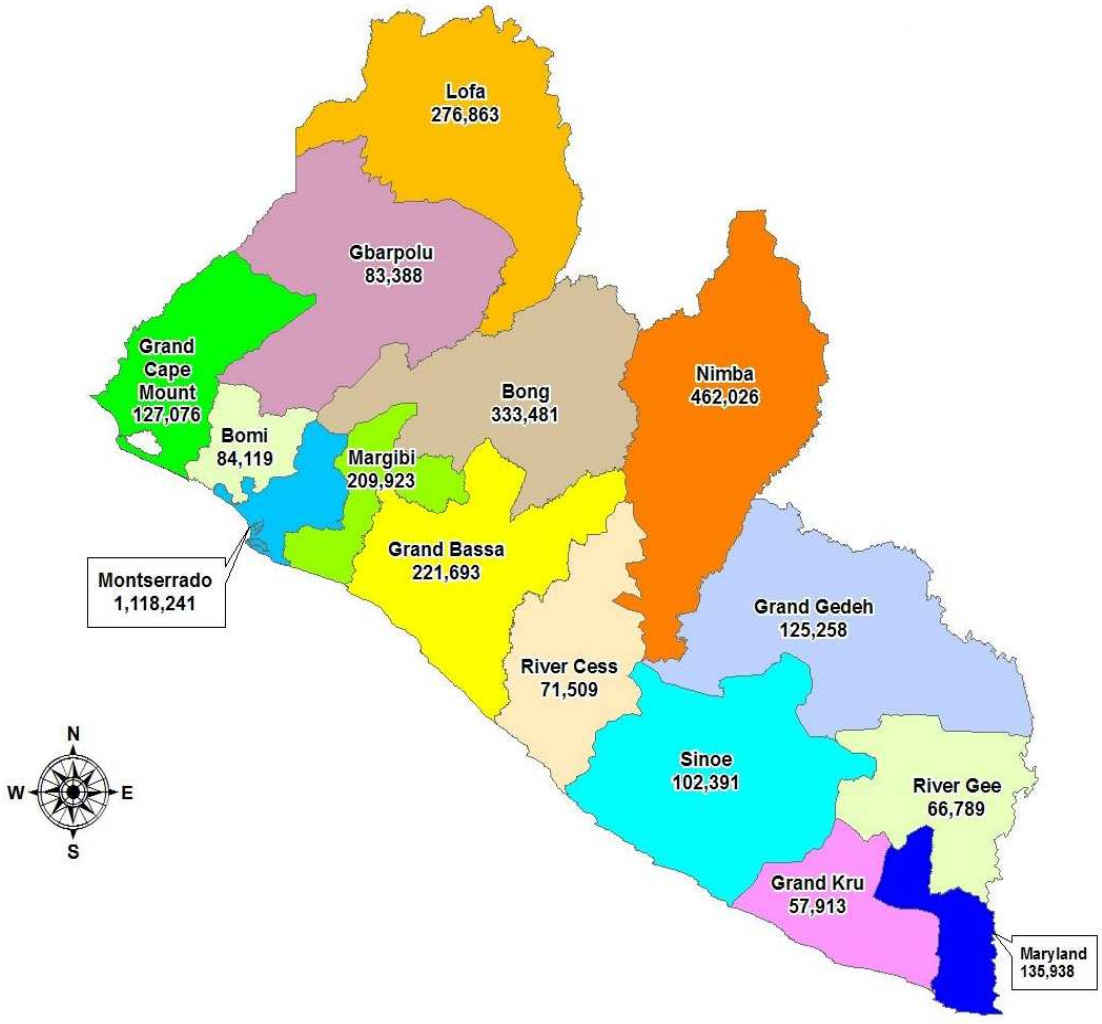
**REPUBLIC OF LIBERIA**



**2008 POPULATION AND HOUSING CENSUS**

**THE  
ADMINISTRATIVE REPORT**

**LIBERIA INSTITUTE OF STATISTICS AND GEO-INFORMATION SERVICES (LISGIS)  
MONROVIA, LIBERIA  
SEPTEMBER 2011**



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## Acronyms

AFDB	African Development Bank
CAT	Census Aptitude Test
CSO	Central Statistical Office
CSPro	Census and Surveys Processing
CST	County Support Team
CTA	Census Technical Advisor
DFID	UK Department for International Development
DSA	Daily Subsistence Allowance
EA	Enumeration Area
EC/EU	European Union
GIS	Geographic Information System
GOL	Government of Liberia
GPS	Geographic Positioning System
IBM	International Business Machine
IMIS	Integrated Management Information System
LAN	Local Area Network
LISGIS	Liberia Institute of Statistics and Geo-Information Services
LNP	Liberia National Police
MPEA	Ministry of Planning and Economic Affairs
NADA	National Data Archive
NGO	Non Governmental Organization
NIMAC	National Information Management Center
NPHC	National Population and Housing Census
PARIS 21	Partnership for Statistics in the 21 <sup>st</sup> Century
PES	Post Enumeration Survey
RIPS	Regional Institute for Population Studies
SA	Supervision Area
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNHCR	United Nations Humanitarian Council for Refugees
UNICEF	United Nations Children Fund
UNMIL	United Nations Mission in Liberia
UNSAID	United Nations Agency for International Development
WFP	World Food Program

## FOREWORD

The post-war socio-economic planning and development of Liberia is a pressing concern to Government and its development partners. Such an onerous undertaking cannot be actualized with scanty, outdated and deficient databases. Realizing this limitation, and in accordance with Article 39 of the 1986 Constitution of the Republic of Liberia, The President of Liberia approved, on May 31, 2007, “An Act Authorizing the Executive Branch of Government to Conduct the National Census of the Republic of Liberia”.

The Population and Housing Census is the major source of demographic and social-economic statistics in Liberia. The country has conducted three scientific population and housing censuses at intervals of about ten years since 1962. The latest census being the fourth was conducted in 2008 as a post war census. This census collected household-based data on the socio-economic conditions of the population as well as agriculture and other community based information.

The country currently finds itself at the crossroads of undergoing major rehabilitation and reconstruction. Virtually, every aspect of life has become an emergency and in resource allocation, crucial decisions have to be taken in a carefully planned and sequential manner.

The Liberia Institute of Statistics and Geo-Information Services (LISGIS), has published the 2008 Census results in different reports at different times and with varying degrees of detail. The Monograph Series provide more detailed and subject-oriented analysis of the census data which relate the findings to our national development policies and targets. This Monograph on Administrative Report contains information on the census technical plan, mapping operation, the pilot census, administrative support services, budget, publicity and advocacy, census field operations, post enumeration survey, data processing and other major activities of the 2008 National Population and Housing Census.

Finally, LISGIS appeals to the people of Liberia to make maximum use of the census data as a basis for evidence-based policy debate and design; decision-making at every level of society; investment and business transactions; and for many other purposes.

  
T. Edward Liberty

DIRECTOR GENERAL (LISGIS)

## ACKNOWLEDGEMENT

The success of this first post-war census was a result of the dedicated efforts of the Census Commission, the Development Partners, the Board of Directors, the Management and staff of the Liberia Institute of Statistics and Geo-Information Services (LISGIS), Government line ministries and agencies, county officials and local authorities, the 11,618 field staff who were deployed throughout the country and the millions of Liberians and Foreign Residents who responded.

Several International and local analysts have worked assiduously at various stages to translate the data from statistical tables to report formats that can easily be utilized by the Government, International agencies, our development partners, other data users and the general public.

We recognize the immense efforts of the lead Consultant, Mr. James P.M. Ntozi and four Research Assistants: Dr. Yeko Mwanga, Mr. John M.A. Mbeire, Mr. Charles Lwanga and Mr. Abel Nzabona. We also give credit to the laudable assistance and dedicated services of Mrs. Dorothy D. Johnson (TOKTEN Consultant, LISGIS), fourteen local analysts and their research assistants, through fervent training, workshops, seminars and emerging with the fourteen individual reports of the 2008 National Population and Housing Census. The sectionalized reports include:

- Administrative Report
- Population Size and Composition
- Fertility and Marriage Patterns
- Mortality
- Migration and Urbanization
- Population Projections
- Youth and Adolescents
- Gender Dimensions
- Education and Literacy
- Labour Force and Employment
- Persons with Disabilities and the Elderly
- Housing Conditions and Housing Facilities
- Population in Agriculture
- Poverty Dimensions

The 2008 National Population and Housing Census programme is adjudged to have been executed within acceptable limits of the highest international standards, using state-of-the-art technology and expertise at all stages of the census operations. The extra resources and other support have been coming from a plethora of organisations whose contributions and moral support are herein acknowledged.

We also extend our thanks and appreciation to the United Nations Population Fund for their continuous support all throughout the tenure of the 2008 Census activities, from the stages of

planning, execution, analysis and the completion of the fourteen final reports. They have contributed varied levels of assistance, from logistics to the provision of technical expertise.

On behalf of the Census Commission and the Board of Directors of LISGIS, I would like to extend my thanks and appreciation to the Government of Liberia and our development partners for providing the required resources for conducting this census. My thanks also go to all local institutions and Analysts that worked with LISGIS to implement and conclude the census programme. Special appreciation for making the census a success goes to Dr. Toga McIntosh, former Chairman of the Commission, the Census Commissioners, the Census Secretariat and other local and international professionals, all categories of census field staff, office staff and all respondents who provided the required information.



**Hon. Amara Konneh**  
**Minister of Planning and Economic Affairs**  
**and Chairman of the Census Commission**

# Facts Sheet

## Main Results of the 2008 Census

NO	COUNTY	NO OF EAs	NO OF LOCALITIES	TOTAL MALE	TOTAL FEMALE	TOTAL BOTH SEXES
1	BOMI	273	700	42,940	41,179	<b>84,119</b>
2	BONG	927	2,968	164,859	168,622	<b>333,481</b>
3	GBARPOLU	148	437	43,906	39,482	<b>83,388</b>
4	GRAND BASSA	468	2,368	110,913	110,780	<b>221,693</b>
5	GRAND CAPE MOUNT	278	641	65,679	61,397	<b>127,076</b>
6	GRAND GEDEH	176	338	64,994	60,264	<b>125,258</b>
7	GRAND KRU	130	186	29,648	28,265	<b>57,913</b>
8	LOFA	501	1,070	133,611	143,252	<b>276,863</b>
9	MARGIBI	431	1,531	105,840	104,083	<b>209,923</b>
10	MARYLAND	171	285	70,855	65,083	<b>135,938</b>
11	MONTSERRADO	2,250	3,230	549,733	568,508	<b>1,118,241</b>
12	NIMBA	781	1,471	230,113	231,913	<b>462,026</b>
13	RIVER CESS	152	544	37,224	34,285	<b>71,509</b>
14	RIVER GEE	108	221	34,863	31,926	<b>66,789</b>
15	SINOE	218	719	54,767	47,624	<b>102,391</b>
	<b>URBAN</b>			802,091	831,733	<b>1,633,824</b>
	<b>RURAL</b>			937,854	904,930	<b>1,842,784</b>
<b>LIBERIA</b>		<b>7,012</b>	<b>16,709</b>	<b>1,739,945</b>	<b>1,736,663</b>	<b>3,476,608</b>

# Executive Summary

In the LISGIS Act, Section 50A.7 of the Laws of the Republic of Liberia empowers LISGIS to collect information from persons and establishments, in order that LISGIS achieve its goals and objectives. One of LISGIS' objectives is to provide timely and reliable statistics for planning and monitoring Government development strategies. The national data bank was vandalized during the civil wars thus destroying most of the statistical time series including the detailed information on censuses of 1962, 1974 and 1984.

After the 1984 census, Liberia should have conducted a census in 1994 and 2004 but did not, mainly because of the civil wars. The civil wars also destroyed most of the detailed population statistics collected during the census of 1962, 1974 and 1984 leaving information mainly at national levels only. The results of the 1984 census were lost during the civil war before the analysis phase. The post war statistical situation was from scanty data mainly from sample surveys and not adequately covering smaller sub-national levels.

The Government expressed its commitment to conduct this census when it launched the census document in July 2006. The main concept behind the 2008 census was to provide the urgently needed information for planning and monitoring development processes at all levels of planning. The previous censuses were *de jure*, which means that they enumerated only usual residents in Liberia. The 2008 census was *de facto* meaning that they enumerated all persons who spent the reference census night of 20<sup>th</sup>/21<sup>st</sup> March 2008 in Liberia. The enumeration/data collection took place from 21<sup>st</sup> to 30<sup>th</sup> March 2008.

The preliminary results of the 2008 census, showing the total population, by sex and basic population indicators by county district and major urban areas, were released in June 2008. The final results were pronounced by the Minister of Planning and Economic Affairs, Amara M. Konneh in May, 2009. The final report including fourteen (14) thematic tables was also launched in December, 2009 by the Minister of Planning and Economic Affairs. This Administrative Report covers details of how the census activities of the various census phases were planned and implemented. It also gives account of innovations, challenges and finally gives recommendations on how to avoid or overcome some of the challenges. It is hoped that this report will be a useful reference to the planners of future censuses.

The success of this census was as a result of the dedicated effort of the Government of Liberia, the Census Commission, the development partners, the Board of Directors, the Consultants, the Analysts and their assistants, the census secretariat, the Management and staff of the Liberia Institute of Statistics and Geo-Information Services (LISGIS), the Ministry of Internal Affairs and its local authorities, a total of 9,485 field staff who were deployed throughout the country to implement the census data collection and the foreign residents and millions of Liberians who responded.

# Chapter One

## Background

### 1.1 Introduction

A census is the total process of collecting, compiling, evaluating, analyzing and disseminating demographic, economic, social and spatial data pertaining, at a specific time to all persons in a country or a well-delimited part of a country.

Although conducting a census requires a lot of money, labour, time and the use of field personnel who are trained within a short time, its advantages and uses are far more valuable. This is because a census means a complete enumeration of a country with less sampling error and time period, data collection from small geographic areas such as districts, clans, enumeration areas (EA) and villages. With the complete analysis of the census data, information is supplied for detailed socioeconomic characteristics and geographic distribution for decision making at the national and sub-national levels, monitoring the PRS and the MDG programmes, and measuring the (International Conference on Population and Development) ICPD indicators. Data from the census will also aid to solve emerging population issues, establish a strong culture of census taking and provide accumulated knowledge and experience in census taking. In addition, the lessons learnt from this census will serve as a benchmark for other censuses to be conducted in future (Onsembe and Ntozi 2006).

After the 1984 census, Liberia should have conducted censuses in 1994 and 2004, but this was not possible because of the civil wars of 1989-2004. The results of the 1984 census were lost during the civil war and Liberia's data bank was almost completely destroyed. This left the country with scanty data from sample surveys conducted using the sampling frame of the 1984 census which were out dated and distorted due to the civil wars thereby indicators obtained for socioeconomic development planning and policy decision making were questionable. Hence, after the wars there was urgent need for a census.

## **1.2 History of Censuses**

Liberia conducted modern censuses in 1962, 1974 and 1984. The first two censuses were analyzed and published while the 1984 census was not analyzed nor published. During the 1990 and 2000 world round of population and housing censuses, Liberia did not undertake any census due to the civil wars. The country needed accurate, relevant and up-to-date information at all administrative levels necessary for evidence based decision making. It is against this background that the Government of Liberia through LISGIS with support from the development partners planned to undertake its fourth and first post-conflict modern census in March 2008. A summary of information about censuses in Liberia is given in Table 1.1.



**Table 1.1: Summary Information about Population Censuses in Liberia Since 1962**

Census Year	Type of Census	Census Reference Day/Night	Duration of Interview	Interval after preceding Census (years)	Release of provisional results	Approximate number of enumerators employed	Conduction of PES	Population	Growth Rate
1962	De Jure	Day of 2 <sup>nd</sup> April	5 weeks	First Census	Not reported	1,500	4 months after (August-1962)	1,016,443	-
1974	De Jure	Day of 1 <sup>st</sup> February	2 weeks	12	4 months after (June, 1974)	3,500	2 weeks after	1,503,368	3.3
1984	De Jure	Day of 1 <sup>st</sup> February	2 weeks	10	3 months after (May, 1984)	5,000	2 weeks after	2,101,628	3.4
2008	De Facto	Night of 21 <sup>st</sup> -30 <sup>th</sup> March	10 Days	24	3 months after June 2008	7,788	2 months after (May, 2008)	3,476,608	2.1

### 1.3 Legal Frame

The conduct of the 2008 NPHC was based on one constitutional article and two laws and they are:

Article 39 of the Liberian Constitution states; “The Legislature shall cause a census of the Republic to be undertaken every ten years”

The 52<sup>nd</sup> National Legislature enacted the law on April 21, 2007 empowering the executive branch of Government to conduct the census in March 2008. The full text of this law which was approved on May 31, 2007 by the President of the Republic of Liberia, Her Excellency Ellen Johnson Sirleaf printed in hand bill is as follows:

Section 50A.8.6 and 7 of the LISGIS Act states “LISGIS shall conduct censuses and surveys and collect administrative statistics” For offence and penalty, any official and /or employee of any institution knowingly prepare / or compile for publication any false statistical information shall be faced with the full penalty of the law.

## **1.4 Objectives of the Report**

The main objective of the administrative report is to give a detailed explanation of how the 2008 Census was conducted.

The specific objectives of this report are:

1. To explain the various planning stages of the census;
2. To describe the data collection activities of the census;
3. To narrate and discuss the post enumeration activities of the census; and
4. To make recommendations for improve future censuses

## **1.5 Objectives of the 2008 Census**

The purpose of the 2008 census was to provide benchmark information which will be essential for development planning, making administrative and policy decisions, helping in the implementation of programmes and research.

The Specific objectives of the census were to know the following:

- i. Size, composition and spatial distribution of the population;
- ii. Levels of education attained by the population;
- iii. Size and deployment of the labour force;
- iv. Prevalence of disability and its spread;
- v. Levels, patterns and trends of fertility, mortality and migration;
- vi. Rate and pattern of urbanization in the country;
- vii. Housing conditions and availability of social amenities;
- viii. Access to basic social services; and
- ix. Population participating in agricultural production.

## **1.6 Time Table**

After the decision was taken in June 2006 to conduct a census in March 2008, the Government requested the UNFPA to assist LISGIS prepare a project proposal document itemizing census objectives, budgetary requirements and time frame for undertaking the census. The 2008 census budgetary requirements will be discussed in Chapter 12, while the objectives have been outlined in Section 1.5 above. Meanwhile, the proposed and actual time frame for the conduct of the census will be discussed in this Section.

**Table 1.2: Timeframe for 2008 Census by Main Phases, 2008**

MAIN PHASES	ORIGINAL TIMEFRAME	ACTUAL TIMEFRAME
PREPARATION	July 2006 - February 2008	November 2006 - February 2008
CENSUS CARTOGRAPHY/MAPPING	July 2006 - October 2007	January 2007 - February 2008
PILOT CENSUS	November 2006 - September 2007	April 2007 - August 2007
CENSUS FIELD ENUMERATION	March 2008(within 7 days)	21 <sup>st</sup> – 30 <sup>th</sup> March 2008
POST ENUMERATION SURVEY	June 2008 - September 2008	June 2008 - November 2008 (but PES was not analyzed)
DATA PROCESSING	October 2007 - August 2009	April 2007 - December 2008
DATA ENTRY SCREEN DESIGN AND DEVELOPMENT OF EDIT PROGRAM	April 2007 – March 2008	April 2007 – March 2008
CODING, EDITING AND DATA ENTRY	April 2008 – December 2008	April 2008 – December 2008
PUBLICATION OF PRELIMINARY RESULTS AND FINAL TABLES	July 2008 - January 2009	June 2008 - December 2009
DATA ANALYSIS, PUBLICATION & DISSEMINATION	October 2008 - November 2009	November 2009 – June 2011

Table 1.2 shows the proposed and actual timeframe for the implementation of the main phases of the 2008 census activities. As it can be observed from the table, there were losses and gains in the timelines for the implementation of most of the major phases of the census. These time lost and gain are common in most census undertaken because of the delays in the delivery of Financial and logistical resources and the limited human resources availability within the institution responsible for the census.

In the case of Liberia, it was proposed in January 2008 that, the census enumeration date of March 2008 be postponed due to the withdrawal of support of a key partner who had originally committed the amount of 2.7 Millions United States Dollars for the census activities, to mainly the Census enumeration phase. The March 2008 as stated in the first census document caused many concerns. It was noted that many countries do postpone census in order to have more time for preparing and raising more resources. In Liberia's case, the postponement was not regarded as the best alternative because by January 2008, the implementing agency (LISGIS) had already fully put in place modalities to conduct the census. The negative effects that would have arisen from the postponement were as below:

Another Publicity and Advocacy campaign would have to be mounted, with sound reasons, to inform the public that the census has been postponed.

By January 2008, the questionnaires and Instruction Manuals had already been printed. Postponing the census would have meant re-printing them because the enumeration date of 21<sup>st</sup>-27<sup>th</sup> March 2008 was already mentioned in all these census instruments.

The earliest date for a re-scheduled enumeration would have been October/November 2008 because of the six-month rainy season in Liberia starts around April until September. If the census had been postponed for more than six months, some maps would have had to be re-done especially in urban areas.

The Government of Liberia and the UNFPA quickly intervened to rescue the situation by providing the needed resources to conduct the enumeration phase as scheduled. Failure to implement some of the census activities on schedule is common in many countries and more rampant in developing countries. Delays in completing certain activities sometimes cause delays in starting the subsequent activities. The Liberia 2008 census was no exception. Delays in releasing funds for the census programme made it impossible to implement some of the activities as originally scheduled.

However, the performance was not bad as shown in Table 1.2 which compares the planned and actual dates of implementation of the major activities. In many cases,

LISGIS staff worked late in the night in order to catch up on activities that were lagging behind.

A census road map with time line and details of the census activities was available. This road map was used for the successive implementation of the census activities. The census process lasted for five (5) years. This includes a two (2) year preparatory phase, ten (10) days data collection, one (1) year and nine (9) months for data processing, including the coding and data entry exercise, eight (8) months simultaneous coding and data entry phase, and one (1) year eight (8) months for data analysis, publication and dissemination.

### **1.7 Organization of Report**

This report is presented in thirteen chapters. Chapter 1 gives background which includes information on the empowerment of LISGIS, history on Liberia censuses and the timetable of the 2008 census. In Chapter 2, there are planning procedures of the census including the development of census instruments, staff organization, technical assistance and quality assurance. The mapping exercise is explained in chapter 3 and includes the census cartographic field work, production of census data sets and enumeration maps. Chapters 4 and 5 give a description of how the pilot census and administrative support services respectively were carried out. In chapter 6, publicity and advocacy were described. The comprehensive information on census field operation which includes recruitment and training of field staff, data collection exercise, compilation of population counts and storage of field returns is given in Chapter 7.

Chapter 8 explains the conducting of the Post Enumeration Survey (PES) and its challenges. In Chapter 9 data processing is described and it explains how the data processing theatre was established at LISGIS, which carried out coding and entry of the 2008 census data. Information on the data tabulation and dissemination of results is given in chapter 10 followed by chapter 11 on data analysis and dissemination. The latter chapter gives information on identification of thematic

areas, recruitment and capacity building of analysts and assistant analysts, dissemination tools and dissemination strategies. Chapter 12 explains financial support from development partners and the Government of Liberia. The summary and implications of the key findings, and recommendations are indicated in Chapter 13.

This report also has appendix which contains the total number of EAs per county and districts, the census questionnaire, census code sheet and the Census personnel (comprising of the Census Management Team, Census Secretariat, Consultants, Seconded staff, Analysts, Assistant Analysts, Editors, the Secretariat, list of data collection field staff, data processing staff and Cartographic Mappers).

# Chapter Two

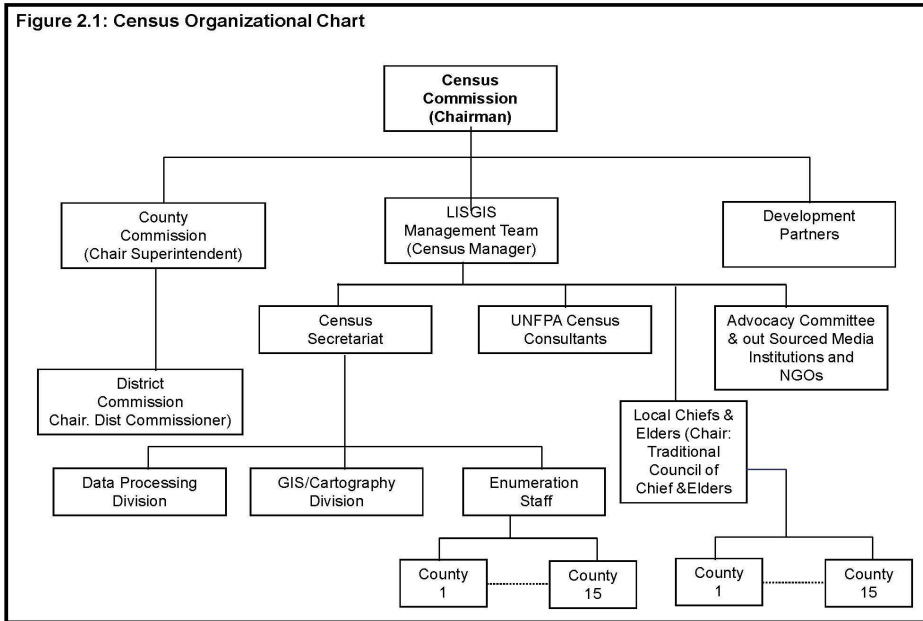
## Census Technical Planning

### 2.1 Introduction

This chapter is divided into eight sections. After this introduction, the next section will be on the census organization chart, which gives a hierarchical chain of command during the implementation of the census. This is followed by two sections describing various census instruments used and the planning procedures. In sections 5, 6 and 7, presentation of the quality of the census process, sampling and technical assistance respectively will be made. The last section will give a summary of the chapter.

### 2.2 Census Organization Chart

An organogram (Figure 2.1) was drawn but not implemented at the county and district levels because of delays in releasing census funds. The actual framework of the census consisted of a Census Commission, LISGIS census Management team, Census Development partners, Census Secretariat, UNFPA and other census Consultants, Local Chiefs and elders, Census advocacy committee and other out sourced media and NGOs. The Census Secretariat comprised of a Technical committee, Data processing, Cartography and enumeration staff. Also the enumeration staff and local chiefs and elders were deployed in each of the fifteen counties to collect data; sensitize and educate the citizens of the county, respectively.



### 2.2.1 Census Commission

A Commission of twenty two (22) members was appointed to oversee the census programme. Some of the census partners were appointed as ex-officios on the commission. The commission’s main duties were to formulate the census project policy, provide general guidelines and assist the Government to mobilize resources. Represented on the commission were:

- |       |   |          |
|-------|---|----------|
| i.    | Ministry of Planning and Economic Affairs.....                    | Chair    |
| ii.   | Liberia Institute of Statistics and Geo-Information Services..... | Co-chair |
| iii.  | Ministry of State for Presidential Affairs.....                   | Member   |
| iv.   | Ministry of Finance.....  | Member   |
| v.    | Ministry of Education.....  | Member   |
| vi.   | Ministry of Information.....                                      | Member   |
| vii.  | Ministry of Internal Affairs.....                                 | Member   |
| viii. | Ministry of Health and Social Welfare.....                        | Member   |
| ix.   | Ministry of Agriculture.....                                      | Member   |
| x.    | Ministry of Commerce.....   | Member   |
| xi.   | Ministry of Youth and Sports.....                                 | Member   |
| xii.  | Ministry of Public Works.....                                     | Member   |
| xiii. | Ministry of lands, Mines and Energy.....                          | Member   |



xiv.	Ministry of Gender and Development.....	Member
xv.	Ministry of Labour.....	Member
xvi.	Bureau of the Budget.....	Member
xvii.	General Services Agency.....	Member
xviii.	University of Liberia.....	Member
xix.	Liberia Marketing Association.....	Member
xx.	Rubber Planters Association of Liberia.....	Member
xxi.	Liberia Business Association.....	Member
xxii.	Chief of Elders.....	Member

Ex-officios of the Commission were:

- i. UNFPA;
- ii. USAID;
- iii. UNMIL;
- iv. EC/EU;
- v. World Bank;
- vi. UNDP and
- vii. DFID

### **2.2.2 Census Partners**

The census partners were officials that provided funds and tangible inputs towards the implementation of the census activities. The composition consisted of:

- i. Government of Liberia
- ii. UNFPA;
- iii. UNDP;
- iv. USAID;
- v. UNMIL;
- vi. AFDB;
- vii. UNICEF;
- viii. Paris 21;
- ix. EU/EC;
- x. UNHCR and
- xi. World Bank

### **2.2.3 Census Secretariat**

The Census Secretariat, comprising of LISGIS Management and heads of technical divisions like Administration, Cartography/GIS, Procurement, Data Processing, Census Technical Consultants and technicians of relevant Ministries and Agencies, particularly those on the Census Commission. Starting January 2008, the Secretariat met daily normally starting from about 5.00pm to about 9.00pm. It was most of the time chaired by the Director General/Census Manager, Dr. T. Edward Liberty. Through these meetings, there were series of brain storming and the UNFPA Census Consultants made tremendous contributions on the planning and implementation of the programme. The Census Secretariat also received advice from the Minister of Planning and Economic Affairs, Dr. Toga G. McIntosh who was also the Chair of the Census Commission.

The terms of reference for the census secretariat included but not limited to the following:

- i. Coordination of the Census Project activities;
- ii. Management of Project equipment;
- iii. Management of Project Finance;
- iv. Preparation of quarterly and annual Reports on the Census activities;
- v. Review of work plan and budget;
- vi. Drawing up the plans of implementing the census programme on a daily basis; and
- vii. Review of the progress of the programme on a daily basis

### **2.3 Census Planning**

A project document was prepared by LISGIS and UNFPA in July 2006 outlining the importance of undertaking the census, its objectives, and strategies of the project implementation, estimated budget, key variables, themes of analysis and other outputs and chronograms of activities. This project document guided the census implementation process.

The Secretariat, comprising of LISGIS Management and heads of technical departments (Planning, Mapping, Field Operations, Procurement, Data Processing, etc) as well as the three (3) UNFPA Consultants met almost daily starting January

2008. The meetings were normally chaired by the Director General/Census Manager to review progress reports from the various heads of departments and receive advice from the UNFPA consultants.

Due to lack of time to organize and host two conferences for producers and users of statistics, the Census Management and Technical Committee merged the two conferences into one and called it Data Producers/Users Statistics Conference. The Conference met once on the 8<sup>th</sup> of January 2008 to review all the Census Instruments such as; questionnaire, Manuals, questionnaire distribution and collection forms, warehouse tracking forms etc. The outcome of this conference was presented to the Census Commission on the same day for their inputs and approval.

## **2.4 Census Instruments**

Only one questionnaire type was administered to households, institutions and other special population categories to collect the required information. Other instruments were manuals, material distribution forms and summary sheets. Being in a post civil war situation, partly influenced the decision to use a simple questionnaire that did not cover too many topics. The list and description of the instruments are given below:

### **2.4.1 The Questionnaire**

The 2008 census questionnaire was just a modification of that used in the 1984 census. Its development started in 2007 when the first draft was made with the assistance of the UNFPA Country Support Team (CST) from Addis Ababa. This draft was piloted in May 2007.

The LISGIS technical staff, with assistance of a short-term UNFPA Advisor, started reviewing the questionnaire in November 2007. At that time, the reviews were mainly based on the recommendations of the Pilot Census. One questionnaire type (administered to households, institutions and other special categories) was designed to collect the census data.

Only one questionnaire was used in the 2008 census and it was administered to households, institutions and other special categories of the population. This was unlike in some countries, where two or more questionnaires covering different

topics or modules are used. The main reason for using one simple questionnaire was that Liberia was in a post war situation and therefore needed to be less ambitious.

The questionnaire was printed in one language only, i.e. English. The reason was that most Liberians do communicate in Liberian English which is spoken and understood by most of them. In addition to this, one of the requirements for an Enumerator and Field supervisor was that: he/she must understand the language spoken in the district. This assumed that in case a respondent did not understand English or the Liberian English, the field worker would interpret the interview into the local language.

This further assumed that the interviewers would interpret the questions from English to Liberian English or local language in the same way. Unfortunately, this is not always the case. Hence, the questionnaire should have been translated into Liberian English and at least into the major local languages. A short cut to this is to print a card with the translated questions for each enumerator. The next census should address this problem.

The almost final questionnaire was used to train the County Coordinators and County Inspectors from 8<sup>th</sup> to 13<sup>th</sup> February, 2008. The trainees, who were mainly LISGIS staff with experience in interviewing and surveys procedures, helped in further fine tuning the wording of the questionnaire. The trainees made useful comments and suggestions as they were being taken through the questionnaire and as they did field practice. This training partly played the role of a questionnaire pre-test. After this training, the questionnaire was finalized by the Census Secretariat and forwarded to the printer.

#### **2.4.2 Manuals**

- i. Enumerator's Instruction manual;
- ii. Supervisors Manual;
- iii. Trainer's Manual.

#### **2.4.3 Field Control Forms**

- i. Form B1: LISGIS' Control Sheet. It was used by LISGIS to issue to and receive materials from County Coordinators. One form was used for both activities.

ii. Form B2: County Coordinator Control Sheet. It was used by the County Coordinator to issue to and receive materials from County Inspectors. One form was used for both activities.

iii. Form B3: County Inspector Control Sheet. It was used by the County Inspector to issue to and receive materials from District Supervisors.

iv. Form B4: District Supervisor's Control Sheet. It was used by the District Supervisor to issue to and receive materials from Field Supervisors.

v. Form B5: Field Supervisor's Control Sheet. It was used by the Field Supervisor to issue to and receive materials from the Enumerator.

#### **2.4.4 Field Summary Sheets**

i. Form A1: LISGIS Summary Sheet. It was used by LISGIS to compile summarize totals from County Coordinators.

ii. Form A2: County Coordinator's Summary Sheet. It was used by the County Coordinator to compile county summaries from County Inspectors.

iii. Form A3: County Inspector's Summary Sheet. It was used by the County Inspector to compile district summaries from the District Supervisor.

iv. Form A4: District Supervisor's Summary Sheet. It was used by the District Supervisor to compile Supervisory Area (SA) summaries from the Field Supervisors.

v. Form A5: Field Supervisor's Summary Sheet. It was used by the Field Supervisor to compile Enumeration Area (EA) summaries from the Enumerators.

#### **2.4.5 Codes**

The Enumerator was to enter a code in the questionnaire for each of the respondent's answer. The census was designed to be 'enumerator coded'. The only answers that had to be written in words were names of administrative areas down to locality/community, street name, institution name, names of household members and names of persons who had died during the last twelve (12) months. It should be

noted that the answers written in words were not to be captured into computers. The various codes were provided to the enumerator as showed below:

**Codes for Administrative Areas:** They were given by the immediate supervisor but were also given in the supervisory and EA maps.

**Names:** were not coded.

Answers for Socio-economic characteristics:

If the possible answers were not many, the codes were included in the questionnaire. If the possible answers were many, the codes were given on the inside of the back page and as an Appendix of the Enumerator's Instruction Manual.

## **2.5 Quality Assurance**

The 2008 census was a de facto census. This means that information was taken from household members that spent the night of March 20<sup>th</sup>/21<sup>st</sup> in the household. This was to have instant/snapshot population information during the reference night and to avoid double counting of persons if the de jury methodology was used. With tangible inputs from ex-officios/development partners towards the census implementation, the census commissioners also formulated a census project policy and provided a general guideline for the census programme. The Census Secretariat was based at LISGIS and handled the day to day planning and implementation of the census process.

During data collection, there were five stages of supervision at county levels ranging from county coordinator to field supervisors. Each county had a Coordinator, Inspector and Assistant Inspector; and a district supervisor. A district supervisor controlled several field supervisors who themselves supervised 3 to 7 enumerators depending on the size of their supervision areas (SAs). All enumerators collected data only on one EA each within the 10 days given. Each EA comprised of 80-120 households. It means therefore that each enumerator collect data from 8 to 12 households per day. This ensures that more than 95% of households throughout the country were captured within the ten (10) days by enumerators. All field supervisors reported regularly to district supervisors either on phones or by visits made by the

district supervisors with motor-bikes provided. The district supervisors in turn reported to County Inspectors and Assistant County Inspectors. Few of the field supervisors were cartographers. These few assisted County Inspectors and Assistant County Inspectors who handled administrative and cartographic/GIS cases. The highest level of supervision at the county level was the County Coordinator who also reported to the Director of Censuses and Surveys within the Census Secretariat. Therefore the 2008NPHC data must be trusted as reliable because of its supervision procedures that ensured quality.

More over EA maps were produced to avoid omission and/or double counting during enumeration. Enumerators canvassed assigned EAs before the start of data collection. Enumerators' instruction manual was provided to act as a full time guide during data collection. Adequate training of field staff, intensive supervision at all levels (EA, clan, district and county). Verification during data entry and consistency checks during data processing was fully carried out.

## **2.6 Sampling Issues**

The 2008NPHC did not use sampling much as a method of data collection. Hence, the data collection was aimed at 100% coverage all over the country. However, the exceptions were a few questions which were in the census questionnaire to be administered to certain individuals either because of their ages, sex, educational background, disability, etc. These questions were found in section 2 and included the following:

- i. In P06, a question on marital status was limited to persons aged 10 years and above;
- ii. Questions in P11 and P12 asked for displacement status and were restricted to persons aged 14 years and above;
- iii. A question on parental survival in P13 and P14 was also limited to ages 0-24 years;
- iv. In P15, the skip procedure depended on the given answer, i.e. yes or no, which implies that the other questions under disability should be ask or skipped to the next question.

V. Questions on literacy (P18), school attendance (P19 and P20) and occupation (P21-24) were also limited to persons with ages 10 years and above, 5 years and above and 6 years and above respectively.

Vi. Questions in P25 to P32 were specific on children borne and their survival status and were posed to only females aged 12-54 years.

Vii. Questions in P33 to P37 on most recent birth within the last 12 months were limited to females aged 12-49 years.

Other exception where sampling was used was in selecting enumeration areas for the pilot and post-enumeration surveys. The sampling designs and procedures used in these two surveys will be described in subsequent chapters specific to the surveys.

## **2.7 Technical Assistance**

In 2006, a UNFPA Census Support Team (CST) came to LISGIS to help in the development of the project proposal as well as the questionnaire that was piloted in May, 2007. In October 2007, a UNFPA Census Technical Advisor arrived at LISGIS to, among other duties, finalize census instruments. He was at LISGIS until June 2008. In addition, UNFPA provided several other long term technical advisors in various census activities including Cartographic work (mapping), data collection, publicity (advocacy) and data processing. Short term consultancies funded by UNFPA were on post-enumeration survey and data analysis. Also, USAID provided two short – term Census Expert Consultants to review and give inputs on the data processing strategy and the drafting of Census instrument. These advisors and consultants played key roles in the successful implementation of the 2008 NPHC.

## **2.8 Conclusion and Recommendations**

In the post-war circumstances of the country, the planning process of the 2008NPHC to have been implemented within the planned time of two (2) years was a great achievement of those involved in the planning process. Failure to implement some of the census activities as scheduled was as a result of delays in the release of funds on time. It is therefore recommended that, stakeholders responsible for release of funds should be more involved in the census technical planning in order to commit them and release funds on time in future censuses. Secondly, it will be important to



translate field instruments, especially the main questionnaire into major dialects to ensure that a standard translated documents are available to the enumerators to use, instead of relying on their abilities to translate the originally English document into their own dialects, which might carry different messages in different language communities.

## **Chapter Three**

# **Mapping Preparations**

### **3.1 Introduction**

In 2006 the Government of Liberia requested UNFPA's support to formulate the road map for the 2008 Population and Housing census in March, 2008. The UNFPA agreed to fund a comprehensive census mapping program which started in January 2007 with the arrival of the Cartography/GIS Adviser who had participated in the formulation of the plan of action in October/November 2006.

The Cartography/GIS Division of LISGIS was charged with the responsibilities for carrying out the census mapping exercise. Although no geographic planning had been done since 1984, there had been many changes to the number of counties, districts, clans and towns/villages and socio-economic infrastructure. The maps used for the previous census were outdated and could not be relied upon for planning and controlling the 2008 Census operations. Therefore, there was need to undertake a comprehensive census geographical planning exercise.

### **3.2 Objective and Purpose**

The aim of census geographical planning was to provide a set of areas and maps for the management and administration of the census enumeration and for the output of results. The basic geographic unit for these functions was the Enumeration Area (EA). The process of enumeration area planning aimed at:

- i. Creating a reasonable workload for enumerators so that they could complete the Enumeration within the allocated time;
- ii. Covering the land area completely without omissions or overlaps;
- iii. Incorporating statutory boundaries for statistical purposes;
- iv. Locating each enumerator's area boundaries and determining precisely what area to cover;
- v. Planning the best route of travel in order to cover EA systematically;
- vi. Marking the location of houses for possible return visits; and

- vii. Updating the EA maps for future use (i.e. adding new streets and names and crossing out features that no longer existed).

The main objectives of the census cartography/GIS work were as follows:

- i. Creation of census field maps together with the list of enumeration areas required for controlling the 2008 National Population and Housing Census;
- ii. Construction of an up to date and efficient national sample frame for all statistical surveys and other activities;

The specific objectives were:

- i. Recruiting and training the mapping staff;
- ii. Updating the map of Liberia to include all administrative boundaries and names, villages, roads, tracks, etc.
- iii. Locating important landmarks using global positioning system (GPS) sets;
- iv. Including all the socio-economic infrastructures like schools, churches, mosques, industries, hospitals/clinics, communication towers etc.
- v. Carrying out tally counting and listing of households in order to obtain estimates of the population and delineating enumeration areas on the updated maps;
- vi. Producing Enumeration Area and Supervision Area maps for census enumeration; and
- vii. Creating an updated National Sampling Frame for future surveys.

### **3.3 Recruitment and Training**

#### **3.3.1 Recruitment**

Before the inception of the work the cartography/GIS division comprised of 10 staff members. The workforce was not sufficient to undertake the proposed census mapping work adequately. In addition, few of the staff had census cartography/GIS experience which was necessary for the coordination of the census mapping project. Hence, LISGIS, with support from UNFPA, recruited additional staff both national and international. The staff were deployed in the field and office and assisted to carry out the census cartography/GIS work.

As a strategy to strengthen the capacity of Cartography/GIS division of LISGIS to undertake a successful census mapping programme and effectively maintain international standards, the UNFPA contracted an International Cartography/GIS Advisor. The Census Cartographic Advisor joined the process in January 2007. The Advisor worked along with the LISGIS Cartography/GIS staff and ensured that the quality of the census cartographic work was good. He provided assistance in the formulation of the entire census mapping strategies, facilitated in the recruitment/training/orientation of the census mapping staff and coordinated the implementation of the entire census mapping activities. The vacancies in the cartographic section were published in the local media requesting applications from qualified Liberians. An aptitude test was administered to candidates who were invited for the interview and training. The recruitment started in January 2007 and ended in February 2007.

LISGIS recruited additional eighty one (81) national staff to provide the workforce needed for the census cartographic work. Priority was given to persons who had previous mapping skills, field data collection and GIS experience. Priority was also given to the following:

- i. Employees seconded from Ministry of Planning and Economic Affairs;
- ii. Cartographers from Ministry of Lands, Mines and Energy; and
- iii. Data collectors who had participated in surveys undertaken by LISGIS.

The best and qualified persons were recruited in line with the Liberian Labour Laws.

The following categories of personnel were recruited:

- i. One (1) national GIS/cartography coordinator;
- ii. Five (5) field regional coordinators;
- iii. One office mapping coordinator;
- iv. Seventeen field mapping supervisors/team leaders;

- v. One office mapping supervisor;
- vi. Fifty one field mapping assistants;
- vii. Six Office mapping assistants and
- viii. Twenty drivers (17 for the field work and 3 for the office).

### **3.3.2 Duties of the National Mapping Staff**

#### **a. National GIS/Cartography Coordinator**

The National Census Cartography/GIS Coordinator, with assistance from the International Census Cartography/GIS Advisor, was responsible for the entire census mapping activities. He supervised and coordinated the work of all the mapping staff in the office and in the field, provided technical assistance, regularly reviewed and provided logistics for the mapping work on a timely basis, and produced monthly reports on the progress of the mapping activities and major recommendations.

#### **b. Field Regional Coordinators**

Field Regional Coordinators provided technical assistance, constantly reviewed the field mapping requirements, supervised and coordinated the work of the field mapping teams in the counties, produced monthly reports on field activities of all the teams.

#### **c. Office Mapping Coordinator**

The Office Mapping Coordinator coordinated all the office mapping activities including those of the office Mapping Supervisors. He/she provided technical assistance in GIS database design, analysis and map reproduction; produced monthly reports on the activities in the office; and constantly reviewed the office mapping requirements and made the necessary recommendations.

#### **d. Field Mapping Supervisors/Team Leaders**

Field Mapping Supervisors liaised with the Field Mapping Coordinators and the local administration on the progress of field mapping activities. They coordinated the work of their teams, made arrangements for meetings with the local administration, and supervised the field mapping assistants to carry out map updating, produced

monthly reports on activities in the field for the team and provided technical support.

**e. Office Mapping Supervisor**

The Office Mapping Supervisor coordinated the work of the Office Mapping Assistants, provided technical assistance in GIS database design, analysis and map reproduction; and any other duties that may be assigned to them.

**f. Field Mapping Assistants**

The Field Mapping Assistants did the actual field mapping work. This included: listing of the administrative units and localities; updating of the base maps; preparation of GPS sketch maps; recording GPS coordinates for point features; undertaking structure numbering and household listing; demarcating EA's based on household listing; completing Field Control Forms as required; and preparing the final field copies of the EA maps.

**g. Office Mapping Assistant**

The work of the office Mapping Assistants included the following: GIS compilation and preparation of base maps; GIS reproduction of base maps for field work; undertaking of quality control checks; verification and corrections of field returns; documenting and monitoring of the census mapping materials; preparation of field returns on clean copies; scanning and geo-referencing of the scanned maps; onscreen digitizing of EA boundaries and other features; editing the attribute tables and entry of descriptive data; integrating and overlaying census mapping digital data; designing and reproducing EA/SA and planning maps.

**h. Drivers**

The work of the drivers was to: drive the team's vehicle on official trips with the authorization of the supervisor; regularly check the petrol gauge, engine oil level, battery fuel level, radiator water level, hydraulic brake fuel level and tyre pressures; keep a log book recording: the date, journey description, distance covered and reasons for journey; and keep the vehicle clean by washing it as and when required.

### **3.3.3 Training**

All the mapping staff were trained on the necessary census mapping techniques and procedures for field and office census mapping. In March 2007, LISGIS organized a training/orientation workshop for one week for all the GIS/Cartographic staff. The workshop was facilitated by the Census Cartography/GIS Coordinator and the International Cartography/GIS Advisor. The topics were based on the mapping manual which had been prepared to assist in the mapping activities. The manual was also used as a most important reference document during the mapping in the field and office. It provided guidelines on census mapping procedures to ensure that the work was done consistently.

The workshop involved classroom lectures and practical training in the field. The aim of the practical training was to test the staff on the topics learned in the classroom and correct mistakes on the spot. The participants took a final written test to qualify for the job.

Practical training for the field staff continued in the first 2 months of field work. The staffs were supervised closely to ensure that they were doing the job correctly. In addition, a GIS training workshop for one week was arranged and facilitated by ESRI in Monrovia for the office staff. The aim was to provide all the mapping staff with: hands-on experience in map updating and EA delineation; skills to work with the key GIS Software; and techniques in GIS database design, analysis, and reproduction of GIS maps.

Additional experience was provided through a study tour to Kenya for three persons. The aim was to understudy the Kenya 2009 census cartographic work with special reference to structure numbering and household listing. Kenya was chosen because it had successfully conducted similar exercises in 1989 and 1999 censuses. The experience gained was useful in effectively implementing the census cartographic work for Liberia.

### **3.4 Procurement of Census Cartographic/GIS equipment and other supplies**

One of the key activities identified during the formulation of the census mapping project was the procurement of cartography/GIS equipment and other supplies. The main items included: transportation, cartography/GIS laboratory and field mapping equipment and consumable supplies etc. Initially, LISGIS reviewed, evaluated and assessed the existing cartography/GIS equipment and materials.

Based on the assessment, the following additional items were ordered with financial support from UNFPA:

- i. 9 Toyota Hilux double cabins 5seater - 4x4 Pick-ups.
- ii. 7 Honda Field Motorcycles Model XL 125 SL/DK.
- iii. Cartography/GIS equipment.
  - a. HP Design jet Plotter 820.
  - b. Wide Format Scanner.
  - c. HP Workstations.
  - d. 40 GPS Receivers.
  - e. 1 Digitizing Table.
  - f. 1 Wide Format Copier.
- iv. Other GIS Laboratory Equipment.
  - a. Vertical Map Filing Cabinets (Steel).
  - b. Filing Strips.
  - c. Steel Map Drawers (A0 size).
  - d. Light box.
- v. Field Equipment.
  - a. Identity Cards – Plastic



- b. Base Maps and District Planning Maps
- c. Control Forms and Notebooks
- d. Ballpoint, Pens, Markers and Pencils
- e. Clip Boards, Box Files, Spring Files and Envelopes
- f. GPS Receivers
- g. Foam Mattresses
- h. Torch Lights and Torch Light Batteries
- i. Holdall Bags
- j. Cutlasses, Shovels and Diggers
- vi. GIS software.
  - a. ArcInfo 9.2.
  - b. GeoExpress.
  - c. ArcIMS.
  - d. Erdas Imagine.
- vii. Consumables.
- viii. Other equipment.
  - a. Paper Trimmer.

The following were also obtained from USAID:

- i. 2 AO photo copiers;
- ii. 3 GIS workstation (Laptops);
- iii. 8 map storage drawers;
- iv. 2 map cabinets;
- v. 1 G5 data server and accessories;
- vi. 8 UPS (500 Amp);
- vii. 1 UPS (1000 Amp);
- viii. 4 drawing lights; and
- ix. 2 Light tables.

Most of the items ordered were received promptly in February 2007 before the commencement of the census mapping work. However, the vehicles and motorcycles were received in June 2007; three months after the work had started. Due to the delays the work was not completed until February 2008.

#### **3.4.1 Acquisition of Base Maps**

The base maps used during the census mapping exercise were obtained from Cartography/GIS division of LISGIS and other local organizations such as the Ministry of Lands, Mines and Energy and the UNMIL GIS. The maps were both in digital and paper formats. 50k and 250k topographic maps were got from the Ministry of Lands Mines and Energy and 15 cities pop image maps from UNMIL.

#### **3.4.2 1984 Census Maps**

The 1984 Census Maps were prepared more than 20 years ago by the Statistical division within the MPEA now LISGIS. They were on transparencies as well as on paper showing administrative/EA boundaries and other features at 1:2,500, 1:5,000 and 1:10,000 for urban areas and 1:40,000 for rural areas. The maps were limited in use because they were mostly marked up, torn or lacking key map elements.

#### **3.4.3 1:1,000,000 Administrative Map**

A 1:1,000,000 administrative map of Liberia was prepared by LISGIS showing county, district and clan/township boundaries. It was prepared in 1996 based on the 1984 population census. The computerised version was used for deployment of the field teams and for monitoring the progress of field mapping work.

#### **3.4.4 The Zone/Community/Block Maps**

The Zone/Community/Block Maps of Monrovia were prepared by LISGIS with funds from GOL, UNFPA and WFP. They represented zone, community, and block boundaries. A separate directory was developed showing structure numbers within the blocks and the principal occupant(s). Since the maps were not drawn to scale they were used for reference purposes during field work and in the compilation of the EA maps in the office.

### **3.4.5 Localities Listing**

In 2005, the GOL, UNMIL, NIMAC and the University of Liberia undertook a joint project which mapped 10,302 localities. The computerised database included information on: County Name; County Code; District Name; District Code; Clan Name; Clan Code; Locality Name; Locality code; X Coordinate; Y Coordinate; Number of households; School; Health Facility etc. The data was used as a checklist to evaluate and assess the information provided by the local administration on the number of localities.

### **3.4.6 1:50,000 Topographic Maps**

1:50,000 Topographic Maps were available in LISGIS, UNMIL and Ministry of Lands, Mines and Energy. They were prepared by the Defence Mapping Agency, Topographic Centre, and Washington DC, USA in 1969 and by GOL/LCS and UK/DOS in 1983. The complete set included 139 sheets as 40 of the planned sheets were never published. The maps were scanned and used to compile the base maps needed for the delineation of EAs in the rural areas.

### **3.4.7 1:250,000 Topographic Maps**

1:250,000 Topographic Maps from LISGIS, UNMIL and Ministry of Lands, Mines and Energy. These topographic maps which cover the whole of Liberia in 10 sheets were published in 1972 by NIMA/NGA. LISGIS and UNMIL provided the computerised raster formats. The maps were reproduced and used for planning census mapping activities in the counties and districts.

### **3.4.8 Satellite Imagery**

The 2004 Satellite Imagery data was provided by UNMIL. It covered 15 cities namely: Monrovia, Foya, Ganta, Gbarnga, Greenville, Harper, Kakata, Buchanan, Harbel-RIA, Robertsport, Sanniquellie, Voinjama, Zwedru, Virginia and Tubmanburg. The data was used to compile and reproduce large scale base maps that were updated and used for the delineation of EAs in the field. The main features included line and points which were labelled with the correct names.

### **3.4.9 Preparation of Base Maps for Field Work**

The maps were reviewed, evaluated, assessed and tested in urban and rural environments. They were selected and reproduced for use in different areas based on their suitability for field work for EA delineation in the rural and urban areas. The maps for the rural areas were reproduced at the scale of 1:50,000/1:10,000/1:5,000, while that of urban centres was 1:5,000/1:2,500/1:1,000.

Since the maps were in both digital and paper formats, copies were reproduced following the steps described below.

- i. Selection of the maps;
- ii. Scanning the paper maps;
- iii. Geo-referencing the scanned maps;
- iv. Compilation and preparation of the required base maps; and
- v. Reproduction of base maps using Large Format Plotter.

### **3.5 Census Cartographic Field Work**

The census cartographic field work started in March 2007, after the training of the census mapping staff and was completed in February 2008. Teams of the field mapping staff were formed and provided with the necessary logistics and deployed all over the country to undertake the field mapping work. The field work involved: map updating, household estimates, EA delineation, supervision area delineation and completion of the various field control forms.

The work was planned to be completed within a period of 10 months from January to October 2007. However due to various constraints, it was not completed until February 2008, 14 Months after. The following were the main constraints:

- i. Lack of sufficient logistics such as vehicles, base maps etc.

Logistic such as vehicles, base maps, made it difficult to quickly reach villages that were far from the capital cities. This is because field staff had to walk for

long distances to reach to such places. Base maps were available in PDF and no actual image and others in hard copies.

ii. Heavy rains from May 2007 to October 2007

This made it difficult to travel within the terrain due to bad muddy roads and road cut offs in some counties. Hence, field workers resorted to use motor bikes and/or walk for long distances.

### **3.5.1 Deployment of the Field Mapping Teams**

The field staff were grouped into 17 teams and deployed in each of the 15 counties to carry out the census cartographic field work. Three teams were allocated to Montserrado County because of its large population size. Each team comprised of:

- i. 1 Team leader/Field Mapping Supervisor;
- ii. 3 Mapping Assistants; and
- iii. 1 Driver.

As the work intensified and gained momentum and the census date drew nearer, it was apparent that Montserrado needed more staff and hence additional three teams were brought on board in November of 2007 to beef up the strength of the teams and make them six teams for Montserrado County in the light of population size.

### **3.5.2 Field Logistics**

Through out the mapping exercise, the field teams did not have sufficient logistics, which retarded the progress of the mapping.

### **3.5.3 Map Updating**

During the cartographic field work in each county the mapping team worked closely with the local administration to complete the tasks assigned to them. The county administrative officials provided the team with the necessary information which enabled them to undertake field work without missing any of the clans or localities.

Therefore, upon arrival in the county the team contacted the local administration to participate in planning the work in the county.

Each team was provided with the necessary base maps that were updated in the field and used for the delineation of the enumeration areas. For areas without a base maps, GPS sketch maps were developed in the field reflecting the geographic features on the ground.

The specific tasks accomplished by each team in each county were as follows:

- i. Contacting the local administration and briefing them about the census mapping;
- ii. Identifying local guides to work with;
- iii. Visiting all the districts, clans/townships and localities;
- iv. Listing and plotting of administrative boundaries;
- v. Updating the census maps (verification of features and names etc);
- vi. Locating important land marks (e.g. schools, churches, mosque, industries, hospital and clinic, etc) using GPS;
- vii. Recording on the control forms the names of administrative areas, villages and other point feature coordinates;
- viii. Preparing GPS Sketch Maps for areas without base maps;
- ix. Recording locations of key features using GPS Receivers; and
- x. Labelling and naming features correctly.

#### **3.5.4 Household Estimates**

While in the field, the mapping teams were required to estimate the number of households in each township or locality. In the rural areas, the households were estimated through household quick count by a tallying method. In the urban areas this was achieved through structure and household listing. The information on the number of households was recorded on specially designed control forms.

### **3.5.5 Delineation of Enumeration Areas**

The ultimate purpose of the cartographic field work was to delineate enumeration areas covering the land area without omissions or overlaps. In all the cases, enumeration areas were delineated completely within the clan/township boundaries. The exercise was based on the estimated number of households in each locality or township. In some situations the accessibility of the locality or township dictated whether it was to be made an EA or be combined with other localities to become an EA.

Each EA was supposed to contain about 100 households. However, the sizes vary from 80 to 120 households (400 to 600 persons assuming the average household size was 5 persons). According to the final results 3,476,608 persons were enumerated in 7,012 Enumeration Areas. Therefore, on the average each EA contained about 496 persons which are very close to 500 persons per EA projected from the census mapping work.

The delineated enumeration areas were clearly plotted and numbered logically in serpentine order, starting with the north (top) of the clan/township and proceeding to the south, or starting from the west and going to the east on the census base maps. For example, a clan/township which was divided into 13 enumeration areas, on the EA map, could be numbered and labelled as: EA01, EA02, EA03, EA04, EA05, EA06, EA07, EA08, EA09, EA10, EA11, EA12 and EA13. The EA were also recorded appropriately on the control forms.

### **3.5.6 Delineation of Supervision Areas**

The enumeration areas in each clan/township were grouped into Supervision Areas (SA) each containing 4 to 5 enumeration areas. The boundaries of each SA were clearly marked on the census maps. During the census enumeration, each SA was controlled by a Field Supervisor. From the description provided above, the EAs listed in 6.5 could be grouped into three supervision areas as follows:

- (i) SA 1 = EA01, EA02, EA03, EA04;
- (ii) SA 2 = EA05, EA06, EA07, EA08, EA09; and
- (iii) SA 3 = EA10, EA11, EA12, EA13).

### **3.5.7 Completing Field Control Forms.**

The information collected during the census cartographic field work was plotted on the census maps. But as a quality control strategy, the information was also recorded on several control forms. The forms listed below were used:

- (i) Form 1 - List of administrative areas;
- (ii) Form 2 - List of localities in each clan/township;
- (iii) Form 3 – List of structures and households in each clan/township in urban areas;
- (iv) Form 4 - List of the delineated enumeration areas in each clan/township;
- (v) Form 5 - List of all feature coordinates in each clan/township; and
- (vi) Form 6 - Boundary descriptions of the delineated enumeration areas.

### **3.5.8 Preparation of the Final Field Maps**

The field mapping teams completed both Field Working copies and Final Field copies of the EA maps during the cartographic field work. The Field Working copies are the maps that were taken to the field every day for updating and used to prepare the final copies. The maps were used to mark and label appropriately county, district, township, clan, zone, community, and EA boundaries as well as the locations of the localities. Names of non-existent features were deleted from the maps at the time of field investigations.

### **3.5.9 Quality Control**

Various strategies were used to improve the accuracy of the census maps and minimize errors at the various stages of the mapping exercise. The main strategies used were as follows: field control forms; efficient field supervision; indexing, filing and storage system; and specific editing tasks.

#### **a. Field Control Forms**

The information collected in the field was documented on the base maps as well as on the field control forms. The forms provided a good basis for quality control checks as the information on both documents needed to match.



### **b. Field Supervision**

Each field mapping team was headed by a Field Mapping Supervisor who thoroughly checked the work of the mapping assistants to make sure that the information was accurate. Also, the country was divided into five zones and assigned to Field Mapping Coordinators. Each coordinator visited the teams regularly to assess the job and provide technical, managerial and logistical support.

In addition, the census secretariat staff (including the Census Cartography/GIS Advisor) frequently undertook field monitoring trips and provided additional technical and logistical support to ensure that the teams were working according to the instructions provided. During these visits, the supervision teams assessed and evaluated the progress of the work and made recommendations which upon implementation helped to improve the cartographic field work.

### **c. Indexing, Filing and Storage System**

A manual system for indexing, filing and storing was developed to monitor and control the movement of all the census mapping documents. The system used box files and map cabinets to file the various control forms and indexed maps respectively. The system was managed in such a way that all the census mapping documents could be accounted for at all times. The system ensured that:

- i. Documents were easily retrievable; and
- ii. Documents were signed for when removed from the filing system.

### **d. Specific Editing Tasks**

Specific editing tasks were undertaken at various stages of the cartographic field work. The main ones are described below:

- i. The maps and control forms were thoroughly checked for consistencies. That is the delineated enumeration areas were checked thoroughly against field control forms and locality lists to ensure that everything matched;
- ii. All boundaries were checked i.e. adjacent administrative units and

- county boundaries were checked for variations and realignments etc.
- iii. The numbering of EAs in each clan/township were checked to make sure they were consecutive and consistent;
  - iv. The numbering of EAs on the GPS sketches were checked to make sure that they were continuous in the township/clan map and differentiated between rural and urban using the appropriate codes;
  - v. Urban boundaries on the town maps and GPS sketches were checked against those same boundaries on the district and township/clan maps;
  - vi. A final listing of all rural and urban EAs by county, district, and township/clan showing the number of enumerators and supervisors required was prepared and thoroughly checked against the EA and SA maps; and
  - vii. The list of localities, other features and their GPS coordinates were edited for consistency.

### **3.5.10 Census Cartographic Codes**

The census geographical preparatory work, verified the boundaries of counties, districts and clans/townships. The clans/townships were further divided into 7,012 enumeration areas. At the same time, 16,709 localities were identified and mapped within the EAs for census purposes (see Table 3.1).

Each EA and locality was assigned a unique geographic code for purposes of collecting and reporting the census data. The census code helps to derive precise data aggregates without any omission or duplication. Below is a table showing the distribution of localities per county:

**Table 3.1 Total Number of Localities per County, 2008**

<b>NO</b>	<b>COUNTY</b>	<b>NO OF LOCALITY</b>
1	BOMI	700
2	BONG	2,968
3	GBARPOLU	437
4	GRAND BASSA	2,368
5	GRAND CAPE MOUNT	641
6	GRAND GEDEH	338
7	GRAND KRU	186
8	LOFA	1,070
9	MARGIBI	1,531
10	MARYLAND	285
11	MONTERRADO	3,230
12	NIMBA	1,471
13	RIVER CESS	544
14	RIVER GEE	221
15	SINOE	719
<b>TOTAL</b>		<b>16,709</b>

The code takes into account, county, district, clan/township, enumeration area and locality which are the geographical entities adopted for collecting and reporting the census data. It identifies the geographical location or the placement within the county, district, clan/township and EA of each locality. A provision was made in the geographic code to indicate the residence status of the population covered in each EA (whether urban or rural).

Each locality was assigned a 12 digit geographic code as illustrated below:

- (i) The 1<sup>st</sup> and 2<sup>nd</sup> digits for county;
- (ii) The 3<sup>rd</sup> and 4<sup>th</sup> digits for district;
- (iii) The 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> digits for township/clan;
- (iv) The 8<sup>th</sup> and 9<sup>th</sup> digits for Enumeration Area(EA);
- (v) The 10<sup>th</sup> digit for the characteristic of the EA (i.e. 1=urban/2=rural);  
and
- (vi) The 11<sup>th</sup> and 12<sup>th</sup> for locality.

### **3.6 Census Data Sets**

The collected mapping data was processed using GIS methods to create the necessary spatial and attribute data sets required for the preparation of quality final census EA and SA maps. The work started in October 2007 and was completed in March 2008, two weeks before the enumeration.

### **3.7 Data from Field Maps**

This section describes the computerization of the census field maps. This was achieved through: preparation of maps for data capture, scanning, geo-referencing, digitizing, editing and adding descriptive data. The field maps were not suitable for direct computerization through scanning because of distortions that may have resulted from poor handling and storage conditions in the field. Therefore, they were redrawn on clean copies and scanned into the required images.

#### **3.7.1 Scanning**

The clean maps were computerized by scanning them into high quality digital raster images using a large format scanner. This made it possible for the scanned images to be converted into vector data through onscreen digitizing.

#### **3.7.2 Geo-referencing**

The map images were geo-referenced to provide the necessary spatial reference information. Information on the Geographic Coordinate System for the scanned images was obtained from the original map sheets. The map sheets were based on WGS 84, WGS 72 and Liberia\_64 Geographic Coordinate Systems.

#### **3.7.3 Digitizing**

The scanned maps were displayed on the computer screen and the vector data (polygon, points and lines) for administrative and EA boundaries and other key features, which were developed through onscreen digitizing method. The coordinates of the various features were created by pointing or tracing them on the scanned image using the mouse.

### **3.7.4 Editing Digitizing Errors**

Digitizing errors such as undershoots, overshoots, missing lines, duplicate lines, and missing IDs were avoided or minimized by setting reasonable snap tolerances during or before each digitizing session. The remaining digitizing errors were edited and corrected after comparison was made between the original field and the digitized maps. This was necessary to ensure that there were no missing features and no duplicate lines in the final digital map.

### **3.7.5 Additional Descriptive Data**

The geographic attribute tables were updated to include key fields that were needed. For example, the EA geographic attribute table was updated to include the following key fields:

- i. CNAME: County Name
- ii. CCODE: County Geographic Code
- iii. DNAME: District Name
- iv. DCODE: District Geographic Code
- v. CLNAME: Township/Clan/Zone Name
- vi. CLCODE: Township/Clan/Zone Geographic Code
- vii. EACODE: Enumeration Area Geographic Code.

### **3.7.6 Data from Control Forms**

The cartographic field staff collected data pertaining to localities, townships, schools, health facilities and other prominent features countrywide. The information, including GPS coordinates, was recorded on the control forms and computerized into excel. As part of the quality control procedures, the data was thoroughly checked against the field maps and revised accordingly.

The final edited point data was displayed in GIS and used in the compilation of the final EA maps. It was used to show the location of prominent point features as bench marks used for the identification of EA boundaries. The information was also used

for labelling features on the census maps (especially on sketch maps and satellite imageries).The computerized point data was classified as in Table 3.2 below:

**Table 3.2: Computerized Prominent Point Features, 2008**

SN#	CLASS	FEATURE CATEGORY
1	LOC	Locality (villages, town etc)
2	SCH	Education (university, secondary, primary)
3	HTH	Health (hospital, clinic, pharmacy)
4	CHU	Church (all denominations)
5	MOS	Mosque
6	POL	Police(zone, deport)
7	PST	Petrol Station
8	BRD	Bridge(concert, steel, secondary)
9	ADM	Administrative Building (town hall, court, palaver, hut etc)
10	WHO	Household Name(dwelling unit)
12	MKT	Market building (market hall, open market)
13	CAM	Cemetery
14	STO	Store (super market, provision shop, entertainment centre etc )
15	RST	Radio station
16	COT	Communication Tower
17	OTH	Other ( river, swamp, tower, creek, factory, garage etc)

### 3.7.7 Data Integration

The main census cartographic data which included the scanned maps, satellite imagery, scanned GPS sketch maps, computerized point data and digitized vector data were in different Geographic Coordinate Systems. They were based on WAS 84, WAS 72 and Liberia\_64 Geographic Coordinate Systems. However, through the use of the relevant GIS functions, all the data sets were transformed into GCS \_WGS84 which is recommended for census mapping.

The geographic vector data were linked with the relevant tabular data and integrated to fit with other data sets in GIS and used in the preparation of the required census maps.

Upon complete computerization, the cartographic data sets were transformed into the GCS WGS84 Map Projection System and integrated with the tabular data using

GIS functions. This was critical in order to make sure that the data sets were fitting into each other and ready for the preparation of the final census maps. The following data formats and types were dealt with:

(i) Raster/Scanned Data

- (a) Topographic Maps;
- (b) Satellite Imageries; and
- (c) GPS Sketch Maps.

(ii) Vector Data

- (a) Administrative boundaries;
- (b) EA boundaries; and
- (c) Point Data (localities, health, schools, churches etc).

(iii) Tabular Data (Descriptive information from control forms).

### **3.7.8 The final Census Maps**

The ultimate goal for the census mapping project was to prepare and reproduce EA/SA and Planning Maps using the final census spatial and attribute data sets. The maps were used in the census enumeration in March 2008

Three types of EA maps were produced based on: Scanned Topographic Maps; Satellite Imagery Data; and Vector Data (Based on Sketch Maps). Each EA map represented a whole clan/township or part of a clan/township on approximately A2 paper size.

### **3.7.9 EA/SA Maps**

- (i) Main Map Elements
  - (a) Administrative boundaries (i.e. County, district, clans/township).
  - (b) Enumeration area and Supervision area boundaries.

- (c) Point features (i.e. localities, schools, health facilities and selected households etc).
- (d) Geographic Codes for counties, districts, clans/townships, EA and localities.
- (e) Labels (names of schools, health facilities, localities etc).

(ii) Other Map Elements

- (a) Map Legend.
- (b) Graphic Scale.
- (c) Ratio Scale.
- (d) North Arrow.
- (e) Logos (LISGIS and Liberia).
- (f) Geographic Coordinate System information.

**3.7.10 Planning Maps**

(i) Main Map Elements

- (a) County, Districts, Clans/township boundaries.
- (b) Selected point features.

(iv) Other map elements

- (a) Map Legend.
- (b) Graphic Scale.
- (c) Ratio Scale.
- (d) North Arrow.
- (e) Logos (LISGIS and Liberia).
- (f) Geographic Coordinate System information.



### **3.7.11 Cartographic Support during Census Enumeration**

#### **a. List of Enumeration and Supervision Areas**

The list of enumeration and supervision areas that was developed during the mapping work assisted during enumeration in the following ways:

- i. Estimating the number of enumerators and Supervisors needed for the census;
- ii. Determining the number of questionnaires to be printed;
- iii. Determining the field transportation needs;
- iv. Recruiting field staff;
- v. Deploying field staff in a systematic manner; and
- vi. Planning the payment of field staff.

#### **b. Deployment of cartographers during enumeration**

During enumeration, cartographers were deployed in the field to assist in the following ways:

- i. Training of enumeration personnel;
- ii. Deploying field staff;
- iii. Identification of difficult enumeration areas and providing solutions to other problems relating to EA maps; and
- iv. Packaging and orderly return of the completed census questionnaire books.

#### **c. Questionnaire Tracking Form**

The Census Cartography/GIS and Data Processing staff worked closely to ensure that population and geographic databases matched accurately. After the census enumeration the completed census questionnaire books were packed, labelled appropriately and delivered to LISGIS Head Office, in Monrovia, in an orderly manner. The books were checked, documented and shelved in an orderly manner. The process involved the following:

- i. Questionnaire Tracking Form was used to record the number of

- questionnaire books that were received from the field for each EA;
- ii. The questionnaire books were packaged into EA and SA parcels and send to the store room for shelving by district and county;
  - iii. The Questionnaire Tracking Form was used to ensure that the questionnaire books were not lost or misplaced during data processing; and
  - iv. Using the tracking form the books were distributed for coding and data entry in an organized manner and signed for at all times.

#### **d. Editing the Geographic Codes**

Initially, the geographic codes on the questionnaire books comprised of 10 digits. But they were revised to 11 digits and corrected accordingly. The work of revising the digits was supervised by five cartographers.

#### **e. GIS Coverage Checks**

The questionnaire books were coded appropriately before data entry commenced. After data entry the population and geographic databases were linked to check whether all the enumeration areas had been computerized. The report on the missing enumeration areas was used for validation purposes.

### **3.8 Partnership with Other Organizations**

Throughout the implementation of the 2008 Census Cartographic work, LISGIS worked in close collaboration with several Governments, UN and other International Organizations and received enormous support. The specific areas of partnership with the various agencies are described below:

- i. The Ministry of Internal Affairs supported the census mapping exercise through:
  - a. Supply of updated list of administrative sub-divisions, which was used as a check list during the field mapping;
  - b. Provision of security escorts to take field mapping staff to various counties during the mapping exercise;

ii. UNMIL provided:

- a. Topographic maps covering the whole country and Satellite Imageries for the main cities;
- b. GIS Engineers who assisted in the training of the field mapping staff and the installation of GIS equipment and software; and
- c. Support in the advocacy and publicity campaigns.

iii. Ministry of Lands , Mines and Energy provided:

- a. technical assistance in mapping in the field; and
- b. Supplied 104 copies of the original 1:50,000 topographic maps.

### 3.9 Challenges

Although most of the objectives of the mapping program were achieved, the implementation of the program faced many challenges. The challenges were as follows:

- i. Heavy rains from May 2007 to October 2007 and difficult terrain slowed the work;
- ii. The mapping staff was often sick from malaria, which created absenteeism that slowed the work;

- iii. The field teams were not provided with adequate base maps because reproduction of the maps in the office was slow due to lack of facilities. There was only one map printing machine (plotter) in the office which was slow and not sufficient;

- iv. At the beginning, insufficient number of vehicles greatly slowed down the work.

Many teams worked on foot and it was challenging to move from one village to the

The necessary vehicles were not provided until three months after the exercise had started;

- (ii) The supply of electricity in the central LISGIS office was quite irregular and this seriously affected the office work including base map reproduction;

Overall, the mapping logistics did not flow smoothly as planned due to several constraints, described above: provision of vehicles for the cartographic field work was delayed for three months, the irregular and inadequate supply of base maps due to insufficient printing facilities in the office, bad terrain as a result of heavy rains during the rainy season which made it difficult to get supplies to the field teams on time.

### **3.10 Conclusion and Recommendation**

In spite of the challenges, the cartographic/GIS mapping exercise which lasted for fourteen (14) months (January 2007 to February 2008) was successful. It is recommended that in future censuses, efforts should be made to minimize the above challenges, by planning and starting cartographic work as early as possible.

# Chapter Four

## The Pilot Census

### 4.1 Introduction

Each of the censuses conducted in Liberia (1962, 1974, 1984 and 2008) was conventionally preceded by a pre-test or pilot census. Unfortunately, not many reports were written on each of the pilot censuses. Even the few that were written are difficult to find as a result of the wide destruction caused by the war. Hence, there is scanty information about the pilot censuses conducted prior to 2008. The 1962 pilot census report states that a standard set of questions was asked at every household. These had been tested along with all methods and procedures in a pre-test conducted in the third quarter of 1961.'

The 1984 questionnaire was pre-tested on a sample size of about one thousand households proportionally obtained from both rural and urban areas. After a quick analysis of the pre-tested results, the formal modification was made on the questionnaire and then submitted for printing.

The 2008 census was conducted in March, 2008. The Pilot census had been scheduled for March 2007, one year before the enumeration. However, due to logistical and financial constraints, the exercise was postponed to April- May 2007, a month after the scheduled date. Data collection was done from 22<sup>nd</sup> to 28<sup>th</sup> April, 2007.

Prior to 2008, Liberia conducted de jure censuses (persons counted where they normally reside). Following this tradition, the 2008 census was initially planned to be a de jure census. The pilot census in April, 2007 was therefore de jure. The sample size of the pilot census was 75 EAs (15 per County). This was a substantial sample to capture but included a huge amount of floating population which included majority of war affected and displaced individuals. Therefore, a decision was made in January, 2008, that the 2008 census was to be de facto (persons enumerated where they are found on census

night, not where they reside) in order to reduce the inflation of household members as a result of the civil conflict experiences. The question on the composition of a de facto household was therefore not tested in the pilot census.

#### **4.1.1 Objectives of the Pilot Census**

A census is a key national large scale activity, expensive and expected to be done only every ten years, so it has to be right. By testing beforehand, many problems and errors can be avoided. Testing allows all the processes within the census plan to be checked and adjusted where necessary.

Every part of the process needs to be tested, from the dissemination of census forms, to enumeration, to retrieval of forms, to data processing and editing, to training manuals, and finally to producing cross-tabulations. One of the key things to test is the questionnaire as it is critical that people understand the requirements of their answers to the questions<sup>1</sup>.

The main objective of the 2007 Pilot Census was to pre-test the census instruments and logistical and administrative arrangements for the main census within the above broad guidelines. The specific objectives were to:

- i. Pre-test the census questionnaire and training manual(s);
- ii. Assess the quality of Enumeration Area (EA) maps;
- iii. Evaluate the calibre of personnel required;
- iv. Test the adequacy of the enumeration period; and
- v. Evaluate the overall census administrative, financial structure, and other general logistics.

#### **4.2 Preparatory Activities**

The 2007 Pilot Census was conducted in all the 15 counties. However, because mapping had not been completed, it was decided that the pilot be undertaken in areas that had been mapped. This also made it possible to test Enumeration Area (EA) maps so far prepared. Hence, a scientific approach of selecting a sample from a complete list of EAs

covering the entire country was not followed. Rather, a total of 75 EAs were purposively selected, but ensuring rural and urban representation of 70 and 30 percent respectively. The following procedure, created during 1984 census based on clans and areas where cartographic mapping had been done, was adopted:

- i. One mapped district was randomly selected from each county;
- ii. One clan was selected from each of the selected districts;
- iii. Five EAs were selected from each of the selected clans (implying five EAs per County).

#### **4.2.1. Recruitment and Training**

Each county was required to recruit census enumerators to participate in the Pilot Census exercise. The selection was stratified by rural/urban and ensure that all counties or regions are represented. The training of Pilot Census personnel was conducted at two levels, i.e. training of trainers/supervisors and training of interviewers. The trainers later referred to as coordinators and supervisors were trained by the consultant and census office staff at the LISGIS training centre for 4 days from 18<sup>th</sup> to 21<sup>st</sup> April 2007. During the training, emphasis was laid on the technical aspects, and organizational and administrative issues. The training covered the following topics:

- i. Meaning and objectives of the 2008-NPHC;
- ii. Purpose and contents of the various Pilot Census documents and materials;
- iii. Field work procedures and practice;
- iv. Question by question explanation;
- v. EA boundary identification;
- vi. Quality control measures; and
- vii. Administrative role of the coordinators and supervisors.

The following documents and materials were used during training:

- a. The instructions manual;
- b. Pilot census questionnaire;
- c. EA maps; and
- d. Power point slides.



The training of interviewers was conducted from 28<sup>th</sup> April 2007 to 3<sup>rd</sup> May 2007 in Monrovia and Zwedru. The whole country was divided into two regions, interviewers from 8 counties trained in Monrovia, Montserrado County, while those from the remaining 7 counties trained in Zwedru, Grand Gedeh County. Training was carried out by coordinators and supervisors with the assistance of the consultant and census office senior staff. The major areas of emphasis were enumeration procedures, definition of concepts and classifications used in enumeration, use of calendar of events, completing questionnaires, how to achieve good relation with respondents and of dealing with non-responses.

#### **4.2.2 Pilot Census Advocacy and sensitization**

Two strategies were adopted to publicize the pilot census:

- i. Communication about the Pilot Census from the Internal Affairs Minister to all 15 County Superintendents who, in turn, were to relay it to their respective local leaders;
- ii. Making announcements over the local radios.

#### **4.2.3 Pilot Census Data Collection/Enumeration**

Enumeration for the Pilot Census was carried out on a de Jure basis. The enumeration was planned to last a maximum of 7 days. Field supervision was carried out at two levels. The sampled districts in a county were supervised by respective County Coordinator and one census supervisor. In addition, LISGIS staff and the consultant supervised some of the districts.

#### **4.2.4 Review of Field work**

After the field work of the Pilot Census, a one day workshop was organized in June, 2007, to share field experiences from all the 15 counties and to map a way forward for better implementation of the main census. It was attended by UNFPA, the consultant and LISGIS staff who supervised the field work. The following were the recommendations of the workshop:

- Efforts should be made to provide more comprehensive definitions of terms used to ensure that everybody understands a given term in the same way;

- EAs with more than 120 households should be identified. During the main census, reserve enumerators should be recruited and trained ready to help out if work load in such EAs became unmanageable;
- Field practice during training should be done twice to ensure that the enumerators master the skills of conducting the interview, obtaining the responses and recording them appropriately;
- Adequate publicity should be carried out in order to overcome the respondents' prejudices; and
- EA maps must be distributed to the enumerators in advance to serve as references for planning their work and acquainting themselves with the boundaries of the EAs.

#### **4.2.5 Data Processing**

Data entry for the 2007 Pilot Census was done with the aim of testing the data entry screen and the entire census data processing system including making cross-tabulations. Data entry was done at LISGIS from May 29<sup>th</sup> 2007 to June 8<sup>th</sup> 2007. Data entry was done by 15 data entry clerks, 5 editors and 2 supervisors.

#### **4.3 Results**

Due to the lack of technical expertise in the area of Sampling, the final results of the Pilot census was never obtained. Efforts have been made to combat this problem in future censuses.

#### **4.4 Conclusion and Recommendations**

Although the pilot census started later than scheduled, it was conducted well and yielded useful results that were used in improving the instruments and logistical arrangements. However, suggestions to improve the planning and implementation of future pilot census and census are made based on the experiences of the Pilot Census exercise as follows:

- Enumerators should be in their respective EAs one day before census night in order to do proper canvassing before beginning the exercise, more especially in urban areas;

- LISGIS staff should be responsible to train and recruit qualified enumerators who will competently administer the questionnaire for quality data;
- That the enumerator's instruction manual be detailed enough for the enumerators to read and understand on their own;
- The enumerators should be recruited from within their respective clan in order to track the respondents more easily since they will be conversant with the area and will know most of the people;
- There will be need for early planning of the exercise to ensure early start and does not delay the next stages of the main census; and
- Cartographic work should be planned to be held well ahead of the pilot census, so that mapping and listing of households are completed before the pilot census to ensure the whole country is covered.
- The Census office should be manned with the technical experts with requisite experience and commitment.

# Chapter Five

## Administrative Support Services

### 5.1 Introduction

This chapter described the administrative support services to the census project. The day to day activities of the census project were guided and managed by the Census Secretariat, which heavily relied on the LISGIS' administrative support. The chapter presents the structure of the managerial and personnel services, financial support, procurement, store keeping and security.

### 5.2 Managerial Services

The census project sourced LISGIS' managerial services through the Census Secretariat. The Census Secretariat comprised of mainly LISGIS senior staff and a few outsiders seconded to the census project. The Secretariat members were assigned census duties but also continued performing their routine official activities. The Secretariat did not have its own other support services but entirely depended on those of LISGIS. The other support services are those routine support functions any institution must traditionally do or have. The census secretariat comprised of the following:

- i. Census Manager
- ii. Deputy Census Manager
- iii. Census Project Coordinator
- iv. Assistant Census Project Coordinator
- v. UNFPA Advisors/Consultants for Cartography/GIS and Data Processing
- vi. Finance Officer (UNFPA)
- vii. Finance Officer (LISGIS)
- viii. UNMIL Civil Affairs Representative
- ix. Programmer/Data Manager
- x. National Census Geographer/GIS Coordinator
- xi. Census Advocacy Officer
- xii. Census Administrative Officer

- xiii. Census Logistician
- xiv. Data Entry Supervisor
- xv. Four (4) Statistical Research Officers
- xvi. Questionnaire Manager
- xvii. Radio Operator and
- xviii. Secretary

### **5.3 Financial Support**

The finance team included the senior staff members of the LISGIS finance office and a seconded finance staff from the UNFPA. The team was responsible for receiving financial support from the Government of Liberia and census donors and disbursed accordingly. They also prepared financial reports on the expenditure of the Census Project from time to time or upon demand.

### **5.4 Procurement**

The Census Logistician was responsible for all logistical needs including procurement of items used for the census process, transportation etc. LISGIS with its representative on the census secretariat, the Census Logistician and its development partners undertook the procurement of several goods and services to facilitate the Census Exercise. These included Census instruments (questionnaires, manuals and field control forms), census bags, pens, chinks, markers, stickers, posters, billboards, T-shirts, caps, notebooks, questionnaire boxes, field workers badges, vehicles, IT equipment, stationery, wooden boxes, etc.

The procurements were undertaken by LISGIS in accordance with the Liberia's Finance Procurement Regulations, while the department for procurement, procured in accordance to the institutional guidelines. As stated earlier, the flow of financial resources to Census Project were irregular and slow. Considering that procurement process requires a lot of time, waivers were sometimes requested in order to deliver goods or services on time.

## **5.5 Transportation**

Most of the vehicles used in the census project were provided to LISGIS during the mapping phase of the project by the GOL, UNFPA and USAID. A total of seventy two (72) vehicles were used for the project. Of the 72 vehicles, ten (10) were provided by the GOL, twenty six (26) by USAID, twenty (20) by the UNFPA. In addition to the 20 vehicles provided by the UNFPA, the organization mobilized another six (6) vehicles from other UN agencies during the enumeration/data collection period and 10 vehicles were hired from the private sector by the GOL. UNMIL also used its trucks and helicopters to transport boxes of questionnaires from Monrovia to the various distant counties.

In addition to the vehicles, one hundred and twenty five (125) motor bikes were hired for the district supervisions. The motor bikes were found cheaper and handy especially in areas where the vehicles could not reach. Furthermore, UNFPA purchased eight (8) motor bikes to help augment the 125 that were hired.

## **5.6 Store management**

The questionnaire Manager was the head of the store room staff and managed the affairs and security of the questionnaires. There was no adequate space at LISGIS office to store the census instruments and materials before dispatching them to the field for enumeration and after the whole exercise. Because of this, an annex building was quickly constructed which contained a logistic division and a storeroom for the storage of the census instruments including the field returns. Shelves were constructed in the storeroom and labelled by counties so that questionnaires from the 15 counties could be easily identified by the storekeeper when coding and data processing commenced.

## **5.7 Personnel Services**

The LISGIS Personnel section in collaboration with the census secretariat was responsible for recruitment of the field staff. All applications regarding the employment of the field staff were directed to the Director for Censuses and Surveys. These applications were later handed over the Personnel sector for short listing and publication.

## **5.8 Security**

LISGIS hired a private security service (The Community Security Guard Service) that was responsible for the security affairs of the LISGIS building. At LISGIS head office in Monrovia, the Liberia National Police (LNP) was also contacted to provide unarmed Police Officers on a 24 hours basis. These supplemented the unarmed security guards that LISGIS hired to provide security to the institution.

Census is a sensitive exercise and hence additional security arrangements had to be put in place to ensure the security of the census instruments, personnel, equipment and LISGIS premises. Arrangements were made with UNMIL to transport census instruments and materials to the various counties and these instruments were kept in the UNMIL offices at the various counties for distribution to the District headquarters. They also provided security during the payment of field staff.

## **5.9 Challenges**

The Census is a big project and needs a lot of administrative services to support it. The challenges for the administrative and support staff included:

- i. The village roads were in bad state, which made the operation and maintenance of vehicles very expensive;
- ii. Some of the field supplies arrived late and made the support staff to work too hard to catch up with the timing of the project;
- iii. The incentive allowances for support staff were low, which might have created low morale among the support staff; and
- iv. Members of the Census Secretariat were overstretched between the Census and their regular activities and made them to stay in office until late hours after work to plan for the Census.

## **5.10 Conclusion and Recommendations**

- Despite the challenges above, the Census Secretariat performed very well, thanks to the commitment of both the administrative and support staff, who worked hard. To overcome some of the challenges listed above, it is recommended that: The administrative and support staff be well motivated financially to keep their morale high all the time;
- The road infrastructure throughout the country should be improved before the next census, so that minimum cost is expended on maintenance and operation of vehicles;
- A census secretariat should be set up with permanent staff that can be used in the next census. Other LISGIS staff should supplement the secretariat on part time basis rather than be the core staff; and
- The Secretariat should be in place 5 years in advance of next enumeration to be able to plan for the project adequately and get supplies ordered and delivered in time.



# Chapter Six

## Publicity and Advocacy

### 6.1 Introduction

Publicity and advocacy are critical for the success of census. On one hand, publicity means to publicize the census and let the public know when it will be held and what is expected of them. It also refers to the sensitization and education of the public on the benefits of the census to them as individuals, communities and nation, so that they cooperate with the census officials and give the information required of them. On the other hand, advocacy is about lobbying the policy and decision makers, development partners and opinion leaders for the support of the census through making relevant laws, providing the needed funds and mobilizing the local cooperation with census workers. This chapter presents the strategies used in the publicity and advocacy and related activities.

### 6.2 Publicity Strategy

A framework was formulated to guide the publicity and advocacy activities for the 2008 NPHC. As a basis of ensuring the implementation of the Publicity and Advocacy framework for the Census, a “Media Core Group” headed by the Minister of Information and comprising the leadership of the National Traditional Council of Chiefs, Elders and Zones of Liberia and a Census Advocacy officer, was set up. The functions of this group were: A multi media campaign was included in the document as a strategy to engage the services of different actors in the media on how they could complement each other and supplement the efforts of the Census Commission to drive the census message clearer and effectively to every household in the country.

### **6.3 Publicity Activities**

The Publicity and Social Mobilization component of the 2008 Liberia National Population and Housing Census was aimed at creating the needed public awareness and knowledge that facilitated commitment to public support for nation-wide grass root participation in the Census.

A local non-governmental social mobilization group, the Liberia Crusaders for Peace headed by Liberia's Cultural Ambassador, Juli Endee, was contracted to assist in fostering the social mobilization aspect of the Census in all the counties.

A Census Logo was designed and formulated by the Liberia Institute of Statistics and Geo-Information Services, and the membership of the Media Core group. Selected artists from the Ministry of Information carved a print out of the 2008 NPHC logo. The Census Logo graphically showed the benefits that would result from conducting the Census, such as the construction of schools, roads, housing facilities, etc. where they would be necessary.

As part of efforts to ensure major publicity of the census, the USAID sponsored the printing of dozens of double-sided billboards, fliers, vehicle bumper stickers, posters, T-shirts and caps bearing important messages about the Census and the benefit of being counted during the census exercise.

In December 2007, the media core group travelled to the counties of Liberia mounting census billboards and distributing other Census paraphernalia while they held meetings with county officials and heads of social groupings with the intent of establishing county Census Advocacy teams.

The Census advocacy teams in the counties comprised of Census Superintendents, County Commissioners, civil society groups and Paramount, Clan and Town Chiefs. The teams assisted in explaining to the residents the importance of the census and what the de facto method of enumeration meant in their respectively spoken and understood

local languages. The teams encouraged the public to remain home to be counted during the week of the census.

In late December 2007, The Advocacy and Public Awareness Campaign of the Census were officially launched simultaneously in the fifteen counties by their respective superintendents. In Monrovia, the campaign was preceded by a march through the principal streets of Monrovia by government officials, students, women's groupings and the civil society. It was officially launched by President, Ellen Johnson Sirleaf at the Monrovia City Hall in May, 2006. Once launched, publicity and advocacy activities for the census started throughout the country.

A census song, jingle and drama prepared by the Crusaders for peace in the eighteen vernacular languages of Liberia, was aired on community radio stations across Liberia. Video of the Census song, jingles and drama were also screened on the four existing television stations in the City of Monrovia and its neighbourhood. The video and audio of the songs drama and jingles were also distributed to video clubs and other entertainment centres as well as among government officials, a cross section of the citizenry and among foreign residents of the country.

A musical concert of a Million voices was held in February 2008 by both Gospel and non Gospel Musical Artists during which Census messages were also disseminated to the public. In the same month, a Census Road Show was also held across the country where the mobilizers used public address systems to disseminate census messages in the various languages of Liberia.

Successive discussions on the importance of the Census were also held on television and radio stations in the country while the newspapers carried editorials, commentary and hundreds of articles on the Census. A weekly phone-in-program on a local United Nations Radio titled "Da Government Thing", held in Liberian "Pigeon English", was dedicated to the conduct of the Census.

The program which was monitored in all of the counties in Liberia witnessed the participation of Liberians from all walks of life who called to make inquiries about the census and to explain what their understanding of the Census was.

The Crusaders for Peace organized and implemented a couple of outreach activities across the country. This included door-to-door outreach activities in cities, towns and villages across the country during which residents and households were told the method of enumeration, the significance of the census and the need for them to participate in the census.

Publicity materials used during the Census included billboards, posters, fliers, vehicle bumper stickers, T-Shirt, Caps, Jackets and hand bands for enumerators, bags and a Presidential proclamation. All of these were supplemented by press conferences and news updates.

Regular radio talk programs were held and their slots were increased as the date clicked closer to the enumeration day. Two weeks to data collection, jingles were played on radios day and night and distribution of fliers with a motor float parade in headquarters' cities around the country. In general, people were notified all over the country before the start of the actual data collection. As a result, census received positive media coverage through out the country.

#### **6.4 Advocacy for Census**

The advocacy support aspect of the Census was meant to lobby for commitment and support for the census by decision makers and opinion leaders at various levels. The commitment was expected to be shown through the active promotion of appropriate, collaborative and supportive changes in resource allocation, programs, strategies and statements made to the various constituents, etc. to ensure grass root and community participation in the Census exercise.

The Community Mobilization was done by the Liberia Crusaders for peace and other prominent social mobilization groups contracted by the United Nations Mission in

Liberia (UNMIL) to conduct massive mobilization campaign in the form of door to door out reach activities to explain the significance of the census to individual households and the need to remain home and be counted during the week of the census. The efforts of these groups were complemented by local leaders at county, town and village levels who also assisted in mobilization activities for the Census.

## **6.5 Challenges**

Publicity and advocacy challenges included the following:

- i. Publicity for the 2008 National Population and Housing census started late partly because the communications and advocacy officer was recruited late;
- ii. Publicity did not have sufficient funds;
- iii. The shortage of funds made it impossible to prepare census materials in the eighteen languages and distribute them to community radios located in regions whose inhabitants speak specific languages;
- iv. No media monitoring company was hired to carry out the monitoring and evaluation of the Census program on their placement and airing in the media;
- v. There was no time to pre-test all media materials;
- vi. The lack of funding prevented the mounting of Census billboards and the distribution of publicity materials to other parts of the country; and
- vii. No vehicle was assigned to the census advocacy and communication office. This hindered the movement of the media core group to communities and schools it had planned to visit.

## **6.6 Conclusion and Recommendations**

Despite the above challenges, the success of the census was partly due to the publicity and advocacy efforts put in the project. The wide publicity of the census resulted in the cooperation of the public and minimized the extent of non response. Acceptance and implementation of the following recommendations will ensure that future censuses receive adequate publicity and advocacy.

Publicity and advocacy activities for future Censuses need to start at least a year before the field enumeration exercise begins. Sufficient funding and logistical support should be made for publicity and advocacy activities of future censuses. Specialized training for selected media personnel in the reporting of population and housing censuses should be conducted.

# Chapter Seven

## Census Field Operations

### 7.1 Introduction

The census operations form the crux of the census. The operations must succeed for the goals and objectives of the census to be realized. This chapter explains what happened in the field. The chapter covers the organizational structures of the census and field operations, recruitment, training and deployment of field workers, distribution of census materials, data collection stage, retrieval of census materials, storage of field returns and compilation of household and total population.

### 7.2 Census organizational structure

There are many options of setting up a census office. The three most common are briefly explained below. The First, which is the most common, is to set up the office within the premises of the Central Statistical Office (CSO) like was the case in Sierra Leone in the 2004 census and in Uganda in 1991 census. In this situation, the census office mainly employs the staff of the CSO but may recruit additional persons from other Government Institutions on seconded bases to perform specific duties. This option has many advantages because these staff, in most cases, will have the technical knowledge of conducting censuses and large scale surveys as well as the use of equipment like computer hardware and software. It would be irregular for the staff of the CSO or those seconded to the census office from other Government Institutions to get a second salary. They can be paid honoraria or responsibility allowance and other fringe benefits.

The second option is to set up the census office in premises away from the CSO like was the case in Uganda in the 2002 census. This, most of the time, is done when there is no sufficient office space at the CSO. The census office again mainly employs the staff of the CSO but may recruit additional persons to perform specific duties. This arrangement, like the one above, will employ the skills of the staff from the CSO as well as other Government Institutions. The payment restriction on the first option also

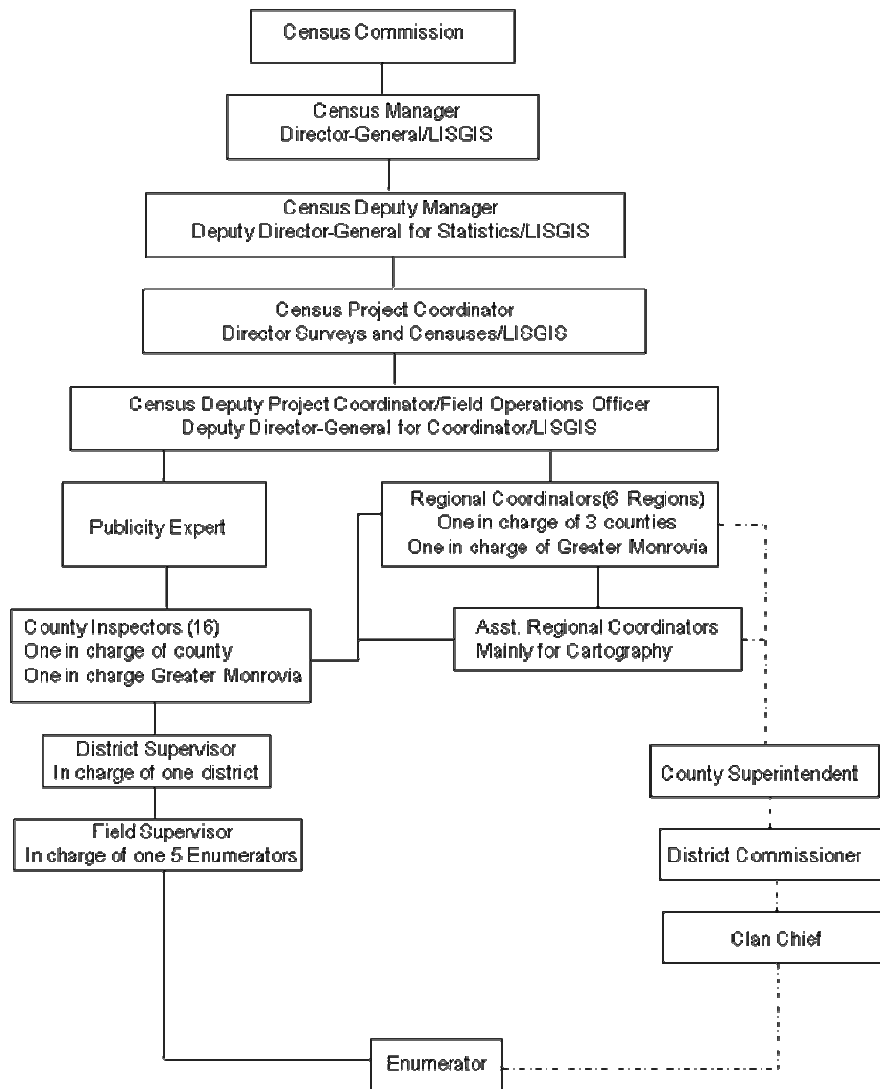
applies here. In this case most of the staff will be seconded from other Government Departments or freshly recruited.

Thirdly, the census office is set up independent of the CSO. The census office may be set up as an entity or the census may be conducted by another Government department or line Ministry like in Nigeria where the Population Council is in charge. When the census activities are completed, the office closes. This usually happens when the CSO has become so weak and ineffective. The staff can be seconded from CSO and other government departments and may earn a good salary to motivate them to do the project successfully. This option may have an advantage of using staff from outside government departments who may have fresh ideas than those in CSOs who take the census as any other data collection activity. The major shortcoming of this option is that CSO may not feel obliged to participate and hence deny the census office valuable experience and skills in large survey implementation. Below are diagrams showing the envisaged and actual organization structure used for the 2008NPHC.

Liberia took the first option. Initially, an elaborate census organogram was drawn indicating the various offices that were envisaged (see Figure 7.1). However, many problems especially the financial constraints did not allow the organogram to be implemented. Apart from the money for the major preparatory activities namely the pilot census and mapping, the rest of the money from the Government and the development partners was released to the census programme in February and March, 2008. This was one month before the enumeration when it was too late to implement the whole planned organogram.



**Figure 7.1: Envisaged Field Operations Structure**



### 7.3 Field Staff Organization Structure

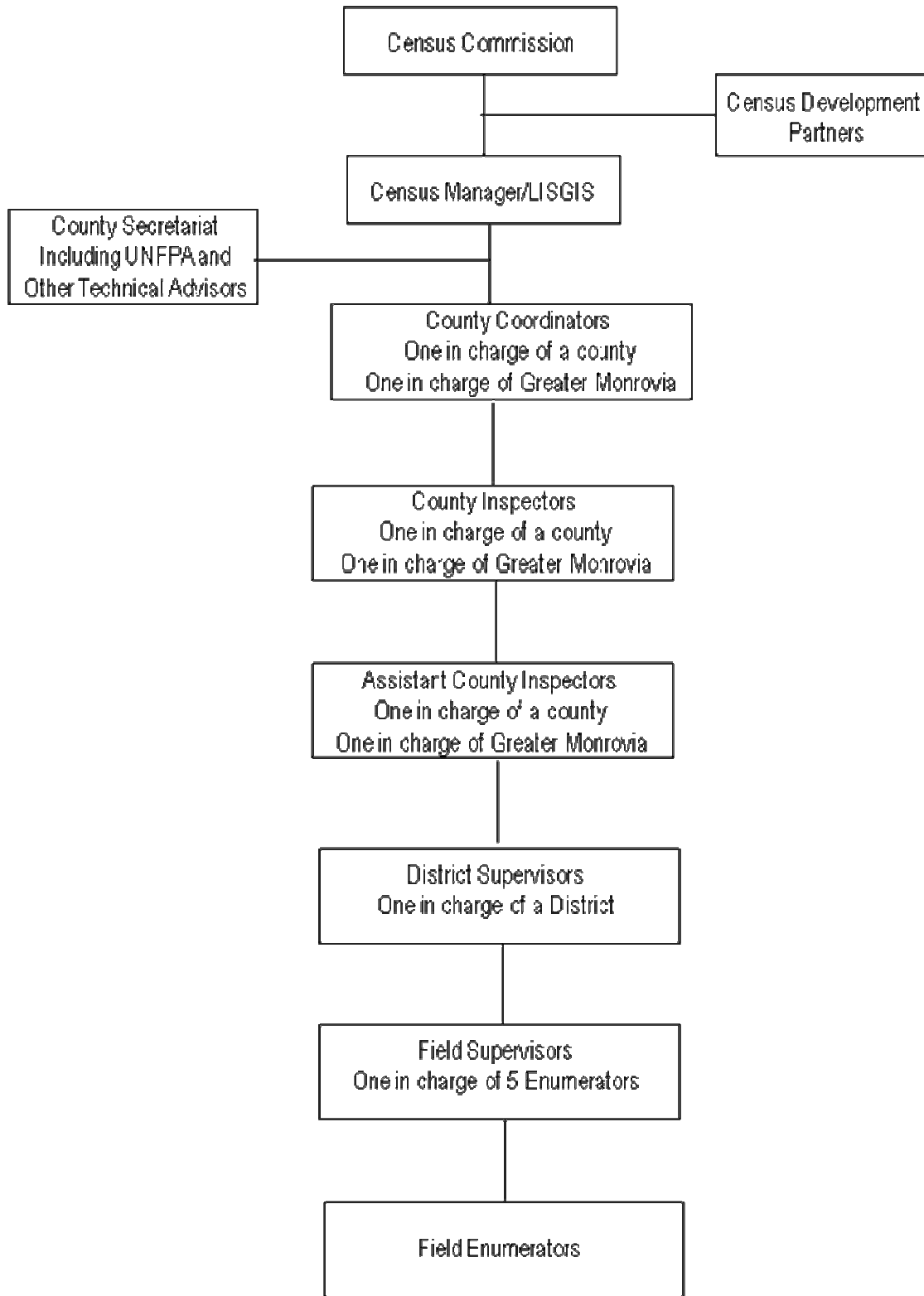
Due to financial constraints, another arrangement of implementing the census programme had to be put in place. In the new arrangement, only some of the positions in the initial structure were formally filled. The day to day decision making and implementation became a responsibility of the Census Secretariat, under the guidance of the Census Manager/Director General, the Census Commissioners, the Stakeholders Meetings and the Minister of Planning and Economic Affairs. The substantive Field Operations Officer was not formally appointed. However, the UNFPA posted a Census Technical Advisor (CTA) to LISGIS to specifically coordinate the census field operations

among other duties. The CTA, the Census Field Operations Advisor and the Advisor in Cartography/Mapping were all members of the Census Secretariat. The secretariat met very frequently in January, 2008 and daily as the enumeration day approached. The terms of reference of the census secretariat in connection with the field operations were:

- i. Determining the number of field staff to be used;
- ii. Establishing the quantities of census instruments and other field logistics for the project;
- iii. Designing strategies for covering special and abnormal population groups;
- iv. Recruiting, training and deploying the field staff at all hierarchical census implementation levels;
- v. Delivering, retrieving of census materials and ensuring full accountability of all census instruments;
- vi. Ensure the smooth conducting of the census data collection;
- vii. Overall supervision of all field activities; and
- viii. Organizing field editing and evaluation of field returns.

Given the wide range of duties entrusted in the Secretariat, the stakeholders called upon LISGIS to ensure that the census secretariat was reasonably staffed and that the current staff attended to census work on a full time basis.

**Figure 7.2: Actual Census Field Operations Structure**



## 7.4 Recruitment and Training of Field Staff

### 7.4.1 Recruitment

The Secretariat drew up a provisional recruitment and training schedule but the dates kept changing due to delays in releasing funds. The final timetable that was followed is given in Table 7.3 below. The development partners requested LISGIS to put in place a system of recruiting census field workers that guarded against favouritism. Other recommended procedures for ensuring transparency in recruitment were:

- i. All positions to be advertised;
- ii. The required qualifications at each level were set and were to be included in the advertisements; and
- iii. A Census Aptitude Test was to be administered to applicants at all levels and this was to take place on the same day and same time for a particular category of recruitment.

These criteria were strictly abided to during recruitment.

**Table 7.1: Final Recruitment/Training Schedule of the 2008 Census Field Workers, 2008**

Activity	Responsible Agency/ Official	Collaborating Agency/ Official	Venue(s)	Original Dates (2008)	Revised Dates (2008)
(1)	(2)	(3)	(4)	(5)	(6)
1 Recruitment of (i) County Coordinators* (ii) County Inspectors*	LISGIS		LISGIS	8-23 Jan	5-8 Feb.
2 Training County Coordinators and County Inspectors*	LISGIS		LISGIS	24-25 Jan.	8-13 Feb.
3 Recruitment of: (i) District Supervisors	LISGIS		LISGIS	26 Jan. to 7 <sup>th</sup> Feb.	25-26 Feb.
4 Training of: (i) District Supervisors	LISGIS		LISGIS	11-16 Feb.	27 Feb. 5 Mar.
5 Recruitment of: (i) Field Supervisors (ii) Enumerators	(i) District Sup. (ii) County Coord. (iii) County Insp.	(i) UNMIL (ii) Dist. Comm. (iii) Clan chiefs	Districts	21 Feb. to 3 Mar.	8-9 Mar.
6 Training of: (i) Field Supervisors (ii) Enumerators	(i) District Sup. (ii) County Insp. (iii) County Coord.		Districts/ Zones	11-17 Mar.	10-19 Mar.
7 Enumeration	All Field Staff	All Field Staff	Whole Country	21-27 Mar.	21-30 Mar.

\* Originally, County Coordinators, County Inspectors and District Supervisors were to be recruited and trained jointly but finally, the District Supervisors were trained separately.

#### **7.4.1.1 Recruitment of County Coordinators, Inspectors and Assistant Inspectors**

These were referred to as trainers and so recruitment at this stage included LISGIS staff members involved in the development of the census instrument as coordinators. The county inspectors were members of other Ministries/Agencies involved in the census process and others with experience from the 1974 and 1984 censuses. The assistant county inspectors were cartographers/GIS staff that took part during the mapping exercise.

#### **7.4.1.2 Recruiting of District Supervisors**

The district supervisors were recruited rather late in February, 2008. This was contrary to the Pilot Census recommendations to set up the county and district census offices early enough to enable them address difficult issues in a timely manner:

The persons who had the requirements for filling the above positions were short listed from the LISGIS data base. This data base contained names, qualifications, and performance-ranking of those persons who were currently working at LISGIS or had worked with LISGIS before. Most of these people participated in the pilot census, several surveys and had interviewing skills. Those who were short listed sat a Census Aptitude Test (CAT) and the best of them were selected as trainees.

#### **7.4.1.3 Recruitment of field Supervisors and field Enumerators**

In February 2008, advertisements were aired on various radio stations informing those interested in serving as Census Field Supervisors and Enumerators to forward written applications with curriculum vitae to their respective district headquarters. Those applications which had earlier been received by LISGIS were sorted and also forwarded to applicants' respective districts. In order to be short listed for sitting the Census Aptitude Test (CAT) the applicants had to have the following qualification:

##### **Criteria of a Census Field Supervisor**

- High School graduate or above;
- Must communicate fluently in the local dialect of the District;
- Must have experience in census or survey data collection;
- Must have leadership ability; and
- Must pass the Census Aptitude Test (CAT).

Although it is stated above that Field Supervisors had to have a minimum education of High School, there were cases of some remote geographical locations where this condition could not be fulfilled. These were reviewed on a case by case basis.

#### **Criteria of Census Enumerators**

- Must have successfully completed at least the 12<sup>th</sup> grade;
- Must be a resident of the clan, where she/he was to work;
- Must communicate fluently in the local dialect of the District;
- Must be willing to work long hours and in strenuous conditions; and
- Must pass the Census Aptitude Test (CAT).

Although it is stated above that an Enumerator had to have a minimum education of 12<sup>th</sup> grade, there were cases of some remote geographical locations where this condition could not be fulfilled. Such cases were reviewed on a case by case basis.

The CAT was administered at about the same time all over the country to minimize cheating. The appointments were strictly based on merit. The transparency in recruitment helped in identifying the best recruits and their good performance as reflected in the good quality of results.

In Monrovia, LISGIS received the applications, administered the CAT and did the short listing. The CAT was administered at the following areas:

- Tubman High School;
- University of Liberia;
- G.W Gibson High School;
- New Port High School; and
- D. Tweh High School.

This exercise turned out to be too much for LISGIS to handle. The following problems were faced:

- Montserrado needed about 3,000 enumerators and received about 5,000 applications. These numbers were too large for a quick short listing.
- After administering the CAT, the scripts were too many for LISGIS to mark. LISGIS staff worked until very late at night in order to complete the marking in time.
- The short listing was based on grades not considering the part of Monrovia where finally one was going to enumerate. This in the end created considerable problems of allocating enumerators to their areas of residence. LISGIS staff worked very hard in order to allocate enumerators to zones and Supervisory areas. Many of the enumerators had to move across Monrovia to go and interview centrally according to the directives in the Instruction Manuals.

## **7.4.2 Training**

### **7.4.2.1 Training of County Coordinators, County Inspectors and Assistant County Inspectors**

The County Coordinators, County Inspectors and Assistant County Inspectors were trained together at LISGIS for six days from 8<sup>th</sup> to 13<sup>th</sup> February, 2008. The training consisted of:

- i. Lectures on field work and administrative guide lines;
- ii. Teaching the trainees using the Enumerator's Instruction Manual paragraph by paragraph, and;
- iii. A field practice which was conducted at Momboe Town East.

The training was conducted by LISGIS senior staff as well as the UNFPA CTA and the Field Operations Advisor. It was made clear in advance that being appointed to more senior position of County Coordinator was going to be based on the grades obtained from training. The training was non-residential and trainees were paid a training allowance of US\$5 per day per trainee. When the field-practice questionnaires were marked, the results indicated that questions on disability, education, employment and child-birth history were not filled very well. Hence, a two day retraining was conducted by the trainers and another test was administered thereafter. The results of the field practice and the test were used in allocating the trainees to the various positions of Regional Coordinator, County Inspector and Assistant County Inspector.

#### **7.4.2.2 Training of District Supervisors**

Training of district supervisors commenced immediately after the training of trainers (TOT) training for coordinators and inspectors. The District Supervisors were trained at LISGIS by the newly recruited County Coordinators, County Inspectors and Assistant County Inspectors under close supervision of Census Advisors and senior members of the census secretariat. The training lasted for two weeks. At the end of the training, a test was administered followed by a field practical testing. The two tests were added together to get an average. From the averages, those with the best scores were recruited. There were 187 trainees including 7 observers. Amongst these, the best 136 were recruited and 4 as stand-bys. Two of the observers were recruited based on their performance.

#### **7.4.2.3 Training Field Supervisors and Enumerators**

LISGIS had in advance identified training venues using the knowledge of the Cartography/Mapping Section. In doing so, LISGIS considered the availability of: public transport to the venue, training facilities like a school and being in a central location. Training was conducted by the District Supervisors, County Inspectors and Assistant County Supervisors under the supervision of the County Coordinators. LISGIS had in advance developed a training timetable which was included in the Enumerator's Instruction Manual. During the training, it was made clear that the Field Supervisors and the Enumerators to be would all be initially trained together and the categorization would be made thereafter basing on the grades scored. The number trained was slightly more than the number required for selecting Field Supervisors, Enumerators and reserves/stand-bys. This arrangement of training more than the number required creates competition and promotes attentiveness during training.

The trainees who performed better were selected as Field Supervisors. They were then given a day's extra training and taken through the Supervisor's Manual which focused on how to supervise the enumeration, distribute materials, retrieve materials and compile summary population figures.

Each trainee was paid a lump sum training allowance of US\$40 regardless of whether he/she was finally recruited.



After training, a final test was administered and those with the best scores were recruited as supervisors followed by enumerators. In other counties, other than Montserrado, the training was conducted in the capital cities and other big cities. In Montserrado County, training was conducted in five centres, where CAT was administered.

The trainees were too many in each of the training centres', sometimes as many as 400. Without public address systems, it was difficult for some trainers to be heard by all trainees. A total of nine thousand, seven hundred seventy nine (9,779) staff was employed (92 cartographers, 9,485 data collectors and 202 data processing staff). See appendix.

Table 7.2: Total number of Data Collectors by County and Category

COUNTY	COUNTY COORDINATOR	COUNTY INSPECTOR	DISTRICT SUPERVISOR	FIELD SUPERVISOR	ENUMERATOR	DRIVER	TOTAL
BOMI	1	1	4	55	307	2	370
BONG	1	1	12	188	944	2	1,148
GBARPOLU	1	1	6	31	122	1	162
GRAND BASSA	1	1	8	106	621	3	740
GRAND CAPE MOUNT	1	1	5	54	280	1	342
GRAND GEDEH	1	1	8	35	175	2	222
GRAND KRU	1	1	18	30	127	1	178
LOFA	1	1	7	90	520	2	621
MARGIBI	1	1	4	92	502	2	602
MARYLAND	1	1	7	34	178	1	222
MONTSERRADO	2	3	19	492	2,581	8 UN Drivers	3,105
NIMBA	1	2	17	171	900	3	1,094
RIVER CESS	1	2	8	41	196	1	249
RIVER GEE	1	1	10	21	110	1	144
SINOE	1	1	11	47	225	1	286
TOTAL	16	19	144	1,487	7,788	31	9,485

## **7.5 Deployment of field Staff**

After the training of field supervisors and enumerators, field staff was given three (3) days for travelling back and for canvassing of EAs. The canvassing was also for publicity purposes, so that the local leaders and heads of households expected enumerators to visit them and collect data and to know the EAs better.

## **7.6 Transportation and Distribution of Census Materials**

It was not possible for each field worker to have a car simply because LISGIS did not have enough of them. It has not been possible to provide a car for each field worker in most censuses of developing countries. Buying so many vehicles to be used for such a short period inflates the census budget and hikes the operation and maintenance costs. In most situations, it is cheaper to rent transport from private providers. LISGIS was always on the look out for cost effective alternatives and it therefore decided to rent some of the vehicles.

The quantities of field materials were determined based on the number of EAs in each district as provided by the Mapping/Cartography division. Special control forms were designed and produced to guide the management of the materials. The training materials were delivered separately from the enumeration materials. The census materials included:

- i. Questionnaires;
- ii. Instruction manuals;
- iii. Summary sheets and control forms;
- iv. Identification cards;
- v. Stationery (pens, markers, reams of papers, exercise books, chalks, etc.);
- vi. maps;
- vii. List of recruits;
- viii. Flash lights and batteries; and
- ix. Census T-shirts and bags.

Delivery of materials was planned and executed in a hierarchical manner. The flow was from LISGIS to county headquarters; then to district headquarters and finally to training venues. At the end of training, each Field Supervisor and his/her team of enumerators were given their materials.

UNMIL assisted in distributing materials from LISGIS to county headquarters and in some cases to district headquarters. They used trucks and helicopters as they found convenient. At the training sites, each field worker was given his/her enumeration materials at the end of the training.

## **7.7 Census Enumeration/Data Collection**

The census reference night was Thursday/Friday 20<sup>th</sup>/21<sup>st</sup> March, 2008. The enumeration began in the morning of Friday 21<sup>st</sup> March, 2008 and was declared a public holiday. This was advantageous to the enumeration process because people stayed at home for three days that weekend. An appreciable percentage of the population was enumerated during that weekend.

Initially, the census was supposed to end on the evening of Thursday 27<sup>th</sup> March, 2008. However, before that Friday, LISGIS received reports from many districts that they were not going to meet the deadline of completing the enumeration as scheduled. It was therefore decided to extend the enumeration for three more days up to the evening of Sunday 30<sup>th</sup> March, 2008. The enumeration was completed within the new deadline. LISGIS made available a number of telephone lines which people who had not been enumerated by that Sunday could use to alert the office. A relatively small number of people, not EAs or clans, called on these lines and officers were sent to those areas. This was an indication of good enumeration coverage.

### **7.7.1 Enumeration of special populations**

The Enumerator Instruction Manual covered this topic in detail. The manual discusses the procedures of enumerating persons in households, institutions, sea ports and the floating population. It defines the floating population as a special case and lists areas where such persons are normally found. It further emphasizes the need of putting special procedures of enumerating them. Reference can be made to this manual. In Liberia, the floating population is most common in Monrovia and not so much in other urban areas which are relatively much smaller. A religious NGO that deals with such people was hired to escort enumerators to areas where these floating persons are commonly found. These escorts were known to them and as such they cooperated in answering the few questions posed to them.

### **7.7.2 Enumeration in special areas**

Letters were written to heads of the security forces namely the Army, Police and Prisons requesting them to alert their members to cooperate and agree to be enumerated. They indeed cooperated and were enumerated whether they were inmates or living in private households. The same applied to the UNMIL.

Special arrangements were made with embassies through the Foreign Affairs Ministry and excellent cooperation was accorded to the enumerators.

Finally, the Director General of LISGIS accompanied the enumerator who interviewed Her Excellency, the President of the Republic of Liberia, His Excellency the Vice President and the Chief Justice. This was done on the first day of the census and greatly enhanced the publicity of the census and the cooperation of other citizens.

### **7.8 Retrieval of Census Materials**

At the Field Supervisor level, all materials were clearly sorted and tied together. All the used and unused materials had to be accounted for and stored. The District Supervisor collected the materials from his/her Field Supervisors and secured them in the respective district headquarters. Later, the County Coordinator transferred them to the county headquarters. The initial plan was for UNMIL to return the materials from county headquarters to LISGIS. However, most of the County Coordinators carried the materials back to LISGIS in their supervisory-vehicles. UNMIL assisted in a few cases.

It was a must to return to the immediate supervisor and consequently to LISGIS the rest of the other field materials such as: ID-cards, maps, control forms, and summary sheets. It was a directive that the immediate supervisor had to receive these items before approving or paying the allowances. Field workers were allowed to keep the rest of the materials as souvenirs. At the headquarters' office, coordinators handed over field returns to the storeroom staff and were handed a certification note that authorized their payment.

## **7.9 Storage of Field Returns**

All materials were packed and labelled clearly. Batching of questionnaires was done at EA level under each district and shelved by county.

## **7.10 Compilation of Households and Population Counts**

The summaries of population counts and households were made for each district. At the end of the enumeration, a summary of all persons enumerated within an EA was made together by the enumerator and his/her supervisor and entered in the Field Supervisor's Summary Sheet. The Field Supervisor in turn summarized the EA population and forwarded it to the District Supervisor. This chain of activity continued up to the County Coordinators and to LISGIS.

Shortly after the enumeration, LISGIS was able to compile the population totals by County from the County Coordinators summaries. However, these summaries were found to have accumulated very many arithmetical errors as the process moved from the Field Supervisor to LISGIS. Instead, LISGIS used the Field Supervisor's Summary Sheets to compile the provisional results.

The Provisional results were released on the 19<sup>th</sup> June, 2008, two and a half months after the enumeration. Although other countries have done so in shorter times, this was good performance considering that Liberia had not conducted a census for 24 years and given the destruction of the socio-economic infrastructure by the wars.

## **7.11 Challenges**

The overall recruitment and training exercise turned out to be difficult for LISGIS to handle. The following general problems were faced in the field:

- i. Central recruitment created more problems when it came to allocating  
LISGIS found it difficult  
to allocate enumerators to zones and Supervisory Areas. Many of  
the enumerators had to move across Monrovia to go and interview contrary to  
the directives in the Instruction Manuals.

- ii. Some of the Field Supervisors had to work with Enumerators they had not seen before because they had been trained in different centres.
  
- iii. While training was in progress, some of the trainees tried to convince others to reject the training allowance of US\$5. Before training started, all the trainees had agreed that they would accept the amount. This delayed the completion of training in Monrovia by one day. This is why enumeration started a day late in Monrovia.
  
- iv. The roads were bad which caused most of census vehicles to be stuck in the mud. This made the enumerators to cover very long distances on foot, which caused the extension of the enumeration by 3 days.

## **7.12 Summary, Conclusions and Recommendations**

The day to day census activities were almost entirely managed and implemented by LISGIS' established staff although not formally appointed to positions in the census office. The recruitment of field staff, training and data collection lasted for approximately two months. Three (3) months after data collection (in June), the preliminary results were compiled from the summary sheets and released to the public. In spite of the above challenges, the field operations were a great success, thanks to the commitment of those who participated under difficult conditions.

The Recommendations for the future census field work include:

- There will be a need to have a clear system of retrieval of materials, and be computerized at county level, so that the centre receives the county results in soft copies for further processing. This would greatly reduce the expense of transporting the returns to the centre. The exercise of receiving, coding, entering and editing data at the county level would train personnel at the county LISGIS offices and build their capacities to handle other data in a similar way. With this capacity, the LISGIS county offices would also learn how to further process and analyse their own data for policy makers and programme purposes.

- A utility study of all materials used and unused during the census should be carried out to help the future census planners to estimate the materials better and reduce waste.
- A formal evaluation of the census activities should be done and results analyzed for the purpose of improving the system in future; and
- It is important for field staff to receive some initial instalment of DSA before commencing the enumeration in order to motivate them to be committed and offset some of their expenses created by their absence from regular income generating work.

## Chapter Eight

### Post Enumeration Survey

#### 8.1 Introduction

A Post Enumeration Survey (PES) is conducted after a census enumeration/data collection to examine the quality of census output and process, e.g., census coverage and content errors. The UN Principles and Recommendations for Population and Housing Censuses defines it as “the complete re-enumeration of a representative sample of the census population and matching each individual who is enumerated in the post-enumeration survey with information from the main enumeration”.

The United Nations further adds that “For the PES to succeed, its planners should develop good area frames with well-defined EAs; design plausible probability samples; adopt efficient but realistic matching rules; attempt to maintain independence between the census and the PES; use the same definitions and concepts in both the census and the PES; use well-trained field staff; carry out pre-tests for the PES and reconciliation; allocate adequate funds for the PES; include relevant and useful items for matching purposes; and keep the PES as simple as possible and set objectives that are attainable.” PESs have been used effectively in a wide range of countries in recent decades. They have been used by both developed and developing countries.

The objectives of the PES were:

- i. To assess the degree of coverage during census enumeration;
- ii. To examine the implications of coverage deficiencies, if any, on the usefulness of the census data;
- iii. To use the PES estimates of coverage and content errors to adjust the main census data;
- iv. To obtain information for the design of future censuses and surveys; and
- v. To examine the characteristics of persons who may have been missed during census enumeration.



## **8.2 History of 2008 PES**

Liberia conducted de jure censuses in 1962, 1974 and 1984. The reports of these three censuses indicate that a PES was done after each of the censuses. However, as shown below, these reports just mentioned the PESs without any details. There is no other information about the number of areas sampled, type of field staff employed, training, how matching was done and methodology of calculating the net error.

### **8.2.1 The 1962 PES**

The 1962 census reference date was Tuesday 2<sup>nd</sup> April, 1962. Its PES was conducted in August, 1962, about four months after the main census. The Summary Report for the 1962 census states that, the aim of the PES was to measure coverage error. Systematic sampling was employed where the procedure “was to select a random sample of small localities (less than an EA in size) and of EAs in localities making up one or more EAs”.

The report concluded: “The results of the survey in general indicated that the net error was relatively insignificant (less than 5 percent)”. It further states: “The size of the survey did not permit estimates of net error for any of the administrative subdivisions”.

### **8.2.2 The 1974 PES**

The reference date for the 1974 census was 1<sup>st</sup> February, 1974. In 1978, Marks and Rumford wrote: “A (PES) post-enumeration survey was conducted in Liberia 15 days after the beginning of the 1974 census. For the most part the 1974 Liberian census appears to have achieved 89% completeness and there is little or no overall difference between males and females in the degree of completeness”.

### **8.2.3 The 1984 PES**

Enumeration in the 1984 census commenced on Wednesday 1<sup>st</sup> February, 1984 and lasted for two weeks until 15<sup>th</sup> February, 1984. In early March, 1984, or two weeks after the enumeration, a PES was conducted. The 1984 summary report states that the re-interview covered “...a sample size of households across the country.” All the detailed information about this PES was lost during the conflicts.

### **8.3 The 2008 PES**

During the 2008 census, Liberia planned to conduct a PES in 2008 immediately after the census. The PES questionnaire and Instruction Manual were all drafted before the main census enumeration. Even the PES enumeration date was tentatively fixed for June, 2008.

The budget for the 2008NPHC document submitted to donors in July 2006 had a component of the PES. This manual was prepared by LISGIS technical staff with the assistance of the CTA who, among other duties, was specifically in charge of the PES.

### **8.4 Developing the PES instruments**

The following instruments were developed and used during the 2008 PES:

- i. A PES household questionnaire;
- ii. PES Enumerator's Instruction Manual;
- iii. The Field Control Forms;
- iv. The Summary Sheets;
- v. EA maps; and
- vi. The Matching Instruction Manual.

#### **8.4.1 The PES questionnaire and Enumerators Instruction Manual**

The PES questionnaire and manual were drafted before the main census enumeration with reference to the Uganda and Sierra Leone samples. Delay in reviewing the samples was the unavailability of money to pay for printing of the instruments, train field workers and conduct the enumeration. They were instead reviewed in May 2008 when funds were pledged from UNICEF. It was in June 2008 when formalities were concluded and UNICEF donation covered all PES activities including report writing.

#### **8.4.2 The Field Control Forms, Summary Sheets, and Pre-testing of instruments**

The formats of the main census forms were also used for the PES with minor alterations made like changing 'main census' to 'Post Enumeration Survey'. The methodology used in interviewing households in the main census was replicated in the PES. Hence, there was no need to pre-test the field procedures. Only the questionnaire and the instruction manual were pre-tested. A team of 18 LISGIS experienced interviewers who had taken part in the main

census were hand picked. The CTA trained them on the 22<sup>nd</sup> May, 2008 and they conducted the pre-test thereafter on the same day in Bomi and Bong counties as well as in Monrovia.

After the field work, the questionnaire and Manual were reviewed by LISGIS senior staff, CTA and the pre-test field workers. The instruments were revised accordingly and ready for use.

#### **8.4.3 EA Maps and the Matching Instruction Manual**

As stated above, the main census field procedure was replicated in the PES. The enumerator had to canvass the whole EA and cover all the households excluding institutions and special population groups. Hence, the map of boundaries of the main census did not change. All that the Cartography Department had to do was to reproduce the maps for the EAs sampled for the PES.

#### **8.4.4 The 2008 PES Sample**

In most countries, the PESs cover only a small sample of about 1-5 percent of the total EAs. For a national large scale exercise like the PES, the sample should be designed by a sampling statistician. For example, the sample for the Demographic and Health Survey that was conducted in Liberia was designed by a sampling statistician. There was no such statistician at LISGIS or elsewhere in Liberia. In view of this, UNFPA had earmarked money for a two week external consultant to design a scientific sample for the PES.

However, the Development Partners meeting of 24<sup>th</sup> April 2008, decided that the sample for the PES should be designed and drawn by a team of statisticians and other professionals constituted from LISGIS, other Government departments and the University of Liberia so as to develop technical capacity in the country. The team would be assisted by the three CTAs.

The sample was needed fairly quickly because the PES was scheduled for June 2008. There were a number of activities that would follow the sample selection like recruiting and training field workers, printing EA maps, preparing money for these various activities, etc. However, the proposal met unforeseen set backs namely:

- i. The letters inviting the statisticians and other professionals outside LISGIS were written and dispatched late; and
- ii. The statisticians and other professionals outside LISGIS either did not show up or responded very late after the LISGIS team had drawn the sample;

Hence, the sample was designed and drawn by LISGIS staff, the CTA and the two Advisors without any contribution from other Government Departments or the University of Liberia. During the process of drawing the sample, it was observed that there were many technicalities which the team did not know. Therefore, the sample that was finally drawn had technical problems which could not be solved by the team.

Finally, the team decided to draw a 5% sample (352 EAs) out of a total of 7,012 EAs in the country.

### **8.5 Recruitment and Training of 2008PES Field Staff**

The senior PES supervisors namely County Coordinators, County Inspectors and County Cartographers were selected from the LISGIS data base used for the 2008 census. As stated earlier, this data base contains names, qualifications, and performance-ranking of those persons who are currently working at LISGIS or have worked with LISGIS before. Most of these data collectors have participated in several surveys and have interviewing skills. The additional criterion in the PES was to select those who performed exceptionally in the main census. The senior PES supervisors were trained at LISGIS by the CTA and the Field Operations Advisor on the 5<sup>th</sup> June, 2008. They departed for field work on the 14<sup>th</sup> June, 2008.

The lower cadre staff namely the District Supervisors, Field Supervisors and Enumerators were recommended by the senior staff that had supervised that area during the main census. The residents of the County/District were given priority on condition that they were not posted to the area where they worked during the main census (i.e. District Supervisor not to the same District, Field Supervisor not to the same Supervisory Area and Enumerator not to the same EA).

## **8.6 Publicity**

The budget for the 2008 PES publicity was very small. Hence only radio messages were used to inform and educate the public about the PES.

## **8.7 PES Enumeration/Data Collection**

The census enumeration procedure was repeated in the PES. However, the PES questionnaire was much shorter than the census questionnaire. Data collection was scheduled for ten days and enumerators completed their work before the end of the prescribed 10 days.

## **8.8 Activities after the PES Field work**

After the PES field work, matching and processing returns delayed due to lack of financial resources. Coding and matching started in mid November 2008.

## **8.9 Challenges**

The major challenge during the conduct of the 2008 PES was the unavailability of funds on time, which delayed the field work. Related to this challenge was that LISGIS has not managed to mobilize funds for field verification and analysis stages of the PES, which means that the major goal of the exercise to estimate coverage and content errors of the main census has not been achieved. The serious implication of this situation is that the data of the main census have been analysed and written up, without the benefit of PES results. This means waste of money invested in the preparation and data collection of PES project. However, in sub-Saharan Africa, this situation is not unique to Liberia and has been largely due to lack of human and financial capacity in many African countries to conduct and complete PES. Many development partners tend to be reluctant to fund PES after spending a lot of money on the main census. Secondly, there are very few experts in the area of PES in sub-Saharan Africa. The one who used to be with the UNFPA Addis Ababa country team and covered the whole region is now retired, while a few others are too busy advising on the main censuses and have little time for PES.

## **8.10 Conclusions and recommendations**

There are no findings from PES to show and use for main census data analysis and future work. It is recommended that in the future, PES should be well planned early at the same time main census is being planned and be conducted after acquisition and assurances of funds to go beyond field work. This would stop waste of funds. Secondly, the PES sample should be designed by a sampling statistician or a person versed in sampling, but not any person not well knowledgeable in this area.

# Chapter Nine

## Data Processing

### 9.1 Introduction

The fundamental purpose of a census is to provide information on the size, distribution and characteristics of a country's population. Data processing is the stage at which data collected from the respondents is coded, entered, edited and tabulated. The result of these operations is the production of micro and macro databases. These databases are the ones from which tabulations; time series analysis, graphing and mapping operations are derived. This chapter describes the process of transforming raw data into data ready for analysis. It has sections on the history of data processing in Liberia, preparatory phase, lessons learned from pilot census data processing, data processing activities, systems design and development, data processing theatre, census materials storage, census data coding and entry, editing and challenges.

### 9.2 History of Census Data Processing in Liberia (1962, 1974 and 1984)

The reports on censuses of 1962, 1974 and 1984 show that the data processing procedures have been similar except for differences in computer hardware and accessories that have been changing over time. The 2008 process was being simplified by the use of the Local Area Network (LAN). Like in previous censuses, manual coding and editing was used in the 2008 census, but on a relatively smaller scale because of recent innovations in electronic data processing as a whole.

In the 1962 census data processing, the International Business Machine (IBM) punch card workstation was used for data entry. In 1974, the same punch card system was used. The summary report on the 1984 census does not mention the method of data processing that was used. However, it is very likely that it was the same IBM system that was used but with a diskette workstation. In short, every period used the system and method that was available. Even the extent of electronic editing used at that time depended on the technology that was available then.

### **9.3 Preparatory Phase**

Preparations for processing the 2008 Population and Housing Census data started in 2007 with the conduct of a pilot census. The preparations included a five day retreat in Kakata in July, 2007 to review the pilot census data processing and other components of the census implementation. The lessons learnt from the pilot census assisted in putting things on track and the choice of data entry method for the 2008 census data processing.

Liberia opted for the traditional mode of data capture using keyboards instead of scanning, which increased value being used by most countries. Liberia took the option because of a number of reasons. With less than twelve months to the census, it was going to be difficult to implement the alternative methodology of scanning because:

- i. The scanning technology would require enormous financial and technical resources that had not been budgeted for;
- ii. It was advisable to use the same technology as what had been used during the pilot census;
- iii. The census instruments had already been designed and envisaging traditional data capture. They would have to be redesigned and re-piloted for scanning technology;
- iv. The expertise to manage the traditional data entry method was already available locally; and
- v. The precision required in printing forms to be used with scanning technology was not available locally.

### **9.4 Lessons from the Pilot Census**

The processing of the pilot census returns involved a few basic operations that included software development (using CSPro), coding, data entry and tabulation. The exercise served its main purpose of enabling the testing and finalization (to a large degree) of the data capture systems and the coding system since they had to be developed from scratch. This project also helped to build the confidence of stakeholders that LISGIS would process the 2008 National Population and Housing Census.

Data entry for the 300 pilot enumeration areas took 2 weeks. A total of 15 data entry clerks, 2 programmers, 1 supervisor and 5 coders took part. The UNFPA provided 1 data processing



consultant during the pilot processing. The whole exercise went smoothly and was completed on time.

Furthermore, the experience with the pilot census data processing revealed other problems concerning the geographic coding system, questionnaires and manuals. These findings helped in finalizing the instruments, preparing editing rules and programmes and revising the codes. The specific recommendations on data processing based on the pilot census were:

- A manual should be developed to guide the editors;
- During data entry, consistency and validation rules should be developed and routinely implemented;
- An elaborate 'tracking system' should be developed to help control the flow of census materials, tools and processes. The system should use the Enumeration Area (EA) as the accounting unit at all times. The system should show at all times the document accountability and level of processing they have gone through. The system should be able to generate reports giving progress at all times.

## **9.5 Data Processing Activities**

The 2008 National Population and Housing Census data processing involved the following major activities:

- i. Systems design and development;
- ii. Census Materials Stores Management;
- iii. Computer equipment and accessories;
- iv. Coding and Manual Editing of the Census returns;
- v. Update of the Geography file (Geo-file);
- vi. Data Entry Operations;
- vii. Electronic Data Editing;
- viii. Generation of Tables;
- ix. Census Archiving; and
- x. Tabulation Programme.

## **9.6 Systems Design and Development**

This is one of the major data processing activities and therefore, after the Pilot Census, a Data Processing Strategy was developed. The strategy highlighted, among other things, the following:

- i. The detailed data processing activities as highlighted in 9.1.4 above;
- ii. The required support services including administration, cleaning and security;
- iii. The number of persons required for all activities of the process;
- iv. A description of the operations and the time frame attached to each activity;
- v. A detailed account of the required equipment, furniture, stationeries and other supplies;
- vi. The needed technical Assistance and training;
- vii. The total space and layout required for all the data processing operations;
- viii. The organgram detailing the hierarchy and other reporting arrangements; and
- ix. A budget for the data processing operation.

In November 2007, a decision was made to secure storage facilities large enough to accommodate the entire census and the Post Enumeration Survey returns. Strong wooden shelves, designed to accommodate the size of the questionnaires, were erected in three adjacent rooms. In between the shelves, there was enough room for the store keepers to move around to shelve the questionnaires. Air conditioners were installed in the store to reduce the effect of humidity in the room, which could destroy the questionnaires.

## **9.7 Establishing a Data Processing Theatre**

A new detailed layout for the data processing theatre was developed. This provided a basis for drawing detailed specifications and quantities for the required furniture and fittings as well as the local area network (LAN) design. The detailed equipment specifications and required quantities earlier were all reviewed and modified taking into account the number of staff that were to be employed and the timeframe within which the work was to be accomplished. The Data Processing staff was fully involved in the procurement process by providing technical input at the procurement design, the procurement process itself and evaluation stages.

The World Bank through PARIS21 provided the computer equipment and accessories that were used for data processing. Data entry started on 28<sup>th</sup> July 2008 after installing the Local Area Network (LAN) and after recruiting coders and data entry clerks. The LAN made monitoring and backing up simpler. All the files created by the various data entry clerks were directed to one folder. File copying could easily be effected by copying a folder from the server. The various sections of the questionnaire (namely personal characteristics, housing, agriculture, etc) were all entered together. None was prioritized over the other.

Before the census data processing, the LISGIS data processing unit occupied a small room that could accommodate only twenty-two (22) computers. To increase the data processing space, a portion of the LISGIS training room was annexed to the data processing theatre. The expanded space could now accommodate fifty (50) computers.

## **9.8 Census Materials Stores Management**

Field returns were received from late March to April 2008 and were secured in a store room described in 9.6 above. Eight (8) store keepers were recruited. All storeroom staff was initially deployed first to sort the unused materials from the used ones. They also separated spoilt ones from the valid ones. This process was double checked to ensure that valid materials were not included in the unused and the spoilt lot. The Field Supervisors and District Supervisors had sorted the questionnaires but were not able to tie them together because they were not provided with ropes. The ropes were bought late after the field materials had been dispatched.

Shelves with 130 pigeon holes had earlier on been erected in the store for keeping the used field returns. The books were further sorted and tied by Supervisory Areas (SAs) then bundled by district. A record of the books in each EA was made using a form which was thereafter attached to the supervisory area bundle. The copy of this form was filed and later entered in a computer to generate a storeroom record data base. Field returns comprising of 17,342 booklets were retrieved from 7,012 EAs. On average, each EA was enumerated using about 2 ½ booklets.

### **9.8.1 Stores Staff**

During data processing the storeroom had a supervisor, one shift leader and a number of storeroom assistants and attendants. The number of staff was kept small because the storeroom was small. The storeroom staff worked 7 days a week from 9:00 a.m. to 10:00 p.m.

### **9.8.2 Management Processes of storeroom materials**

The major aspects of work in the stores centred on shelving and un-shelving of books for storage and issuing of books to coder and entry clerks. A shelving list that enabled quick access and orderly shelving was generated from the Returns Database created from the records made at the sorting and the initial shelving stages.

### **9.8.3 Issuing questionnaires to editors, coders and data entry supervisors**

The storeroom section would receive and process requests for questionnaires from the coding, data entry and the editing sections. The requests would, in most cases, involve one or more districts of the same county but in some instances, they would be for specific lower geographic areas like supervisory area or enumeration area. The required questionnaires would then be un-shelved; their details recorded and then are delivered to the supervisors using a form that recorded the quantities and geographic details of the materials.

### **9.8.4 Retrieving from the various processing sections**

Once the work on a consignment of materials was completed by the relevant section, its supervisor would notify the storeroom. By that time, the processing section would have received the next consignment to be worked on. The storeroom section would then conduct a preliminary check to confirm that all the materials had been assembled ready for returning to the storeroom. Once in the storeroom, the books were re-checked in detail to confirm that all books were present and in the expected order. The shelving lists were used to guide the shelving process. It was a policy that the questionnaires should never be moved from one processing section to another without getting back to the storeroom first.

## **9.9 Census Data Processing Operations**

The Director General of LISGIS and the UNFPA Resident Representative decided to invite a short-term consultant in data processing to review the whole system for one week starting 27<sup>th</sup>

October 2008. In brief, the consultant found a number of shortcomings in the way the system was being implemented.

The consultant also trained LISGIS staff on how to generate basic cross-tabulations from the system for performing demographic consistency checks on the data. He also gave training on how to electronically format the cross-tabulations in the Tabulation Plan. This was to make it easier for the data processing team to generate the cross-tabulations. Soon after the consultant visit, a long term census data processing expert arrived in December 2008 and helped to develop a comprehensive data processing schedule and requirements. The short term consultant mission and the arrival of the expert in data processing relieved the CTA concerns of lack of data processing expertise on the project.

#### **9.9.1 Recruitment and Training of Coders and Entry Clerks**

The recruitment was mainly for coders and data entry clerks. The process started in 2007 with the processing of the pilot census and the Liberian DHS. The coders and data entry clerks that were recruited and trained for these two activities formed a good starting point for the census.

The positions for the coders and data entry clerks were advertised in February, 2008. Over 600 persons applied. An aptitude test was administered to the applicants so as to short list 114 trainee coders and 119 trainee data entry clerks. The actual numbers required were 100 coders and 100 data entry clerks. More persons than the number required were trained to promote competition, concentration and regular attendance.

A ten days workshop was conducted for the 233 participants. At the end of the training workshop, a final test was administered. Based on the result of the final test, 78 coders, 100 data entry clerks, 3 coding supervisors, 2 data entry supervisors, 15 compilation clerks and 5 storeroom management staff were recruited. Additional 5 coders and 5 data entry clerks were selected as reserves.

#### **9.9.2 Data Coding and Entry Operations**

Data entry started with the summary forms in June 2008 in a bid to compile the Provisional Results. Using a simple data entry application designed internally, 15 entry clerks took about a

week and half to enter the field summaries and tabulate them leading to the preliminary results.

The plan for the major data entry operation was to capture all sections of the questionnaire with 50% verification, but due to time and financial constraints the idea was not implemented. Instead, logical imputations were used to correct any errors in the data.

The Data Processing Centre consisting 206 coding and data entry clerk staff was managed by an International Consultant, a programmer/Data Processing Director and an Assistant Director. Throughout the entire data processing phase, the stand-bys were used to replace those who would either abscond or resign and those whose services would be terminated. Termination of services were invoked mainly for staff engaging in unbecoming behaviours in contravention of the LISGIS Terms and Conditions of Service as spelled-out in the contractual agreement and failure to meet the required performance levels.

The coders and clerks were divided into two shifts of equal size of coders and data entry clerks. Each shift worked for 5 hours a day and 6 days a week for 6 weeks. The first shift ran from 9:00 am to 2:00 pm and the second shift ran from 3:00 pm to 8:00 pm.

Coders were instructed to work ahead of the data entry clerks, so that the former keep on feeding coded books to the latter group. Coders were trained to do specific corrections in each section using a coding manual.

### **9.9.3 Cleaning the Geo Files**

Census mapping started in April 2007 and was completed in February 2008. During that period, boundary changes were affected in some of the districts that had already been mapped. New districts and lower administrative areas had been created. In light of this, the guidance of the cartographers was very necessary during the coding and data entry period. Furthermore, some Field Supervisors carved new EAs out of the large EAs that could not be handled by one enumerator.

In order to verify the boundaries of these new EAs the following was done:

- i. Office checking was carried out to identify areas that had variation; and

- ii. Field visits were arranged to verify some controversial Administrative units in the affected districts/EAs.

This clean up was very useful in eradicating erroneous/duplicated items in the geo-data base.

### **9.10 Final Electronic Editing**

The Census Secretariat set up a team to organize, preferably an off station workshop to finalize the Electronic Editing Rules. Participants consisted of demographers and programmers. Technical assistance to finalize the rules and the programs was provided by UNFPA consultants or some subject specialists. A draft of such edit rules had been made with the assistance of a consultant provided by USAID. The system used both logical imputation and hot decking whenever an error (inconsistent or missing data) was detected. The system also made logical imputations by deducing from other information in the household or information based on other household members, in a bid to make the data consistent.

All the specifications were reviewed by the subject matter specialists to verify whether they were working well. A review session was held to resolve such issues. All the issues raised were dealt with by the Programmers at the Census Data Processing Centre. After completion of the preliminary editing, the edited data was subjected to the edit programmes in two phases. The first run was to undertake structural edits which in essence was ensuring that the entries were logical. For instance, males were not expected to have fertility data.

The second run of the programmes was aimed at ensuring completeness of content by imputing missing values following a logic imbedded in the computer programs according to the editing specifications or rules established. This exercise was fully automated and was undertaken by the programmers and the consultants/subject specialists. In addition to checking of inconsistent data, and correct missing information the machine editing system imputed some derived variables based on the variables collected. The end result of the post-capture editing process is clean and reliable census data.

#### **9.10.1 Tabulation Program**

The Census Secretariat provided a list of dummy tables to be produced from the Census data and these included:

- i. Tables for production of indicators at national, county and district levels;
- ii. Tables to be published at Sub-District levels;
- iii. Specialized Tables for the Monographs; and
- iv. Tables on request for analytical purposes.

Prior to the final production of these dummy tables, a series of orientation workshops were held in stages so as to verify, vet and validate these dummy tables before finalization. In these workshops, invitations were extended to various stakeholders such as representatives from various Ministries, development partners, agencies, University officials, etc.

### **9.11 Census Archiving**

The purpose of census archiving is to preserve data in the easiest way to retrieve and query system (database) for future use. The 2008 Population and Housing Census data are archived using REDATAM software, popularly known as IMIS. In this system data is assured of confidentiality and are free from corruption. Little training is required for one to be able to query the data for information

### **9.12 Technical Assistance by Development Partners**

The Data Processing programs received technical assistance at different stages as below:

- i. A data processing consultant from UNFPA supported the setting up of the system for the pilot at the data processing centre;
- ii. Staff from the USAID and UNFPA gave technical assistance in the development and writing of the machine editing rules and programs;
- iii. Another consultant from UNFPA helped in kick starting the main data processing activity;
- iv. UNFPA paid for the erection of shelves to store the field returns;
- v. The World Bank, through PARIS 21, met the cost of computers, soft ware, accessories and honoraria for the data entry staff;
- vi. UNFPA paid for allowances, tea and other fringe benefits for the data entry staff; and
- vii. UNFPA brought on board a long term data processing technical advisor who took charge of the data processing activities from February 2009.



### **9.13 Challenges**

Unlike other stages of census, the data processing did not experience the challenges of funding. This was because data processing is very critical in a census process and development partners were ready to sponsor this stage immediately after data collection. However a major challenge was lack of space to accommodate both the coders and entry clerks. This was resolved by dividing the groups into two shifts. The second challenge was late start of the phase due to the delayed installation of the data entry system, which related to procurement issues and led to delayed completion of data processing activities.

### **9.14 Conclusions and Recommendations**

The 2008 census data was processed using the CSPro software from data entry to tabulation. A recommendation for this stage is for a consistency check and preliminary editing is a priority.

The success of this phase of the census is evidence of benefits of prior planning and availability of funds for the operations. It is recommended that in future this good planning should be extended to other phases to make them succeed also. Secondly, enough room space should be acquired long before data processing starts to avoid any delays.

## Chapter Ten

# Tabulation and Dissemination of Results

### 10.1 Introduction

The phase of tabulation and dissemination of census results is a very important one, since without it; there will be no proof that the census took place. The Government, public and other stakeholders need the data for policy purpose and programme implementation. This chapter is about the last phase of data processing, namely tabulation and how the results were disseminated.

### 10.2 Preliminary Results

During data collection, modalities were put in place to release preliminary results within the shortest possible time by ensuring that field staff filled summary sheets and control forms provided during enumeration. This enabled the Census Secretariat to get a quick population count per district and per county. A special team with the supervision of members of Census Secretariat was put together to implement this quickly. Immediately after the questionnaire books were returned to LISGIS headquarters office in Monrovia, the special team used the summary sheets and control forms filled by field staff during the data collection to calculate the preliminary result as 3,489,072 on the night of 20/21 March 2008. The Chairman of the Census Commission, Dr. Toga G. McIntosh officially submitted the Preliminary results to the President, Her Excellency, Ellen Johnson Sirleaf, who released the results officially on June 6, 2008, less than three months from the enumeration day, at the Cecil Dennis Memorial Hall, Ministry of Foreign Affairs at 2:00pm. The total population was disaggregated into 1,764,555 males and 1,724,517 females with an overall sex ratio of 102.3. The preliminary total population was slightly above what the United Nations Development Program's Human Development Report (UNDP's HDR) 2007/2008 estimated 3,442,000 for Liberia in 2007/2008. This closeness gave confidence to the census figure.

### **10.3 Tabulation Plan**

The tabulation as a stage of data processing was a process in which dummy tables were drafted with several thematic titles. These tables were drafted by the census secretariat and discussed by other senior members of LISGIS during meetings of three days. Further discussion meetings on the tables were held with heads of statistical units in the various Ministries and Agencies who assisted in the vetting exercise. The tables were then produced for a validation workshop attended by the representatives of the Government Ministries and Agencies, University Authorities, Civil Societies Organizations etc.

A short term Data Processing Programmer was recruited to help with the designing of the tables. Thereafter, a final four days workshop was held at the Thinkers Village Hotel, in Monrovia and effected the final corrections, and inputs of previous workshops. The following ten themes were covered by the dummy tables:

- Theme 1: Geographical and Internal Migration Characteristics;
- Theme 2: International Migration and Immigrant Stock;
- Theme 3: Household and Family Characteristics;
- Theme 4: Demographic and Social Characteristics;
- Theme 5: Fertility and Mortality;
- Theme 6: Education Characteristics;
- Theme 7: Economic Characteristics, Employment and Labour Force;
- Theme 8: Disability Characteristics;
- Theme 9: Housing Characteristics; and
- Theme 10: Agriculture.

### **10.4 Dissemination of Final Results**

The final results were products from the data processing exercise using the CSPro soft -ware. Hence, from the electronic count, the population of Liberia was 3,476,608 on the night of 20<sup>th</sup>/21<sup>st</sup> March 2008. This result is disaggregated into the population of 1, 739,945 males and 1,736,663 females, which gives a sex ratio of 100.2. The result was first announced by the then Minister of Planning and Economic Affairs, Hon. Amara M. Konneh in May 2009 at the LISGIS headquarters office. This announcement was later followed by an official launching of the Final

Census Report by the same minister on December 17, 2009 at the Cecil Dennis Memorial Hall, Ministry of Foreign Affairs at 2:00pm.

At the launch of the census preliminary and final result reports, copies were distributed to those present. After the launch, copies were disseminated to various Government Ministries, Agencies, Parastatals, The Legislature, Development Partners, NGOs, Universities, High Schools, Civil Society groups, all county headquarters etc for public consumption. In addition, at LISGIS headquarters office copies were available at the customer services section for a minimum price of five United States Dollars (US\$5.00) per copy.

For the purpose of comparison, Table 10.1 showing difference between Census preliminary results and the final results by county is given below. As can be seen in the table, the differences in counties are small. In some counties, the preliminary results were higher, while in others they were lower than the final results. Overall, the difference nationally is less than 0.4%, which is negligible and implies a good job done by the workers who manually compiled the preliminary results.

**Table 10.1: The Difference between Census Preliminary and Final Results, 2008**

<b>COUNTY</b>	<b>PRELIMINARY RESULTS</b>	<b>FINAL RESULTS</b>	<b>DIFFERENCE IN POPULATION</b>
BOMI	82,036	84,119	+ 2,083
BONG	328,919	333,481	+ 4, 562
GBARPOLU	83,758	83,388	- 370
GRAND BASSA	224,839	221,693	- 3,146
GRAND CAPE MOUNT	129,055	127,076	- 1,979
GRAND GEDEH	126,146	125,258	- 888
GRAND KRU	57,106	57,913	+ 807
LOFA	270,114	276,863	+ 6,749
MARGIBI	199,689	209,923	+10,234
MARYLAND	136,404	135,938	- 466
MONTERRADO	1,144,806	1,118,241	- 26,565
NIMBA	468,088	462,026	- 6,062
RIVER CESS	65,862	71,509	+ 5,647
RIVER GEE	67,318	66,789	- 529
SINOE	104,932	102,391	+ 2,541
<b>LIBERIA</b>	<b>3,489,072</b>	<b>3,476,608</b>	<b>- 12,464</b>

### **10.5 Challenges:**

The delay of the arrival of data processing expert for nine (9) months after the data collection is completed and the use of traditional mode of data capture using keyboards instead of scanning technology meant that the final results were to be delayed. They were officially released 21 months after enumeration, compared to Tanzania which used scanning and released their results only 6 months after enumeration date.

### **10.6 Summary and Conclusions**

Generally, the progress up to the official release of the final census results was commendable, in spite of the post-conflict situation of the country. However, in future, the planning should allow the census processing expert on board as soon as the data collection is over, so that work can immediately begin. Secondly, scanning technology should be used in the next census to fasten the process of releasing the results sooner than later.

## Chapter Eleven

# Analysis and Dissemination of Final Census Products

### 11.1 Introduction

Immediately after the preliminary and final census results were released, Government departments, the public and other stakeholders started using them. However, it was necessary for the data to be analysed for the benefits of those who wanted to have an insight of the results. The analysis is usually in two forms. The first is aimed at generating indicators for policy and programme purposes only. The second form of analysis is to examine the data deeply for academic, policy and programme purposes. This chapter will elaborate how the first form of analysis was done.

### 11.2 Recruitment of Consultants and National analysts

It was decided by LISGIS and UNFPA that a short-term Lead consultant be recruited to plan and guide the analysis process. Advertisements were made both locally and internationally for the recruitment of a Lead Consultant. The terms of reference for the Lead Consultant were to prepare a road map for the analysis, train nationals for the analysis and guide the nationals in the analysis. An international Lead Consultant, Professor James P. M. Ntozi, was identified, appointed and started his duties in mid-November, 2009 up to mid-September, 2010.

Around the same time, local advertisements for the recruitment of national analysts and their assistants were made. Fourteen national analysts and 14 assistants were recruited by LISGIS to be paid by UNDP and AFDB, respectively.

### 11.3 Identification of Thematic Areas

As the various analysis personnel were being recruited, the census secretariat identified themes on which the analysis will be done. Initially eighteen (18) themes were proposed for analysis. After discussion in a series of workshops, the number of themes was reduced to fourteen (14). The fourteen thematic reports agreed on with the Lead Consultant and national analysts were:

Theme 1: Administrative Report;

Theme 2: Population Size and Composition;  
Theme 3: Fertility and Nuptiality;  
Theme 4: Mortality;  
Theme 5: Migration and Urbanization;  
Theme 6: Population Projections;  
Theme 7: Youth and Adolescence;  
Theme 8: Gender Dimensions;  
Theme 9: Literacy and Education;  
Theme 10: Labour Force;  
Theme 11: Disability and Elderly;  
Theme 12: Housing Conditions and Household Facilities;  
Theme 13: Agriculture; and  
Theme 14: Poverty.

It was also agreed that additional documents be prepared such as:

- i. Poverty Mapping;
- ii. Census Atlas;
- iii. Consolidated/Abridged Analytical Report;
- iv. Policy Briefs; and
- v. Census Brochure.

#### **11.4: Analysis and Dissemination Packages**

LISGIS was allowed by development partners to access and use various software packages for the analysis and dissemination of the census data and other data collected from sampled surveys. The software packages included the Integrated Management Information System (IMIS), DevInfo (later converted to LiberiaInfo and then to CensusInfo) and the National Data Archiving (NADA). Experts in each of these software packages conducted workshops to introduce and demonstrate the use of the packages. The participants of these workshops included those from LISGIS, representatives of line Ministries and Agencies. The soft wares were also uploaded on the LISGIS website for easy access.



### **11.5 Analysis Road Map and Capacity Building Workshops**

The Lead Consultant started his duties in mid November 2009 by preparing a road map for census data analysis and dissemination. The road map was discussed with LISGIS census secretariat, UNFPA and national analysts. The road map was to run for 14 months from November 2009 to December 2010. However, because of some delays in funding, the road map was updated to go on to June 2011.

The second task the Lead consultant performed was to train the national analysts and their assistants in doing the analysis. He took them through how to prepare and use dummy tables and analysis plans for their reports.

In his second short term contract, the Lead consultant trained the analysts and their assistants in how to prepare analytical tables and indicators and use them in the write up of their reports. In June 2010, a workshop retreat was organized in Kakata, (Margibi County), where the national analysts and assistant analysts were guided by the Lead consultant and data processing personnel in preparing the first draft of their reports. As a result first drafts of most reports were ready by end of June.

In July 2010, LISGIS and UNFPA decided to increase the number of short-term consultants to five to support the Lead consultant in reviewing and improving the 14 reports. The work of reviewing the draft reports was followed by a retreat workshop in August, 2010 to give the analysts time with the consultants to improve their first drafts and complete the final drafts.

In October 2010, the Civil Service Agency in Liberia recruited a Liberian born Demographer (Mrs. Dorothy Johnson), through the TOKTEN Program. She immediately continued from where the Lead consultant stopped and made progress on final editing and consolidation of all themes.

The 14 reports were synthesized and came up with a consolidated report. In the same period, the GIS consultant used the consolidated indicators to prepare a census atlas. The 14 thematic reports together with the consolidated report and census atlas were discussed at a retreat

workshop in attended by various stakeholders who approved the documents for printing, publication and dissemination.

It is envisaged that the LISGIS county coordinators will be trained by the already trained LISGIS headquarters officials to prepare census reports on their respective counties, which will help in the planning and policy making process in their areas.

### **11.6 Dissemination Strategy**

PARIS21 provide the technical assistance to prepare materials for the dissemination of the census products. This took place from January 2011 to June 2011. The department of Information and Dissemination within LISGIS in collaboration with the census secretariat took the lead in the dissemination process. The process began at the national level, starting with high level government officials and ending at the grass root in the districts, clans and villages.

Towards this effort, the UNDP donated to LISGIS a four wheel Land cruiser Jeep with dissemination accessories for the dissemination of the census reports.

### **11.7 Challenges**

The analysis had several challenges. First, the process was delayed by lack of requisite expertise to start by over one year. This was because there was no one in LISGIS who could lead the process, which meant looking for funds from development partners to source international experts to do the work. Secondly, even when the Lead consultant was available, funding was slow to be available at the appropriate time. Third, it was hard to get enough national professionals to prepare the 14 reports. Several national professionals able to do the work were not available, since they had full time jobs elsewhere. Some of these professionals who agreed to do the jobs soon found that they were too busy to add on other demanding tasks and they resigned after they had been trained. This is why it was decided to hire more international consultants to help out.

## **11.8 Conclusions and Recommendations**

Above constraints notwithstanding, the process of analysis and dissemination was completed successfully. It is recommended that analysis and dissemination be planned and budgeted for during the overall technical and budgeting process and money be earmarked early enough to avoid delays later. Secondly, capacity building for the next data analysis of the 2018 census is started now by sending various LISGIS workers to demographic training centres, such as RIPS in Ghana and Makerere in Uganda to do postgraduate work and be attached to the Ghana Central Bureau of Statistics and Uganda Bureau of Statistics, respectively for mentoring, in preparation for the work ahead. This would create a large pool of demographers, from whom LISGIS will get many census analysts in future. Some development partners could be requested to fund this training, since it would save them a lot of money bringing in many international consultants and experts next time. Thirdly, a few Liberian demographers with Masters Degrees from RIPS and Makerere should be facilitated to do PhDs in the African demographic centres with the purpose of returning to work at the University of Liberia and starting postgraduate training programmes to cater for the Liberian market in census and large survey works.

# Chapter Twelve

## Finance

### 12.1 Introduction

Finance is a critical tool in implementing a census project. Without finance, nothing would move in a census programme. This chapter gives some details on how finance was sourced from different stakeholders and spent on various phases.

### 12.2 Budgetary Support

The common practice to finance censuses in most developing countries is for the countries to provide most resources and source minimum support from international and bilateral agencies. However, in case of Liberia, like many post conflict countries, such as Sierra Leone, Rwanda and Sudan, special consideration was extended because of special problems regarding post war conditions. In Liberia, the decision to conduct a census was about two years after the internal conflicts had ceased when the limited resources available to the Government had to be allocated to other equally urgent reconstruction programmes. Although, many international agencies were reluctant to help because they preferred postponement of the census in favour of sample surveys, several other international partners led by UNFPA decided to support the Government in conducting an early census to fill the data sources gaps existing at the time. Hence, the 2008NPHC was funded by the Government of Liberia, UNFPA, UNDP, USAID, UNICEF, UNHCR, PARIS 21, AfDB, World Bank, UNMIL and the EU/EC.

#### 12.2.1 Estimated Budget

The overall cost of the census project was initially estimated at US\$5,642,809 (394,996,630.00 Liberian dollars at a US\$ rate of 70) out of which 42% was to be spent on field enumeration and 28% on census mapping. The initial total budget by major phases can be seen in Table 12.1, while the budget by each financial year for 5 years spread across 5 calendar years is given in Table 12.2. According to Table 12.2, 41.4% of the budget was spent in the first 2 calendar years of 2006 and 2007, while about half (49.7%) was used in the enumeration year of 2008. The rest (less than 10%) was utilized in the last two calendar years of 2009 and 2010.

**Table 12.1: Initial Estimated Cost (In USD) of the Census Project by Phases, 2008**

<b>PHASES</b>	<b>AMOUNT</b>	<b>PERCENTAGE</b>
CENSUS MAPPING	1,576,488	27.9
PILOT CENSUS	35,081	0.6
FIELD ENUMERATION	2, 354,650	41.7
POST-ENUMERATION SURVEY	40,070	0.7
DATA PROCESSING	169,686	3.0
DATA ANALYSES	74,800	1.3
PUBLICATION	101,700	1.8
RESULT DISSEMINATION	12,500	0.2
INTERNATIONAL EXPERTISE	549,000	9.7
TRAINING & TOURS	86 000	1.5
LOCAL COSTS	374,130	6.6
TOTAL COST	5, 374,104	95.2
Miscellaneous (5%)	268,705	4.8
<b>GRAND TOTAL</b>	<b>5, 642,809</b>	<b>100.0</b>

**Table 12.2 : Initial Summary Budget by Phases and  
Expected Year of Execution, 2008**

PHASES	YEAR					
	2006	2007	2008	2009	2010	TOTAL
CENSUS CARTOGRAPHY/MAPPING	244,135	1,332,353				1,576,488
PILOT CENSUS		35,081				35,081
FIELD ENUMERATION		171,315	2,183,335			2,354,650
POST-ENUMERATION SURVEY		3,700	36,370			40,070
DATA PROCESSING		99,190	70,496			169,686
DATA ANALYSES				74,800		74,800
PUBLICATION			2,500	98,700	500	101,700
RESULT DISSEMINATION			500	1,000	11,000	12,500
INTERNATIONAL EXPERTISE	21,000	141,000	231,000	156,000		549,000
TRAINING & TOURS	12,000	24,000	38,000	12,000		86,000
LOCAL COSTS	29,877	110,946	110,496	110,046	12,765	374,130
TOTAL COST	307,012	1,917,585	2,672,697	452,546	24,265	5,374,104
5% Unforeseen	15,351	95,879	133,635	22,627	1,213	268,705
<b>GRAND TOTAL</b>	<b>322,363</b>	<b>2,013,464</b>	<b>2,806,331</b>	<b>475,173</b>	<b>25,478</b>	<b>5,642,809</b>
% Distribution by year of Execution	5.7	35.7	49.7	8.4	0.5	100.0

### 12.3 Development Partners

At the end of the 2008 census activities in December 2010, the actual estimated budget was placed at US\$ 10,579,268.00 (740,548,760.00 Liberian dollars at a US\$ rate of 70) with field enumeration accounting of 23.39%, followed by international Consultants at 16.44%, cartographic mapping, 16.03 and recurrent expenses 12.09% (see Table 12.3).

Also, table 12.4 shows the percentage contribution by GOL and her development partners. The table depicts that UNFPA contributed about 49.82% of the total actual budget followed by the Government of Liberia, 38.80%.

**Table 12.3: Actual Summary Expenditure of the 2008 Census by Phases and Year of Execution, 2008**

Phase	2006	2007	2008	2009	2010	TOTAL	PERCENT
PREPARATION	100,000					<b>100,000</b>	<b>0.95</b>
CENSUS CARTOGRAPHIC MAPPING	244,135	1,451,523				<b>1,695,658</b>	<b>16.03</b>
PILOT CENSUS		46,481				<b>46,481</b>	<b>0.44</b>
FIELD ENUMERATION			2,475,000			<b>2,475,000</b>	<b>23.39</b>
POST-ENUMERATION SURVEY			186,678			<b>186,678</b>	<b>1.76</b>
DATA PROCESSING		99,190	127,600			<b>226,790</b>	<b>2.14</b>
PUBLICATION OF PRELIMINARY RESULTS			101,700			<b>101,700</b>	<b>0.96</b>
PRINTING AND PUBLICATION OF FINAL TABLES				166,000		<b>166,000</b>	<b>1.57</b>
DATA ANALYSES, PUBLICATION & DISSEMINATION				75,000	833,179.00	<b>908,179</b>	<b>8.58</b>
INTERNATIONAL EXPERTISE	21,000	141,000	496,812	540,000	540,000.00	<b>1,738,812</b>	<b>16.44</b>
TRAINING & TOURS	12,000	24,000	38,000	12,000		<b>86,000</b>	<b>0.81</b>
LOCAL COSTS	29,877	110,946	480,893	221,821	221,821.00	<b>1,065,358</b>	<b>10.07</b>
RECURRENT EXPENSES		500,000		372,528	406,310.00	<b>1,278,838</b>	<b>12.09</b>
<b>TOTAL COST</b>	<b>407,012</b>	<b>2,373,140</b>	<b>3,906,683</b>	<b>1,387,349</b>	<b>2,001,310.00</b>	<b>10,075,494</b>	<b>95.23</b>
5% Unforeseen	20,351	118,657	195,334	69,367	100,065.00	<b>503,774</b>	<b>4.77</b>
<b>GRAND TOTAL</b>	<b>427,363</b>	<b>2,491,797</b>	<b>4,102,017</b>	<b>1,456,716</b>	<b>2,101,375.00</b>	<b>10,579,268</b>	<b>100</b>
% Distribution by year of Execution	<b>4.04</b>	<b>23.55</b>	<b>38.77</b>	<b>13.77</b>	<b>19.86</b>	<b>100</b>	

**Table 12.4: Summary Sources of Funding by Year of Execution, 2008**

SOURCE OF FUNDING	2006	2007	2008	2009	2010	TOTAL	PERCENT
GOL	152,161	500,000	2,175,000	760716	516,375.00	<b>4,104,252</b>	<b>38.80</b>

<b>UNFPA</b>	275,202	1,786,146	1,297,739	615,000	1,296,000	<b>5,270,087</b>	<b>49.82</b>
<b>USAID</b>		205,651				<b>205,651</b>	<b>1.94</b>
<b>EU/EC &amp; UNDP</b>			100,000	75,000	70,000.00	<b>245,000</b>	<b>2.32</b>
<b>UNMIL (IN KIND)</b>			215,000			<b>215,000</b>	<b>2.03</b>
<b>World Bank/PARIS21</b>			127,600			<b>127,600</b>	<b>1.21</b>
<b>UNICEF</b>			186,678			<b>186,678</b>	<b>1.76</b>
<b>AfDP</b>				6,000	219,000.00	<b>225,000</b>	<b>2.12</b>
<b>GRAND TOTAL</b>	<b>427,363.00</b>	<b>2,491,797.00</b>	<b>4,102,017.00</b>	<b>1,456,716.00</b>	<b>2,101,375.00</b>	<b>10,579,268.00</b>	<b>100.00</b>

## **12.4 Government of Liberia Budget**

Since funding the census was the primary responsibility of the GOL, the Government mobilized all possible sources within its power to finance the project. Although the development partners funded most of the pre-enumeration activities, about four months to data collection, a key development partner was unable to contribute its pledge to the project, leaving a huge funding gap that raised alarm and a strong possibility of postponing the census enumeration period for 6-7 months from March to October 2008. Since October is a heavy rainy season, the information was relayed to Her Excellency, President of the Republic of Liberia, who together with other Government officials decided to save the situation by relocating funds budgeted for the renovation of the Executive Mansion to conduct the 2008NPHC specifically for the data collection phase. This timely decision by Government put LISGIS back on track with arrangements of the implementation of the census data collection on time.

## **12.5 Challenges**

In the 2008 census project, finance was probably the biggest challenge. The unavailability of funds before the enumeration phase created a huge unforeseen challenge to the project. Secondly, during other census phases, LISGIS had to wait for pledged funds to arrive before implementing various phases, which delayed and slowed down the progress of implementation.

## **12.6 Conclusions and Recommendations**

The timely action by government to take census enumeration more of a priority than rehabilitating the state house is unique in Africa and a huge credit to the President and her Government. The decision by GOL to almost match the support the lead development partner



(UNFPA) also demonstrated that the Government valued the benefits expected from the census. In the future, the Government can meet most of the financial obligations of the census project and leave minimal support from the development partners, whose support may not be predictable. It is therefore recommended that the government should plan to finance most of the cost of the future census in 2018 and in a timely manner.

# Chapter Thirteen

## Implications and Way Forward

### 13.1 Introduction

The undertaking of the 2008 National Population and Housing Census was a milestone for the Government of the Republic of Liberia. The census was taken at the time when Liberia had just emerged from a bloody civil war and had not conducted a census since 1984. The country had not participated in the 1990 and 2000 Rounds of Population Censuses and had lost almost all of its statistical databases. She was relying on crude data estimates and scanty primary data collected from surveys based on the 1984 National Population Housing Census data and Sample Frame, which were obsolete. In 2007, the Government prepared the first Poverty Reduction Strategy (PRS) for the improvement of the lives of its people using data from surveys such as the 2007 Core Welfare Indicators Questionnaire (CWIQ), 2007 Poverty Participatory Survey, etc. using the outdated 1984 Census Sample Frame. The Government did not have any idea of its population size, distribution, structure, etc. during the preparation of the PRS. It is in this light, the Government decided in 2006 to conduct its first post-war census in March 2008. This Chapter presents a summary of key findings of the 2008 Census Administrative Report and gives implications of the census processes and proposes recommendations for future action.

### 13.2 Summary and Key findings

The Government of Liberia decided in 2006 to conduct a national population and housing census in March 2008 and requested UNFPA and other development partners to assist the Liberia Institute of Statistics and Geo-Information Services (LISGIS) with the implementation of the census project. The National Census Commissions was set up to implement the project. However, due to the insufficient of funds, the intended Local Commissions at lower levels were replaced by the roles of Chiefs, Elders and Traditional Zoes who were organized and mandated to educate their citizens and residents about the 2008 census.

Development Partner forum was established and assisted the Census Commission to mobilize resources for the census activities as well as monitor and advise the Census Management Team at LISGIS.

Preparatory activities of the census included geographic planning/mapping exercise in 2007, Pilot Census in 2007, development of census instruments and massive advocacy and awareness program to educate the general public throughout the entire country about the conduct of the Census. The census enumeration was conducted from March 21 – 30, 2008 covering a period of ten (10) days using the De Factor Methodology.

Post enumeration activities included receiving completed census questionnaires from the field, storing, coding and entering them. Other activities included processing, tabulation, analyzing census data, preparation of reports and dissemination.

The challenges of conducting the census included limited capacity, inadequate funding, lack of infrastructure, deplorable road networks, and late delivery of transport equipment for geographic planning/mapping, delay in the implementation of major components of the census activities and inadequate compensation for field staff.

### **13.3 Implications**

The key findings listed above show that the Government, the public and development partners overwhelmingly supported the census and this ensured the success of the implementation for most of the census activities. However, the above listed challenges constrained the overall success of the implementation of some of the stages of the census.

### **13.4 Recommendations**

The following Recommendations are made for timely consideration by the Government and her Development Partners for conducting the next census:

1. That the Government and her Development Partners should release funds on time to avoid delays in the implementation of census activities;
2. That the Government should plan to finance over fifty (50) percent of the budget for the next census in 2018 and funds should be timely provided;
3. That procurement of transport and communication equipment should be planned well in advance of the census activities and delivered on time so as avoid the delay in starting the census activities;

4. That field staff including district and field supervisors and enumerators should be recruited from within their respective districts and clans so that they can easily canvass the communities that they are conversant with.
5. That field staff should be compensated adequately and should receive fifty (50) percent of their DSA before commencing the enumeration in order to motivate them to be fully committed;
6. That enumerators should be in their respective EAs one (1) day before census night in order to conduct proper canvassing before starting the enumeration exercise, particularly in urban areas;
7. That LISGIS staff should be responsible to train and recruit qualified enumerators who will competently administer the questionnaire for quality data;
8. That the enumerator's instruction manual be detailed enough for the enumerators to read and understand on their own;
9. That cartographic work should be planned to be held well ahead of the pilot census, so that mapping and listing of households are completed before the pilot census to ensure the whole country is covered;
10. That the cartographic work should be planned and implemented during the dry season in order to avoid difficult terrain which may slow the work during the rainy season and also sturdy vehicles should also be provided;
11. That administrative and support staff of LISGIS should be well motivated financially to keep their morale high all the time;
12. That the road infrastructure throughout the country should be improved before the next census, so that minimum cost is expended on maintenance and operation of vehicles;
13. That a census secretariat should be set up with permanent staff that can be used in the next census and should be in place five (5) years in advance of next enumeration to be

able to plan for the census project adequately and get supplies ordered and delivered on time;

14. That publicity and advocacy activities for next census should start at least a year before the field enumeration exercise begins, sufficient funding and logistical support should be made available and specialized training for selected media personnel in the reporting on population and housing census should be conducted;
15. That there should be a clear system of retrieval of census materials, and they should be computerized at the county level, so that the LISGIS Headquarters receives the county results in soft copies for further processing;
16. That in future the Post Enumeration Survey (PES) should be planned early at the same time the main census is being planned, be conducted after assurances and acquisition of funds to go beyond field work and the PES sample be designed by a sampling statistician or a person versed in sampling;
17. That, though the 2008 Census data was processed successfully using the CSPRO software from data entry to tabulation, the use of scanning technology be considered and introduced in the next census, so as to be in tune with modern technology;
18. That the census managerial structure, particularly the Census Commission, should be expanded from the national level to the local (county, district and clan) levels; and
19. That the Government and its Development Partners, through LISGIS, should begin immediately to train its statistical staff at the Masters and Ph.D. levels in order to prepare them for the planning and implementation of the next census and other statistical activities.

## REFERENCES

Onsembe J. O. and J.P.M. Ntozi (2006): The 2000 round of Censuses in Africa: Achievements and Challenges. The African Statistical Journal. Volume 3, November 2006.

United Nations (2007): Principles and Recommendations for Population and Housing Censuses, Revision 2: United Nations Statistical Commission, New York. P13.

Ministry of Foreign Affairs, Republic of Liberia (2004): An Act to further amend the new Executive Law, title 12, of the Liberian code of Laws revised, as amended, by adding thereto a new chapter 50A (2004).



<b>G. CAPE MOUNT</b>	Commonwealth	22	Doedain	25
	Garwula	75	Fen River	20
	Golakonneh	53	Jo River	25
	Porkpa	48	Norwein	34
	Tewor	80	Sam Gbalor	7
<b>TOTAL</b>		<b>278</b>	Zarflahn	13
<b>MARYLAND</b>			<b>TOTAL</b>	<b>152</b>
	Gwelekpoken	6	<b>MARGIBI</b>	
	Harper	50	Firestone	80
	Karluway#1	11	Gibi	37
	Karluway#2	24	Kakata	235
	Nyorken	7	Mambah	
	Pleebo/Sodoken	68	Kaba	79
	Whojah	5	<b>TOTAL</b>	<b>431</b>
<b>TOTAL</b>		<b>171</b>	<b>RIVER GEE</b>	
<b>MONTSERRADO</b>			Chedepo	13
	Greater Monrovia	1967	Gbeapo	14
	Careysburg	57	Glaro	7
	Commonwealth	19	Karforh	7
	St. Paul River	131	Nanee	8
	Todee	76	Nyenawliken	9
<b>TOTAL</b>		<b>2250</b>	Nyenebo	12
<b>NIMBA</b>			Potupo	16
	Boe & Quilla	32	Sarbo	12
	Buu-Yao	65	Tuobo	10
	Doe	71	<b>TOTAL</b>	<b>108</b>
	Garr-Bain	86	<b>SINOE</b>	
	Gbehlay-Geh	76	Bodae	4
	Gbi & Doru	17	Bokon	8
	Gbor	17	Butaw	13
	Kparblee	17	Dugbe River	29
	Leewehpea-Mahn	35	Greenville	30
	Meinpea-Mahn	35	Jaedae	7
	Sanniquellie Mahn	45	Jeadepo	13
	Twan River	87	Juarzon	8
	Wee-Gbehyi-Mahn	53	Kpayan	41
	Yarmeim	37	Kulu Shaw	
	Yarpea Mahn	30	Boe	10
	Yarwein Mehnsonnoh	35	Plahn Nyarn	11
	Zoe-Gbao	43	Pynes Town	7
			Sanquin	
			Dist# 1	5
			Sanquin	
			Dist# 3	7
			Sanquin	
			Dist#2	7
			Seekon	8



**TOTAL  
RIVER CESS**

**781**

Beawor  
Central Rivercess

9  
19

**TOTAL**

**GRAND TOTAL**

Wedjah

10

**218**

**7012**



# CENSUS CODE SHEET

## CODES FOR LIBERIA NATIONAL POPULATION AND HOUSING CENSUS, 2008

<p><b>POPULATION TYPE</b></p> <p>01 Household 02 Educational 03 Home for Destitute 04 Convent 05 Mental Institute 06 Prison 07 Bush Society 08 Barrack (Military/Police) 09 Hotel 10 Nurses' Home 11 Health facility 12 Leper colony 13 Orphanage 14 Floating Population</p>	<p><b>P08. COUNTY AND CENSUS DISTRICT</b></p> <p>Bomi County Klay Suehin Mecca Dowien Bong County Fuamah Jorquelleh Panta Salala Sanoyea Suakoko Zola Kokoyah Turkpaiblee Boisen Kpali Grand Bassa Other Spouse Parent Grand Child Servant Ward Other relative Non Relative</p>	<p><b>P02. RELATIONSHIP</b></p> <p>01 Head 02 Spouse 03 Son/Daughter 04 Other Spouse 05 Parent 06 Grand Child 07 Servant 08 Ward 09 Other relative 10 Non Relative</p>	<p><b>P09. CITIZENSHIP</b></p> <p>01 Liberian 02 Nigerian 03 Gambian 04 Guinean 05 Ghanaian 06 Sierra Leonean 07 Ivorian 08 Bukinabe 09 Senegalese 10 Malian 11 Togolese 12 Other West African 13 East African 14 Southern African 15 Central African 16 Indian 17 Lebanese 18 North American (USA, Canada) 19 Central American 20 Other Asian 21 Other</p>	<p><b>P06. MARITAL STATUS</b></p> <p>1 Never Married 2 Married monogamous 3 Married polygamous 4 Separated 5 Divorced 6 Widowed 7 Consensual Union</p>	<p><b>P07. ETHNIC AFFILIATION</b></p> <p>Bassa Belle Dey Gbandi Glo Gola Grebo Kpelle Kissi Krahn Kru Loma Mandingo Mano Mende Sapo Vai Other Liberian ethnic group Other African tribe Non African</p>	<p><b>P21. ACTIVITY STATUS</b></p> <p>01 Paid employee 02 Self employed 03 Contributing family worker 04 Looking for work 05 Not working and not looking for work 06 Household worker 07 Full time student 08 Retired/pensioner 09 Incapacitated 10 Part-time worker 11 Others</p>	<p><b>P17. CAUSE OF DISABILITY</b></p> <p>01 Sight difficulty 02 Loss of sight (blindness) 03 Speech impairment 10 Unable to speak (mute) 11 Mental retardation 12 Mental illness (strange behavior) 13 Deaf and Dumb 14 Other Multiple Disability 15 Others</p>	<p><b>P16. KIND OF DISABILITY</b></p> <p>01 Limited use of leg(s) 02 Loss of leg(s) 03 Limited use of arm(s) 04 Loss of arm(s) 05 Hearing difficulty 06 Unable to hear (deaf)</p>	<p><b>P19. SCHOOL ATTENDANCE</b></p> <p>1 Never attended 2 Completed 3 Drop-out 4 Currently attending</p>	<p><b>P20. EDUCATIONAL LEVEL</b></p> <p>00 Pre-primary Primary School 01 Grade 1 02 Grade 2 03 Grade 3 04 Grade 4 05 Grade 5 06 Grade 6 Junior High School 07 Grade 7 08 Grade 8 09 Grade 9 Senior High School 10 Grade 10 11 Grade 11 12 Grade 12</p>	<p><b>P22. OCCUPATION / KIND OF WORK</b></p> <p>01 Legislator, Senior Official, Manager 02 Professional 03 Technician &amp; Associate professional 04 Clerk 05 Service worker, shop and market sales worker 06 Skilled Agricultural and Fishery worker 07 Craft and related trade worker 08 Plant and machine operator &amp; assembler 09 Elementary occupation 10 Armed forces</p>	<p><b>P23. INDUSTRY/SECTOR</b></p> <p>01 Agriculture, forestry and fishing 02 Mining and quarrying 03 Manufacturing 04 Electricity, Gas, Steam and Air conditioning supply 05 Water supply, sewerage, waste management 06 Construction 07 Wholesale &amp; Retail trade, repair of motor vehicles, motorcycles and personal goods 08 Accommodation and food service activities 09 Transport and storage 10 Information and communication 11 Financial and insurance activities 12 Administrative, support service activities 13 Real Estate activities 14 Professional, scientific and technical activities 15 Public administration, defense and compulsory social security 16 Education 17 Health, Social work and personal service activities 18 Arts, entertainment and recreation 19 Private households with employed persons 20 Extra-territorial organizations and bodies</p>	<p><b>P24. WORK STATUS</b></p> <p>1 Employee 2 Employer 3 Own-account worker 4 Contributing family worker 5 Member of producer's cooperative 6 Work not classifiable by status</p>
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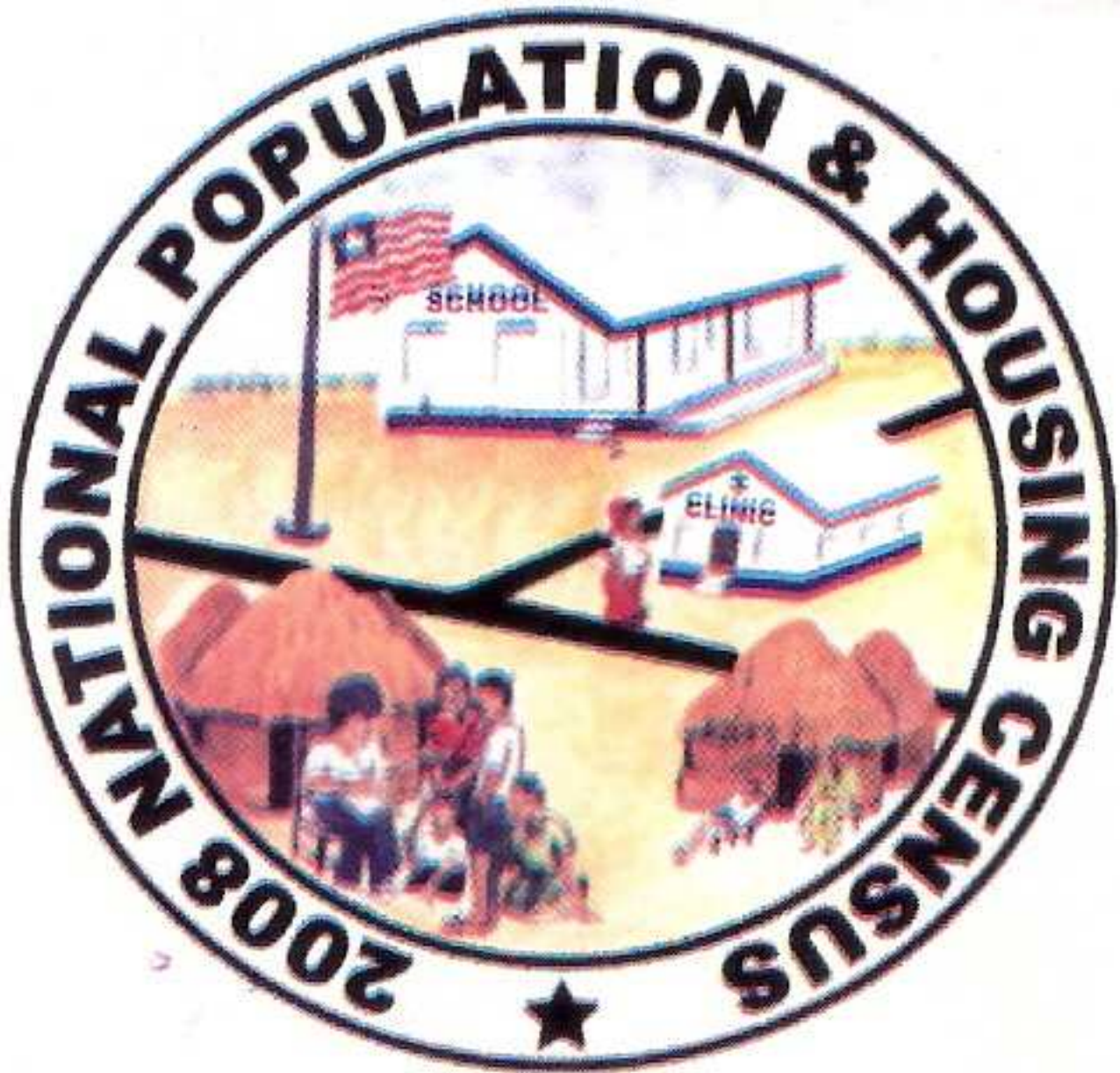
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The Liberian Government and its Development Partners for the 2008 National Population and Housing Census

