

CHAPTER 1

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CHAPTER 1

Introduction

1.1 Preliminary

This report which is a follow up of the publication “ General Population Census of Cambodia 2008, Provisional Population Totals”(August,2008) contains the final population totals according to the 2008 census together with an analysis of the results mainly at the national level. Some select tables at the provincial level are also included to provide a general demographic profile of each province. Further in-depth analysis at national, provincial, district and commune levels will be made in the analytical reports and province level publications.

1.2 Background

The population census is the most fundamental source of national population data required by a country for administrative purposes as well as for economic and social planning and research. It is expected to provide a comprehensive and reliable inventory of a country's population. Apart from the size of population in each of the administrative units which is the basic information provided by the census, an analysis of the census data provides information on trends in population growth, age and sex structure of the population, the levels of mortality and fertility, the course of migration, trends in urbanization and on many more characteristics of the population. A study of the current demographic levels and past trends is very essential in making population projections that form the basis of national plans for economic development and other welfare programmes.

The National Strategic Development Plan, 2006-2010 (NSDP) of Cambodia came into force in June 2006. It represents a broad consensus on Cambodia's future development and takes into account the aspiration and priorities of Cambodian citizens within the frame work of realistic potential and practical possibilities in the future. It operationalises the Rectangular Strategy to achieve its intended goals and outlines priority goals and strategies of Royal Government of Cambodia (RGC) to reduce poverty rapidly, and to develop other Cambodia Millennium Development Goals (CMDG's) and socio-economic development goals. The demographic, social and economic indicators as well as other bench mark data at small area levels produced by the 2008 Census will go a long way in monitoring and evaluating the implementation of NSDP programmes in the future.

Commencing from 1998, the Royal Government of Cambodia is committed to conducting a general population census every ten years in accordance with the U.N. recommendations and the Statistical Law of Cambodia. Such a census would include some aspects of housing census also. Accordingly the 2008 General Population Census of Cambodia was conducted on a *de facto* basis with reference to 3 March, 2008, exactly ten years after the previous census was held. This census marked the second census since Cambodia became a democratic country and the first of the twenty first century. The total estimated cost of US \$ 6.02 million for the 2008 census was shared by different agencies as follows: UNFPA, Japan International Co-operation Agency or JICA, Government of Japan, the Government of Federal Republic of Germany and The Royal Government of Cambodia. In addition to this, the Government of Japan provided a new building for housing the census office of the National Institute of Statistics (NIS).

1.3 Organization of the 2008 Census

Legal Authority for the Census

The 2008 census was conducted under the authority of (i) the Royal Decree (Kret) No.JS/RKT/02-96/08 dated February 29,1996 on the organization of the General Population Census of Cambodia (ii) The Statistics Law enacted on May 9,2005 and (iii) Sub-Decree No.08 dated 30 January 2006. The Sub-

Decree fixed the census date as March 3, 2008 and specified the methods of the organization and implementation of the 2008 census.

Census Committees

The census was conducted under the overall guidance in policy matters by the National Committee for the 2008 census under the chairmanship of Deputy Prime Minister and Minister of Interior. It was assisted in all technical issues by the Technical Committee for the 2008 census under the chairmanship of the Senior Minister, Minister of Planning. The National Steering Committee for census information campaign with Senior Minister, Minister of Planning at the head was responsible for developing the census publicity campaign to inform the public about the census and solicit their cooperation. The composition of these committees is given on page (vi). Each province had a provincial census committee under the chairmanship of the respective provincial governor. The role of this committee was to oversee and monitor census work within the province concerned.

Implementation of the Census

The Ministry of Planning was responsible for overall census planning and implementation. The census was carried out under the supervision of the Director General, NIS in the Ministry of Planning, assisted by Deputy Director Generals. The census office within the NIS coordinated the census work in the country. All these staff members had experience of census or survey work. The Director of The Provincial Planning Office, or The Provincial Census Officer (PCO) was responsible for the census in his/her province and was assisted by The Deputy Director/Bureau Chief. The District Planning Officer and the Commune Chief were responsible for the census in their respective areas. The PCO was assisted on technical issues by Regional and Assistant Regional officers drawn from experienced staff of NIS.

Unlike in the 1998 Census when there were UN experts serving as long term resident technical advisers for census and data processing, external technical assistance was kept at the minimum for the 2008 Census. The UNFPA provided the services of short term consultants for census planning, reporting and data processing. The NIS also had the benefit of advice from JICA consultants on mapping, editing, coding, tabulation and other related activities.

Calendar of Census Operations

The main census operations were conducted according to the following calendar:

Dates	Activity
February 29 to March 2, 2008 (3 days)	House listing Operations
March 2, 2008 Night	Enumeration of Homeless/Transient etc. population
March 3 to 13, 2008 (11 days)	2008 Census Enumeration with March 3 (00-00 hours) as reference time
March 13 to 15, 2008	Collection of filled-in census records at field offices
March 16 to 20, 2008	Receipt of filled-in census records at the NIS, Phnom Penh

The Geographic Frame

Thanks to peace and stability in the country, the 2008 census of Cambodia could be conducted in the entire country comprising at the census time 24 provinces, 185 districts, 1,621 communes and 14,073 villages.

It has to be noted here that at the time of the 1998 census it was not possible to enumerate the population of four small areas in the country as they were insecure due to war at that time. These were: (i) Whole district of Anlong Veang in Otdar Meanchey province (ii) Samlout in Battambang province (iii) Veal Veang in Pursat province and (iv) Village of Ou Beichoan of Ou Chrov district in Banteay Meanchey province. The total estimated population (45,000) of the omitted areas was allocated as follows: 10,000 to Otdar Meanchey province; 2,000 to Banteay Meanchey province; 23,000 to Battambang province and 10,000 to Pursat province. This estimation was based on reports from the Directors of Planning of the Provinces concerned.

Re-classification of Urban Areas

The classification of places as urban or rural is not a matter of mere academic interest, but is of great importance for planning purposes. For the 1998 census of Cambodia the following areas were treated as urban:

- (i) All provincial towns (which were whole districts)
- (ii) Four districts of Phnom Penh Municipality (the other three were considered rural)
- (iii) The then existing entire provinces of Sihanoukville, Kep and Pailin which were called Krongs.

The designation of places as urban was based only on administrative criteria. This was considered not satisfactory for planning for the needs of actual urban populations. There were a number of problems in the classification of urban areas following the above definition. The main problem was that it made decisions at the level of province and district. The provincial towns encompassed large areas of agriculture and wastelands, and un-inhabited areas including mountainous terrain. A more refined definition of urban areas required designation of urban or rural at a lower administrative level-the commune or, ideally, the village. It was decided by the Ministry of Planning, Royal Government of Cambodia that a classification of urban areas was needed that was consistent with Cambodian conditions, and optimum for planning purposes.

A study was therefore undertaken by the NIS during 2002-2004 with expert guidance to reclassify urban areas. The study attempted to provide recommendations about a classification of urban places based on a consistent set of criteria utilizing the 1998 census data on population and workers in agriculture. After careful consideration of all relevant aspects, field study and consultation with agencies concerned the study decided to apply the following criteria to every commune so as to treat it as urban:

- (a) Population density exceeding 200 per km²
- (b) Percentage of male employment in agriculture below 50 percent
- (c) Total population of the commune should exceed 2,000.

The study's recommendations were accepted by the Royal Government of Cambodia, and subsequently adopted for the 2008 census. For details of this study one may refer to the publication of NIS, Ministry of Planning on "Reclassification of Urban Areas in Cambodia" (November 2004).

The following minor revision was made further to the study for the sake of uniformity of the principle that commune would be the lowest unit for examining whether it qualified to be included as urban or rural based on the criteria adopted :

The communes mentioned below which were partly urban were treated as wholly urban : Ta Pung, Ta Meun and Kouk Khmum communes of Thma Koul district and Anlong Vil commune in Sangkae district in Battambang province; Soutip commune of Cheung Prey district and Chrey Vien commune of Prey Chhor district in Kampong Cham province.

In the present report, wherever the 1998 census information relating to urban areas is used for comparison with corresponding information for urban areas of the 2008 census, the 1998 census urban figures are recalculated based on the revised classification of urban areas adopted in the 2008 census.

Royal Sub-decree on Administrative Area changes

With the promulgation of the Royal Sub-Decree Number 18 ANKR BK of 12 January 2008 and earlier Sub-Decrees, many administrative changes were introduced by the Royal Government after the 2008 census was taken like re-naming certain provinces and districts, shifting of communes from one district to another within a province, formation of new districts and cities within a province by regrouping communes, shifting of a few communes (wholly and partly) from Koh Kong province to Preah Sihanouk province, and converting province headquarter districts into Kongs. These changes are listed in Annex 1. The revised codes adopted for the administrative units as a result of these changes are shown in Annex 2.

According to the new administrative frame Cambodia comprises 23 provinces, one Municipality (Phnom Penh), 8 Kongs (within Phnom Penh Municipality), 159 Districts (within 23 Provinces), 26 Kongs or Cities (within 23 Provinces), 1417 Communes (within 159 Districts), 204 Sangkats (within Phnom Penh and 26 Kongs or cities) and 14,119 villages (within Communes and Sangkats).

Taking into account all aspects of re-coding and tabulation it was decided that the 2008 Census Priority Tables would be generated on the basis of the Sub-Decree Changes (New frame). The 1998 Census priority tables would also be revised adopting the new frame to enable comparison of the two sets of data. It was recognized that this method of presentation incorporated the Sub-Decree changes and provided data according to the new administrative frame.

The difference between the old and new administrative frames does not affect the 1998-2008 national level comparisons and province level comparisons except in the case of Koh Kong and Preah Sihanouk provinces. At district and commune levels, however, there will be several changes between the old and new frames.

For the purpose of urbanization, only communes declared as urban based on demographic criteria according to the 2004 study referred to in the previous section are treated as urban. According to the Sub-decrees, the 23 province headquarters (barring Phnom Penh Municipality or *Reach Theany*) and the three newly formed cities of Paoy Pet (Banteay Meanchey province), Soung (Kampong Cham province) and Bavet (Svay Rieng province) are called *Kongs* or cities. Since urban classification in the census is done at the level of commune applying the demographic criteria, Phnom Penh Municipality and each Krong may have either all the Sangkats as urban or have some Sangkats urban and some rural.

1.4 The 2008 Census Questionnaires

General

The census questionnaires were evolved after carefully taking into account past experience, the present needs of the Government and the data users. The questions were so worded as to be simple and at the same time enable collection of reliable data.

Two meetings were held to elicit the views of stake holders and data users regarding the contents of the census questionnaires and the tabulation plan. The census questionnaires were pre-tested twice in the field. A pilot census was conducted in a few Enumeration Areas (EAs) as a dress rehearsal for the census. All these exercises proved very useful in finally adopting the census questionnaires and the tabulation plan.

There were two main census questionnaires: - (i) the house list (Form A) and (ii) the household questionnaire (Form B). A few census forms were also to be filled-in by enumerators. Buildings with

households were first listed in Form A. This was done three days ahead of the main enumeration along with updating the EA map (29 February to 2 March 2008). Form B which is the main census questionnaire was filled-in by enumerators after interviewing each household during March 3 to March 13. Specimen copies of the two questionnaires are attached as Annexes 3 and 4.

New questions in the 2008 Census

While most of the questions of the 1998 census were retained in the 2008 Census questionnaires for comparative purposes, significant improvements were made in the design and the contents of the questionnaires.

The following new questions/topics were included in Form B Household Questionnaire of the 2008 census:

1. Can the enumerated person read and write with understanding in Khmer language?
(Enter 1 for Yes and 2 for No) (Part 2, Col.13-a)
2. Can the enumerated person read and write with understanding in any other language? If so which language? (Enter code from list given) (Part 2, Col.13-b)
3. Question on physical/mental disability, if any (Part 2, Col.15)
4. Secondary economic activity (Part 2, Col.22)
5. Place of work or schooling (Part 2, Col.23)
6. Type of assistance to a woman at the time of delivery in the previous twelve months (Part 3, Col.8)
7. Type of toilet facility available to a household (Part 4, Col.4)
8. Location of drinking water source (Part 4, Col.6)
9. Information on ownership of some facilities by the household enumerated (Part 4, Cols.8 to 17)
10. Whether the household has access to the Internet at home/outside home (Part 4, Cols.18 and 19)
11. A separate section called Part 5 was added in the questionnaire on “Deaths in the household in the previous twelve months”. It included details of age, sex, cause of death and maternal mortality (if any) (Part 5, Cols.1 to 7-c).

Improvements were also made in respect of some of the old questions as indicated below: More codes were provided for recording answers to the questions on

- (a) Mother tongue (Col.7, Part 2)
- (b) Reason for migration (Col.12, Part 2)
- (c) The highest grade completed (Col.14 (b), Part 2)
- (d) Sector of employment (Col.21, Part 2) and
- (e) Main source of drinking water (Col.5, Part 4)

Focus on Gender Issues

In the last census and in the 2008 census of Cambodia, sex-wise data on socio-economic, cultural and demographic characteristics of the population are presented based on information collected. The wide sex differentials in respect of many variables have drawn the attention of planners and data users and highlighted the importance of focusing on gender issues. The census functionaries at the different levels were instructed in the training sessions and through the instruction manuals to ensure careful collection and recording of information on unpaid family work and other informal sector activities of men and women, in particular for the latter, secondary economic activities, literacy and educational attainment etc.

1.5 Preparatory Activities

Mapping

The work of pre-census mapping commenced in June 2006 with the development of maps at small area levels. To ensure complete coverage of the population, it was necessary to divide the entire country into small enumeration areas (EAs). The intention was to assign an EA to an enumerator so that he/she might enumerate all persons found in that area within the census enumeration period of 11 days. Proper delineation of enumeration areas in each village/town was the first most important step in census preparations. In the absence of precise and detailed maps of scale 1 to 5,000 required for a census, photographs and satellite maps were used as reference material in the cartographic field work.

The pre-census cartographic work was supported financially and technically by JICA. Thirty staff members from NIS were thoroughly trained both theoretically and practically in mapping. Village boundaries were checked and measurement of location of each village was taken using GPS. Enumeration areas were demarcated with an average size of about 100 households each.

Recruitment of Enumeration Staff

The census enumeration was done by about 28,000 enumerators who interviewed every household. At the rate of one field supervisor to guide and oversee the work of four enumerators, about 7,000 supervisors were appointed. Enumerators and supervisors were drawn from teachers and other officials. As the schools were closed during the census period the teaching staff could be drawn for the census work without affecting their teaching duties.

There were 72 provincial census officers, 500 field staff trainers, 370 district census officers, 1,621 commune census officers, 500 translators and additional supervisors and enumerators for special settlements. Selected staff of Ministry of Planning and NIS participated in training field staff and supervision of field work. Provincial, district, commune and village officers assisted in organizing the training sessions and intense supervision of the census count.

The Senior Minister, Minister of Planning, Secretary of State for Statistics and other senior officers of the Ministry of Planning, as well as representatives of development partners and technical advisers, undertook field visits to supervise the census and encourage the enumerators in their arduous job.

Training Programme

One of the important activities before undertaking the census was the training of field staff. The technical assistance provided for the 1998 census contributed substantially to capacity building of the national staff in undertaking 2008 census activities. This capacity was further supplemented by an additional training programme.

Firstly the core NIS staff (about 120) was trained by the census consultant through pre-tests, pilot census and training sessions. This staff was utilized for training of trainers for field staff and as regional and assistant regional census officers to assist and supervise the census work in the provinces.

At the second phase the provincial staff was trained by the NIS staff. At the third phase approximately 500 trainers of field staff were trained. In the next phase approximately 40,000 enumerators, supervisors and support staff were trained (February 2008). About 1,000 training sessions were held by the 500 trainers. Training manuals and materials like flip charts and training forms were used in all the training sessions. The training included practice in conducting interviews and filling the census schedules.

1.6 Publicity for the Census

An advocacy and public information campaign for the census was carried out with the overall guidance of the Committee set up for the purpose. The public was informed well in advance about the scope and purpose of the census through different media with a view to enlisting their cooperation. It commenced in the second half of 2007 with newspaper advertisements, sensitization of community leaders and others through local meetings. Census publicity reached its peak during the census phase. It was accomplished through electronic media, especially radio, television and the press, and also through more conventional methods of communication such as posters, banners, stickers etc.

Physical networks such as those of the line Ministries and of religious groups (mainly pagodas) were also utilized. Village chiefs played an important role in informing the residents of their respective villages about the census and getting their cooperation.

1.7 Field work

The 2008 census covered approximately 2.8 million households spread over the different terrains of the 24 provinces of the country. Most of them were enumerated during the eleven-day census enumeration period. In addition to households living in dwellings, those staying in institutions like hotels, hostels, pagodas, hospitals, prisons etc. were also enumerated. Special arrangements were made to enumerate the homeless population, transient population and those found in boats on the night of 2 March 2008.

One distinct advantage at the time of the 2008 census which was not available fully at the time of the 1998 census was the better communication and transport facilities in the country. Most of the places could be reached by road. However in certain remote parts and in forest areas the enumerators had to walk long distances. Four wheelers, motorbikes, cycles and boats were utilized by the field staff as and where necessary. Mobile phone was found very useful during the census. It helped the trainers, supervisors and enumerators in quickly contacting the census officers concerned in getting necessary clarifications in the course of their work.

1.8 Post-Enumeration Survey

The census was closely followed by a Post Enumeration Survey (PES) conducted in 100 selected enumeration areas. The objective of this exercise was to estimate the coverage and content errors in the census. This evaluation was necessary as in a large-scale operation like the population and housing census it is inevitable that some inaccuracies arise from deficiencies and errors in coverage and response. The most important finding of the PES was that the net under-enumeration in the census was 2.77 percent. It is about one percent more than the corresponding error rate in the 1998 census. Yet it is at a reasonable and acceptable level when compared to the error rates in other countries of the region. As for the content error it is at acceptable level for all the selected characteristics except in the case of secondary activity which had a moderate level of inconsistency. A report on the findings of the survey will be published separately.

1.9 Data Processing Plan

The census data processing division of NIS is responsible for manual editing and coding of questionnaires, data entry, computer editing and tabulation, and the generation of products like the population database and maintenance of the web site. The new five-storey building that was supported by the Japanese Government houses the census office and has sufficient space for archiving and handling the large number of census records. This facilitates proper organization of post-census activities. The data processing division has established its editing, coding and data entry teams in the different floors of the building.

The CSPro package is used for data entry, computer editing as well as tabulation. The staff of the data processing division has been trained by the data processing consultant in using this software.

The manual coding and editing of the census schedules were organized in three stages. First the enumerator's summary statements were scrutinized and edited followed by data entry. This provided the basis for the provisional census results (population by sex at national and provincial levels) released through the earlier publication. The second stage related to coding and editing of the main census questionnaire (Form B). This will be followed by editing of the House list (Form A) at the third stage. The computerized census data have been used to generate a number of priority tables according to an approved Tabulation Plan. This tabulation was completed in June 2009.

1.10 Tabulation and Analysis of Data

The experience gained in the 1998 Census stood the National Institute of Statistics (NIS) in good stead in planning the analysis and dissemination of the data of the present census. In consultation with data users NIS decided to produce 70 basic priority tables for the 2008 Census (see Annex 5). Taking into account the different levels of production of these tables, the total number of priority tables in the 2008 census works out to 73,151. This is a huge increase (more than six times) from the 11,513 priority tables produced during the 1998 Census. These tables cover most of the topics included in the census questionnaire and their cross classification should satisfy most of the requirements of all sections of data users.

The production of priority tables may be followed by the preparation of additional tables called supplementary tables proposed by the data users, and other tables produced in the course of in-depth analysis.

The analysis of census data by NIS will be mainly confined to priority tables and additional tables that may be produced for analysis. However census analysis is not confined to the Government alone. The universities, scholars, demographers, institutions and data users may also use and analyze the data in their own way according to their need and interest. They will be encouraged to contact the census Data Users' Service Center (DUSC) for any additional information, tables or reports. The vastness of the data and the various cross classifications and tabulations that could be made with the census tables and the micro data permit unlimited scope for the census analysis exercise.

The analysis plan

Census analysis by NIS is proposed in the following order:

1. General analysis of final census results at National level.

In September 2008 the preliminary census results based on population totals obtained from the field were generally analyzed and released. The present one will be the general census report at the national level. Some select tables/data for each province with brief notes are also included in this report.

2. General Analysis of final census results at Provincial level

This report for each province will be more or less on the lines of the analysis made in the national report. Reports for the 24 provinces will be drafted by the trained NIS staff.

3. In-depth analysis by topic.

This will be done for the following subjects by the NIS staff with international technical assistance:

- (i) Fertility and mortality.
- (ii) Population growth and change in spatial distribution
- (iii) Nuptiality
- (iv) Gender and age composition
- (v) Disability
- (vi) Migration
- (vii) Literacy and educational attainment

- (viii) Economic activity and employment
- (ix) Commuting
- (x) Housing amenity
- (xi) Family and households
- (xii) Population Projections of Cambodia
- (xiii) Women in Cambodia
- (xiv) Urban Development in Cambodia

A separate report on each topic is expected to be prepared and published. For this purpose a workshop may be held for each subject involving the national staff not only within the NIS but also from other line Ministries concerned. This will afford an opportunity to the staff concerned to interact with each other and study deeply the census results and draw conclusions which could be incorporated in the analytical report. Such a system worked very well in the 1998 census analysis programme of Cambodia.

1.11 The dissemination plan

The findings of the previous census data were successfully disseminated both through electronic products and printed reports and by way of dissemination seminars and workshops at the national and provincial levels. The CDs released each for priority table, aggregated commune database, POPMAP applications, and WinR+ Population Database were well received and used by the line Ministries, International Agencies, NGOs, planning offices in the provinces and districts, the universities, individual and institutional scholars and researchers, teachers and students, and other data users. Another important dissemination product developed was a web site with census background information, key census results, and a request page such that distant data user can demand for further detailed census information. Census tables were also supplied as demanded by data users from time to time. DUSC has also been servicing data users on an on-going basis.

(a) Dissemination by print media

The reports mentioned under the analysis plan will be printed and published. It will also be necessary to publish handy data sheets and brochures containing important indicators as derived from the census analysis with suitable and attractive illustrations. Wall maps/charts and census thematic atlases will also be produced.

Apart from reports and maps, census priority tables on each topic would also be published. In the 1998 Census, Tables at National and Provisional levels were published. In the context of growing literacy and educational levels among the people of Cambodia, it may be useful to make available select abridged tables also at district/commune levels. This may be useful for local planning and for those who may not have access to computer facilities and consequently may not be able to avail of the census electronic products.

(b) Electronic Dissemination products

The fast-growing uses of computer and its networking call for wider and deeper electronic dissemination products with user-friendly interface, and efficient retrieval and manipulation functionality. The proposed electronic dissemination is classified into two main categories, 1. Off-line electronic dissemination products and 2 On-line electronic dissemination products

(i) Off-line electronic dissemination products

Off-line electronic dissemination products will be mainly in the form of CD-ROM. The project plans to produce a variety of electronic dissemination products based on CD ROMs. These include: a Table Retrieval System, a Community Profile System, a population database built on census micro data, a thematic mapping application and Cam Info updates. About 1000 CD-ROMs may be produced initially.

Table Retrieval System

The Table Retrieval System stores the large number of census tables onto a single CD ROM and facilitates easy retrieval of selected tables. A user-friendly interface will be available to select multiple tables for multiple geographical areas. The application will also include a table viewer that allows exporting the tables or table cells to Excel spreadsheets for further manipulation and analysis.

Community Profile System

This dissemination product is based on an indicator database consisting of aggregated counts, rates and ratios for all possible geographical levels, i.e. the Country (total, urban and rural), Provinces (total, urban and rural), Districts, Communes, and Villages. A variety of indicators may be considered, such as: distribution by age groups and sex, household types, median age, dependency ratio, singulate mean age at marriage, literacy rate, employment rate, educational attainment, proportions of migrants, etc. The application will allow aggregation of selected areas and will include functionality to present some of the key indicators in a graphical format and to export the profile to Excel format.

Population database

Population databases are highly recommended as they greatly expand the usability and enhance the dissemination of census data. Databases on micro-data (individual records) permit retrieval of data at any level of detail. They are ideal tools to produce small-area statistics. However, the issue of confidentiality will have to be considered and may require re-coding of some of the variables to a higher level.

The interface for the population database will be the REDATAM+SP package. REDATAM stands for Retrieval of Data for small Areas by Microcomputer. This package enables data users to easily derive information from the database, including new variables, tabulations and other outputs. All this can be achieved via graphical windows and without the assistance of a programmer. The software also facilitates the processing of external databases in one of the common formats such as dBase and Excel. A Data Dictionary, describing in detail the structure of the database, will be included with the product.

Mapping application

Mapping and graphing databases also greatly improve the effectiveness of census dissemination as trends and patterns of the larger area, and distinct boundary and characteristics are more easily detected when displayed on maps. The project will make available map layers for the Country, Provinces, Districts, Commune and, if possible, Villages. Statistical databases consisting of aggregated count, ratios and rates for all geographical levels will complement these map layers. The layers will be in ESRI shape file and MapInfo table file formats. Data users are expected to acquire a copy of their preferred GIS software.

CamInfo Updates

CamInfo is the national adaptation of DevInfo software, a global initiative funded by the United Nations. CamInfo is Cambodia's Socio-Economic and demographic Indicator Database, providing a one-stop user-friendly computer program for storage, retrieval, comparison and dissemination of a wide range of indicators from different sources, including national surveys, censuses and administrative systems. CamInfo also allows the user to retrieve and compare indicator data values across multiple time periods, geographic levels, and other sub-group dis-aggregations. Data presentation is possible with tables, graphs and maps.

Census 2008 data will be uploaded into CamInfo in two stages: the first stage will be for the general analysis of final results at national level (late 2009), and the second stage will be for general analysis at provincial level and for in-depth analysis by topic (2010). NIS will select indicators from the priority tables of the 2008 census based on the perceived needs of users, to be incorporated into the CamInfo

updates. The online user interface is the same as the CamInfo updates CD-ROM. This allows users both inside and outside of the country to access data using the Internet without installing the CD.

The feasibility of using the recently introduced census dissemination tool called UN Census Info would also be explored.

(ii) On-line census dissemination

The National Institute of Statistics maintains a web site with information on population censuses, the results of various types of surveys, periodical publication, etc. The URL is www.nis.gov.kh. Most of the information available on this web site is in a static format. For the on-line dissemination of the results of the General Population Census of Cambodia 2008 a more dynamic approach is envisaged. Priority tables and analysis outputs are suggested to be available on-line for wider and distant accesses. The possibilities of SQL database querying and on-line mapping will be explored. To abide by the statistics law on keeping confidentiality of respondents, however, security, authentication, recoding and aggregation shall be closely observed.

(iii) Other Electronic products

As there is a vast scope to expand this type of dissemination in modern times, more electronic products may also be utilized

(c) Dissemination Workshops

Seminars for the presentation of census results and workshops to train planners in the line Ministries and other data users may be conducted in the course of 2009-10. Such seminars/workshops will be held in every province/district so as to benefit participants down to the village level. They may be held in Phnom Penh and provinces once in 2009 closely following the release of final results in September 2009 and again in 2010 at the national, provincial and district levels after the provincial reports are released.

The purpose of the dissemination workshops is to provide census data to planners, administrators and researchers at province, district and commune levels. Such direct interactions between the producers of census data and its users would enable the latter to understand the impact of population growth on welfare measures undertaken by the Government and also help monitor the progress made in the various development programmes of Cambodia.

1.12 Master Sample

A fresh Master Sample will be created using the 2008 Census frame for the purpose of sample selection in the various household surveys that would be undertaken during the inter-censal period. The master sampling frame derived from the 1998 census was used in many large scale surveys like the Cambodia Demographic Health Survey, Cambodia Socio Economic Survey etc.

1.13 Quality Assurance

Adequate steps were taken to ensure quality of data at every stage of the 2008 Census operations. For quality assurance in field work, the importance of collecting quality information was stressed in the training classes for enumerators and supervisors. The need to collect accurate data by gender was also emphasized.

For every four enumerators, there was a field supervisor who was an official drawn generally from experienced teachers. The supervisor checked the work of every enumerator under him/her initially to satisfy himself/herself that each enumerator had understood the concepts and the method of interviewing the respondents satisfactorily. In some cases the supervisor rechecked the data collected by interviewing the respondents again. Reporting forms were prescribed for supervisors to ensure timeliness in data collection.

The field work was also closely checked by the commune, district and province census officers. Senior officers of NIS and consultants also undertook field visits for supervising the census operations. All the supervising officials not only checked the data collection but also guided the enumerators in filling the census schedules according to instructions and clarified their doubts.

The census data processing division carried out manual coding and editing using some 70 staff members. An in-house training was given to the census staff of NIS on Quality Assurance (QA) of the 2008 Census of Cambodia by a senior JICA expert during April-May 2008. Quality was defined as the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs. The QA team reviewed manual editing and coding done by editors and coders on a continuous basis. Regular and ad hoc meetings were held with editors and coders by QA leaders and supervisors to review the quality of the outputs. Editors and coders were not only warned of typical errors but also encouraged in their work. QA was maintained in production of tables also so as to maintain timeliness and security of the tables. In the dissemination of census results accessibility, relevance and user satisfaction will be ensured. QA will be given due consideration in the use of census micro- data as well.

Data entry of the main census questionnaires was done with CSPRO. Since this package was also used for the processing of the Cambodia Inter-censal Survey data, many data processing staff were familiar with this software. Emphasis was laid on data entry quality rather than on speed. The data entry applications were intelligent in the sense that they included: (i) Automated skips (ii) Range checks for all data items and (iii) Limited intra-record consistency checks.

Verification of data entry batches was performed in order to minimize typing errors. At the beginning of data entry full verification (100%) was in place, but as work progressed and operators gained more experience the percentage was reduced gradually. In all, some 20% of all data batches were verified.

After the completion of data entry, the Enumeration Area batches were concatenated to District-level data files which were checked for possible errors and inconsistencies. The main objectives of computer editing were to validate the geographical codes, the batch structure, the completeness of the batches, and the detection and correction of inter- and intra-record consistency errors. Automatic imputations, including hot-desk techniques, were used where possible to correct the inconsistencies encountered. Computer editing produced clean data sets freed of errors and ready for tabulation.

Instruction manuals on coding, editing, and data entry were prepared and circulated among the staff concerned which served as ready reference materials and improved the quality of each activity.

The Post Enumeration Survey described in Paragraph 1.8 evaluated the census and gave an estimate of the content and coverage error in the census. Other evaluation methods with reference to administrative data and by employing demographic techniques will be adopted while analysing the census data.