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THE 2000 POPULATION AND HOUSING CENSUS IN ESTONIA *

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1. Background

In 2000, the first population and housing census was conducted in re-independent Estonia implementing as much as possible the United Nations "Recommendations for the Population and Housing Censuses" and the statistical principles of the European Union. The reference date of the Census was 31 March 2000.

In 1994, the Census plan, time schedule and estimated budget for the Census were agreed which formed the basis for annual budget allocations. Several projects and developments of technical work of the Census were initiated. At the same time, the experiences and methodologies of censuses of other countries were studied, co-operation with organisations other countries was established and followed.

A Government Census Committee was set up on 28 February 1995. By Government of the Republic Resolution the reference date of the Census was preliminarily fixed as 11 January 2000.

In 1996, work on the draft Population and Housing Census Act began. The Census Act was passed by the Parliament in May 1998. This Act established a legal basis for conducting the Census. Other relevant legislative acts were drafted and adopted before the Census in 1999 and in January 2000.

In February 1999, the reference date of the Census was postponed from 11 January to 31 March 2000 at the request of local authorities and considering the experiences gained during the Pilot Census in March 1998.

The reasons for postponement were: elections of local authorities would have caused difficulties in organizing the Census in municipalities during the last quarter of 1999; the work of enumerators is much easier in March as the daylight time in Estonia is much longer than in January.

2. Census questionnaire and regulations of the 2000 Population and Housing Census

The Census questionnaire, regulations and forms of Census questionnaires for the 2000 Population and Housing Census were approved by Government of the Republic Regulation by 5 March 1999.

There were two types of questionnaires — the Personal Questionnaire containing 31 questions, and the Housing Questionnaire with 12 questions.

A user poll was carried out to find out what Census data would be needed to design the main output tabulations and to order the software necessary for processing the Census data.

According to the 2000 Population and Housing Census Act the units of enumeration were individual persons, households, dwellings, and buildings with one or more person living as of 31 March 2000.

Persons were enumerated both as *de facto* basis according to their place of residence at the moment of the Census and *de jure* as usual residents according to their permanent place of residence in Estonia.

3. The Census procedure

The Population Census was divided into three stages:

- The Census was preceded by a preliminary visit by the enumerator on 26–29 March 2001. This meant that the enumerator got acquainted with his/her enumeration area and the people living there, delivered the leaflet introducing the Census, and agreed on the time for enumeration suitable for the residents.
- The Population Census started on 31 March and lasted through 9 April. During the Census 5,400 enumerators interviewed people all over Estonia. The enumerator visited on an average 285 persons. The Census was managed by 161 census area managers, 1,000 supervisors and 5,400 enumerators. The persons covered by the Census did not fill in the questionnaires themselves — rather the enumerators entered the responses. It was to ensure the quality of filled Census questionnaire. Imperfect questionnaire entries would have raised problems at the time of scanning.
- To verify the quality of the Census, a post-enumeration sample survey was organised from 14–19 April, and covered 1% of the total population. This was a verification survey, which meant that in certain regions in Estonia people were visited by supervisors. During the post-enumeration survey the supervisors asked the people to answer certain questions (20) in the Census questionnaires. This was to verify whether the enumerators who had enumerated the respondents had accomplished their task properly.

4. Adapting new technologies to Census operations

4.1. Compiling digital census maps

The Statistical Office of Estonia (SOE) launched the mapping programme for the 2000 Population and Housing Census in 1995. After completing the test areas the specifications for the digital Census maps were finalized. According to the Specification, 1:50 000 maps in rural areas and 1:5 000 maps in urban areas were drawn. The specification was optimized to create a cartographic basis for the Census planning (Census area (CA) delineation) and for the Census itself (maps for enumerators, maps for supervisors, etc.).

The Census mapping process was outsourced from SOE. The work was done by two companies – one in urban, another in rural areas. The production methodology was different in urban and rural areas. In rural areas, paper maps of the 1989 Census were used as a base source material, digitized by the mapping company and updated by local governments. In urban areas, the existing maps and orthophotos were used as a base source and the maps were updated by the mapping company. For rural and urban areas the municipalities compiled household lists including the number of inhabitants in each building or apartment. The purpose of household lists was to provide information about the number of inhabitants for the delineation of enumeration areas (EA).

The borders of Census units were marked on digital Population Census maps and the maps were printed for Census purposes. SOE stores digital maps in urban areas in Mapinfo, in rural areas in ArcView software and household lists in Foxpro software. The Census maps were ready by December 1999. Digital Population Census maps with the registered borders of administrative and settlement units are the basis for presenting the Census results in a cartographic way and for the development of Census GIS.

4.2. On data processing

The processing of the Population and Housing Census data was completed using the appropriate information system developed for specific purposes. This required:

- preparatory works
 - designing the Census questionnaires according to OCR (Optical Character Recognition) requirements;
 - creation of Census maps;
 - organising extraction of data from registers in co-operation with companies/persons maintaining the respective registers;
 - compiling dictionaries of automatic coding (occupation, economic activity, administrative unit, ethnic nationality, languages, religion, countries)
- preparations for and testing of entering the data from Census questionnaires using the Eyes & Hands software provided by a Swedish firm ReadSoft AB for scanning; interpreting and correcting the letters, numbers and signs;
- development of application of the software in co-operation with AboBase Systems Ltd. for processing Census data using Oracle (automatic coding, logical checks, etc.), application of security requirements, storage and electronic archiving of data and creation of outputs (for disseminating on paper, electronically and on maps);
- development of security policy for data processing and for the whole Census process in co-operation with specialists in the field which covered security measures ranging from the protection of enumerators to the protection of collected personal data.

The data processing started in the middle of May 2000, the scanning and verification was completed in 4 to 5 months instead of the planned 7 to 8 months and the full data processing will be finished in the first half of 2001.

5. The preliminary results and data dissemination

The preliminary results of the Population Census of total population were published by the Statistical Office of Estonia in September 2000.

According to the preliminary Census results, on 31 March 2000 the usual resident population in Estonia was 1,376,700, and compared with the 1989 Population Census it was a decrease of 188,900 people or 12.1%. The population size has decreased due to the negative natural increase (estimated to be 41,000 persons) and out-migration (85,000 persons).

The population of every town and rural municipality has also been affected by the internal migration. Generally, the internal migration is directed towards larger towns and rural municipalities around them.

The departure of the former Soviet army is responsible for the steep decrease in the population size of those towns and rural municipalities where the armed forces were located.

The preliminary Census data on population differ from the population registered in local governments as these registers do not reflect the actual place of residence of all persons.

According to the preliminary estimates the undercoverage of the Census is about 2%.

The final results will be published by the Statistical Office within two years after the Population and Housing Census enumeration.

The core tabulation plan includes 176 tables. It is planned to produce all Census output tables. The Census results will be published and disseminated both on paper and through electronic media.

6. Some lessons learned at the Census

- Too detailed and very specific Census Act may cause problems at different stages of the Census activities and may lead to misinterpretations.
- Changes to the questionnaire and Census procedures after the Pilot Census must be carefully handled and tested considering all stages of data processing.
- Using administrative records and databases as a source for delineation of enumeration areas may cause uneven workload for enumerators, especially in the cities, due to the differences between *de jure* and *de facto* place of residence.
- Different software environment for storing the Census data and spatial data would be difficult to handle.
- Producing Census outputs and access of users to the results must be as flexible as possible.
- And, finally, a well-known problem of traditional censuses remains – it is difficult to enumerate certain groups of population, such as single young mobile people, students, etc.

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