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Documentation of the 2000 Round of Population and Housing Censuses in the EU, EFTA and Candidate Countries Part I + II

University of Thessaly

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The views expressed in this document are the author's and do not necessarily reflect the opinion of the European Commission

DOCUMENTATION OF THE 2000 ROUND OF POPULATION AND HOUSING CENSUSES IN THE EU, EFTA AND CANDIDATE COUNTRIES

May 2003

by

Byron Kotzamanis
Giambattista Cantisani
Arij Dekker
Despina Logiadu-Didika
Maire-Noelle Duquenne
Alberto Castori

Laboratory of Demographic and Social Analysis
Department of Planning and Regional Development
University of Thessaly
Pedion Areos
38334 Volos
Greece

FOREWORD

This documentation for the 2000 Round of Population and Housing Censuses[1] covers the European Union Member States[2], the European Free Trade Association Member States[3] and countries that are presently Candidates for accession into the EU[4] as well as some of the remaining countries of the Western Balkans[5]. Apart from the country reports, which are a new element, this documentation represents a continuation of similar work undertaken by Eurostat after the 1980 and 1990 census rounds[6].

This study was prepared on behalf of Eurostat by an international research team at the Laboratory of Social and Demographic Analysis (LDSA) of the University of Thessaly (Volos) under the direction of Prof. Byron Kotzamanis. It is the main output of a comprehensive collection of information concerning the conduct of national censuses. In the framework of this project a broad range of material was gathered from countries - the result depending on the census method applied, the survey timetable and the level of dissemination. Further information was obtained from international organisations and from the proceedings of conferences. Most of this material has been assembled on an electronic platform, to be made available to users through an internet site.

This publication is divided into three main sections:

- an overview of the population and housing census programme and its international aspects;
- a comparative analysis of the most important aspects of the 2000 censuses in the project countries, and
- a set of individual country reports.

Further information is presented in the annexes. In addition, the electronic version of the publication contains a large selection of:

- census questionnaires as used in the different countries, (facsimiles, normally in English or French), and
- documents on the legal framework for the conduct of the census in each country (census laws, statistical laws, other regulations).

It is important to note that the national data were mostly collected from spring to autumn 2002. As a result of this and the widely differing census dates in the countries covered here - from November 1995 (Malta) to May 2002 (Poland) - the information collected refers to national censuses that are in different stages of completion.

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[1] A round of population and housing censuses or simply 'census round' is said to be the ten year period over two decades (e.g. 1995-2004). From here on, as stated in the title of the publication, each census round is identified by indication of the year ending in '0' (2000 for the current round).

[2] Belgium, Denmark, Germany, Greece, Spain, France, Ireland, Italy, Luxembourg, Netherlands, Austria, Portugal, Finland, Sweden, the United Kingdom.

[3] Iceland, Liechtenstein, Norway, Switzerland.

[4] Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, Slovenia, Cyprus, Malta, Turkey.

[5] Albania, Croatia, Serbia-Montenegro, the former Yugoslav Republic of Macedonia.

[6] Ref: Eurostat (1992 and 1996).

The comparative analysis is mostly based on a survey questionnaire prepared by the LDSA (hereafter 'LDSA questionnaire'). A total of 26 National Statistical Institutes responded. Three countries (Germany, Sweden and Iceland), having not implemented a census, were unable to complete the questionnaire, while three others (Netherlands, Liechtenstein and Romania) did not respond. For all the questions concerning directly the census process and treatment, the tables used for the comparative analysis don't include Liechtenstein and obviously Germany, Sweden and Iceland.

The country reports were prepared during the second half of 2002. Most of the reports follow a similar structure, but country-specific paragraphs (e.g. for Spain and Italy, on the comparison of census results with data from population registers) or formats (e.g. Switzerland) are also present. For countries not undertaking a census, alternative reporting formats have been chosen.

Eurostat and the research team would like to thank the National Statistical Institutes for providing the requested initial information and for fruitful co-operation in the follow-up stage.

Luxembourg, May 2003

ACKNOWLEDGEMENTS

We would like to thank all the institutions and persons who helped us with the preparation of the present report and, more specifically, EUROSTAT (Mr Aarno Laihonen, Acting head of Unit E-4: Population and Social Protection as well as the ESTAT-Secretariat-Demography). We are also indebted to all the National Statistical Institutes and the persons responsible for the census in each country for their invaluable assistance.

Apart from the official contribution of the NSIs, by providing us with material, notes and the answers to the LDSA questionnaire, this publication was also made possible thanks to the contribution of many European statisticians and researchers who friendly provided information, texts, comments and advise in the collection of the material. The list of persons who actually contributed to this work is so long that it is impossible for us to mention each one of them individually. Thus, we would like to thank all and everyone of them.

Moreover, we would also like to thank various persons from the University of Thessaly, and first of all, Mr Eleftherios Bozis and Ms Evi Paraskevopoulou who collected most of data and created and maintained the Internet site so useful for the communication with the team and with Eurostat. Finally, we would like to thank Mrs Rosemary Allison for the editing as well as Mrs Maria Michela Mirabelli and Mr Alberto Castori who are responsible for the layout and the electronic version of the publication respectively.

Byron Kotzamanis

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PART I
OVERVIEW OF THE POPULATION CENSUS AND ITS INTERNATIONAL ASPECTS

I.1. Origin and evolution of censuses

Population censuses are the oldest and most reliable way of taking stock of people and their living conditions in a given territory. The earliest recorded census was for the Babylonian Empire 3800 BC. Censuses were often used in China, Persia, Greece, Egypt, the Roman Empire and India during the period 3000 BC to 72 AD. The main reasons for undertaking such a complex operation were the army, tax and global administration. The most famous census of this time is probably that taken at the time of the birth of Jesus.

The modern era of population censuses started in the second half of the 18th century when entire national states (the Scandinavian countries, Spain, the United States of America) undertook complex counts with no fiscal purpose or innovative procedures. The population census was the starting point of the establishment of modern statistics and the *'prise de conscience'* of its necessity.

Throughout history the method of data collection has constantly improved. In the middle of the 19th century the first major innovation was the use of a questionnaire rather than a list for data collection. This innovation allowed for the inclusion of more questions and simplified the processing of data. Increasingly the census transformed from the simple enumeration of people to providing the means of knowing the socio-economic characteristics of the population living in a country. The means of identifying the population's living conditions was provided by the collection of data on buildings and housing units, or with more in-depth surveys agricultural holdings or associations.

Today censuses are usually based on sound scientific methods and taken at regular intervals. The high cost of census work and its significant response burden on the public are factors that cannot be neglected. Still, for most countries censuses constitute the most common source of demographic and socio-economic information, from the national level down to smaller geographical units. Censuses represent an indispensable tool for decision-making, forecasting and preparing samples for more specific surveys. This is why in recent years such a statistical inquiry has been performed at least once in almost all countries of the world. International support has played a significant role in this process – and censuses have contributed to the process of nation-building in many developing countries.

I.2 The census as a varying and evolving concept

The population and housing census has been subject to intensive international discussion and coordination, aiming at obtaining results that are consistent and comparable between countries. Such coordination efforts are repeated before every census round, and have resulted in generally accepted principles and recommendations. These contain definitions of the main ideas, preferred variables to be collected, recommendations for questionnaire design and field activities, models of the tables to be produced, and more.
Nevertheless, the census approach varies between countries, and in individual countries the process has evolved over time. One of the main distinctions between countries is whether the census serves to determine quota for representation of administrative territories in legislative bodies, and/or to directly assign financial support to local

authorities. This last requires special attention to ensure full coverage because census results may have to stand up to verification in the courts, and the use of sampling methods to estimate undercount may not be acceptable. This situation usually mandates a *de jure* census, where people are counted at the place they usually reside.

In some countries, especially those with large nomadic populations or with significant seasonal migration, a *de jure* census may be impractical. People are then enumerated at the place they spent census night, a *de facto* census.

A number of more advanced countries have population registers, the reliability of which is gradually improving. The primary role of the census in determining total populations then decreases in importance, and the emphasis shifts to the verification and possible updating of these registers. At the same time more attention may be placed, for research, on variables that traditionally are not part of a census, but have great importance to modern societies. Examples concern such issues as travel to work, occupation-related disabilities and use of leisure time.

Registers may become sufficiently complete and reliable to void the need for a complete field enumeration. An investigation of the registers, combined with sample surveys, may be enough to obtain results equivalent to those of a traditional census. The operation may still be undertaken periodically, and could be called an '**administrative census**'.

Different country methodologies, mostly the coverage and definitions applied in the national censuses, complicate the international comparability of results. These aspects opened the door to widespread international coordination and information exchange.

I.3. International activities and transition to the 2000 Census Round

In the last four to five decades the United Nations (UN) has provided international co-ordination of the general population and housing censuses. This was accomplished through the promotion of international discussion, and elaboration of recommendations for each census round. In this regard since 1960 each census round has been guided by the UN recommendations adapted specifically to the world's regions.

The UN Economic and Social Council, passed Resolution 1995/7 on the *2000 World Population and Housing Census Programme*, which stressed that periodic population and housing censuses are one of the primary sources of data needed for effective development planning and the monitoring of population issues and socio-economic and environmental trends, policies and programmes aimed at the improvement of living standards. To assist countries in the implementation of national censuses from 1995 to 2004, in the framework of the *2000 World Population and Housing Census Programme* the UN Statistical Division prepared a range of publications and handbooks on principles, recommendations (jointly with Eurostat) and specific census activities.

At the same time, international co-operation supports the organisation and conduction of censuses in developing countries. Excluding single donor countries, it is appropriate to mention here the more active international organisations such as the UN, UNFPA, the

US Census Bureau, the EU, the Council of Europe, up to the most recent PARIS21[7] initiative.

Most countries have been grouped together with the aim of closing the dates of enumeration and methodologies and of sharing experiences. This is the case for the UNECE region, including all countries covered by this publication; Eastern Asia and Pacific region through ESCAP; Latin America and Caribbean through ECLAC; Sub-Saharan Africa through a joint committee established under UNFPA. International recommendations were not prepared this round in every UN region for budgetary reasons. However, most countries around the world have already performed or will carry out a census in this round, as seen in the table in Annex 2, based on the most recent information.

In particular UNECE recommendations, following Community Census Programmes, were prepared for the census rounds of 1980 and 1990[8] for the countries in the European Union. The aim of these programmes, based on Council Directives adopted in 1973 and 1987[9] was:

- synchronisation of national census reference dates, and
- compilation of homogeneous statistical tables, i.e. a set of data for certain demographic, economic and social characteristics of individuals, households and families at the national and regional level, respecting common definitions and international nomenclatures.

The main difference concerning the 1973 and 1987 directives is related to Art. 3 of the Directive of 26 May 1987 where – for the first time – use of alternative methods by Member States is stipulated. Where countries are unable to organise an exhaustive conventional census, they are authorised to implement 'alternative methods such as use of registers or sample surveys' in order to 'supply statistical data comparable' to those produced by countries carrying out a conventional census.

The same principles were established for the Community Census Programme for 2001, a *'gentleman's agreement'* aiming to involve other European countries. In fact, after the events at the beginning of the nineties and the end of the West-East division, a broad group of Central and Eastern European countries plus Cyprus, Malta and Turkey (thus including all Candidate countries) is progressively joining the EU and EFTA Member States in the co-ordination of work in the field of population statistics.

The censuses carried out around 2000 coincided with the end of the 20th century and the beginning of the 21st. In this way they portrayed the socio-economic state of Europe at a time of sweeping change and development on the planet. In this regard, the following phenomena should be mentioned:

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[7] PARIS21 stood for Partnerships in Statistics for development in the 21st Century. This international statistical partnership arrangement has been established in November 1999.

[8] The first Eurostat effort to improve international comparability factors date back to the census programme for 1968/71.

[9] Council Directive of 22 November 1973 (73/403/EEC), Official Journal of the EEC No. L347/50/17-2-73 and Council Directive of 26 May 1987 (87/287/EEC), Official Journal of the EEC No. L143/33/3-6-87.

- the opening of European borders and the trend towards homogenisation of socio-economic systems;
- population re-distribution occurring as a result of conflict and economic recession;
- the rising mobility of economic migrants and the oversupply of cheap labour;
- the influx into Europe of great numbers of political and economic refugees from countries of the developing world;
- the reversal of models of state social protection and of institutionalised working relations, that had been achieved with considerable struggle, as a result of pressures arising from the trend towards globalisation;
- the reversal of the stereotypical relations between the sexes and the new form of European family.

Apart from the harmonisation of census coverage, with the aim to provide comparable results, the international context has developed the debate on methods. Increasingly national experiences are known and discussed in and with other countries. Most recently discussions have focussed strongly on the possibility of limiting the costs of these complex surveys. In most countries a wealth of information is available on population censuses. This includes detailed published results and descriptions of the statistical methods applied. Today national statistical agencies present census information on their websites thus offering an additional valuable channel of dissemination.

The international sharing of information is handled by continuous networks/working groups and published statistical material from the UN, the EU, the Council of Europe, and other multinational groups. Among other subjects, for many years the annual UN demographic yearbook has been devoted to census and other demographic data. For European countries this exchange of know-how and data is strongly supported by Eurostat through the Working Group on Demographic Statistics and Population and Housing Censuses, and the compilation of standard tables through publications and databases.

I.4. Census methods around 2000

The methodologies of data collection and processing had to be adjusted because of changing life-styles. More sophisticated technologies were introduced, which in some cases became both increasingly complex and more accurate. However, new census techniques narrowly relate to national administrative systems and the statistical needs of each country.

The international evolution of methods allows for the definition of three main typologies of census-taking according to the data collection system.

The first type of method is the **traditional census**, with enumeration based on questionnaires through door-to-door visits – with interviews of respondents by enumerators or self-compilation of the forms by the respondents – and manual data entry by operators. The process is expensive mostly because of the great need for and reliance on human resources. Moreover, expenditure seems high in relation to the fact that the operation is concentrated in time.

Apart from the technical and cost aspects, in the seventies and eighties the burden on respondents, privacy and data confidentiality hampered the implementation of population censuses in Europe, in some cases causing cancellation of the survey.

For all the above-mentioned reasons – technical developments, information systems and each country's needs, cost, burden on respondents, privacy and information privacy – during the last decades many countries have been seeking and transferring to other solutions. The new possibilities include the use of the postal service, innovative data capturing procedures (such as Optical Character Recognition), and administrative registers or other existing data sources, regular surveys, sampling, etc.

Concerning the traditional census, increasingly questionnaires are delivered to and retrieved from the population through alternative means (mail-out/hand-back, hand-out/mail-back, mail-out/mail-back, Internet, etc.) while data entry is supported by optical reading technologies. Despite these changes, this documentation concerns reference to a 'traditional census' where innovations have been adopted but still at the heart of the process there is a country-wide enumeration using questionnaires.

A second method that has arisen is the **register-based census**, where no enumeration is carried out by an enumerator nor is there the adoption of a mailing system. Data collection is based on the use of registers (inhabitants' registers, registers of buildings and dwellings, geographical co-ordinates, school registers, social security, tax, business and company registers). This method originates and has been developed mostly in the Scandinavian countries with the intention of reducing the costs and burden on respondents, when some of the data collected are already (or could be made) available in another form or source.

The conduction of the census in this way is strongly dependent on the country's administration and organisation. Among the pre-conditions necessary for the successful implementation of a register-based census are the central population register and the adoption of the Personal Identification Number (PIN) and other identifier for families, households, dwellings and buildings. In a register system all is based on the possibility of linking univocally the different sources and their units. In order to produce not only data on individuals but on households and families it is necessary to have a dwelling register (or at least dwelling data in the registers), which can be linked with the individuals' registers. Few countries in the world fully meet these conditions, others are working to achieve them. In any case the process of changing census method in this direction is slow and needs decades to become operational. Over a period of about 30 years Sweden has been gradually moving towards an entirely register-based population and housing census.

As soon as the necessary registers are set-up and reliable, the basic data from administrative registers are converted into statistical registers and linked to each other. The register system of a country is in fact defined as a data processing system and in principle allows for the production of the larger set of national official statistics.

Apart from eliminating the burden on the public, the use of registers provides the main advantage of the possibility of producing statistics more frequently, for small areas and in some cases for information that is not collected efficiently using the traditional census such as people's income. As most data are collected during the course of normal

administrative procedures, the process which is limited to access, links, tabulation and dissemination of data is normally less expensive. In addition, registers provide a more efficient basis for undertaking retrospective studies.

On the other hand, first of all the registers strictly depend on the notion of personal privacy in the country. The greatest difficulty with a register system is keeping them all up-to-date. The quality of registers can never be perfect, as they first serve purposes other than statistics, are updated through administrative routines and are largely dependent on personal declarations. In practice only frequent use of the register and its inter-connection within a national system may support data quality. Other limitations are related to the fact that many variables (such as ethnicity, knowledge of foreign languages or means of transport to work and school) can not be deduced from these sources. Finally, some argue that the use of registers is really less expensive only where very good registers have been established and are carefully and expensively maintained.

Often countries have taken or take the opportunity of using the results from traditional enumeration to establish or to improve registers, i.e. to prepare them for a further stage when the census may be based on the use of registers. This applies first but not only on the individuals' data. Considering the most recent experiences documented here, it is opportune to distinguish the **entirely (or largely) register-based census** from the **partially register-based census**. The first method applies to countries having definitively developed an operational register system useful to population, household and housing statistics. The second may represent a transition from the traditional to the completely register-based census, which is often a definitive solution integrating enumeration though questionnaires with registers.

The partially register-based census is a first example of **mixed census**, the third possible census method based on a combination of statistical inquiries and sources. In this case enumeration is always carried out on specific topics or on a sample of the population, and is combined with existing regular statistical surveys, registers, lists, or ad hoc organised activities.

Where a sample survey is part of the mixed census, interviews may be carried out by a smaller and more specialised staff of enumerators and through more detailed questionnaires – making participation from respondents and processing of data less complicated as well as increasing the accuracy of results. The minor costs and better public acceptance may allow for more frequent or even regular basic inquiries. On the other hand sample surveys may produce limits to the availability of results at lower regional or local levels.

Finally, as many different cases may be identified using the definition of mixed census, it may be considered the category of all solutions that differ from the first two methods. Even with current experience further methods may be identified, such as register-supported or register-improved censuses, where registers are adopted respectively in the preparatory phase to facilitate enumeration (for instance pre-printing questionnaires with basic data – name, sex, date of birth, address – available from population registers) and in the post-enumeration phase as tools to check and integrate collected information. Although for this possibility the following classification of country census methodologies, into only four main categories, are taken into account indicating further country specifications in comparison to the different census phases.

I.5. Towards the 'best method'?

The exploitation of existing population registers, as a (partial) replacement of traditional census activities, is a highly significant development. Many statisticians maintain that the use of registers does not correspond at all to the concept of a census, i.e. enumeration of people in a given territory. Only if data capture includes a traditional census component is the word 'census' justified. Combining variables from different fields of statistics is not a criterion for censuses, because this is achieved also in ordinary statistics.

Whether the resulting operation could still be called a 'census', is perhaps not the most important issue here. What counts more, is that demographic statisticians do not hesitate to put into question methods and technologies that have been used – often quite successfully – for a long time. As mentioned above, traditional census-taking can be slow as well as expensive. The increased use of registers offers the promise of improvement on both accounts.

Opponents of register use rightly point out that outdated, incomplete, or otherwise erroneous registers seriously undercut the applicability of the register approach. Census takers need to be aware of this, and make absolutely certain that a register's quality is sufficient for its foreseen use. In almost all cases this will include at least a partial return to classic door-to-door canvassing, if only to sample check register coverage.

A range of new technologies promise efficiency improvement even in traditional census taking. These include global positioning systems for census mapping, optical character recognition for data capture, and various uses of the internet for data capture and information dissemination. In many countries the facilities for communication between census staff at headquarters and in the field – often a serious problem in earlier days – have made a quantum leap in terms of availability, affordability, and reliability.

What constitutes the best mix of methods and technologies, in any particular country and at a particular point of time, remains a matter for consideration for those responsible. It is obvious, and confirmed by the information contained in this report, that no one solution fits all. Time and again it will be necessary for national census takers to recapitulate all available options, to recall past lessons learned, to gather guidelines and information available from Eurostat and other international sources, and then to make their informed decisions.

Whatever the views on the methods of data collection and processing to be used, there can be no difference of opinion about the crucial importance in this day and age of having the best possible demographic information. The ageing populations of Europe, and migratory currents both within the EU and across its borders, are phenomena of overwhelming importance. These demographic evolutions need to be taken into full consideration whenever the Commission, national governments, or other stakeholders, determine socio-economic policies, both for the short and for the long term. It remains the responsibility of national statistical organisations and demographic statisticians to ensure that these policies can be based on solid demographic fact and carefully crafted forecasts. The debate on census methods and technologies goes beyond the mere details of cost-efficiency and scientific preference. It is about providing the proper tools to guide our societies into a successful and harmonious future.

PART II
COMPARATIVE ANALYSIS OF SELECTED TOPICS

II.1. Frequency and typology of censuses

The comparative analysis of censuses reveals different experiences depending on the legislative context, administrative system, statistical tradition and history of the country. In correspondence to the 2000 Census Round the relevant economic and political changes that occurred in Central and Eastern Europe in the nineties have assumed a particular meaning. Following these events, many new independent states were created and had to establish their infrastructure and administration. Many national statistical institutes were radically reorganised or created. Concerning the census, in the previous federation states, such as Yugoslavia or the Soviet Union the republics prepared the project together, taking the same date for enumeration and respecting the instructions from the central statistical authority.

The main change is that in the 2000 Round these countries used the concept of usual place of residence instead of legal place of residence/present population and the census was carried out in an open population (free migrations). In some of these countries, questions on citizenship were included and in some case, questions on religion were introduced.

The frequency of censuses

The beginning of modern population enumerations / censuses dates to the 18th century, with first counts being undertaken in Iceland, Denmark, Finland, Sweden, Norway, Spain and the United States (Table 1). The larger countries carried out the first enumerations/censuses at the start (France and England) or around the middle (Germany and Italy) of the following century. Ireland (1812/13), Greece (1828) and the Netherlands (1829) preceded the remaining countries that are currently members of the EU and EFTA. Dates for the first census were somewhat late in the current Candidate countries, with the first initiative being taken in Malta (1842), Romania (1859) and Slovenia (1857) and later in Poland and Turkey (1921 and 1927 respectively). In two Baltic states (Estonia and Latvia), the beginning of the census considered here (1897) refers to the first enumeration under the Russian Empire (not exactly based on current boundaries of these countries) while in the third Baltic state (Lithuania), the first census was carried out in 1790 with enumeration of all existing social groups[10]. In these countries, as in other cases, where earlier enumerations were carried out covering only part of the territory (often only the main towns), these 'partial' censuses cannot be considered real censuses.

Ranking the 32 countries according to the number of censuses taken since 1840, Luxembourg (27), Denmark and France (26), Finland (22), Ireland (21) and Sweden (20) are the first, Slovenia, then those with fewer censuses Poland, Estonia and Lithuania (from 9 to 8 only). The share of censuses in three main periods – before 1900, 1900 to 1949, after 1950 – denotes different frequencies for groups of countries. Decennial censuses started in the United States in 1790 and in England in 1801. In the second half of the 19th century census taking became a regular event for all 19 EU and EFTA countries.

[10] The 1790 Census is considered to be the first overall population census in the Grand Duchy of Lithuania.

Table 1 - History of population enumerations/censuses [1]

Countries	Year of the first enumerations/ census	Number of enumerations / censuses since 1840	Number of censuses / enumerations from 1840 to 1899	Number of censuses from 1900 to 1949	Number of censuses since 1950	Interval between 2 censuses after 1950 (in years)
Belgium	1846	16	6	5	5	9-10
Denmark	1769	26	8	10	8	5-11
Germany	1852	14	4	6	4	9-17
Greece	1828	17	7	4	6	10
Spain	1768	16	5	5	6	10-11
France	1801	26	11	8	7	6-9
Ireland	1812/13	21	5	5	11	2-8
Italy	1861	14	3	5	6	10
Luxembourg	1855	27	9	12	6	4-11
Netherlands	1829	13	6	4	3	10-20
Austria	1857	16	4	6	6	10
Portugal	1854	17	6	5	6	10-11
Finland	1749	22	8	5	9	5-10
Sweden	1749	20	5	7	8	5-10
United Kingdom[2]	1801	17	5	4	8	5-10
Iceland	1703	15	6	5	4	10-11
Liechtenstein	1872	13	3	4	6	10
Norway	1769	15	4	5	6	10
Switzerland	1850	16	4	5	7	10
Bulgaria	1880	16	2	7	7	6-10
Czech Rep.	1880	13	2	5	6	9-11
Estonia	1897	9	2	2	5	9-11
Hungary	1870	14	3	6	5	11
Latvia	1897	11	2	4	5	9-11
Lithuania	1790	8	2	1	5	9-12
Poland	1921	9	0	5	4	8-14
Romania	1859	11	2	4	5	10-15
Slovak Rep.	1880	13	2	5	6	9-11
Slovenia	1857	9	0	3	6	10-11
Cyprus	1881	13	2	5	6	3-10
Malta	1842	15	6	5	4	10-18
Turkey	1927	14	0	4	10	5-10

1 As a result of historical events and changes in the boundaries of the countries some indications concerning the number of censuses may slightly differ from other sources. Only censuses on the entire territory of countries and within the boundaries at that time are normally counted. Censuses have also been taken into consideration for countries that no longer exist (such as Czechoslovakia, USSR and Yugoslavia). From 1950 on, data for Germany refer to the German Federal Republic.

2 Mostly, regarding England.

Sources: Eggerickx (1993), Eurostat (1992, 1996), NSI websites and other Internet sources.

Considering the longer period to 1949, France and Luxembourg took a census normally at five year intervals respectively from 1851 to 1946 (skipped twice because of the World Wars) and from 1861 to 1936 (with four censuses in the forties). There were mostly ten year intervals for the other cases, with the notable exception of Denmark (five years from 1901 on). The census has been more frequent in the most recent period in the Candidate countries, with the exception of Malta.

In the most recent period, starting with 1950, a higher frequency is observed (normally five-year intervals) in Ireland, Turkey (until 1990), in Finland (from 1970 to 1995) and Sweden (1960 to 1990). The survey in France was intensive but irregular, this was the EU country with the most obvious '*décalages*' in years ending with '1', where censuses in the project countries are increasingly concentrated. Finally, apart from countries that do not take a census, the length of intervals between two censuses conducted after 1950 is often characterised by the objective of aligning the census date with the internationally recommended period for the countries of the UNECE region and EU, as well as for Luxembourg, the Netherlands, Portugal, Iceland or Bulgaria.

The dates of the 2000 Round

Considering the first objective of the Community Census Programme referred to above, the adoption of dates concentrated between January and May 2001 was satisfied by 13 of the 29 countries undertaking the census (see Figure 1 on synchronisation of population censuses around 2000). Nevertheless at least six exceptions result from the postponement of the national project or refer to very close reference dates.

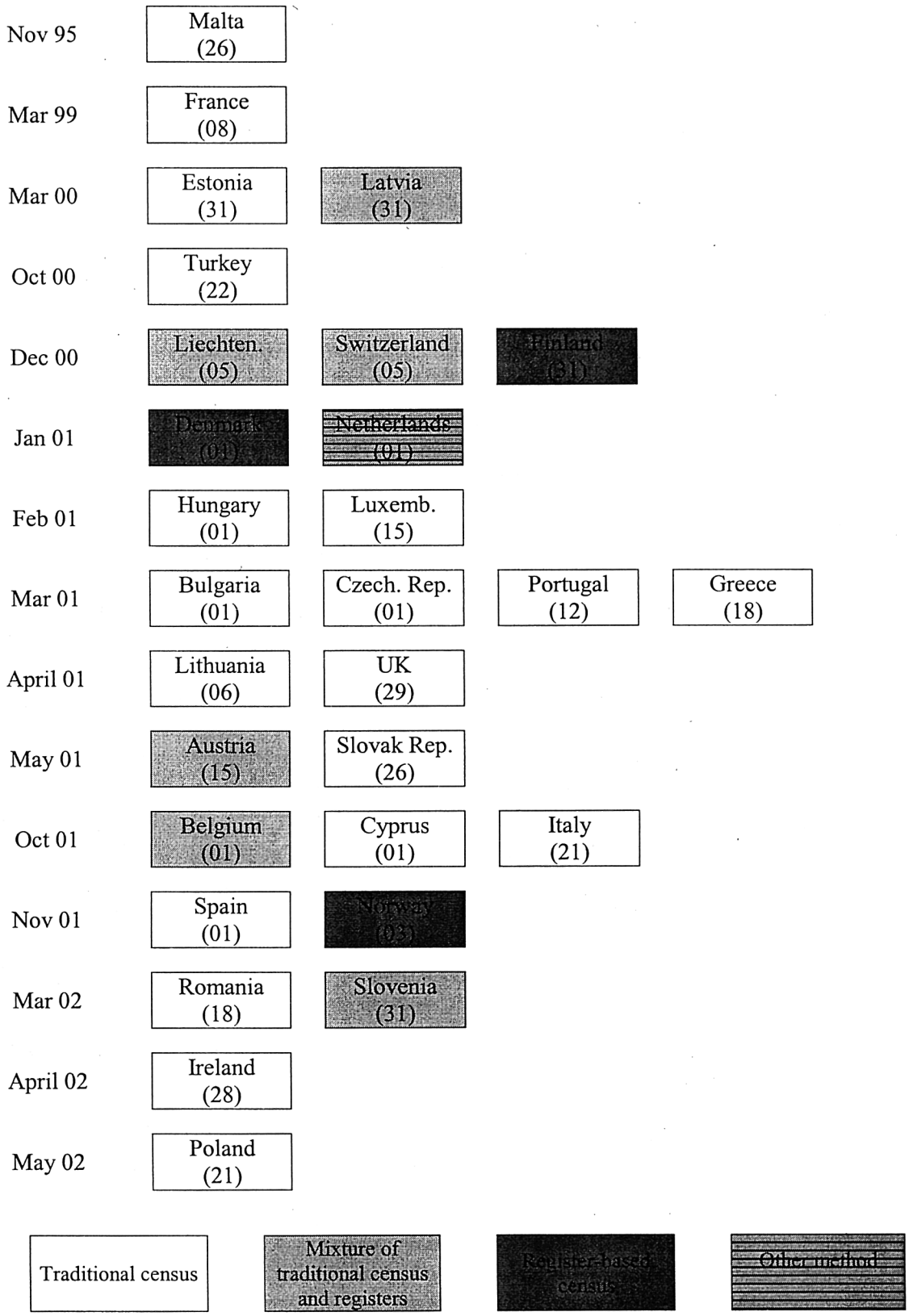
Within the group of the EU Member States, concerning respect of the recommended period, notable exceptions are France (March 1999), Ireland (April 2002, one year after the original plans because of the outbreak of foot and mouth disease), then Belgium, Spain and Italy (autumn 2001). Concerning the EFTA, the project was undertaken a few weeks before the period in Switzerland and Liechtenstein and about five months after in Norway, the latter as a result of a postponement.

Among the Candidate countries, in the ten Central and Eastern European countries censuses were undertaken within about two years only, from April 2000 (Estonia) to May 2002 (Poland). For Bulgaria, Czech Republic, Hungary and Lithuania dates result as concentrated from February to beginning of April 2001. The last census in Malta dates to November 1995, while Cyprus and Turkey conducted their traditional enumeration respectively a few months after and before the recommended period. Even in the case of Cyprus, however, the postponement was the result of the six month delay in the selection of the company responsible for scanning.

Briefly, countries adopted dates in the different years as follows:

- 2 countries (or 7%) before 2000
- 6 countries (21%) in 2000
- 16 countries (55%) in 2001
- 5 countries (17%) in 2002

Diagram 1 - Synchronisation of population censuses at 2000 Round



The figure within brackets denotes the day of the month (census day)

The evolution of census methods

Since the 1970 Census Round, the alternative census has been high on the agenda of the statistician community to reduce the cost of the operation and to alleviate the burden on respondents. However, the implementation of new methodologies has been hampered by the difficulty and the cost of such transition.

Mostly in view of the analysis of the methods used in 2000, censuses may be represented by the following four categories:

- traditional census
- mixture of traditional census and registers
- entirely or largely register-based census
- other method (other mixed census or micro-census)

Since 1970, the Scandinavian countries have transferred using different means to the application of registers for census purposes. As soon as dwelling and building data were harmonised to population registers and employment and other individual statistics derived from registers, Denmark and Finland carried out the fully register-based project, in 1981 and 1990 respectively. Sweden and Norway began to partially use registers during the 1980 and 1990 round respectively – Sweden, in combination with a short questionnaire for people aged 16 and over; Norway in combination with a sample survey. During the 2000 Round, Sweden and Norway plus Iceland still lacked complete building, dwelling and household data in their register systems. Crucial missing information included household composition and the link between each household and dwelling in multi-flat buildings (known as 'household construction').

Apart from these Nordic countries, from 1970 to 1990 only the Netherlands and Germany in 1991[11] applied a method that varied from the traditional, respectively a combination of registers and surveys and the micro-census (see Diagram 2).

Based on classification of the above-mentioned methods, the summary Figure 1 below demonstrates how slowly the process changes in the different country groupings. The traditional census was discarded in 1990 (five countries, i.e. 16% of those taking a census) and in 2000 (nine countries, i.e. 31%). Considering only the population census 12 of 32 countries (38%) now apply or are seeking a new method.

[11] The indication of traditional census for Germany for the 1990 Round refers to the 1987 Census.

Diagram 2 - Methods adopted since the 1970 Census Round

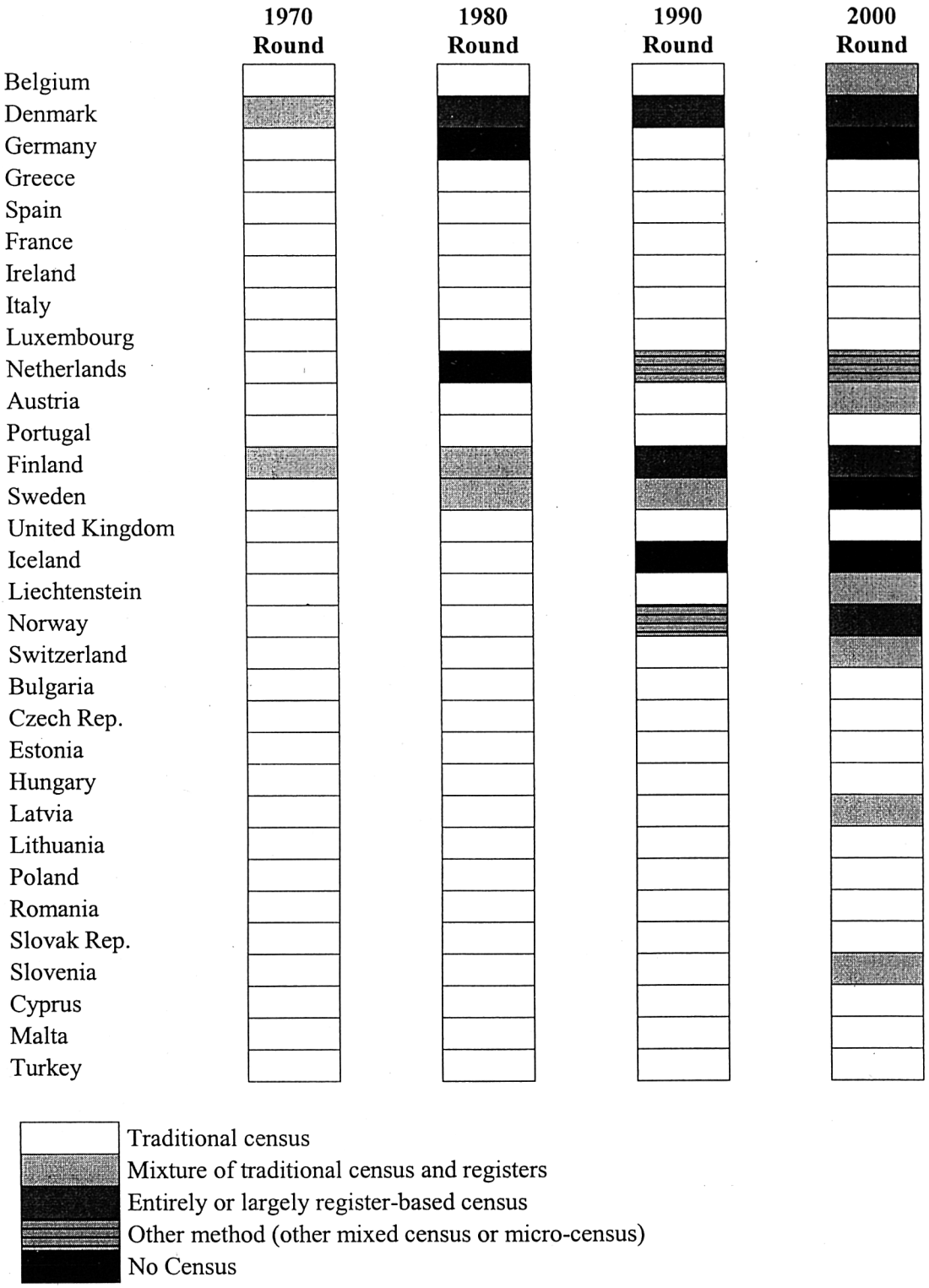
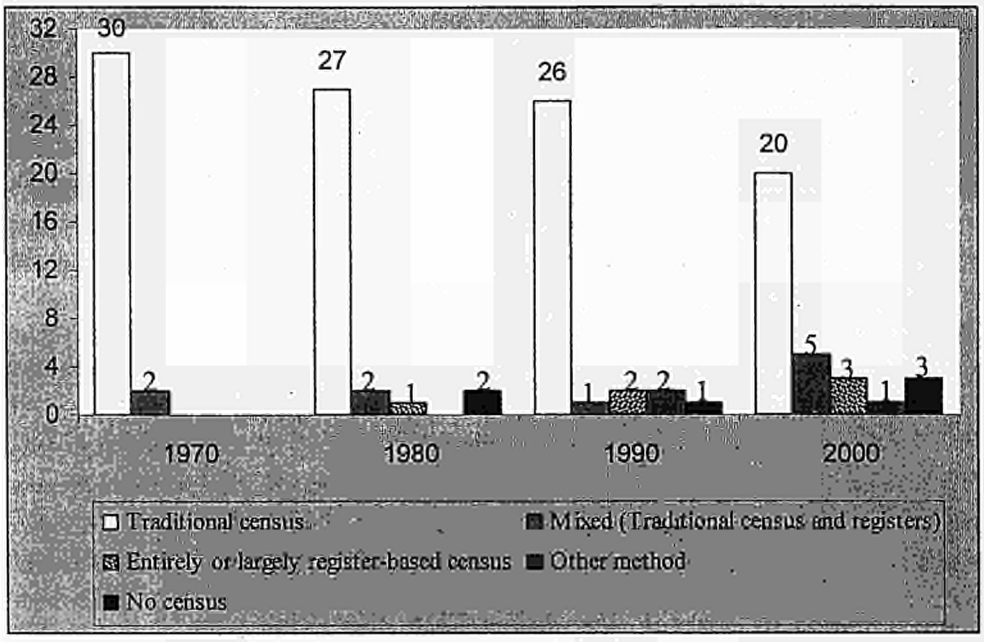


Figure 1 - The evolution of the census methods



Postponement or cancellation of the census

During the last four census rounds a few countries decided not to carry out a population and housing census. This was the result of negative public opinion towards the survey or because it was considered unnecessary. In project countries the survey was postponed for reasons related to cost. Overall, from 1970 on, the census was not organised or cancelled six times, in Germany (in 1980 and 2000), the Netherlands (1980), Sweden (2000) and Iceland (1990 and 2000).

Considering the cases before the 2000 Round, the census in Germany was first postponed to 1983 then cancelled at a very late stage following a wave of public protest and a boycotting campaign, which was based on the fear of intrusion of privacy and the failure to maintain data confidentiality and legislative aspects. Discussions covered the unconstitutionality of census plans, especially those concerning the use of census results to update population registers. Finally the Federal Constitutional Court ruled for postponement of the census, which was finally carried out in May 1987. Subsequently Germany held the 1991 Census, based on the micro-census of a 1% sample of the population carried out annually since 1957. This is sometimes supported by supplementary surveys on more restricted samples.

In another case during the seventies in the Netherlands, a public debate arose before the 1971 Census on the utility of the census and privacy aspects. This procured a level of refusal of more than 2% of respondents. Later, following a non-participation rate of only 25%, with peaks of 40-50% in the main cities during a voluntary test in 1979, CBS took the initiative to cancel the 1981 Census and worked out and applied an alternative census method for the 1990 Round.

Finally, a case before 2000 is represented by Iceland during the 1990 Round. The census taken in 1981 was not sufficiently well planned. This had the result that

processing (checking, recording, editing) was severely delayed. It was also clear that a full scale census would need extensive funding and vast human resources, neither of which was easily available when considering other priorities at that time. For these reasons Iceland decided that there was no capacity for a full-scale census and no reason to attempt ever having another traditional one. Rather the opportunity was provided to plan and prepare a register based census, which is still the country policy within the framework of the definitive development of a comprehensive register system.

The methods applied in the 2000 Census Round

For the 2000 Round, many countries sought to change their methodologies concerning the register-based method, but gave up because of the lack of one or several required elements. Besides the introduction of new technologies and approaches for the different units covered by the national projects[12] (such as use of pre-printed questionnaires, most countries (20) carried out a **traditional census**.

In some cases such as Luxembourg, Estonia or Hungary, introduction of the registers has been probably only postponed, this is taking into consideration possible development or support to the change from the recently conducted census. In most cases, despite some countries' objections it seems difficult to foresee relevant changes to the significant use of registers for the next round as there are no existing technical and/or legislative conditions.

A second larger group is composed of Belgium, Austria, Switzerland, Liechtenstein, Latvia and Slovenia that in this round initiated a new system of **census based on questionnaires and registers**. The use of the registers was of course different, depending on national conditions and census contents. However only Belgium and Austria probably have a long-term plan to move to only registers. As far as possible, for technical and organisational reasons, different data were extracted from registers in Belgium, Austria, Latvia and Slovenia.

In Belgium, the NSI entered the questionnaire results that were unobtainable from existing and accessible registers into different databases and has established procedures to regularly update its contents. In Switzerland, where at present there are no centralised population registers, the 2000 Census was to some extent based on communal and cantonal registers, depending on their contents. This was a transitional census moving towards the establishment of a coordinated register structure for inhabitants, buildings and dwellings. For this reason changes have been made to the Swiss constitution to give the government general powers to regulate and harmonise registers for statistical purposes. Liechtenstein gave mandate to the Swiss statistical office for the execution of the census according to the same questionnaire and, generally, the same methods and technology.

[12] The censuses presented here normally covered population, households, dwellings and buildings. However, as a result of its predominant aspects, the definition of the methods applied refers mostly to the population census. In some countries, such as Bulgaria or Poland, additional sample surveys were undertaken in the framework of the census project. Indications of different methods used for different topics and the conduction of other surveys are given in this comparative analysis and in the country reports.

The Scandinavian countries carried out **entirely or largely register-based censuses** for the 2000 Round: Denmark and Finland relied on registers only (mostly in the former, the census is actually the processing of the tables necessary to meet international demands), Norway used registers for the population census and traditional enumeration for the component on housing, buildings and households. In Norway, the implementation of a preliminary project numbering all apartments and the census results will provide the population and building registers with all the data necessary to frequently obtain census and other new statistics from the register system. As stated above, Iceland and Sweden did not carry out a census, as they may already be relying on registers for demographic and socio-economic individual data (both will provide Eurostat with the relevant tables with 1 January 2001 and 31 December 2000 respectively as reference point). These countries do not have definitive plans for the household component of census statistics, however both countries will follow the Norwegian method in setting-up the missing household and dwelling data in the registers.

Given the four methods classified above, The Netherlands is the only country that used a solution different from those stated previously for the 2000 Round, following adoption as in 1991 of a **combination of administrative registers and household sample surveys.**

A census test in Germany

In Germany, following the heated public debate on census since the eighties, as yet there has been no final decision on the future of the population and housing census. Nevertheless, it seems that the classical census will not be used anymore, as Germany has recently carried out a test for using a **mixed (register-supported) census**. The test using 5 December 2001 as reference date was based on the following activities:

- extraction of data from population and other registers
- traditional interview based on a household sample
- comparison of results with the population registers
- collection of building and dwelling data by mail from the owners (at present no registers exist)
- a supplementary sample survey of all persons between ages 15 and 65 not encountered in the employment and pension registers to obtain economic information on the self-employed and family workers
- the extension of the survey results to the whole population

This solution reducing the burden on the population and the reduced cost should ensure the survey is acceptable to all. A decision is expected in 2003 or 2004, when the conclusions from the 2001 Census Test will be completed. However, Germany indicated that it would be in a position to provide comparable data to fulfil the Eurostat Table Programme for the 2000 Censuses.

II.2. Legal framework

The creation of harmonised models for the concepts, definitions, codes, essential common variables and procedures were established and commonly agreed upon in the framework of the international organisations. The countries, however, were under obligation to create the appropriate **legal framework**, to ensure the provision of comparable statistical data on the basis of the principle of the protection of personal data, with the lowest cost and the least possible disturbance to the interviewees.

Given that:

- the relevant laws that were formulated to fulfil these needs, constitute in most cases legal frameworks and the most specific issues are handled by the founding law of the National Statistical Services, which is usually complemented by a series of presidential and legislative decrees, ministerial decisions and circulars, and
- the legal framework for the protection of personal data either constitutes a separate law or is covered by the founding law of the statistical service or the census law or by both;

it was decided that in order to study and analyse the legal framework of each country's census, the content of all three laws – for statistics, data confidentiality and census – would be recorded.

Statistical Law – Data Confidentiality Law - Census Law

Regarding the comparison of the legal frameworks of 31 European countries[13], it should be clarified that a group of countries exists where censuses are no longer carried out in the classic manner, but by means of administrative registers and sources which are constantly updated with a continuous influx of data (see tables 2 -3).

A second group is comprised of certain EU and EFTA Member States that have begun an attempt at conducting a traditional census in combination with the use of data from their administrative sources. The last census may be a pilot for future data collection from administrative sources and the method of a complete census may be abandoned such as Belgium.

A third group includes the remaining EU countries that do not have the intention, or the conditions, for realising the transition from a traditional census to updating through administrative registers in the immediate future (such as Greece, Ireland, Italy, the United Kingdom).

Finally, the Candidate countries conducted a classic census and can be divided into two groups: countries having more reliable registers and that have already adopted or plan for their future use (Estonia, Latvia, Lithuania, Slovenia) and those that will continue to gather the necessary statistical data through traditional censuses.

[13] It was not possible to analyse Iceland's legislation because these documents have not been translated into any foreign language

In certain countries (such as Austria or Finland) the national legislation (Statistical Law) grants the right to collect personal data only to the local authorities. Thus, in countries where data are derived exclusively or partially from administrative sources, the Statistical Services, based on ministerial decisions, organise the conduction of censuses on a national basis or set the reference date. All necessary procedures for implementation of the censuses or their presentation are carried out in cooperation with local authorities (through local databases and local registers) after processing of available statistical data from the databases and administrative registers (Belgium).

In most countries, the Census Law provides the legal framework on the basis of which several factors are determined, such as reference date for the data, the compulsory character of the provision of data on the part of citizens, sanctions in the case of refusal and, in several countries, confidentiality of the data provided. Ministerial decisions, administrative decisions and circulars manage the remaining procedures, when these are not covered by the Law regulating the establishment and function of statistical services.

In the case of countries that have carried out a complete or mixed census, and where the Census Law contains a detailed description, (such as Bulgaria, Czech Republic, Hungary, Italy, Slovak Republic) the following factors are included:

- **Management**: administrative duties hierarchy, description of characteristics and responsibilities, number of staff employed in each phase and work regime, composition of work groups and determination of participation in the relevant bodies of representatives of other administrative organisations.
- **Organisational process**: time-schedule and description of phases. Cartographic work, pre-census study, pre-measuring, geographic segmentation of the country into census-taking sectors and departments, employment and training of the enumerators, time of conducting the census, post-enumeration study of cover, methods and means of collection, control and processing of data, census expenses.
- **List of topics, concepts, classifications, compulsorily and optionally for national use.**

The long-term course of the Statistical Laws reflects the socio-political changes in Europe. In the EU and the EFTA countries, certain statistical services operate on the basis of their founding law, which dates back to the 1950s and 1960s (Belgium, Greece, Spain, France) and the 1920s (United Kingdom) and is complemented by the necessary reforms, in the form of complementary decrees and ministerial decisions, where this is considered essential because of changes in the socio-economic model of the European economy. The countries that have changed their system of collecting statistical data, moving gradually from the classic method to the use of administrative sources base their operation on a legal framework that was created in the 1980s and early 1990s.

Among the Candidate countries, several events occurred in the 1990s, the disintegration of the Soviet Union, the peaceful partition of Czechoslovakia and the successive conflict in Yugoslavia. Changes in the socio-economic systems of the Central and Eastern European countries led to reform of the model of statistical services, based on current demands for statistical information. Therefore, new legal frameworks, first formulated in 1992, were complemented by successive amendments when the original formulation of the law presented weaknesses and gaps.

Data Confidentiality Law

Changes in the structure and operation of Statistical Services, new methods of data reception and kind of statistical data are required (increased amounts of personal data at a specifically geographical level) to design policies and actions. This information is needed not only at the country level, but at the level of problematic regions or special groups (i.e. issues of social exclusion), where the Statistical Law does not protect such data. These changes created a new reality necessitating the implementation of legal measures to protect personal data, persons and legal entities. Thus, the need for the implementation of the Confidentiality Law arose, in 65% of countries this law was formulated at the beginning of the 1990s and later. In certain countries this need is covered totally or partially by the Statistical Law (Ireland, Finland, Bulgaria, Estonia, Poland or Cyprus), by the Census Law (Luxembourg) or by both laws (Bulgaria, Estonia).

Census Law

The relevant legislation was formulated between the years 1999-2001 in the EU and EFTA countries that conducted a traditional or mixed census (about 85%). The United Kingdom's legislation was based on the Law of 1920 with Census Order and Census Regulations approved during 2000. Legislation in Austria was based on the Law of 1980 with the Statistical Law of 2000. Spain legislation was based on the Law of 1980/1999 with Royal Decrees of 1999 and 2000, as well as, special orders. In 1999 France conducted a census based on ministerial decisions taken in 1998, given the fact that the census in this country is not a matter of law, as there is no constitutional or legal requirement.

In 77% of the Candidate countries the Census Law was passed between 1998 and 2001. For certain countries the law provides a framework that is complemented by decrees, amendments and ministerial decisions, while for the remaining it constitutes a detailed description of the management, organisation, obligations (topics, concepts, classifications). In Cyprus no special legislation is required, as it is included in the Statistical Law and all procedures are handled by ministerial decisions. In Malta in 1995 a Census Order was made under the terms of the 1948 Census Act and was established by a legal notice of 1995. Turkey conducted a census on the basis of the Census Law of 1990 with regulations of 2000.

Table 2 - Type of legislation (*)

Countries	Year of last Statistical Law	Year of last Law on Data Confidentiality	Year of last Census Law (NA = not applicable or no separate Act)
Belgium	1962 / 2001	1962	NA (2001 by royal act on the socio-economic survey)
Denmark	1992/2000 amendment	1978/2000 (1)	1970/1981 regulation
Germany	1983/1987	Not existing (3)	1987/2001 (2)
Greece	1956/1980/2000 amendments	1996	2000
Spain	1989 royal decree	1999	1999/2001 royal decrees and orders
France	1951	1978	1998 decrees
Ireland	1993	Not existing (3)	1993/2001 order
Italy	1989/1996 decree	1996	1999/2001 operational regulation
Luxembourg	1962, 67, 71/1995	Not existing (3)	2001
Netherlands	1996	1999	1970 rescinded in 1991
Austria	2000	2000	1980/1994/2001
Portugal	2000	1989	2000 decrees 143/144
Finland	1994	Not existing (3,4)	1938/1971 followed by decrees till 1971
Sweden	1992	1980, 1998	1990
United Kingdom	1920	1991/1998	1920/2000 followed by orders and regulations
Norway	1989	1978	2001 (5)
Switzerland	1992	1999	1998
Bulgaria	1999/2001	Not existing (3,4)	2000
Czech Republic	1995/2000	2000 (3)	1999/2001 followed by decrees
Estonia	1997/2000 amendment	1997 (3,4)	1998/1999 regulation, 2000 other legislative acts
Hungary	1993/1999	1992 (4)	1999/2000 regulation
Latvia	1997	2000	1999
Lithuania	1993/1999	1996/2000/2003	1997/1999 law, 1999 decree, 2000 resolution
Poland	1995	Not existing (3,4)	1999
Romania	1993/2000 amendment	2000 regulation (3,4)	2001
Slovak Republic	1992/93, 95, 96 decrees 1999 amendments	1992/1998	1998/1999 and 2000 amendments
Slovenia	1995/2001 amendment	1999	2000, 2001 amendments
Cyprus	2000	2002	NA (3)
Malta	2000	2000	1948/1995 regulation and order
Turkey	NA	1962	1990/2000 regulation, orders and norms

(*) When more than one years are mentioned, the first year concerns the date of adoption while the other dates concern the amendments.

1 Public Authorities Regulations Act (1978) for the use of registers.

2 The Census Test Act of 27/07/2001 is a regulation providing the legal foundation for the test operation for a register-based census. The last census conducted in the Federal Republic of Germany in 1987 was legislated by a separate law, the 1987 Census of Population Act.

3 Included in the Statistical Law.

4 Included in the Census Law.

5 This legal text concerns only the building and dwelling census which is a traditional one

Sources: LDSA questionnaires, country reports, Statistical Laws, Census Laws, Data Protection or Confidentiality Laws, Conference of European Statisticians in Dublin.

Table 3 – Contents of census laws

Countries	Concepts	List of topics	Reference date or period	Enume-ration period	Employ-ment regime	Obligation to respond	Post-Enum. Survey	Cost of census
Belgium	-	√	√	-	-	√	-	-
Denmark	Not relevant							
Greece	√	-	-	-	-	-	√	√
Spain	-	-	√	-	-	-	-	-
France	-	-	-	-	-	-	-	-
Ireland	√	√	√	-	-	√	-	-
Italy	√	√	√	√	√	√	-	√
Luxembourg	-	-	-	-	-	-	-	-
Netherlands	Information Not Available							
Austria	-	-	√	√	√	√	√	√
Portugal	√	√	√	√	-	√	-	√
Finland	-	-	By decree	-	-	-	-	By decree
United Kingdom	-	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-	-
Switzerland	√	√	√	√	-	√	√	√
Bulgaria	√	√	√	√	√	√	√	√
Czech Republic	√	√	-	√	√	√	-	-
Estonia	√	√	√	√	√	√	√	√
Hungary	√	√	√	√	-	√	√	-
Latvia	√	-	√	-	√	√	-	-
Lithuania	√	√	√	√	√	√	√	-
Poland	√	√	√	-	-	√	-	-
Romania	√	√	√	-	-	√	-	-
Slovak republic	√	√	√	√	√	√	-	-
Slovenia	√	√	√	√	√	√	√	√
Cyprus	√	√	√	-	-	√	-	-
Malta	-	√	√	-	√	By decree	-	√
Turkey	-	-	√	-	-	-	-	-

Belgium The population census is replaced by the General Socio-Economic Survey 2001. The census is an agreement. From a judicial viewpoint it is not obligatory. Census Law in combination with Statistics Law are included in the organisation, management and the obligatory character of the survey.

Greece Census Law is supported by amendments and orders.

Spain Orders and norms are also part of the legal framework. The Royal decree 1996 developed the Census Law of 1980 and established a new framework for the relation between the Padron and the population census.

France Census is not a matter of Law. There is no constitutional or legal requirement. Guidelines by decrees/orders.

Luxembourg The legal basis of the census is the Electoral Law. Confidentiality is included in the same law. In addition the reference date is established by regulation.

Finland Census Law is a framework.

UK The Census Act of 1920 is the primary legislation determining the topics that may be included in the census. For each census, Parliament is required to approve two pieces of secondary legislation – the Census Order and the Census Regulations.

Estonia Concepts and topics are covered by regulation.

Hungary Amendments and decrees are part of the legal framework.

Latvia The Census Law is supported by decrees that also regulate the date and duration of enumeration. Management of 2000 Population Census was developed in compliance with the regulations of Cabinet of Ministers, 1995 (*'Regulations on preparation for the regular population census'*).

Lithuania The Census law, decree in 1999 and a resolution in 2000 on basic operations of the census and employment regime are part of the legal framework.

Cyprus There was no separate Census Legislation. Census taking is provided under the Statistics Law of 2000, which includes confidentiality and access to administrative sources.

Turkey Regulation, orders and norms are also part of the legal framework.

Sources: Census Laws or, in case of no separate census act, Statistical Acts.

II.3. Preparatory phases

A population census is normally undertaken once in a decade. However, despite continuous technological innovations, the preparation phase, data processing and dissemination following data collection still takes a lot of time. For example the preparatory phase for the Europe 2000 Round country reports began early in the nineties (e.g. 1993 in France, 1994 in Norway, 1995 in the United Kingdom, Estonia and Poland). A significant portion of the international recommendations already had been developed in the first half of the nineties, while first discussions for the 2010 Round had been planned for 2003.

Decisions taken concerning data collection and processing methods were in many countries the most important aspects of the preparatory stage for the 2000 census. This is because all organisational, technical and budget aspects strictly depend on them. The length of the preparatory phase is normally longer and more delicate in the larger countries. However, this is not always the rule, especially during transition from one method to another, with all the possible consequences of public debate. In this case Norway should be mentioned as an example (see country report).

Preparation of the census questionnaires

Determination of the census contents even today constitutes the most crucial and probably lengthiest preparatory activity. This is due to the prevalence of the traditional census method, or the requirement of linking the questionnaire to complement available information from registers, where a mixed method was used. Throughout the research countries the contents of the questionnaires – or, generally, coverage of the census – was decided taking into consideration the international recommendations. Although already in place at the time of the previous census rounds, the new geo-political situation in Europe has contributed to a stronger effort being made by countries to abide by the recommendations. During this round discussions of census coverage have been carried out in each country far more than in the past. Working groups and other meetings between statisticians, researchers, academics and other groups, such as data users, have been reported by almost all countries. In the United Kingdom, France and Italy the overall process of proposal and decision making was sustained over a longer period.

Questionnaire design, together with the determination of census topics has taken a prime place in preparation. The main reason was the need to provide an easily identifiable tool for the different enumeration units (buildings, dwellings, population); which could be easily understood and compiled, possibly brief, and included all necessary instructive information and appropriate public messages to gain the confidence of respondents. Another principal aspect this time was the need to prepare a useful tool for subsequent optical reading technology.

Specific tests were undertaken in many countries that covered both content and format. For example testing was carried out in Italy to evaluate the length of the questionnaire

and the possible burden on respondents[14], France tested the new questions or formulation as well as respondents' reaction to new questionnaires (in 1994 and 1996 respectively). Following testing Hungary decided to considerably reduce the number of pages so as to decrease the burden on respondents.

Census cartography

Cartography was introduced into the census to first **define territorial units for data collection**[15] for traditional enumeration. After the field work cartography facilitated the application of checking, analysis and publication of results. The implication of the first preparatory step, the determination of territorial units for data collection, is considered here.

As stated above, in countries covered by this study traditional enumeration is still widely used as a census method. Thus making census cartography crucial to the work of preparation. The same applies for a mixed census, which still includes enumeration work on the entire territory or only a part. Modern censuses base enumeration on maps, which are obviously the favourite tool. This is especially so in urban areas, where buildings are concentrated and coverage errors may more easily result from double counts or incompleteness. For this reason, a relevant effort is provided by the NSI, often with support from other national authorities and private firms, to delimit – or update – the EA and prepare complete dossiers of use to the enumerators.

The main features of the cartographic process are presented in Table 4. Excluding countries using registers, where the cartographic process does not apply (at least at this stage or to delimit territory) or those countries where information is missing, most remaining countries (16 out of 21) have a national cadastre that has been used in some way for census purposes. However the situation is varied. More than half of the countries have no cartographic unit at the NSI (however in Hungary a few permanent staff from the Census Department handle cartographic issues). Maps for census purposes have been directly prepared in about half the NSI (partially in Estonia and Hungary), normally on the basis of products furnished by the national geographic organisation and/or other national and local authorities. The link between presence of

[14] Italy introduced at 2001 Census the enumeration of persons temporarily resident in a dwelling in addition to enumeration of those usually resident and occasionally present. As a result, a study was conducted of the time required to fill in the additional forms at these temporary residences for people living in different places (see country report for further information).

[15] These units have different names in each country, for example: Enumeration District, Enumeration Area, Census Section, Census District and others are used to identify the basic territory assigned to one single enumerator. In this comparative section the term Enumeration Area (EA) is used despite these different terminologies used by countries.

Table 4 - Main features of the cartographic process

Countries	Carto-graphic unit at NSI	Own creation of maps	Use of GIS	Organisation furnishing maps	Digital maps	Use of cartographic data	National cadastre	Helpful of national cadastre
Belgium	Information not available							
Denmark	No	No	No	-	No	No	No	-
Greece	Yes	Yes	No	Army Geographic Service and Municipalities	No	Yes	No	-
Spain	Yes	No	Yes	National geographic and other org. and national cadastre	Yes	Yes	Yes	Yes
France	Yes	Yes	Yes	Local authorities and national cadastre	No	No	Yes	Yes
Ireland	No	No	Yes	National geographic organisation	Yes	Yes	Yes	Yes
Italy	Yes	Yes	Yes	-	Yes	Yes	Yes	Yes
Luxembourg	No	Information not available						
Netherlands	Information not available							
Austria	Yes	Yes[1]	Yes	-	Yes	No	Yes	Yes
Portugal	Yes	Yes	Yes	-	Yes	Yes	No	-
Finland	Yes	Yes	Yes	Private firms and national geographical organisation	Yes	Yes	No	-
United Kingdom	No	Yes	Yes	National geographic organisation	Yes	Yes	Yes	No
Norway	No	Yes	Yes	-	Yes	No	Yes	Yes
Switzerland	Yes	Yes	Yes[2]	-	Yes	No	No	-
Bulgaria	Yes	Yes	Yes	National geographic and other organisations	Yes	Yes	Yes	No
Czech Republic	Yes	Yes	Yes	-	Yes	Yes	Yes	Yes
Estonia	Yes	Partially	Yes	Private firms, national geographical org. and local auth.	Yes	Yes	Yes	Yes
Hungary	No	Partially	Yes	Private firms, national geographical org. and local auth.	Yes	Yes	Yes	No
Latvia	No	No	No	National organisations	No	Yes	Yes	Yes
Lithuania	No	No	No	National organisations and cadastre	No	Yes	Yes	Yes
Poland	No	No	No	National geographic organisation	No	Yes	No	-
Romania	Information not available							
Slovak Republic	No	No	Yes	National geographic organisation	No	Yes	Yes	Yes
Slovenia	No	Yes	Yes	-	Yes	Yes	Yes	No
Cyprus	No	No	No	Land and Surveys Department (governmental authority)	No	Yes	Yes	No
Malta	No	No	No	National organisations	Yes	Yes	No	-
Turkey	Yes	No	No	Municipalities	No	Yes	Yes	Yes

1 As mentioned in the questionnaire, Austria "did not need maps for enumeration, but used addresses of all buildings which are maintained by the address register unit"
2 Switzerland used GIS technology but only "partially"
Sources: LDSA questionnaires, country reports.

cartographic means and skills in the NSI is not direct. Sometimes there are internal structures and permanent staff, but map production is taken care of outside the NSI (e.g. Spain). No use was made of GIS in Greece, Latvia, Lithuania, Poland and Cyprus.

More specifically for single countries, Italy took the initiative to update and link a unique geographical database; the territorial breakdown was used for all censuses carried out in 2000 and 2001[16].

Pilot Census and other tests

A series of factors were considered and checked during the pre-census period to estimate the number of enumerators required and the cost of the census. Among the factors were the ways and means of collecting information, the possibility and the extent of utilisation of available administrative sources, creation of registers based on the previous census, harmonisation of concepts and definitions based on the recommendations, control of the census questionnaires and estimation of the time required for their completion.

Where possible available information on the Pilot Census and other tests is shown in Table 5). The duration of the pilot period ranged from one day in Greece, Ireland, Austria to 120 days in Spain. In Spain, France, Italy, Austria and Latvia more than one test was conducted, by phase and type of questionnaire, using alternative collection methods, coding and data processing. In France there was an intensive sequence of six tests. Surveys were undertaken each time in selected regions or cities. Most countries carried out the real 'dress rehearsal' between one and two years before census day. However, there are notable exceptions such as Slovenia and Lithuania that carried out the pilot some 4 and 3.5 years before respectively. Lithuania carried out sample socio-demographic survey based on census methodology one year before the census. About 80% of the countries that conducted a traditional or mixed census carried out at least one test, the coverage percentage of which ranged from 0.03% (Bulgaria) to 1.5% (Portugal). In the countries that took a traditional census: Luxembourg, Romania, Slovak Republic, Cyprus and Turkey, pilot surveys or other main tests were not conducted.

Existence of registers

Almost all countries are equipped with registers, w hitch are often used for statistical purposes. **Administrative registers** are first set up and regularly maintained for different state administration purposes. Beginning with these registers – better, from their copies ('satellite databases') – **statistical registers** are derived and updated by combining and linking the various sources of different authorities. In countries where a register system is definitively established, registers are mutually updated between administrations based on a previously defined data exchange method. One of the basic principles is that only one agency collects the information useful to different sources and then transmits the data to other agencies. In these situations the NSIs contribute to the determination of the registers' contents. Normally this depends on basic data collection carried out by other national institutions. However, ad hoc registers are constructed and maintained by the NSIs for topics of no interest to the administrative

[16] Agricultural Census (2000), Population and Housing Census, Building Census, Census of Economic Units (2001).

system and are not regularly updated (e.g. the Register on the Level of Education at Statistics Norway). These registers are normally derived or updated through statistical surveys such as the census.

Table 5 - Main features of the Pilot Census and other tests

Countries	Test reference date[1]	No. of days	Sample size	Census reference date
Belgium	**12/04/1999**	40	0.10%	01/10/2001
Denmark	No	-	-	01/01/2001
Greece	**31/10/1999**	1	1.00%	18/03/2001
Spain	**15/06/1999** **18/09/2000**	120 84	0.10%	01/11/2001
France	10/1993 Spring 1994 Autumn 1995 Autumn 1996 03/1997 **10/1997**	NA	110 000 households 30 000 persons 70 000 persons 10 000 persons 300 000 persons 100 000 persons	08/03/1999
Ireland	**19/09/1999**	1	0.60%	28/04/2002
Italy	**10/1998** **04/2000**	NA	"Reasoned sample"	21/10/2001
Luxembourg	No	-		15/02/2001
Netherlands	Information not available			
Austria	29/04/1998 21/04/1999 **10/05/2000**	1	0.20% 0.20% 0.10%	15/05/2001
Portugal	**01/03/2000**	60	1.50%	12/03/2001
Finland	No	-	-	31/12/2000
United Kingdom	1997 **1999**	NA	: 0.50%	29/04/2001
Norway	**4/11/2000**	1	0.40%	03/11/2001
Switzerland	**1998** **1999**	NA	1.00%	05/12/2000
Bulgaria	**01/03/2000**	14	0.03%	01/03/2001
Czech Republic	**21/09/1999**	22	0.50%	01/03/2001
Estonia	**20/03/1998**	10	1.00%	31/03/2000
Hungary	**15/09/1999**	21	50 000 persons	01/02/2001
Latvia	**1997** **1999**	15 days 28 days	10 000 persons	31/03/2000
Lithuania	**04/11/1997** **5-14/04/2000**	5 10	1.00% 1900 households	06/04/2001
Poland	**23/05/2000**	19	0.30%	21/05/2002
Romania	No	-	-	18/03/2002
Slovak Republic	No	-	-	26/05/2002
Slovenia	**01/04/1998**	15	0.50%	31/03/2002
Cyprus	No	-	-	01/10/2001
Malta	09/1995	NA	400 households	26/11/1995
Turkey	No	-	-	22/10/2000

1 The dates in bold denote Pilot Census(es). The other dates concern other types of tests, concerning mainly alternative data collection methods

NA = Information not available

Sources: LDSA questionnaires, country reports, Statistical Laws, Census Acts.

Countries may be divided into three main groups regarding the most important administrative source for individuals and the census, i.e. the population registers:

- **countries with local registers in the municipalities linked in a central population register**, with larger sets of information (in some cases up to 80 different variables) frequently used in administrative procedures. This group includes first the Nordic countries and Belgium, the Netherlands and Latvia);
- **countries with population registers at the local level only**, where the recorded information is limited to a few variables (e.g. demographic data and occupation). These are less frequently and more complicated to update by the public. This is the case for Germany, Spain, Italy, Austria, Switzerland or many countries in Central and Eastern Europe such as Bulgaria;
- **countries with no population registers**, such as Greece, France, Ireland and United Kingdom.

According to the combined list presented in the Table 6, 81% of countries have a population register, 75% a business register, 25% a dwellings register (while such a register is in development in other 9,4% countries), 47% an insurance register and 56% other registers, on tax and income, labour market, social security, education, demographic events, etc.

Existing administrative and statistical registers for the 2000 Census Round were carefully examined for the possibility of conducting whole or part of the survey based on them. Although there are many registers, and conditions for accessing them, in many cases these sources were not applied because of their lack of reliability and the need for further improvement. The coverage they might provide of incomplete variables such as ethnicity, language and religion, more than work place and occupation, are normally unavailable from registers. In addition there are difficulties matching records, lack of a complete legal framework and complications linked to public acceptance of these methods. Spain, Luxembourg, Austria, Bulgaria, Estonia and Hungary, fall into this situation. In some cases, as in Belgium, Austria and Lithuania, the improvement of registers gained by the last census is probably more relevant than the use of those same registers. In fact, registers are being updated or created to perform register-based censuses in the next round.

The personal identification number

The personal identification number (PIN) is the basis for the combination of individual data with information from different registers. A total of 75% of countries have a PIN. In 20% of these it is not used for statistical purposes. In countries that have both the PIN and use it for statistical purposes, 89% maintain it in connection with administrative sources, 63% for censuses and 63% for surveys. Among the EU and EFTA countries, 68% have the PIN, of these 31% do not use it for statistical purposes. Among the Candidate countries, 92% have the PIN and of these 16% do not use it for statistical purposes. A PIN does not exist in Greece, Spain, Ireland, the United Kingdom, Switzerland and Turkey. Countries where the PIN exists but is not in use are: Germany, France, Italy, Luxembourg and the Slovak Republic (see Table 7).

Table 6 - Existence of registers

Countries	Population	Dwellings	Businesses	Insurance	Other registers
Belgium	Yes	(1)	Yes	No	(3)
Denmark	Yes	Yes	Yes	No	Income, education, social security, buildings and dwellings, ... (over 70)
Germany	Yes	No	No	Yes	Unemployed persons, employed workers
Greece			Yes	Yes	Tax
Spain	Yes	No	No	No	Cadastre
France	No	No	Yes	No	(3)
Ireland	No	No	Yes	No	(3)
Italy	Yes	No	Yes	Yes	(3)
Luxembourg	Yes	No	Yes	Yes	(3)
Netherlands	Yes	Yes	No	Yes	Tax, public sector employees, employment, disability benefits, students, ...
Austria	Yes		Yes	Yes	Tax, addresses
Portugal	Yes	Yes	Yes	Yes	Tax, driver's licence
Finland	Yes	Yes	Yes	Yes	Buildings, unemployment, work, pensions, taxation, education, ...
Sweden	Yes	(1)	Yes	No	Job and other activities, state benefits, education, real estate,
U.K			Yes	No	Electoral register
Iceland	Yes	(2)	(2)	No	Migration, citizenship, demographic change, education, occupation, ...
Liechtenstein	Yes	No	No	No	(3)
Norway	Yes	(1)	Yes	Yes	Jobs, wages and income, addresses, buildings and properties, education, ...
Switzerland	Yes (local)	Yes(2)	Yes	No	(3)
Bulgaria	Yes	No	Yes	Yes	Tax, health insurance
Czech Rep.	Yes	No	Yes		
Estonia	Yes	Yes	Yes	Yes	Tax, birth, vehicles, ...
Hungary	Yes	Yes	Yes	Yes	Tax, real estate
Latvia	Yes	No	Yes		Tax and other registers under the responsibility of various authorities
Lithuania	Yes	No	Yes	Yes	Farmers, real property, mortgage, administrative units, settlements and streets, ... (about 50 registers)
Poland	Yes	Yes	Yes	Yes	(3)
Romania	Information not available				
Slovak Rep.	Yes	No	Yes	No	(3)
Slovenia	Yes	No	Yes	No	Territorial units, statistical register of employment
Cyprus	Yes	No	Yes	Yes	(3)
Malta	No	No	No	No	(3)
Turkey	Yes	No	No	No	(3)
Total countries	**26**	**8**	**24**	**15**	**18**

1 Under development.
2 FSO's new register of buildings and dwellings based on the 2000 Census.
3 No other register mentioned.
Sources: LDSA questionnaires, country reports, Conference of European Statisticians.

Table 7 - Existence and use of the Personal Identification Number (PIN)

Countries where a PIN does not exist	Countries where a PIN exists	Use of PIN for:		
		Census	Surveys	Adm. sources
Greece	Belgium	√	√	√
Spain	Denmark	√	√	√
Ireland	Germany			
United Kingdom	France			
Liechtenstein	Italy			
Switzerland	Luxembourg			√
Turkey	Netherlands			
	Austria			√
	Portugal			√
	Finland	√	√	√
	Sweden	√	√	√
	Iceland		√	
	Norway	√	√	√
	Bulgaria	√	√	√
	Czech Republic	√		
	Estonia	√	√	√
	Hungary			√
	Latvia	√	√	√
	Lithuania	√	√	√
	Poland			√
	Slovak Republic			
	Slovenia	√	√	√
	Cyprus			√
	Malta	√	√	√
TOTAL COUNTRIES				
7	**24**	**12**	**12**	**17**

Notes: Information is not available for Romania

Sources: LDSA questionnaires, country reports.

The main causes for lack or no use of the PIN are social, political and religious reasons, people's attitude (conservative societies) as well as the lack of a legal framework for the protection of personal data.

Other preparatory work

Further aspects specific to each project were implemented in the different countries. For countries relying, even partially, on a traditional census a few measures were applied to make fieldwork easier and more reliable. This is the case for Austria, where the building questionnaires were pre-printed with address and numeric code from the *Building Register*, and Estonia where enumerators were provided with helpful data from the population and building registers. In Spain the enumeration of population, dwellings and buildings was integrated using administrative registers for the identification of all dwellings – inhabited or not. In addition, questionnaires were pre-printed using data

from the *Padrón*[17] for confirmation or updating by respondents. In Bulgaria, preliminary census lists were drawn up on the basis of the previous census, the local population registers and field visits. Databases, including addresses or EAs were created or updated elsewhere (e.g. Czech Republic, Hungary) to produce digitalised maps for fieldwork. Census commissions and organisational structure were established at a different level (see below).

Other relevant preparatory work concerned countries relying on mixed or register-based censuses. Slovenia stored all useful data from existing public and private registers in a pre-census database, which were pre-printed on the questionnaires. Before the census Norway organised and carried out an extensive preliminary project[18] numbering all dwellings so as to establish a link in the register system between dwellings and persons that would be useful for household statistics. Generally, payment was made for work to upgrade the contents of all the different registers used for the population census.

The most innovative country was probably Switzerland, where the 2000 Census was a combination of a traditional enumeration through door-to-door visits, mailing and the Internet and use of registers, mostly the building address register available at SFSO and local inhabitants' registers. Key to this transitional census method was that many technical tasks were outsourced to a single national service, which operated on behalf of the communes and cantons for the pre-printing of personalised questionnaires, mail management, reminders, information centre, data checking and data capture. Some cantons and communes autonomously organised the work based on their tools. In the preparatory phase a major effort was made, with support from Swiss Post, to improve addresses and the links between persons and households.

In countries relying only on register data, no questionnaires were designed and tests and staff training were not required. The census was essentially the outcome of the co-ordination between different annual statistics and the opportunity to further invest in the improvement of registers.

[17] Population register at level of municipality.
[18] *Dwelling Address Project.*

II.4. Publicity and information campaign

Because the census is one of the most important statistical surveys at the national level, it is absolutely necessary to sensitise and raise the awareness of the population through appropriate activities. The final objective is to guarantee the best public co-operation and to motivate people to respond, even if participation must be won by legal dispositions. In this regard, two main aspects must be identified:

- publicity taking the form of announcements disseminated to the public mostly before and during the census period
- the diffusion of information and instructions relative to the census process and its modalities

The publicity campaign: communication means and methods

Countries with a register-based census no longer need to mount a public awareness campaign. However, in Finland, one press release was issued on census day to inform the public that *'the Census is happening now, but no questionnaires are used'*. Belgium is the only country that, for administrative reasons, did not carry out a publicity campaign.

As shown in the following Table 8, most countries used quite a significant number of communication means (TV, radio, newspapers, posters, leaflets, the Internet, etc.). Generally, most countries have largely diversified methods of communication to reach all categories of the population. Considering the relevance of the different means of communication, national TV is generally considered to be the most appropriate method (with the relative spots and explanation of the importance of the census by NSI's staff). This is followed by national and local radio, newspapers and posters. Almost all countries organised press conferences. Finally, fourteen countries made use of the Internet during the publicity campaign for the 2000 Round.

Three groups of countries may be identified:

- *countries using all types of communication means* (at least ten different methods), such as Greece, Spain, Ireland, Portugal, UK and Lithuania
- *countries using a relevant number of methods* (7 to 9), such as France, Italy, Switzerland, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Slovak Republic, Slovenia, Malta and Turkey
- *countries using a restricted number of means*, as with Luxembourg, Austria, Norway and Cyprus

Public institutions were the most frequent location for posters and leaflets, while documents were often distributed through schools, public transportation and infrastructure (trains, stations, airports), post offices and pharmacies. Ireland, the United Kingdom, Estonia, Latvia, Lithuania, Slovenia, Malta and Turkey also used libraries to distribute publicity documents. Only three countries (Greece, Malta and Portugal) used banks. In Greece, for example, messages were diffused through the screens of automatic banking machines. Traditional kits for students as well as further innovative means were also used (see Table 8).

Table 8 - Type of census publicity means adopted at 2000 Round

Countries	National TV	Local TV	Radio	Local Radio	Internet	Press	Posters	Leaflets	Bill-boards	Gadgets	Press confe-rences	Other	N. of means used
Belgium	No publicity campaign(*)												-
Denmark	No publicity campaign												-
Greece	√	√	√	√	√	√	√	√	-	√	√	-	10
Spain	√	√	√	√	√	√	√	√	√	-	√	-	10
France	√	√	-	√		√	√	√	√	-	√	√ (1)	9
Ireland	√	√	-	√	√	√	√	√	√	√	√	√ (1)	11
Italy	√	√	√	√	√	√	√	-	-	-	√	√ (1) (2)	9
Luxembourg	√	√	-	-	√	√	-	-	-	-	√	-	5
Netherlands	Information not available												-
Austria	√	-	-	√	-	√	-	-	-	-	√	-	4
Portugal	√	√	√	√	√	√	√	√	√	√	√	√ (1)	12
Finland	-	-	-	-	-	-	-	-	-	-	√	-	-
United Kingdom	√	√	√	√	√	√	√	√	-	√	√	√ (1) (3)	11
Norway	√	-	-	√	√	-	√	-	-	-	√	-	5
Switzerland	√	√	√	√	√	√	-	√	-	-	√	-	8
Bulgaria	√	√	√	√	-	√	√	√	-	-	√	-	8
Czech Republic	√	√	√	√	√	√	√	√	-	-	√	-	9
Estonia	√	√	√	√	√	√	√	√	-	-	√	-	9
Hungary	√	√	√	√	-	√	√	√	-	-	√	-	8
Latvia	√	√	√	√	-	√	√	√	-	-	-	-	7
Lithuania	√	√	√	√	√	√	√	√	√	-	√	√ (4)	11
Poland	√	√	√	√	√	√	-	√	√	√	√	-	10
Romania	Information not available												
Slovak Republic	√	√	-	√	√	-	√	√	-	-	√	-	7
Slovenia	√	√	√	√	√	√	√	√	-	-	√	-	9
Cyprus	√	√	√	√	-	√	-	-	-	-	√	-	6
Malta	√	√	√	√	-	√	√	√	-	-	√	-	8
Turkey	√	√	√	√	-	√	√	-	√	-	√	-	8
N. of countries	**23**	**21**	**17**	**22**	**15**	**21**	**18**	**17**	**7**	**5**	**23**	**6**	

* As specified in the questionnaire, Belgium has not implemented publicity campaign because of "administrative reasons"

1 Kits and/or different material and specific activities for schools and students; 2 SMS; 3 Road publicity campaigns; 4 Catholic Church

Sources: LDSA questionnaires, country reports, data collection.

Target groups of the publicity campaign

Countries may be divided into two main categories concerning publicity messages to recipients (see Table 9):

- **8 countries without selected target groups**, so that the publicity campaign concerns the entire population (Spain, Austria, Finland, Bulgaria, Czech Republic, Estonia, Slovak Republic and Cyprus)

Table 9 - Target groups for the publicity campaign

Countries	No selected groups	Youth and students	People in rural areas	Foreigners living in the country	Companies	Other
Belgium	No publicity campaign					
Denmark	No publicity campaign					
Greece	-	-	-	√	-	-
Spain	√	-	-	-	-	-
France	-	-	-	√	-	The elderly
Ireland	-	√	-	-	-	Traveller community, ethnic minorities and visitors
Italy	-	√	-	√	√	Households, farmers
Luxembourg	-	-	-	√	-	-
Netherlands	Information not available					
Austria	√	-	-	-	-	-
Portugal	-	√	√	√	-	-
Finland	√	-	-	-	-	-
United Kingdom	-	√	√	-	-	-
Norway	-	√	-	√	-	-
Switzerland	-	√	-	√	-	-
Bulgaria	√	-	-	-	-	-
Czech Republic	√	-	-	-	-	-
Estonia	√	-	-	-	-	-
Hungary	-	√	√	-	-	Media
Latvia	-	√	√	-	-	-
Lithuania	-	√	√	-	√	Business people, families
Poland	-	-	√	√	-	Farms
Romania	Information not available					
Slovak Republic	√	-	-	-	-	-
Slovenia		-	-	-	-	Households
Cyprus	√	-	-	-	-	-
Malta	-	√	√	√	-	-
Turkey	-	√	√	-	-	-
Total countries	**8**	**11**	**8**	**9**	**2**	**7**

Sources: LDSA questionnaires, country reports, data collection.

- **15 countries having developed specific activities** for groups considered as more difficult to enumerate (e.g. foreigners), more sensitive and therefore hesitant about participating (the elderly, ethnic minorities, etc.) or more useful for the transmission of the message (students). In most of these 15 countries (73%), the young and students are effectively a focus group for the publicity campaign.

Slogans used for publicity

Almost all countries focused their publicity campaign on at least one main slogan (see Table 10). Only Austria, Cyprus and Malta did not develop a specific slogan.

Examining the different slogans used, the message is focused on four main concepts:

- **census as an important operation**, where *'Everyone counts'* (Hungary), *'Everybody one by one'* (Spain), nobody can be omitted (United Kingdom). The omission generates an important question, *'Do you exist?'* (Turkey). In other terms, everybody is responsible for the success of the survey (*'Count on me'* in France) and directly implicated (*'Be present, because you count'*, Estonia).

Table 10 - Main slogans used for publicity

1st Group	
Spain	Everybody counts / Everybody one by one
France	Count on me
United Kingdom	Count me in
Estonia	Be present, because you count
Hungary	Everyone counts!
Lithuania	Count me in
Slovak Republic	We want to know how many we are
Turkey	Do you exist?
2nd Group	
Norway	Remember the Population and Housing Census the 3rd of November
Switzerland	Don't miss the photo of 5.12.2000
3rd Group	
Greece	1) We all say 'present' for the future 2) We are handsome, but how many are we?
Ireland	1) The knowledge to build your future 2) It is the future, don't leave it blank
Italy	Italy you are, Italy you will be
Slovenia	The Census is ours – we are the future
Czech Republic	Making census for the next millennium 'we count for the next millennium'
4th Group	
Portugal	More than a study, a picture of the country
Bulgaria	The census 2001 – necessary information
Latvia	Without you the 'Picture' will not be complete
Poland	How many of us? Who are we? Where do we live? Give the answers during the census!

Sources: LDSA questionnaires,

- **census as a really important operation**, so everybody has to 'remember it' (Norway) and 'don't miss the photo' (Switzerland).
- **census relevant the future of the country**: *'We all say present for the future'* (Greece), *'We count for the next millennium'* (Czech Republic). The participation (response and not 'blank') contributes to 'build the future' (Ireland), concept that also appears in the slogan of Italy and Slovenia
- **census not only a statistical operation**, as it is 'a picture of the country' (Portugal) *'How many of us? Who are we? Where do we live? Give the answers during the census!'* (Poland) and the 'picture' has to be completed (Latvia) with the participation of everybody. It is 'necessary information' (Bulgaria)

Information campaign

The diffusion of information relative to the census operation and especially to the compilation and collection of questionnaires – aspects for which the population is directly concerned – was achieved in most countries through messages and spots diffused through the mass-media. Other supports such as booklets or specific events were not often used, as shown in the following Table 11.

The need for the population to access the census information and to be able to obtain adequate responses to individual questions explains that the information campaign in all countries – except Bulgaria and Cyprus – was accompanied by the establishment of a call centre (generally a toll-free phone line) and / or an Internet website.

The information campaigns were mostly addressed at explaining the tools and legal framework of the census so as to increase the confidence of respondents. Moreover, a broad section of the activities were aimed at obtaining correct and simple responses.

One important aspect of the information campaign was that this operation is increasingly a continuous activity carried out by the NSIs, through their web-site in which up-dated information and results are available directly. Even if this post-census information campaign is not an innovation of the 2000 Census Round, it is more intensive than in the past.

Table 11 - Media support for the information campaign

Countries	TV programmes	Radio programmes	Press	Booklets	Call centre	Internet
Belgium	Information not available					√(1)
Denmark	No information campaign					
Greece	√	√	√	√	√	√
Spain	√	√	√	√	-	√
France	√	-	-	√	√	√
Ireland	√	√	√	-	√	√
Italy	-	√	√	-	√	√
Luxembourg	-	-	√	-	-	√
Netherlands	Information not available					
Austria	√	√	√	-	√	√
Portugal	√	√	√	√	√	√
Finland	No information campaign					
United Kingdom	√	√	-	-	√	√
Norway	√	-	√	-	√	√
Switzerland	√	√	√	√	√	√
Bulgaria	√	√	√	-	-	-
Czech Republic	√	√	√	√	√	√
Estonia	√	√	√	√	√	√
Hungary	√	√	√	√	√	-
Latvia	√	√	√	√	√	√
Lithuania	√	√	√	√	√	√
Poland	√	√	√	√	√	√
Romania	Information not available					
Slovak Republic	√	√	-	-	√	√
Slovenia	√	√	√	√	√	√
Cyprus	√	√	√	-	-	-
Malta	√	√	√	√	√	-
Turkey	√	√	√	√	√	√
N. of countries	**21**	**20**	**20**	**12**	**19**	**20**

1 Detailed information concerning the 2001 Socio-Economic Survey is available in the website of the NSI

Sources: LDSA questionnaires, country reports, data collection.

II.5. Field work and data collection

The central phase of the census is the enumeration or data collection period, which is traditionally identified by 'field work'[19]. As a result of the evolution of census methods and the introduction of registers, today the words 'data collection' may better represent this phase where data referring to a reference date are collected through questionnaires and/or linkage and extraction from various sources. Although in some countries a mix of methods is applied (see Figure 2), the following comparison is distinguished by two cases: there **is** or **is no** enumeration. Data supporting the first analysis are presented in Table 12; all cases are further described in the respective country reports.

Enumeration through questionnaires

Because of country traditions and the available tools, there are considerable differences between countries using – even partially – questionnaires for data collection, i.e. the 25 countries (excluding Liechtenstein) that implemented a traditional or mixed census.

Out of the ten EU Member States, only Greece carried out the 'face-to-face interview' method. In fact, almost all countries used 'self-compilation' of forms by respondents, with enumerators distributing, providing assistance and collecting the forms (Spain, France, Ireland, Italy, Luxembourg and Portugal), 'mail-out/mail-back' method (Belgium and Austria) or hand-over distribution of forms and collection by post (United Kingdom). Nevertheless, interviews also were used for enumeration in the smaller communes in Austria, or when questionnaires were not posted back (Belgium and the United Kingdom), were not properly completed or simply not returned. In addition, in Spain it was possible to reply via the Internet (but only 0.06% of questionnaires were properly completely and sent back in this way).

In the EFTA countries, Norway used mail-out/mail-back and the Internet for its housing census, whereas Switzerland applied self-compilation based on a combination of methods with enumerators, mail services and the Internet, depending on the survey variant (see country report). Most Candidate countries used the classic method of the interview (85% of the total), sometimes in combination with self-compilation (Hungary, Poland and Malta). Only the Czech Republic and the Slovak Republic applied self-compilation, with enumerators dispatching and collecting the forms.

[19] Fieldwork also may be carried out in the preparatory phase (e.g. for the determination or the updating of EAs) and after data collection (with ad hoc quality surveys undertaken in the field). Because of this and lack of available country data (what is missing is a measure of quality for each country), the post-census quality surveys analysed in this chapter are mainly devoted to the comparison of enumeration and data collection.

Table 12 - Main features of enumeration and Post-Enumeration Surveys (PES)

Countries	Census enumeration			PES		
	Reference date	No. of days[1]	Type of data collection [2]	Date of start	No. of days	Sample size
Belgium	01/10/2001	90	Mail-out/mail-back, interview	No	-	-
Denmark	01/01/2001	Not relevant				
Greece	18/03/2001	1	Interview	21/03/2001	1	2 400 households
Spain	01/11/2001	60	Self compilation, Internet	12/2001	90	65 000 households
France	08/03/1999	28	Self-compilation	No	-	-
Ireland	28/04/2002	30	Self-compilation	No	-	-
Italy	21/10/2001	30	Self-compilation	2 PES	Information not available	
Luxembourg	15/02/2001	21	Self-compilation	No	-	-
Netherlands	Information not available					
Austria	15/05/2001	30	Mail-out/mail-back, interview	No	-	-
Portugal	12/03/2001	60	Self-compilation	01/05/2001	75	2%
Finland	31/12/2000	Not relevant				
United Kingdom	29/04/2001	50	Hand-out/mail-back, interview	No	-	-
Norway	03/11/2001	7	Mail-out/mail-back, Internet	08/10/2001	90	0.8%
Switzerland	05/12/2000		Self-compilation, mail-out/hand-back, mail-out/mail-back, Internet	17/04/2001	45	0.7%
Bulgaria	01/03/2001	14	Interview	20/03/2001	10	0.01%
Czech Republic	01/03/2001	14	Self-compilation	No	-	-
Estonia	31/03/2000	10	Interview	14/04/2000	6	1% dwellings
Hungary	01/02/2001	21	Interview, self-compilation	No	-	-
Latvia	31/03/2000	30	Interview	11/05/2000	30	1%
Lithuania	06/04/2001	10	Interview	17/04/2001	4	1%
Poland	21/05/2002	19	Interview, self-compilation	17/06/2002	9	Information not available
Romania	18/03/2002	10	Interview	01/04/2002	10	14 300 dwellings
Slovak Republic	26/05/2002	21	Self-compilation	No	-	-
Slovenia	31/03/2002	15	Self-compilation, interview	16/04/2002	10	0.5%
Cyprus	01/10/2001	60	Interview	01/12/2001	1	Information not available
Malta	26/11/1995	21	Mail-out/hand-back, interview	10/1995	Information not available	
Turkey	22/10/2000	1	Interview	No	-	-

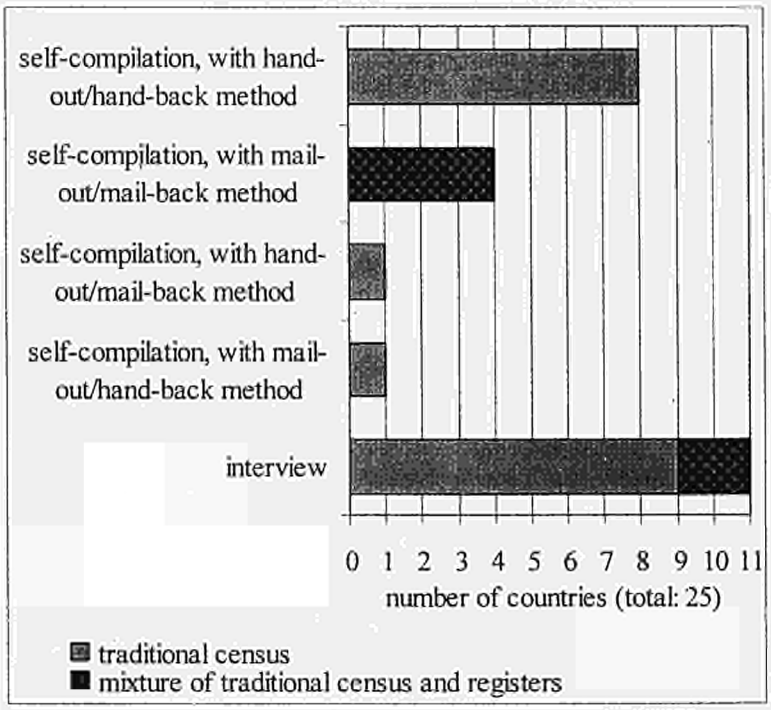
1 Values often refer to the number of days originally planned instead of the effective duration of enumeration. Enumeration of population left out during this period has been undertaken in the following weeks or months.

2 Self-compilation also means that the forms were delivered and collected by enumerators (this might be reported as hand-out/hand-back method); however where the method is mail-out/mail-back, hand-out/mail-back or mail-out/hand-back the forms were also self-compiled by the respondents.

Sources: LDSA questionnaires, country reports, Statistical Laws, Census Acts.

Considering all these 25 countries together, the following Figure 2 may represent their use of the different enumeration methods.

Figure 2 - Enumeration methods adopted at 2000 Census Round



All countries used printed questionnaires. In several cases questionnaires were pre-printed with basic information from the population. The duration of the census-taking process ranged from only one day (Greece and Turkey) to 90 days (Belgium). However, data reported in the Table 12 refer to the number of days of enumeration originally planned, instead of the effective duration. Enumeration of the left out population was carried out, in some cases, even months after this period because of delays or other problems during field operations (e.g. Italy). In other cases, where a mixed method was applied (e.g. Belgium or Switzerland), the data collection lasted several months.

Field work structure and staff

Throughout countries that applied enumeration the staff responsible for field work were organised in a pyramid structure; supervisors, controllers and then enumerators, with eventually additional intermediate workers. Despite some differences in the delimitation of the territory and the attribution of staff, at the lower level enumerators were responsible for single EAs. The size of each EA (given in terms of quantity of housing, households or population) varied from country to country, depending on the duration of field work, method of data collection, type of staff involved, type of area[20] and other reasons. A classical enumeration of the population was carried out through interviews

[20] Excluding other conditions, such as the presence of respondents at home during enumeration, reaching isolated houses in rural areas takes more time than visiting all the flats in a multi-dwelling building in a city.

over at least two weeks covering an average of 75-100 households or 250-400 persons in an EA.

In only a few cases field workers were recruited ad hoc for fieldwork during the census. Following a period of training seasonal and contractual workers were normally involved as enumerators. In France, Italy, Portugal, Estonia, Latvia, Slovenia and Malta non-permanent workers also operated at the level of supervisors. In addition, often interpreters and other persons worked on field operations facilitating the enumeration of non-nationals, the elderly or other categories of the population (Greece, Italy, Portugal, United Kingdom, Norway, Czech Republic, Lithuania, Slovenia).

Other data collection methods

In countries where a mixed census was conducted as a **combination of a traditional census and registers**, such as Belgium, data from the Central Population Register and other registers were retrieved and combined with information collected through the questionnaires of the General Socio-Economic Survey. Results were organised into different databases for the various census units and topics; procedures for further updating and execution of future censuses, based only on registers, were also defined. In Spain, where there were uncollected questionnaires, census results were complemented by existing data from the *Padròn,* the police database and other sources. In Austria missing data for the population census on individual characteristics, such as nationality, place of birth, secondary and former places of residence and moving date, were extracted from the census EDP programme resulting from the matching of administrative registers. For Switzerland and Slovenia the information extracted from registers before enumeration was part of data collection. In Latvia, in addition to the information collected through the questionnaires, further data were extracted (or even integrated) from three administrative and statistical registers: the Residents' Register, State Revenue Service information system (Tax Register) and CSB Business Register.

Countries with a long tradition of data collection from administrative sources, which are updated on a permanent basis, applied **register-based censuses** and extracted data as soon as these sources were ready for annual production. This was the situation for Denmark, Finland and Norway, the only countries that implemented totally register-based censuses (Norway only for the population census). For Denmark and Finland, data from approximately 30 administrative and statistical registers (for population, building and dwellings, wages and salaries, income, education, etc.) were used to produce the census results.

The Netherlands was the only country that applied an alternative census method at this round. Data was obtained for population, households and dwellings using a **combination of registers and sample surveys**. These included population registers, dwelling registers, registers for jobs and benefits, business sample surveys (employment, earnings), household sample surveys (LFS, living conditions survey, income). Each of the sources contributed information on the topics included in the Eurostat Census Programme.

Post-enumeration work and quality surveys

In almost all countries checking and integration of data were undertaken following data collection from the field work. In several cases such as Spain, Italy, Austria or Bulgaria census results were compared with the contents of the population registers. In Spain and Italy, based on the census laws, this phase provided the conditions to update the population registers available at the level of the municipality[21]. In Italy and Bulgaria significant differences were found during the first stage between census results and the population register data because of unsatisfactory updating of registers.

A Post-Enumeration Survey (PES) on census coverage and/or quality was conducted in 60% of countries carrying out a census including traditional enumeration (Greece, Spain, Italy, Portugal, Norway, Switzerland, Bulgaria, Estonia, Latvia, Lithuania, Romania, Poland, Slovenia, Cyprus, Malta, as from Table 12). The coverage of these surveys ranged from 0.01% (Bulgaria) to 2% (Portugal). Almost all the PES were intended to provide a measure of data control and not to be used to correct results. In a few countries the duration of PES was 75 days in Portugal or even 90 in Norway and Switzerland.

The PES was not planned for in the EU Member States (Belgium, France, Ireland, Luxembourg, Austria, United Kingdom) because of methodological, organisational and/or cost reasons. This was also the case in the Candidate countries (Czech Republic, Hungary, Slovak Republic, Turkey).

[21] *Padròn* and *Anagrafe* respectively in the two countries.

II.6. Comparability of census contents as regards international recommendations

The recommendations for the 2000 Round of Population and Housing Censuses were drawn up at the joint UNECE / Eurostat meetings convened in 1995 and 1996. The conclusions reached in these meetings were endorsed by the Conference of European Statisticians at its 45th Plenary Session in June 1997 and the Committee on Human Settlements at its 58th session in September 1997. The joint recommendations concern two main aspects. First, **the topics** (variables) for which data are to be collected and, second **a core tabulation programme** with a list of recommended tables.

As regards the topics, the recommendations propose a list of variables divided into two main categories:

- **core topics**, comprising variables of basic interest and value for which countries are invited to collect the relative data, in order to obtain international comparability
- **non-core topics**, concerning optional variables depending upon national priorities. In this case, it is evident that international comparability is difficult to obtain.

Distribution of variables

A first, synthetic comparison between countries may be based on the number and distribution separately for each type of census (Tables 13a and 13b).

POPULATION CENSUS

- 100% to 68.2% of core variables and 100% to 10.8% of optional variables were included;
- all countries included more than 70% of the core variables; 64% of the optional variables and 60% of the recommended variables.

CENSUS OF HOUSING AND HOUSEHOLDS

- 100% to 42.8% of the core variables and 100% to 14.3% of the optional variables were included in the census.
- the countries which included less than 60% of the core variables are the United Kingdom and Turkey. Countries that included less than 60% of the optional variables are Spain, France, Italy, Luxembourg, Austria, the United Kingdom, Switzerland, Estonia, Latvia, Lithuania, Cyprus and Turkey, namely, 43%.

Table 13a - Number of core and optional (non-core) topics covered by each country. Population variables

Countries	Type of variables						
	Core	**Non-core**	**National**	**Core not used**	**Non-core not used**	**% of core**	**% of non-core**
Belgium	22	37	1			100.0	100.0
Denmark	22	37				100.0	100.0
Greece	21	17		1	20	95.5	45.9
Spain	18	19		4	18	81.8	51.4
France	19	12		3	25	86.4	32.4
Ireland	22	37	3			100.0	100.0
Italy	20	16		2	21	90.9	43.2
Luxembourg	20	14		2	23	90.9	37.8
Netherlands	Information not available						
Austria	20	14		2	23	90.9	37.8
Portugal	20	17		2	20	90.9	45.9
Finland	19	18	1	3	19	86.4	48.6
United Kingdom[1]	15	12		7	25	68.2	32.4
Norway	22	37	7			100.0	100.0
Switzerland	22	19	4		18	100.0	51.4
Bulgaria	21	21	1	1	16	95.5	56.8
Czech Republic	20	18	-	2	19	90.9	48.6
Estonia	18	15	6	4	22	81.8	40.5
Hungary	20	23	2	2	14	90.9	62.2
Latvia	20	10		2	27	90.9	27.0
Lithuania	21	17	2	1	20	95.5	45.9
Poland	22	37	3			100.0	100.0
Romania	Information not available						
Slovak Republic	17	16		5	21	77.3	43.2
Slovenia	19	20	8	3	17	86.4	54.1
Cyprus	20	12		2	25	90.9	32.4
Malta	22	37				100.0	100.0
Turkey	18	4	1	4	33	81.8	10.8

1 Language (non-core) was used in Wales only. It is not counted in the table.

Source: LDSA questionnaires.

Table 13b - Number of core and non-core (optional) topics covered by each country. Housing – household variables

Countries	Type of variables						
	Core	Non-core	National	Core not used	Non-core not used	% of core	% of non-core
Belgium	14	14				100.0	100.0
Denmark	14	14				100.0	100.0
Greece	13	9	1	1	5	92.9	64.3
Spain	11	8		3	6	78.6	57.1
France	12	5	1	2	9	85.7	35.7
Ireland	14	14	3			100.0	100.0
Italy	14	8	12		6	100.0	57.1
Luxembourg	10	5		4	9	71.4	35.7
Netherlands	Information not available						
Austria	13	3	1	1	11	92.9	21.4
Portugal	14	10			4	100.0	71.4
Finland	13	9	1	1	5	92.9	64.3
United Kingdom	6	2		8	12	42.8	14.3
Norway	14	14	4			100.0	100.0
Switzerland	10	6		4	8	71.4	42.9
Bulgaria	13	12		1	2	92.9	85.7
Czech Republic	14	11			3	100.0	78.6
Estonia	13	6		1	8	92.9	42.9
Hungary	14	9			5	100.0	64.3
Latvia	13	6		1	8	92.9	42.9
Lithuania	14	8			6	100.0	57.1
Poland	14	14				100.0	100.0
Romania	Information not available						
Slovak Republic	12	11	1	2	3	85.7	78.6
Slovenia	14	9	8		5	100.0	64.3
Cyprus	13	2		1	12	92.9	14.3
Malta	14	14				100.0	100.0
Turkey	8			6	14	57.1	

Source: LDSA questionnaires.

Comparability of the census variables with the UNECE and Eurostat Recommendations

The harmonisation of the variables in accordance with the recommendations constitutes the only basis for the comparison and drawing of conclusions, concerning the socio-economic situation of both each country separately and of the entire European region covered by the present study. During the 20th century these countries have developed under different economic, social, cultural and civil systems. Today, these different systems are called upon to converge on the same model on account of the new facts and rules set by globalisation.

In order to fulfil such an ambitious target and to implement the relevant policies, it is essential to acquire comparable statistical data that will facilitate both the control of the

convergence rules and the possible interventions- reinforcements where and when these are required. The tables for comparison of the variables included in the different census questionnaires – for buildings, dwellings, households and population – present a clear differentiation because of methods used during the conduction of the surveys and the collection of the required data.

In countries where the realisation of the census was based on the traditional method, it is easier to locate the quantity and type of core and optional variables included, and to identify the extent to which they may be compared and to which they differ. For countries applying a mixed method, the comparison is only partially feasible, as data derived from administrative sources are based on national legislations and are not, in most cases, totally comparable with the EU models of statistical data. Finally, countries having a long tradition in the use of administrative sources present serious divergence.

According to the findings of the study, a great number of differentiated variables are observed in each of the three groups of countries above, such as Ireland and Italy in the first group, Belgium in the second, and Denmark and Norway in the third. Differences may be divided into three-four categories, as follows for each type of census (Tables 14a and 14b).

POPULATION CENSUS

Number of variables that did not respect recommendations

Belgium, Denmark, Ireland, Norway present a very large number of differentiated core and optional variables in relation to the recommendations (23-42%).

Number of variables where concepts diverge

In Norway there is a divergence of 42%. The data on variables are derived from administrative sources.

Number of variables with specific question on the country

These cases are limited and concern 12 countries. In three countries there are 8-6 such variables and in the rest there are between 4-1. There is great differentiation between countries and therefore they cannot be grouped together.

Number of variables where a national classification is used

There are no serious differentiations. Based on national reports, the divergences and differentiations observed in certain countries are mainly the result of the method of data collection, resulting from the use of administrative sources.

CENSUS OF HOUSING AND HOUSEHOLDS

Number of variables that did not respect recommendations and where concepts diverge

The variations are located in six countries that conducted a traditional census and derive from national specificities (Austria, Ireland, Italy, Estonia, Hungary, Slovenia).

Number of variables with specific questions on the country

In the case of 11 countries there was an addition of variables for national needs (Belgium, France, Greece, Ireland, Italy, Austria, Finland, Norway, Slovak Republic, Slovenia, Cyprus). Mainly concerning buildings and housing facilities and housing equipment. With the exception of Finland and Norway, the remaining countries adopted the classic method of census-taking.

Number of variables where a national classification is used

The differences are located mainly in the period of construction, the type of buildings and living quarters (France, Ireland, Italy, Austria, Czech Republic, Hungary, Slovenia, Cyprus). The differences can more easily be located in the cases of countries that have carried out the census on the basis of the classic method, where common standards of comparison exist.

Table 14a - Compliance with the UNECE / Eurostat Recommendations. Population variables

Countries	Number of variables that did not respect recommendations	Number of variables where concepts diverge	Number of variables with a specific question in each country	Number of variables where a national classification is used
Belgium	13	NA	4 (1)	
Denmark	20	NA		
Greece			2 (1)	1 (2)
Spain				
France	9	8	(1)	4 (2)
Ireland	22	3	3 (1)	
Italy	4	NA		
Luxembourg	6	5		
Netherlands	Information not available			
Austria	5	5	-	
Portugal	2	2	-	
Finland		2	1 (1)	
United Kingdom				
Norway	24	24	7 (1)	
Switzerland	8	NA	4 (1)	
Bulgaria			1 (1)	
Czech Republic	1	NA	-	1 (2)
Estonia	1		6 (1)	1 (2)
Hungary			2 (1)	
Latvia				
Lithuania			2 (2	2 (2)
Poland	21			
Romania	Information not available			
Slovak Republic			-	
Slovenia	1	3	8 (1)	
Cyprus				
Malta		NA		
Turkey			1 (1)	6 (2)

(1) National variables

Belgium	Training after finishing school. For women over 14 years. Year of first marriage, year of first cohabitation, year of birth of each live born child. Health, long term illness, given voluntarily to other persons
Greece	Municipality of civil registration for *de jure* population. Migration.
France	Variables used to code occupation.
Ireland	Membership of Irish traveller community, disability, time of leaving home for work.

Norway	Characteristics of immigrants, country of background, refugee/not refugee, year of immigration, property, full/part time student, number of household members having a driving license.
Switzerland	Date of actual marital status (for married, widowed, divorced, men/women), other citizenship (only for Swiss people), work in home/family, voluntary work (work in own household and voluntary work in houses), languages at work or school and at home.
Estonia	Place of residence of the previous census, time of birth if first child, disability, socio-economic state temporary absence/presents and duration.
Hungary	Last job, deficiencies.
Lithuania	Disability. The year of 1st marriage.
Romania	Questions of non-national population: reason and date of establishing residence in country, location of workplace, duration of unemployment, rent, agricultural area used by households by classes of size
Poland	Disability of persons, receiving social payments or benefits, main and second source of maintenance of persons and private households
Slovenia	Family position, reason for absence from household, reason for presence in dwelling, ownership of another dwelling, use of garage, production of food, reason for last immigration, additional education.
Turkey	Main reasons for moving from the place where the person was living 5 years before.

(2) Use of national classification

Greece	School attendance (educational classification)
France	Occupation (national classification and after ISCO88-COM), branch of economic activity (National classification and after NACE), type of sector (institutional unit), type of private household (not standard variables, possible with re-codification).
Czech Rep.	Tenure status of household.
Estonia	Main sources of livelihood.
Turkey	Type of institutional or other communal establishment in which a person lives. Place where found at time of census. Total number of children born alive, internal migration, international migration, literacy.

Different Concepts

Belgium	Question 'durable consumer goods possessed by the household' only for bicycles, motorcycles, PCs. Duration of residence and previous place of usual residence, not before 1.1.1988. Year of immigration in the country, country of citizenship, citizenship acquisition, are collected from the national register of physical persons. *De facto* marital status: cohabitants are included. Internal and international migration on January 1st of the current year, are collected from other available statistical sources. Income: from other statistical sources (Income survey)
Denmark	Place of birth of parents, if they live or have lived in Denmark. Place of work, only in Denmark.
Greece	Place of birth of parents. Only, if parents are members of the particular household.
France	Type of private household. Not for standard variables. Possible with re-codification. Total population. French residents living in other countries not counted. Duration of residence. Not for persons but for household in the dwelling. Number of persons working in local unit only for employees. Place of work. Someone who works at home or who has a different place of work. As place of work is counted his place of residence by convention.
Ireland	Consumer goods by household. PCs only. Duration of residence, previous place of usual residence, year of immigration in the country. only for persons who lived abroad for more than one year. Ethnic group. Irish travellers distinguished separately. Language. Only the Irish language. Internal and international migration. Derivable from usual residence one year ago. Usual work time. Hours worked last week. Providers of non- paid social and personal services. Regular unpaid personal help.
Italy	Telephone. Only for fix telephone. Date of last marriage.

	Usual work time. Time worked during a short difference period.
	Only the time needed to go to work.
Luxembourg	Place of usual residence is based on country legislation dealing with local elections
Austria	Language. Language(s) most currently spoken at home.
	Religion. Formal membership of church or a religious community.
	Current marriage of ever - married women. Only date of current marriage of both parents.
	Usual work time. 1-11 hors, 12-31 hours, 32 and over
Portugal	Previous place of residence 5 years prior to the census.
	Field of study. Only for persons who have completed tertiary education.
Finland	Usual work time will be estimated.
Switzerland	Type and size of private household. 1 dwelling = 1 household (No separate household for lodger or subtenant) .
	Place of usual residence for the year prior to the census, previous place of usual residence, internal and international migration, for the 5 previous years.
	Total number of children alive, current marriage of ever - married women, for men and women.
Bulgaria	Previous place of usual residence. For people migrated within the period 1993 - 2001.
	International migration. Immigrants only..
Czech Rep.	Internal and international migration,, only for place of usual residence one year before the census.
Estonia	Language. Mother tongue. Command of foreign languages (optional answer).
	Religion. Religious affiliation, membership of church was not necessary (optional answer)
	Current activity status. Status for the week preceding the census.
	Main source of livelihood. Additional categories by an institution, maintained by other persons, personal auxiliary household.
Hungary	Usual activity status. In case of seasonal or occasional workers and agricultural activity only.
Lithuania	Main sources of livelihood. Construction materials of the outer walls.
Poland	Rent, durable consumer goods processed by the household. Number of cars available for the use of private household, telephone are collected through household budget survey.
	Nationality, instead of ethnic group
	Number of children born alive, date of first marriage, current marriage of ever-married women are collected through fertility survey
	Usual work time, usual activity status are asked only in agricultural areas
Slovenia	Telephone. Connection to the telephone network for a housing unit.
	Locality. Administrative - territorial concepts.
	Place of work. Without type of work place.
	Length and frequency of journey to work.
Cyprus	Ethnic groups. National community/religious groups for Cypriot citizens.

Source: LDSA questionnaires.

Table 14b - Compliance with the UNECE / Eurostat Recommendations. Housing – household variables

Countries	Number of variables that did not respect recommendations	Number of variables where concepts diverge	Number of variables with a specific question in each country	Number of variables where a national classification is used
Belgium	5	NA	1 (1)	
Denmark	3	NA		
Greece			1 (1)	
Spain				
France	2	1	3 (1)	3 (2)
Ireland	18	4	3 (1)	1 (2)
Italy	8	2	13 (1)	6 (2)
Luxembourg	7	7		
Netherlands	Information not available			
Austria	5	5	1 (1)	1 (2)
Portugal				
Finland			1 (1)	
United Kingdom				
Norway	13	8	4 (1)	
Switzerland	3	-		
Bulgaria		-		
Czech Republic	8	NA		9 (2)
Estonia		1		-
Hungary	2	2		1 (2)
Latvia				
Lithuania		1		
Poland	6	-		1 (2)
Romania				
Slovak Republic		-	1 (1)	
Slovenia		3	8 (1)	2 (2)
Cyprus			1 (1)	1 (2)
Malta		NA		
Turkey				

(1) National variables

Belgium	Facilities: Garden, fixed telephone, internet connection, automobile, motorcycle, vehicles.
Greece	Use of rooms for professional purposes.
France	Caretaker of the building: Year / number, digicode - intercom : year / number, garage - box - parking for the building : year / number.
Ireland	Cost of paid rent, if there is PC, access to the Internet at home.
Italy	Buildings: In use / not in use, Contiguity with other buildings, source of information for the period of construction, floor under the ground level, number of stairs. Dwellings: number of professional rooms, number of floors of the dwellings, heating system of the water, main tape of energy used for heating the water, renewal work in the last 10 years, presence of a private car parking. Number of WC at home, shower or bathtub in the dwelling.
Portugal	Type of heating.
Austria	How many freehold dwellings are in the buildings. Tenants were asked if the lease is limited or unlimited.
Finland	Summer cottages. If there is sauna.
Norway	Access to dwelling by disabled, garden, balcony/terrace, garage/car-port/parking.

Romania	State of dwellings, number of rooms used for other purposes and endowment of dwelling with air-conditioner
Slovak Rep.	Household equipment: Fridge, wash-machine, TV, phone, car, PC.
Slovenia	Use of a building, type of roofing, year of the change of the roofing. Number of rooms used for business purposes, floor space of the kitchen, other premises within the dwelling, connection to cable TV, year of the last renovation of the dwelling.
Cyprus	Solar energy use.

(2) Use of national classification

France	Period of construction, location of living quarters. main type of energy used for heating.
Ireland	Period of construction
Italy	Period of construction, type of building, structural material of building, state of repair, occupancy status, water supply system, type of heating.
Austria	Useful and living floor space.
Czech Rep.	Type of building, type of living quarters, type of ownership, occupancy status, hot water, bathing facilities, type of heating, main type of energy used for heating, position of dwelling in the building.
Hungary	Very slight for institutional household.
Poland	Period of construction
Slovenia	Structural material of the building, position of dwelling in the building.
Cyprus	Type of living quarters.

Different concepts

Ireland	Type of building. Distinction between whole building, flats and temporary structures. Type of living quarters. Distinction between residential and communal, permanent and temporary. Type of ownership has a very detailed analysis, according to the nature of occupancy. In the number of rooms the auxiliary places and professional rooms of the household.are not included Detailed analysis of transportation means and leave time, for work or studies.
Italy	The living quarters are defined as conventional and non conventional, if they are occupied or not respectively. The case of hot water outside the dwelling is not considered. The number of WC, shower or bathtub in the dwelling must be indicated.
Austria	Housing units without a kitchen or kitchenette are not counted as dwellings.
Estonia	'Gas' was recorded in the case of availability of either network or liquid gas. In a corridor type of houses where the kitchen was shared by several households, all the dwellings were regarded as equipped with gas in case there were gas ovens in the kitchen.
Hungary	Structural material of the building, only for the external walls. For type of living quarters without specifications.
Lithuania	The kithen is not considered a room.
Slovenia	To be considered as a room it must be at least 6 sq.m. The kitchen is not considered a room.

Source: LDSA questionnaires.

II.7. Data capture, data processing and the application of ICT technologies

The overall census process is increasingly dependent on the introduction of new ICT means. The logical need to enjoy technological developments is also motivated by the expense of human labour required to perform huge tasks. Moreover, use of machinery is normally more efficient in terms of both quality and speed of work. Not in the too distant past the contribution of computer work was limited to the tabulation aspects of the census. Today, however, the ICT structure concerns all the following phases:

- planning and support in the preparatory phases
- project management
- data capture
- coding
- tabulation and confidentiality protection
- demographic analysis and database development
- publication and dissemination

The omnipresence of ICT in modern census work holds for the informatics as well as for the communications aspect. Computers are on the desk of nearly every staff member of the census organisations, with notebook computers and palmtop machines increasingly being used in the field. Computer networks and the Internet provide much improved communication, both within the census organisations and with outside data providers and information users.

Since much census work is similar to activities elsewhere in society, off-the-shelf software can frequently be used. This is of course true for the three mainstay applications of word processing, spreadsheet technology, and general-purpose databases. But it extends to application programs for project management and dissemination through printed media or via the Internet. Even the software for optical reading is not specific to statistical applications, although parameters specific for each questionnaire obviously need to be determined. Keyboard data capture, computer coding, tabulation and demographic analysis belong to the areas where dedicated statistical software is still common. But even here census organisations frequently develop their own application software. There is, in fact, an astounding variety in the types of software being used. It is obvious that should countries decide to cooperate in these technical fields to the same degree as they already do in the area of substantive statistical issues, considerable economies of scale could be obtained.

In communications, electronic mail and mobile telephony have completely changed the perspective, often relegating fax and fixed-line telephony to the role of back-up media only. Nearly all project countries now have good coverage of such modern communication facilities. The Internet also plays a steadily increasing role as a channel for publicity and information dissemination. In the more advanced countries data collection through the Internet has been attempted.

The increasing efficiency of modern technology has improved the quality, and reduced the mounting costs of censuses. In a 2001 Symposium, the United Nations Statistics Division has highlighted these advances. (UNSD, 2001, document ESA/STAT/AC.84).

The main aspects of the activities carried out during the post-census phase in the majority of countries covered by this study are presented below. Based on the contents of the LDSA questionnaire, the description applies more to countries taking traditional or mixed censuses than for those relying only on registers and to the broader aspects involved in the first group of countries. Some comparison of the implementation of planning, management and monitoring measures are provided based on a table recording use of software.

Data capture of census results

The 2000 Census Round has certainly seen the advent of optical reading technology to retrieve data collected through census questionnaires. Manual data entry was widely applied in the European countries until the 1990 Round. At that time, in the project countries the application of character or mark recognition systems was already being implemented in some countries such as Belgium, Germany, Austria, Norway, Switzerland and Slovenia.

It is important to note that optical reading operates in various ways. Normally, once the forms have been scanned and the relative images are stored, optical recognition may refer to the marks (Optical Mark Recognition, OMR) or the characters (Optical or Intelligent Character Recognition, OCR or ICR). After the execution of this phase, still unrecognised characters necessitates that further steps be taken such as the Key From Image (KFI) method. Despite the efficiency procured by these methods, their application is normally riskier than keyboard data entry, as they primarily strictly depend on millions or at least thousands of different people filling in questionnaires and on the quality of the printed forms as originally produced after field work. Finally, after careful design of the questionnaires for optical recognition and an intensive series of trials and pre-tests, practical implementation is normally carried out through a combination of different methods, with room for manual work. Out of the 26 countries reporting on the data capture method through the LDSA questionnaire (Table 15), 21 used mark and/or character recognition (seven used both methods, 13 used only OCR/ICR, while Belgium only OMR). Many countries (8 out of 21, i.e. 38%) used ICR/OCR in combination with keyboard data entry, for specific variables (e.g. Greece) or for a remaining number of unrecognised responses.

Only Luxembourg, Bulgaria and Malta (in 1995) used manual data entry. It is important to note that Bulgaria decided on this method considering it more important for the social effect of employing several hundred operators than for the introduction of new technologies. Finally, of course Denmark and Finland used only registers.

Table 15 - Data capture methods

Countries	Keyboard[1]	Mark sensing	OCR/ICR	Internet	Registers
Belgium	√ D	√		√	
Denmark					√
Greece	√ C	√	√		
Spain	√ C	√	√	√	√
France	√ D		√		
Ireland			√		
Italy	√ D	√	√	√	
Luxembourg	√ C				
Netherlands	Information not available				
Austria			√		√
Portugal			√		
Finland					√
United Kingdom	√ C	√	√		
Norway			√	√	√
Switzerland			√	√	√
Bulgaria	√ D				
Czech Republic		√	√		
Estonia			√		
Hungary	√ C	√	√		
Latvia			√		√
Lithuania			√		
Poland			√		
Romania	Information not available				
Slovak Republic	√ D		√		
Slovenia		√	√		√
Cyprus			√		
Malta	√ C				
Turkey			√		

1 For countries where keyboard data entry has been applied, C denotes that data entry took place at a single site (centralised process); D that data entry took place at several sites (decentralised process).

Sources: LDSA questionnaires, country reports.

Use of classifications and data coding

Excluding countries such as Germany, Sweden and Iceland, which did not carry out a census as well as the countries relying on registers, all project countries mainly used the European classifications (See Table 16).

Out of the 25 countries, 92% used NACE Rev 1 and ISCO-88. The United Kingdom and Ireland used the UK standard occupational classification of 1990, which can be converted to ISCO-88. A total of 79% used ISCED, except for countries such as Ireland, Austria, the United Kingdom, Estonia and Turkey. Nationality codes were used by 88% (list of citizenship); the only exceptions were Spain, the United Kingdom and Malta. Geographical codes (NUTS) were used by 96%; the exceptions were Lithuania and France. The national classification codes used by the Slovak Republic as well as other countries normally may be converted to the international.

Table 16 - Type of classifications used

Countries	NACE Rev.1	ISCO-88	ISCED	Nationality (list of citizenship)	Geographical codes (NUTS)	Other
Belgium	√	√	√	√	√	(1)
Denmark	√	√	√	√	√	National variants can be converted
Greece	√	√	√	√	√	Education (national classification partly harmonised with ISCED)
Spain	√	√	√		√	(1)
France	√	√	√	√	√	No NUTS
Ireland	√			√	√	UK 1990 classification for occupation (convertible to ISCO-88
Italy	√	√	√	√	√	(1)
Luxembourg	√	√	√	√	√	(1)
Netherlands	Information not available					
Austria	√	√		√	√	Field of study (national classification), religion, denomination, colloquial language
Portugal	√	√	√	√	√	(1)
Finland	√	√	√	√	√	Socio-economic classifications
United Kingdom	Information not available				√	(1)
Norway	√	√	√	√	√	(1)
Switzerland	√	√	√	√	√	Religion, languages (national classifications convertible to international)
Bulgaria	√	√	√	√	√	(1)
Czech Republic	√	√	√	√	√	(1)
Estonia	√	√		√	√	Education (national classification)
Hungary	√	√	√	√	√	(1)
Latvia	√	√	√	√	√	(1)
Lithuania	√	√	√	√	√	Education (national classification harmonised with ISCED), religions, foreign languages
Poland	√	√	√	√	√	Foreign languages
Romania	Information not available					
Slovak Republic						National classification convertible to those mentioned
Slovenia	√	√	√	√	√	(1)
Cyprus	√	√	√	√	√	(1)
Malta	√	√	√		√	(1)
Turkey		√		√	√	(1)

1 No other type mentioned

Sources: LDSA questionnaires, country reports.

Apart from Malta, the activity of coding results was mainly performed using a combination of manual, computer-assisted and/or automatic work (see Table 17). Most used classifications outside the census; NACE and ISCO were more frequently submitted to automatic coding. As for other features of this phase, coding was often undertaken in several phases and computer-assisted coding was applied after failure of automatic coding. Moreover, countries that outsourced the work of data capture, such as France or Italy, normally remained responsible for a large part of data coding.

Table 17 - Data coding

Countries	Manual coding using code books	Computer-assisted coding	Automatic coding	Items
Belgium		√	√	Nationality, NUTS
Denmark(1)			√	
Greece	√ 40%		√ 60%	All classifications
Spain	√		√	NACE, ISCO-88, CNED 2000 (for education), geographical codes
France		√ (2)	√	Geographical codes, nationality, occupation, work place
Ireland		√	√	NACE, SOC 1990 (for occupation)
Italy		√	√	All classifications
Luxembourg	√		√	Partially for NACE
Netherlands	Information not available			
Austria		√	√	Nationality, country of birth, religion, colloquial language, field of study, ISCO-88
Portugal		√	√	All classifications (only field of study for ISCED)
Finland		√	√	ISCO-88
United Kingdom		√ (2)	√	Not specified
Norway(1)				
Switzerland		√	√	All classifications
Bulgaria			√	NACE, ISCO-88, NUTS
Czech Republic	√			
Estonia	√		√	NACE, ISCO, NUTS, ISO-639
Hungary	√			
Latvia		√	√	Partly ISCO, ISCED
Lithuania		√	√	ISCO-88, citizenship, nationality, education, religion, language, geografical codes
Poland		√	√	NACE, ISCO-88, ISO-3166, citizenship, language
Romania	Information not available			
Slovak Republic		√		
Slovenia			√	Geographical codes, nationality, religion, language
Cyprus		√	√	ISO-3166, geographical codes, citizenship,
Malta	√		No	
Turkey	√	√	√	Geographical codes, nationality

1 Not relevant, data are obtained from Registers
2 Used when automatic coding failed

Sources: LDSA questionnaires, country reports.

Data editing

About two-thirds of countries applied data editing supported by computer (see Table 18). The exceptions are Belgium, Luxembourg, Bulgaria, Estonia and the Slovak Republic. Automatic imputation was frequent within the EU and EFTA Member States as compared to Central and Eastern European countries. The products for census data editing were mostly self-developed at each NSI. Products like DIESIS or SCIA for Italy or NIM for Switzerland, although largely used by statistical offices in other types of survey, included ad hoc and broader specifications good for the census project. Just over half the countries generated statistics on the imputation rate by variable.

Table 18 - Computer-supported editing of raw data files

Countries	Use of computer-supported editing	Cut-off percentage for reviewing batches generating high error rates	Automatic imputation		Generation of statistics on imputation rate
			Used	Kind of software	
Belgium	No	-	No	-	No
Denmark	Not relevant				
Greece	Yes	No	Yes	ORACLE, SQL	Yes
Spain	Yes	No	Yes	Self-developed	Yes
France	Yes	No	Yes	SAS (with tables of decision)	Yes
Ireland	Yes	No	Yes	Not specified	Yes
Italy	Yes	Yes	Yes	DIESIS, SCIA	Yes
Luxembourg	No	-	No	-	No
Netherlands	Information not available				
Austria	Yes	No	Yes	Self-developed (Hot deck)	Yes
Portugal	Yes	Yes	Yes	Self-developed	Yes
Finland	Not relevant				
United Kingdom	Yes	No	Yes	Self-developed (based on donor imputation system)	Yes
Norway	Yes	No	Yes	SAS	Yes
Switzerland	Yes	No	Yes	New Imputation Methodology NIM	Yes
Bulgaria	No	-	No	-	No
Czech Republic	No	-	No	-	No
Estonia	No	-	No	-	No
Hungary	Yes	No	No	-	No
Latvia	Yes	No	No	-	No
Lithuania	Yes	Yes	Yes	Oracle	Yes
Poland	Yes	No	Yes	Self-developed	Yes
Romania	Information not available				
Slovak Republic	No	-	No	-	No
Slovenia	Yes	Yes	No	-	No
Cyprus	Yes	No	No	-	No
Malta	Yes	Yes	No	-	No
Turkey	Yes	Yes	Yes	Self-developed	Yes

Sources: LDSA questionnaires, country report.

Use of software

A broader comparison is possible between countries using software for the different post-census phases. The analysis remains limited in terms of countries, even if they represent the large majority.

First, returning to the **planning, management and quality monitoring aspects** of the census, through the information reported in the Table 19, it is possible to identify the different approaches taken. A total of 11 out of 14 countries declared having applied project design and management using ICT. This is the case for all the larger countries with the only exception being Turkey. Among countries with an average population size (around 10 million inhabitants), Austria and Bulgaria did not implement any such activity. Given the character of the project it was certainly less necessary in Denmark or Finland. MS Project was the most widespread process used together with products self-developed by the NSIs. The situation is reversed, with more 'No' than 'Yes', where adoption of a system for quality monitoring of operations is concerned.

The software tools used for **data capture**, **automatic coding** and **census micro-database** are extremely varied. This is because of the broad selection available on the market, combined with the specificity of each census project, and the means normally used in each statistical office. The self-developed applications constitute the great majority of applications. In some cases with NSI specific tools (e.g. SICORE in France for automatic coding or even SCIA for Italy, for automatic imputation, see Table 19). Overall, well over 20 different tools were reported for the 25 countries. Visual Basic seems to be the most widely used where keyboard data entry was partially carried out (Greece, Spain, Bulgaria). AFSP-Pro and Eye & Hands are reported at least three times each among applications supporting optical reading technologies. SAS, ORACLE, Access and SQL Server are frequently used when looking at all the activities.

Table 19 - Use of software

Countries	Project Management Software		IT system for quality monitoring of operations	Software used for data entry or data capture		Software used for automatic coding		Census database of micro-data	
	Use	Software		Type[1]	Application	Type[1]	Application	Use	Application
Belgium	Yes	FORMIRIS 2.7	Yes	SD	FORMIRIS, INFORMIX	SD		No	-
Denmark	No	-	No	-	-	-	-	-	-
Greece	Yes	ORACLE, SQL and self-developed system	Yes	CP+SD	Access, Visual Basic, SQL, PL-SQL	SD	ORACLE Developer 6i	Yes	ORACLE, SQL, PL/SQL, Access
Spain	Yes	DIA	Yes	SD	Bellview Scan system, Visual Basic	SD		No	-
France	Yes	PMW one by process	No	CP	ORACLE[2]	SD	SICORE	Yes	ORACLE
Ireland	No		No	CP	Bespoke System built on AFPS-PRO	SD+CP	Precision Data Coder	Yes	ORACLE, SAS
Italy	Yes	MS Project	Yes	SD	ORACLE FORMS	CP	ACTR	Yes	ORACLE
Luxembourg	No		No			SD		Yes	Not specified
Netherlands	Information not available								
Austria	No		No	CP	IFP, RECO STAR	SD		Yes	DB2
Portugal	Yes	MS Project and self-developed system	No	CP+SD	Floware, C++	SD		Yes	ORACLE
Finland	No		No			SD		No	
United Kingdom	Yes	MS Project	Yes	CP	TMS Sequoia Formfix OMR CGK Recostar OCR	CP	ACTR, MATCHCODE	Yes	Sybase database, Superstar
Norway	Yes	MS Project	No	SD	SAS			Yes	ORACLE
Switzerland	Yes	Primavera/Sure Trak	Yes	CP	Kodak Capture	SD		Yes	ORACLE

Countries	Project Management Software		IT system for quality monitoring of operations	Software used for data entry or data capture		Software used for automatic coding		Census database of micro-data	
	Use	Software		Type[1]	Application	Type[1]	Application	Use	Application
Bulgaria	No		No	SD	Visual Basic	SD		Yes	Not specified
Czech Republic	Yes		No	SD		CP	IRIS sw.		
Estonia	Yes	MS Project (at planning stage only)	No	CP	Eyes & Hands (ReadSoft)	SD		Yes	Not specified
Hungary	Yes		Yes	CP+NCP	Access, Bull la Poste			Yes	Not specified
Latvia	Yes	MS Project and self-developed system	Yes	CP+SD	Eyes & Hands (ReadSoft)	SD		Yes	SQL Server
Lithuania	Yes	MS Project and self-developed system	Yes	CP	Monsun/2	SD		Yes	ORACLE
Poland	Yes	Self-developed system	No	SD		SD		Yes	SQL Server, SuperStar
Romania	Information not available								
Slovak Republic	No		Yes	CP	AFPS-PRO	SD		No	
Slovenia	No		Yes	CP	Eyes & Hands (ReadSoft)	SD		Yes	ORACLE
Cyprus	No		No	CP	AFPS-PRO	NCP		Yes	SQL Server, SAS
Malta	Yes		No	SD	FOXPRO			Yes	Not specified
Turkey	No		Yes	CP	AFPS-PRO	SD		Yes	ORACLE, SPSS

1 Type of software used: CP = Commercial Product, NCP = Non-Commercial Product, SD = Self-Developed application.

2 For work not subcontracted.

Sources: LDSA questionnaires, country reports.

II.8. Publication and dissemination

It is possible to identify three main activities concerning dissemination for publication and more generally distribution of information and results:

- publication of preliminary census results
- publication of the table programme
- publication of in-depth detailed analysis and studies or other output

Even if the most important statistics must be widely available and free of charge, as recommended by UNECE and Eurostat, it is clear that dissemination practices must respect the constraints imposed by national legislation, especially concerning confidentiality of the information collected (see relative chapter). The Eurostat recommendations not only concern confidentiality of individual data but also 'census output for small areas or specific population groups'.

a) Publication of preliminary census results

For countries with an entirely or largely register-based census (Denmark, Finland, Norway) this aspect of the publication and dissemination program is not relevant. For countries that carried out a traditional or mixed census, only the United Kingdom and Switzerland for the EU and EFTA countries and the Slovak Republic for the applicant group did not published preliminary results.

All other countries (20) declared that they have published preliminary data. Nevertheless, these countries differ widely with regard to the nature and territorial level of information distributed. As a more common aspects, these data were normally obtained from the counts of the daily summaries (often called 'control lists') compiled by the enumerators and other staff during the field work (e.g.: Greece, Ireland, Italy or Check Republic). In other cases these data were derived from not completely edited and imputed (e.g.: Spain) or a census microdata database (Latvia).

b) National Table Programme

According to the 'Guidelines and Table Programme for the Community Programme of Population and Housing Censuses in 2001'[22], countries are invited to produce a table programme containing a set of 42 tables and to transmit these data to Eurostat before the end of June 2003 while Eurostat will take charge of dissemination of all data[(23)]. The degree of data availability and compliance with the Eurostat Table Programme can be summarised as follow (see Tables 20 and 21):

- Based on the answers to the LDSA questionnaire, only five countries have planned to produce all tables in their entirety (complete availability of data:

[22] Ref.: Eurostat (1999). For the list of tables see Annex 6: LDSA survey questionnaire (including the Eurostat table Programme).

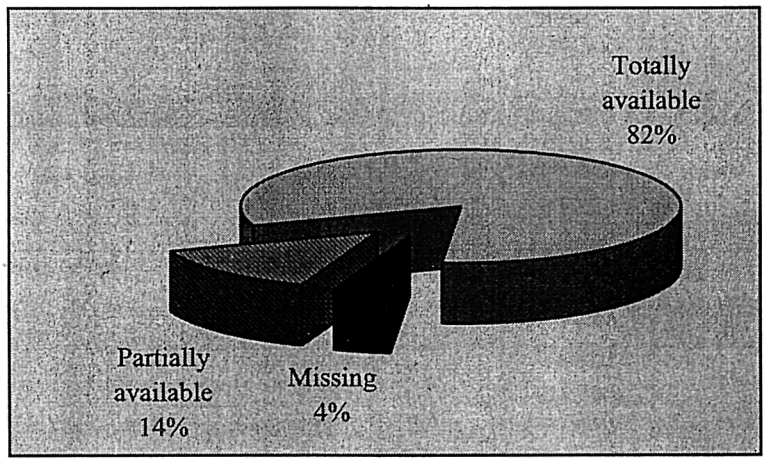
[23] Originally, a set of 40 tables was foreseen:'28 tables at the national level and nine tables at regional level (NUTS 3) and three tables at local level (NUTS 5). A further, two tables were added concerning urban statistics. More precisely, Eurostat will disseminate the data down to NUTS 3 level within a delay of not more than one year after data have been received from the last country (Laihonen, 2000).

Greece, Spain and Portugal for EU and EFTA countries and Cyprus and Hungary for applicant countries).

- Belgium will produce all the first 40 tables as such while the two last tables, at the urban level are under examination.
- Ten countries will publish the entire set proposed in the Table Programme, but the data in some tables will be only partially available (Denmark, France, Austria, Finland, Norway, Switzerland, Bulgaria, the Czech Republic, Lithuania, Slovenia). Generally the percentage of totally available data is very high (between 85.7 and 92.9%). Three countries show a significant number of partially completed tables: France with 25, Austria with 11 and Lithuania with 8 tables.
- For six other countries: Ireland, Italy and Luxembourg, Estonia Latvia and Poland, only one or two tables will be missing.
- Only four countries present a high percent of missing tables: the United Kingdom with only the table 2 totally available (most tables will be partially available), Malta and the Slovak Republic with ten missing tables and Turkey with six missing tables. In the two last cases, the percent of partially available tables is also important.

In fact, excluding the last four countries, the average availability of the table programme data in each country, is quite good. Moreover, considering all the countries together and the total set of tables, the availability of data is as for the following figure (see also Table 20):

Figure 3 - Availability of data for the Table Programme



The tables presenting the lowest percent (less than 75%) of totally available data are:

- Table 40: Employed persons with residence in the area by place of work at local level (Nuts 5) and sex (percent = 63%)
- Table 32: Usual resident population by sex, age group, marital and cohabitation status, size of household and selected social indicators (percent = 66.7%)
- Table 5: (percent = 70.4%)
- Table 19: (percent = 70.4%)
- Table 29: Usual resident population and economically active population by sex, age and indicator of internal or international migration at Nuts 3 (percent = 70.4%)

- Table 42: Main characteristics of private households and dwellings in urban areas (percent = 70.4%)

The tables presenting the highest percent (92.6%) of data totally available are:

- Table 3: Usual resident population by sex, country of citizenship and age group at the national level
- Table 4: Usual resident population by sex, country of birth, indicator of citizenship and age group at national level
- Table 12: Population in private households by sex, age group, indicator of citizenship and household size at national level
- Table 15: Employed persons aged 15 and over by sex, age group, indicator of citizenship and occupation at national level
- Table 17: Employed persons aged 15 and over by sex, age group, indicator of citizenship and industry (branch of economic activity) at national level
- Table 36: Private households by type and number of members and population by age group and economic activity at regional level

c) Time schedule for the availability of census results

As mentioned above, according to the gentlemen's agreement, it was initially foreseen that countries should transmit the definitive census results before June 2003.

Considering the answers given in the LDSA questionnaire, it appears (see Diagram 3) that 17 countries[24] (63% of responses obtained) planned to produce the definitive tables before this date. In six other countries (22%), definitive data will be available before the end of 2003. Only four countries (15%) will produce all the results until the first semester of 2004.

The time required to produce all the tables varies from one country to the next: generally, countries with a register-based census are able to complete the Table Programme in less than 18 months (only Finland has a total duration of two years), while for countries with traditional or mixed census, 70% have foreseen that data will be entirely available in 18 to 24 months after their census date, the other 30%, in 25 to 36 months.

d) Publication of in-depth analysis and other census output

Apart from preliminary results and final tabulations (on paper and/or through other media of dissemination), most censuses generate many other outputs. Tabulations are not necessarily the most effective means to transfer information to the users. Therefore, apart from the main set of tables – or integrated with them - additional material is usually produced, that contains graphic illustrations in the form of maps and graphs, plus explanatory narrative. Some countries (Cyprus, Luxemburg) prepare special census atlases, which hold a collection of thematic maps. This will bring out the regional variation of particular indicators in an easily understandable way. Others, like Bulgaria, Estonia, Finland, and the United Kingdom, report the use of GIS technology.

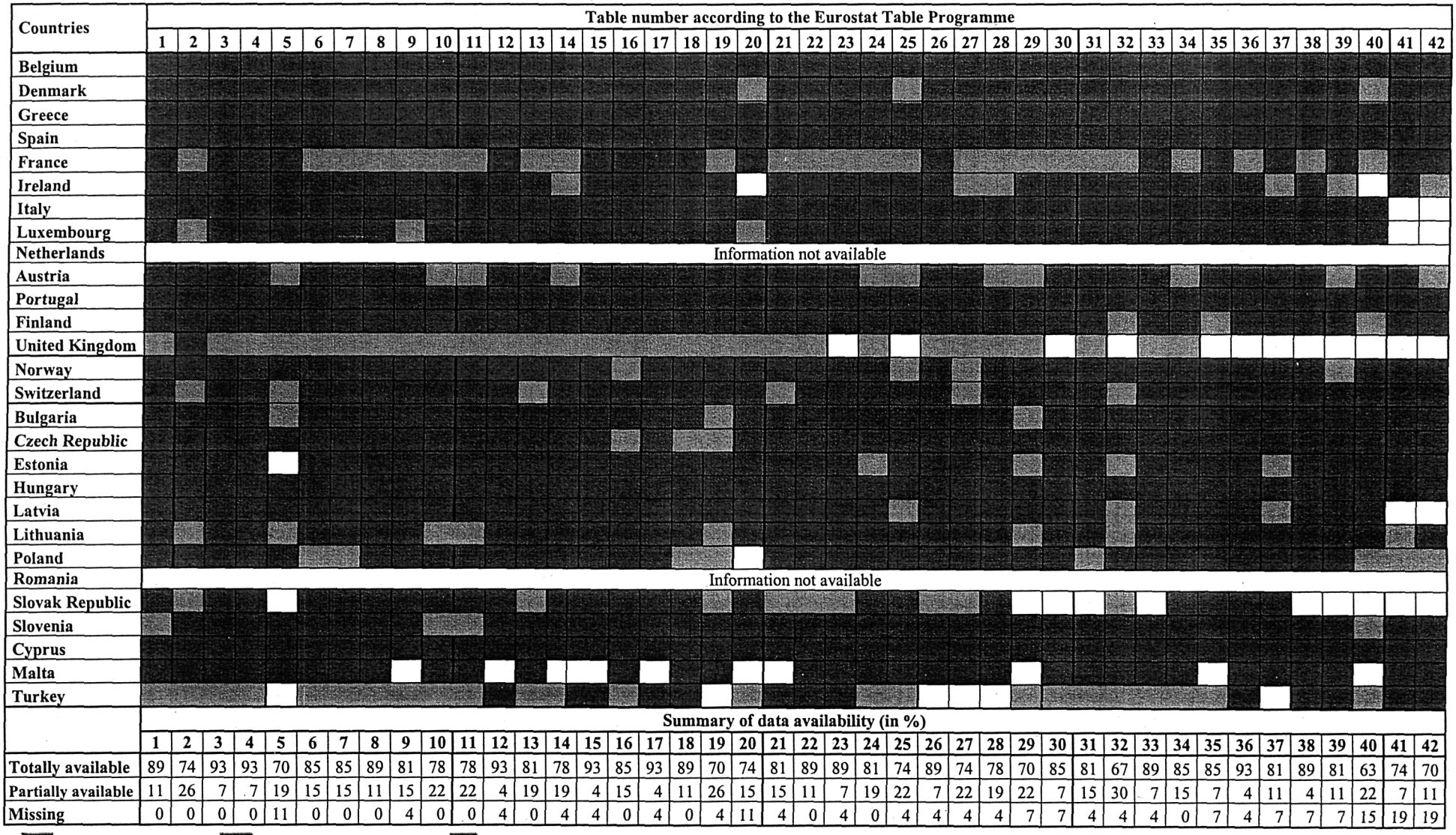
[24] Germany is included in this group

Since no collection of tables can ever be complete, demand for additional tables will arise from future users. The census office may offer a "table-on-demand" service, perhaps charging a fee for such work. Another option is to make a subset of census microdata available, from which users can generate their own tables. This obviously demands special measures to protect the confidentiality of the individual information. Microdata, but also small-area aggregated data, can be stored in databases for later use. Many countries, including Belgium, Greece, Italy, Lithuania, and Spain, report dissemination databases of various designs.

The results of most censuses are subject to careful analysis by professional demographers. These experts may work in the census offices, in centres for population studies, may be members of academic faculty, and so forth. They place the subject census in the context of other censuses and surveys, and apply the tools of demography to arrive at pertinent conclusions about the current state of the population, as well as at forecasts of likely developments in the future. This work is often published in the form of one or several special research volumes. The country reports of Belgium, Bulgaria, France, Luxemburg, Italy, and Switzerland consider very seriously this issue.

It should be noted that any publication may appear on paper, but also, and perhaps only, through other media. The use of optical disks (CD-ROM and DVD) has become quite common; it has the advantages of potentially fast production, and low cost. The Internet obviously constitutes a very attractive way of dissemination. Both optical disks and the Internet can be used to store and disseminate databases. Nearly all-reporting countries use non-paper publication, and some have cut back sharply on printed output.

Table 20 - Availability of data according to the Eurostat Table Programme



	Summary of data availability (in %)																																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Totally available	89	74	93	93	70	85	85	89	81	78	78	93	81	78	93	85	93	89	70	74	81	89	89	81	74	89	74	78	70	85	81	67	89	85	85	93	81	89	81	63	74	70
Partially available	11	26	7	7	19	15	15	11	15	22	22	4	19	19	4	15	4	11	26	15	15	11	7	19	22	7	22	19	22	7	15	30	7	15	7	4	11	4	11	22	7	11
Missing	0	0	0	0	11	0	0	0	4	0	0	4	0	4	4	0	4	0	4	11	4	0	4	0	4	4	4	4	7	7	4	4	4	0	7	4	7	7	7	15	19	19

totally available partially available missing

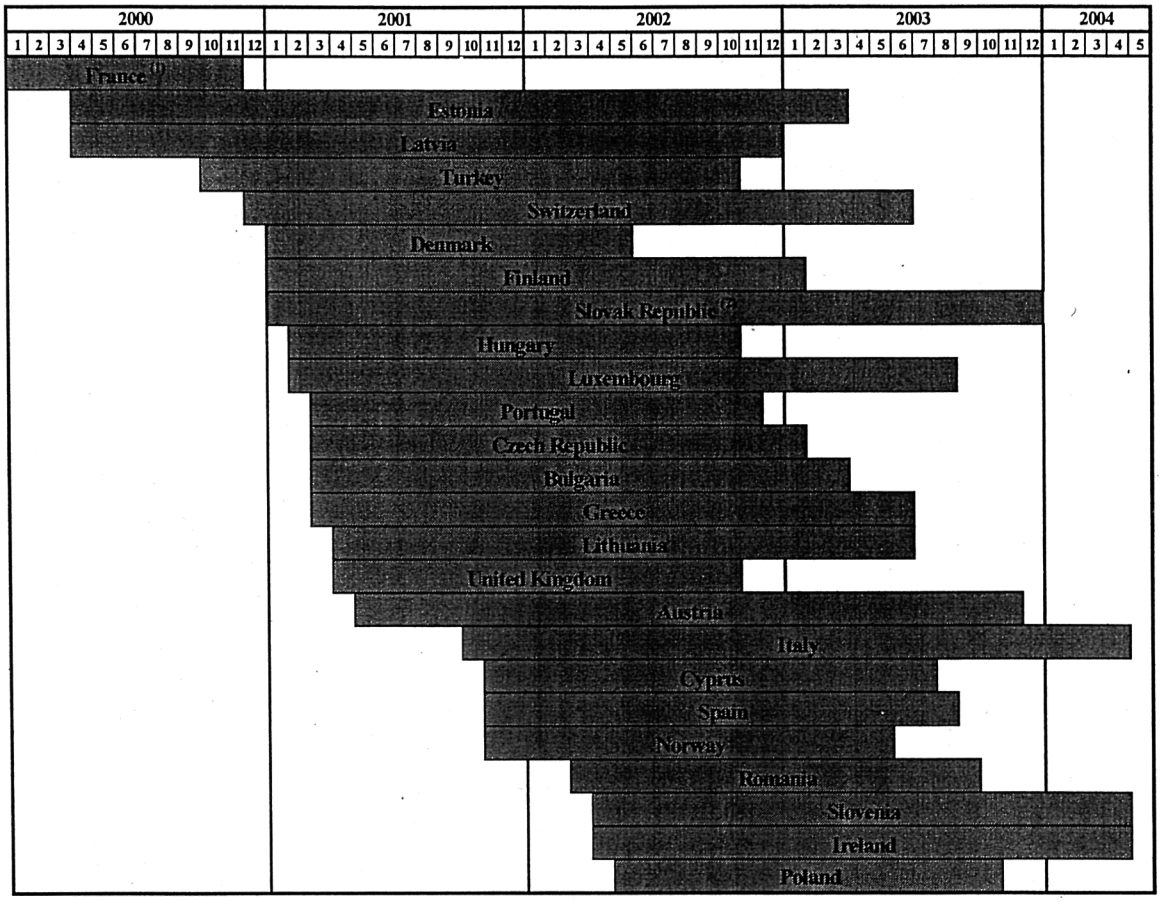
Source: LDSA questionnaires

Table 21 - Compliance with the Eurostat Table Programme

Countries	Number of tables			In %		
	Totally available	Partially available	Missing	Totally available	Partially available	Missing
Belgium	42	-	-	100.0	-	-
Denmark	39	3	-	92.9	7.1	-
Greece	42	-	-	100.0	-	-
Spain	42	-	-	100.0	-	-
France	17	25	-	40.5	59.5	-
Ireland	34	6	2	81.0	14.3	4.8
Italy	40	-	2	95.2	-	4.8
Luxembourg	37	3	2	88.1	7.1	4.8
Netherlands	Information not available					
Austria	31	11	-	73.8	26.2	-
Portugal	42	-	-	100.0	-	-
Finland	39	3	-	92.9	7.1	-
United Kingdom	1	29	12	2.4	69.0	28.6
Norway	38	4	-	90.5	9.5	-
Switzerland	36	6	-	85.7	14.3	-
Bulgaria	39	3	-	92.9	7.1	-
Czech Rep	39	3	-	92.9	7.1	-
Estonia	36	5	1	85.7	11.9	2.4
Hungary	42	-	-	100.0	-	-
Latvia	37	3	2	88.1	7.1	4.8
Lithuania	34	8	-	81.0	19.0	-
Poland	33	8	1	78.6	19.0	2.4
Romania	Information not available					
Slovak Republic	23	9	10	54.8	21.4	23.8
Slovenia	38	4	-	90.5	9.5	-
Cyprus	42	-	-	100.0	-	-
Malta	32	-	10	76.2	-	23.8
Turkey	12	24	6	28.6	57.1	14.3
Total	**929**	**157**	**48**	**81.9**	**13.8**	**4.2**

Source: LDSA questionnaires.

Diagram 3 - Time schedule for the definitive availability of final census results according to the Eurostat Table Programme



(1) Started in 3/1999 (census date: 8/3/1999)
(2) The table programme will be available in 2003, but the exact date is not yet available
For Belgium, the availability of all results was not given.
For Malta, the table programme was definitively available in May 1997.
The questionnaire for data collection was sent from Eurostat to the countries in August 2002.
Source: LDSA questionnaires

II.9. Costs of the censuses

Total cost and cost per capita

As stated above, the question of census' cost has been seriously debated over the past decades. This aspect is not only an economic problem but social in that high cost is a factor that may influence public acceptance. It is fairly complicated in many cases to gain a real measure of the cost of organising and carrying out a census. Among other reasons this is because of staff participation from the NSI and other national administrations, work carried out over several years, equipment life lasts beyond the execution of the project. Moreover, several post-census operations are still ongoing. It is also more difficult – and quite dangerous – to proceed to international comparison between costs of censuses, because of significant differences in methods and techniques used during the various phases of the operation and the evolution of the currency exchange rates[25].

Although there are a certain number of limits, information on the total costs of the national censuses collected through the LDSA questionnaires are presented here (Table 22). On the basis of these data and the total population figure the **cost per person** is also estimated for each country. Despite the necessary approximation, this information allows more appropriate placement of the different countries.

The cost per person largely varies from country to country. Switzerland, Ireland and Luxembourg have the highest cost, more than € 10 per person. At the opposite extreme, are Romania and Bulgaria where costs did not exceed € 1.5 per person. At the same time, with the exception of Turkey, the largest countries in terms of population (France, United Kingdom, Italy, Spain, Poland) have a cost varying from € 3.9 to 6.2. Cost per capita in Bulgaria or Romania is far cheaper than in France or Italy because the cost of living is really lower in the first group of countries. Among the countries carrying out a traditional or mixed census Turkey represents the lowest cost per person (€ 0.3).

Cost per person is not really correlated to the size of the country (number of population); small countries may have either low or high cost[26]. This result confirms that one determining factor influencing the total cost is undoubtedly related to the complexity of techniques and methods employed. The high cost in Switzerland is directly linked to the technical and methodological innovations introduced in the 2000 Census (see country report) as well as the high cost of living in this country. It is obvious that the total and per-capita census costs are strongly affected by the economic conditions in a country, in particular the level of labour costs.

The duration of all the operations from the preparatory phase to data dissemination can partially explain the relative high cost in some countries. For example the Czech Republic, with a budget spread out over seven years (1997-2003), while Ireland supported a supplementary cost of about 20% of the total budget because of the one-year postponement.

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[25] In many cases the cost in EURO varies considerably as the exchange rate may be taken with a few months difference.

[26] It should be noted that a very small country like Luxembourg, with less than 0.5 million inhabitants, can not easily reduce the cost per person.

Table 22 - Estimated costs of the census

Countries	Estimated total cost (in 000 EURO)	Total population from census (in 000)	Estimated cost per person (in EURO)
Belgium	24 000	10 296	2.3
Denmark	No budget	5 349	NA
Greece	49 730	10 964	4.5
Spain	167 050	40 848	4.1
France	248 000	60 187	4.1
Ireland	44 000	3 917	11.2
Italy	298 254	56 306	5.3
Luxembourg	4 650	440	10.6
Netherlands	5 000	:	:
Austria	56 000	8 065	6.9
Portugal	46 500	10 356	4.5
Finland	800	5 181	0.2
United Kingdom	367 386	58 789	6.2
Norway	14 600	4 485	3.3
Switzerland	99 090	7 288	13.6
Bulgaria	11 540	7 929	1.5
Czech Republic	80 000	10 293	7.8
Estonia	10 200	1 370	7.4
Hungary	40 000	10 198	3.9
Latvia	5 095	2 377	2.1
Lithuania	9 471	3 484	2.7
Poland	154 000	40 000	3.9
Romania	26 600	21 698	around 1.2
Slovak Republic	16 300	5 379	3.0
Slovenia	over 8 000	1 964	over 4:1
Cyprus	2 600	689	3.8
Malta	1 200	378	3.2
Turkey	18 750	67 804	0.3

Greece Using the *de facto* population.

France Total cost includes the cost for the Overseas Departments and Mayotte as well as (a) expenditures related to work carried out by permanent employees of INSEE and (b) expenditures incurred by the communes related to the organisation of activities. If these two categories of expenditures are not taken into account, the total cost does not exceed € 187.2 million, i.e. € 3.1 per person.

Ireland Total cost includes € 8 million resulting from postponement of the Census.

Italy Total cost corresponds to the State allocation, which was the only financing source (external funds are not provided). Additional financial resources were obtained from the ISTAT budget and residual funds from the previous census. In the total amount of € 298.254.000, publication and dissemination costs are not included. So the true estimated cost per person is foreseen to be higher than € 5.3

Netherlands The amount concerns exclusively the direct cost of the current census operation and in fact, the cost of the total operation is absorbed by the regular budget of Statistics Netherlands.

Switzerland In addition, € 2.6 million (equal to 18% of census costs) were directly devoted to the improvement of the registers over the last few years.

Czech Rep. Cost is over the 7 year period 1997-2003.

Lithuania Cost is over the 6 year period 1997-2002.

Sources: LDSA questionnaires, country reports.

Methods adopted for the 2000 Round for the intermediate countries (Belgium, Latvia and Slovenia), even if applying very different methods, succeeded in maintaining a relatively low cost per capita. Austria at the opposite end has a relatively high cost, related to the diversity of operations carried out through the 'Combined Census'.

For countries applying a register-based census, the cost per person is negligible in Denmark and Finland since the register method has been used for years. The cost concerns mainly expenditures for data processing, tabulation and dissemination. In Norway the situation is quite different because the largely register-based census was carried out for the first time in the 2000 Round. There was a long preparatory phase so as to properly upgrade all statistical systems and to establish the necessary links between registers. Moreover, a traditional enumeration was implemented for the housing census.

The Baltic States directly used a small amount of external financial support as follows:

- 5.4% of total cost in Estonia (covering 7.3% of costs for cartography, mapping, GIS and 33% of costs for equipment);
- 11% in Latvia (34% of costs for equipment and 25% of cost of publication and dissemination);
- 4.4% in Lithuania (80% of cost for equipment by a PHARE programme, 85% for publication and dissemination by an UNPFA specific project supporting the census data dissemination and analysis).

In these cases, as for all other countries, the equipment procured for the census will be used for other surveys. This is another element that disturbs the real evaluation of census costs.

Often, in the different phases of the census additional costs were supported by the local authorities, as is mainly the case for France or Switzerland. In the latter, respectively 38% and 80% of costs for the general preparation and enumeration were directly paid by the cantons and communes.

Breakdown of costs by main phases

The breakdown of costs shown (Table 23) highlights the differences between countries for particulars, for example Portugal and Estonia show relatively significant costs for cartography and mapping or Turkey where 15% of the total cost was devoted to publication and dissemination. Other particulars for selected countries (such as the extra items for Norway or Switzerland) or individual categories in the breakdown for others (Romania or Slovenia) limit comparison between countries. Excluding these cases from the analysis and focusing on the remaining 19 countries (as from the Figure 4), three groups of countries may be identified:

- the first group corresponds to countries where the enumeration phase covers the greater part of the total cost (with at least 67%), as for Greece, Spain, France, Italy and Lithuania;
- the second, broader group includes countries principally for costs of field work– from 40 to 52% of the total – with the second higher cost for the preparation (Malta, Estonia, Poland and Portugal) or data processing, equipment and

publication together (United Kingdom, Latvia, Bulgaria, Austria, Turkey and Cyprus);

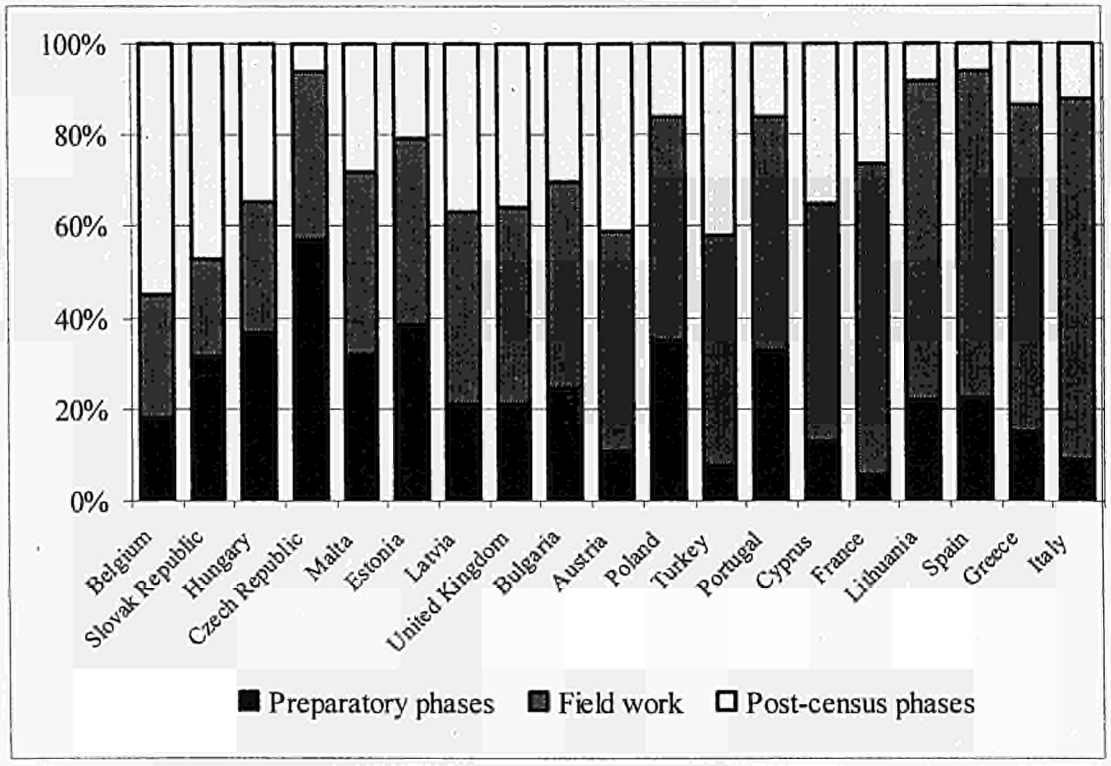
- the third group of countries includes those where the most significant cost was for preparatory activities (Hungary, mostly Czech Republic with 55% of total) or for post-census work (Belgium and Slovak Republic).

The 19 countries here considered constitute a homogenous group of countries with regard to census methodology, only Austria, Belgium and Latvia adopted a combined method of traditional enumeration and use of registers. However some budgets are characterised by the large amount devoted to specific items, such as the 25% or even more spent for equipment in the Slovak Republic and Latvia. Once again with some limitations, using the average values of this selection of countries it is possible to divide the total cost of the census into the three main phases as follows:

- about 25% for preparation,
- about 50% for enumeration and quality surveys,
- about 25% for all post-census work.

Bulgaria is the country that comes closest to this approximation, with respectively 25%, 45% and 30% for the three large phases.

Figure 4. Census costs by main budget lines



Sources: LDSA questionnaires, country reports

Table 23 - Census costs by budget lines

Countries	General prepar. and services	Pilot Census	Census mapping	Publicity and inform.	Field work	PES	Data entry and processing	Processing and analysis	Equipment	Publication and disseminat.	Other
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Belgium	15.0	1.0	1.0	1.0	3.0	4.0	36.0	5.0	4.0	10.0	20.0
Greece	11.2	0.2		2.8	71.4	0.1	9.9		3.6		0.8
Spain	13.9	0.2	0.1	4.5	70.2	1.2	3.6		2.3	0.2	3.8
France	3.2	0.8	0.1	1.6	62.9	0.3	20.6		4.7	1.2	4.5
Ireland	In [7]	1.7	In [7]	3.7	46.9	-	25.4	In [7]	22.3	In [7]	
Italy	7.3		0.3	1.6	78.3	0.5	7.0	4.4	0.6	0.02	
Luxembourg	Information not available										
Netherlands	Information not available										
Austria	11.0	In [1]		In [5]	10.0	-	30.0	8.0	1.0	2.0	38.0
Portugal	7.5	1.6	15.0	8.6	50.0	1.1	6.5	1.1	7.5	1.1	
Finland	15.0						30.0	30.0	10.0	15.0	
United Kingdom	in 'Other'	2.0	3.3	4.0	39.6	3.2	29.8	3.0		3.1	12.0
Norway	40.0	8.0	2.0	5.0			10.0	3.0	4.0	10.0	18.0
Switzerland	6.1	3.3		4.0	34.3	1.3	24.4	2.0	4.6	0.9	19.1
Bulgaria	24.4	0.1		0.2	45.0	0.7	13.2		10.1	7.2	
Czech Republic	57.0				37.0				6.0		
Estonia	20.8	1.0	15.5	1.0	40.6	0.4	5.3	0.4	13.1	1.9	
Hungary	31.0		2.0	3.0	28.0		27.0	1.0	5.0	1.0	
Latvia	19.0	1.0		1.0	41.0	1.0	4.0	1.0	30.0	2.0	
Lithuania	10.3	1.6	6.6	3.4	69.8		2.8		4.8	0.7	
Poland	34.1	0.6	0.2	0.2	48.5	0.2	6.2	1.9	6.5	1.6	
Romania	82.3% staff expenses, 17.7% material and equipment										
Slovak Republic	28.0		1.8	1.8	21.4		19.8	0.8	24.5	1.9	
Slovenia	11.0	In [1]	1.0	1.0	62.0	1.0	11.0	In [1]	13.0	In [1]	
Cyprus	12.3	0.1	0.6	Free	49.8	2.3	9.6	2.0	7.4	1.2	14.7
Malta	32.0				40.0	In [7]	22.0			6.0	
Turkey	5.0		1.0	2.0	50.0		12.0		5.0	15.0	10.0

Belgium 'Other' represents postal costs.
France Cost for publication and dissemination excludes studies. 'Other' represents the cost of the Census in the overseas departments and Mayotte.
Italy Cost of Pilot Census accounts for zero as it was covered by allocated funds from the ISTAT budget; costs for Census Mapping were mainly covered by residual funds from the previous census; costs for the processing and analysis refer only to temporary staff.
Austria 'Other' represents payments to the municipalities for their contribution to the census operations (carrying out the enumeration, hiring, training and paying the enumerators, checking and sending of the collected forms).
UK 'Other' represents the cost for support services on legislation and initial research and development.
Norway 'Other' represents improvement of existing registers.
Switzerland 'Other' represents personal.
Estonia Cost for census mapping also includes GIS expenses.
Hungary The cost of the outsourced data entry is 17% (it is included in 'data processing').
Lithuania Enumeration includes 5.2% printing of questionnaires, forms and instructions.
Cyprus 'Other' represents software and IT support.
Turkey 'Other' represents the quality control of imaginary enumerated.

Sources: LDSA Survey questionnaires, country reports.

II.10. Conclusions and future plans

Use of census results

The main issue from the decennial project are the census results, which are used to revise the inter-censual population estimates, as a base for population projections and as a framework for surveys in the majority of countries, i.e. 18 (see Table 24). In addition, in France, Luxembourg, the Czech Republic and Turkey the same data are used for population revisions and projections. Finally, only in Belgium, Denmark, the Netherlands, Finland, Norway and Slovenia (as well as Germany, Sweden and Iceland) the registers are used to provide population statistics and a base for projections. Most Candidate countries (with the exception of the Czech Republic, Lithuania, the Slovak Republic and Turkey), Belgium, Greece, Portugal and the United Kingdom undertake statistical surveys on migration, fertility or other demographic topics using census results.

Table 24 - Use of census results

Countries	Revision of population estimates between two censuses	As basis for population projections	Revision of population registers or electoral lists	Framework for surveys	Migration surveys	Fertility and other demographic surveys	Labour force surveys	Various quantative estimates for administrative purposes
Belgium				√		√		√
Greece	√	√		√	√	√	√	√
Spain	√	√	√	√				√
France	√	√		√				√
Ireland	√	√		√			√	
Italy	√	√	√	√				
Luxembourg	√	√						√
Netherlands	Information not available							
Austria	√	√	√	√				
Portugal	√	√		√	√	√	√	√
United Kingdom	√			√		√		
Switzerland	√	√		√		√	√	√
Bulgaria	√	√		√	√	√	√	√
Czech Republic	√	√						
Estonia	√	√		√	√	√	√	√
Hungary	√	√		√	√	√	√	
Latvia	√	√		√		√	√	
Lithuania	√	√		√				
Poland	√	√		√	√	√		√
Romania	√	√		√	√	√		√
Slovak Republic	√	√		√				
Slovenia		√		√	√	√	√	√
Cyprus	√	√		√	√	√		√
Malta	√	√		√		√	√	√
Turkey	√	√						√

1 For countries relying on registers most of the census data are available annually. There is no need for inter-censual estimations. Annual migration and fertility statistics are based on total counts.

Source: LDSA questionnaires.

As stated elsewhere in the publication, in Spain, Italy and Austria the census forms the basis for a revision of the population registers. Since the legal population amounts are defined, in these cases a number of political and administrative decisions and budget allocations are derived.

Emerging organisational issues and main difficulties

In correspondence of the 2000 Census Round some new organisational issues definitively emerged, mostly because many tasks were helped by new technologies and have to be outsourced (see Table 25). The use of subcontractors largely included the data capture and data processing phases, so the confidentiality matters, since personal census forms had to be provided outside the NSIs. Arrangements aiming to ensure the security of basic census material, their transportation, temporary storage and exploitation characterised many national projects, extending the administrative and legal concerns necessary for the conduction of the project. In some cases, due to the size of the contracts, it is now necessary to launch tenders at international level, with the consequent risk to see the activity largely carried out in a foreign country and making it difficult to verify compliance with the national norms.

As from the following table, the outsourcing of some activities was prevalent in the countries conducting a traditional census or using registers only partially. Some tasks as the determination of the enumeration areas, parts of the publicity and information campaigns, the data capture and mostly the production, delivery and collection of census forms were mainly outsourced by the national organisations.

Considering the applicant countries, census mapping was quite often not carried out by the NSI because of absence of cartographic unit (Hungary, Latvia, Lithuania, Slovak Republic, Slovenia, Malta)..Maps are mainly furnished by the national geographic organisation and also in some cases, by private firms (Estonia, Hungary)

Among others, it has to be anticipated the case of Switzerland with the centralisation of technical survey tasks in a single national service centre and however the possibility for local authorities to choose their preferred method (see country report). According to the method applied in each commune, this Consortium has undertaken various census tasks depending from the variant, from the simple mail management to the monitoring data collection, reminders to respondents and checking of the returned questionnaires by a so-called "Global Package".

Table 25 - Activities not carried out by NSI or outsourced

Countries	Census mapping	Publicity and information	Printing, delivery and/or collection of forms	Data entry/ capture	Other
Belgium	√	√		√	
Denmark					
Greece					
Spain		√	√		
France		√	√	√	
Ireland	√	√	√		
Italy	Partially	Partially	√	Partially	Call centre
Luxembourg			√	√	
Netherlands					
Austria			√		
Portugal	Editing, printing	Mostly			
Finland					
United Kingdom		√	√	√	
Norway	√		√		design of the electronic form for Internet
Switzerland			√	√	
Bulgaria					
Czech Republic			√		
Estonia	√				
Hungary	√	√	√	√	
Latvia	√	√			
Lithuania	√				
Poland					
Romania					
Slovak Republic	√				
Slovenia	√		√	√	
Cyprus				√	
Malta	√				
Turkey	√				

In terms of problems encountered from NSIs, according to the information collected mostly through the LDSA questionnaire, it is possible to classify three main groups of events (see Table 26):

- **Classical difficulties and problems from the traditional enumeration**, such as the finding people at home (Portugal), the respondent's privacy obsession (Italy) or negative attitude of press before the census (Czech Republic), difficulties to amend legislation (United Kingdom, Hungary), the recruitment and payment of staff (United Kingdom, Italy) or more in general the funding (Italy, Latvia, Slovenia or Slovak Republic);
- **Events from the introduction of new technologies, methods and procedures**, such as the application of optical reading (France, Norway or Poland), the too many different ways to prepare and collect data (Switzerland) or the delay in the conduction of tenders (e.g.: Cyprus). In some cases as France, the introduction of new technologies generated a delay in the data entry and processing. Some applicant countries also encountered

problems with the cartography and mapping activity (Bulgaria, Latvia, Cyprus and Turkey).

Some episodic events, such as the foot and mouth epidemic for Ireland and the United Kingdom also causing, in the first of the two countries, the postponement of the survey in order to prevent the spreading of the disease.

Table 26 - Main problems and difficulties encountered from countries

Countries	Main problems and difficulties
Belgium	Lack of publicity campaign due to administrative reasons
Denmark	
Greece	Geographic structure of the country, census carried out in one day only mainly due to the lack of population registers
Spain	
France	6 months delay in the beginning of data entry, problems with data processing
Ireland	Postponement due to the foot and mouth epidemic, difficulties to realise 100% enumeration in certain urban areas
Italy	Respondents' privacy obsession, optical reading compliant, not enough funds
Luxembourg	Some lack of quality in the questionnaires and control forms returned from field work, some inconsistencies between communes in the inclusion of asylum seekers in the count
Netherlands	
Austria	Resource-binding, solving the question of main place of residence in cases of doubt which is politically relevant because of state funding to the communes is based on number of inhabitants
Portugal	Difficulties in finding people at home
Finland	
United Kingdom	Limited time to amend legislation, difficulties in the staff recruitment, problems with the foot and mouth epidemic, delays in data processing, public telephone help tire, payroll service provision, delays in paying field staff
Norway	Questions on floor space, number of rooms etc, low response rates for selected subgroups, some problems with optical readings
Switzerland	too many different ways to prepare and collect data, problems with non-responses and open answers in the data processing
Bulgaria	Cartography/mapping
Czech Republic	Negative influence of the press before the Census
Estonia	Design of questionnaires, use of new technologies, data processing
Hungary	Problems of timing because of late legislation, problems arising from legal requirements
Latvia	Problems with conformity of contents, cartography/mapping, staff, data collection, using of new technologies, funding sources
Lithuania	
Poland	Problems with OCR, checking, data processing
Romania	
Slovak Republic	Data collection, funding sources
Slovenia	Design of questionnaires, staff, funding sources
Cyprus	Lack of GIS, shortage of experienced staff and difficulties in recruitment of casual staff, delays in data collection, delay in the tender procedure for the OCR resulting in the census postponement, various problems with OCR
Malta	
Turkey	Cartography/mapping, administrative registration

Source: LDSA questionnaires, country reports

Future plans

The overview of method and practice of population census within the European countries shows a wide range of solutions to find out the best way for a reliable, accurate count of the people living in the limits of the different state. These efforts are carrying out through the administrative, legislative, financial and traditional framework of each country, which try to get the best of their own practice. What is important is the achievement, not the tool to get the results. The results – e.g. the population count and its characteristics – must be harmonised and be compatible between the countries. Eurostat has well understood that the challenge is not on the methods of data collection and for this reason, Eurostat did not recommend to the Members states and the Candidates countries to adopt a common data collection method.

One must keep in mind the reason why to change the methodology. We can identify three mains reasons:

- the cost of a traditional census is high for an operation which is carried out only once a decade; the justification of this high cost is poor in comparison with the timeliness of data which become quickly out of date;
- the classical data collect phase mobilise a lot of means and also put a burden to the respondents. This is a bottleneck in a society where information and communication seems to be evident. The population is reluctant to provide with information that the population think it is already given to the statistical system in other operation;
- the technical environment had changed fast both with progress on statistical methodology and the use of information technology at all stage of the process (data collection, data processing, dissemination of results). Thus, the creation of alternative data collection system may be easily envisaged.

In their future plans, the countries need to define what is the final product they want to obtain from the population census. The specific needs of such costly operation – both on human, financial and administrative resources – have to be narrow defined. This definition depends on the administrative, legislative and statistical system of each country.

In fact, most aspects of the 2010 Round of population censuses are already written with existing practices. The largest part of the country are working on alternative methodologies not solely linked with the use of registers but also with the use of more sophisticate statistical methodology where the sample survey would be the central piece to collect information on socio-economic characteristic of the population. The solution followed needs to be in line with the structure of the country in term of statistical infrastructure (population register or not), legislation (use of PIN, use of register to collect statistical data, law of confidentiality, etc....), financial means (new methodology should be less costly or at least the same). The solution followed needs also to take into account the reason why a population census is taken.

From the LDSA questionnaires (based on the responses available to the specific question) and other sources, it is possible to distinguish **four groups of countries** as regards the future prospects and plans for the next census (Table 27):

Table 27 - Expected sources of data collection for the 2010 Census Round

Countries	Traditional census	Administrative and statistical registers	Mixture of traditional census and registers	Alternative method
Belgium		√		√
Denmark		√		
Germany		√		√
Greece	√			
Spain			√	
France				√
Ireland	√			
Italy			√	
Luxembourg			√	
Netherlands		√		√
Austria		√		
Portugal			√	
Finland		√		
Sweden		√		
United Kingdom			√	
Iceland		√		
Liechtenstein			√	
Norway		√		
Switzerland			√	
Bulgaria			√	
Czech Republic	Information Not Available			
Estonia			√	
Hungary	Information Not Available			
Latvia			√	
Lithuania			√	
Poland			√	
Romania	Information Not Available			
Slovak Republic			√	
Slovenia		√		
Cyprus	√			
Malta	√			
Turkey	√			

Source: LDSA Questionnaires and other sources

1. Five countries (Greece, Ireland, Cyprus, Malta and Turkey) **plan to continue with the traditional census** as in the 2000 Round. Nevertheless, modifications are foreseen in the data collection procedure: Ireland foresees to implement a self-completion process while Greece examines the possibility to collect questionnaires by mail.

2. Apart from the Scandinavian countries that have still adopted the register method, two other countries (Austria and Slovenia) **plan to use only administrative and statistical registers**, applying a totally register-based census.

3. Thirteen countries plan to adopt **a data collection process based on a mixture of traditional census and administrative and statistical sources**.

4. Four countries (Belgium, France, Germany and Netherlands) are looking for **a different solution**. Belgium will not carry out census but will combine registers and alternative surveys/methods. France is already implementing a rolling census including traditional enumeration, registers and other methods, depending from the size of the communes (see country report). Germany should follow the Netherlands, in the use of register data combined with data collection from sample surveys.

As regards the questionnaire, less than 25% of countries (such as Spain, Portugal, United Kingdom, Switzerland, Poland and Slovenia) declare to be already looking for the implementation of an electronic questionnaire.

The synchronisation of the population censuses for the 1980 and 1990 rounds on a closed period of time has been always a difficult exercise and national constraints often hamper the achievement of such a goal. This objective is not longer of the same importance. This is due to the fact that all European countries can now produce good yearly estimates of the population and that sample surveys like labour force survey or household budget survey give more accurate, complete and update information on the socio-economic characteristic of the population.

Once again, the census is a tool to achieve sound information - set about the population. The evolution of the technology, administrative structures and mentalities generate a more and more intensive need to innovate and to adapt the constraint of data collection to the real state of the society. This is a normal evolution. The actual form of population census is linked with the development of the society from the middle of the 18th century and the attempt to renovate its methodology is a sound evolution and the sign that statistics can move in the same direction that the society.

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