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DRAFT

The Use of Population Census Data for Environmental Analysis

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I. INTRODUCTION

Despite their potential, censuses have not been sufficiently exploited as key data source for environmental studies and climate change analysis. This neglect was particularly prominent at recent specialized conferences (such as the Conference on Climate Change and Official Statistics held in Oslo, Norway, in April 2008 and the International Conference on Climate Change, Development and Official Statistics in the Asia-Pacific Region, held in Seoul, Korea, in December 2008), where population censuses were rarely mentioned² In one of the most important frameworks for adaptation in least developed countries, National Adaptation Programmes of Action (NAPAS), census data are rarely used. When they are used, it is primarily to report the most basic population statistics.

However, information requirements to investigate and analyze the impact of environmental changes on the socioeconomic and demographic conditions of the population have increased significantly in recent years; the increased availability of census data at a smaller scale can thus make a significant contribution. Censuses collect information on all households, which allows for the production of statistics for small areas. The limit for the level of detail depends on the confidentiality protection of census data.

The 2010 census round could become one of the most important sources of data for environmental analysis³ and, in particular, will provide additional information that can help in the calculation of emissions and in the identification of vulnerable populations to environmental disasters caused by climate change, thus providing an evidence-base for both mitigation and adaptation policies. Three main challenges need to be addressed: 1) What needs to be done to ensure that relevant questions are included in the censuses and also ensure that those that are usually included are adequate to current needs; 2) What needs to be done to ensure that census data are collected and processed to facilitate

¹ The author thanks Sabrina Juran, Samson Lamlem, Ricardo Neupert and George Martine from UNFPA as well as Alejandra Silva from CELADE, ECLAC for their inputs and suggestions.

² The same applies to documents from relevant agencies. See for example the presentation of the United Nations Environment Programme (UNEP) (2008). Data Needs for Addressing Climate Change – UNEP’s Perspective UNEP/DEWA Scoping Paper UNSD/Statistics Norway Conference on Climate Change & Official Statistics, Oslo, 14-16 April 2008

³ The document “The Indicators of Sustainable Development: Guidelines and Methodologies Third Edition” prepared by the UN Division for Sustainable Development (2007) presents a list of 50 core indicators, which are part of a larger set of 96 indicators of sustainable development. Around 40% of these indicators can be calculated (partially or totally) using census data. See a detailed list of these indicators in the Annex.

detailed analysis at very small areas (preferably environmentally homogeneous areas); and
3) What needs to be done to ensure that census data are made available, disseminated, analyzed and used for national mitigation and adaptation policies.

This paper will present an overview of the potential of census data and provide some examples of the use of census data in particular countries and highlight the potential of such data to provide evidence in still unexplored areas. It aims to call attention to the need to act now in order to better position environmental statistics in censuses, through the inclusion of questions and the development of methods for processing and analyzing geo-referencing population data.

II. THE 2010 ROUND OF CENSUSES

Most of the countries of the World are expecting to conduct their censuses around 2010. Censuses will inform about the size, composition and characteristics of the population and will provide information on many other areas, such as the spatial distribution of the population, occupation, education, gender, household composition, environment and others. The 2010 census round will also be the main source for updates of current population estimates and projections.

The potential of population and housing censuses is undisputable. However, its use will largely be affected by the availability of the data, the degree of its dissemination, the extension of the analysis based on the information collected, the data quality and, most important, the relevance that is given to the census data as key input for policy design.

In the particular case of environmental analysis, in addition to the areas mentioned above, use of the data will depend on the availability of geo-referenced maps as well as having census enumeration areas that are small enough to allow for linking population data to environmental-geographic data. It will also depend on the type of questions and categories of responses related to environmental issues.

Limitations exist, *inter alia*, because censuses are conducted, in the best case, every ten years, outdating the data from censuses at it departs from the date of the most recent census. In addition to the above, the potential use of information derived from the inclusion of specific questions related to the environment can be limited due to the characteristics of the census questionnaire, that only allow for the inclusion of a selected number of questions and easily identifiable categories.

This paper begins with an analysis of some common questions that are included in censuses and that can be used for environment studies (see Annex 1).

III. THE USE OF CENSUS DATA BASED ON SPECIFIC QUESTIONS INCLUDED

Most of the information obtained in a census can be useful for climate change analysis. Information about the characteristics of the population (sex, age, household composition,

etc.) can be used to determine the pattern and level of emissions (see Dalton et al, 2008) and the conditions and assets of a population for adaptation to climate change. However, there are specific questions included in the household questionnaire that can provide specific details about the anthropogenic impact on climate change. The most commonly used will be shown below, mainly because they are considered as the basic questions in the Principles and Recommendations of the United Nations for Population and Housing Census. In some cases, other questions are included based on the specific country needs⁴.

1. Questions Included

a) Source of Energy for Cooking and Lighting

Target 9 (Integrate the Principles of Sustainable Development into Country Policies and Programmes and Reverse the Loss of Environmental Resources of the Millennium Development) of goal 7 of the Millennium Development Goals (MDGs) (Ensure Environmental Sustainability) has, as one of its indicators, the proportion of population using solid fuels. This indicator is relevant because of it provides a link between household solid fuel use, indoor air pollution, deforestation, soil erosion and greenhouse gas emissions.⁵

Access to electricity is a relevant indicator for environmental analysis. The need to increase accessibility and affordability of energy services for poorest population in developing countries is considered essential in strategies to alleviate poverty and to contribute to social and economic development.⁶

The environmental impact of sources of energy for cooking and lighting are best demonstrated when coupled with other information such as densities, occupational distribution, land-use and tenure patterns and the level of urbanization. Then the level of pressure on resources can best be brought into focus⁷.

b) Waste Disposal

The amount of waste generated, its composition and mode of disposal are important variables that are relevant for environmental analysis. Censuses usually collect information only on the type of waste disposal. Where household waste (solid or liquid) is dumped into streets, drains or streams, especially in high density areas, the environmental consequences will be greater than in areas where such waste is either composted or collected through an organized sewerage system.

Therefore, this is an important component of (local) environmental policies aimed at reducing toxicity and volume of waste generated by the population at large, increasing

⁴ In the case of Latin America, there has been an increase of the number of countries including these questions (see Annex).

⁵ United Nations (2008)

⁶ International Atomic Energy Agency (2005). Energy Indicators for Sustainable Development.

coverage of households with waste collection and helping in the design of appropriate management of waste for disposal⁸. These components were included in the Questionnaire 2008 on Environmental Activities by the United Nations Statistics Division (UNSD) and the United Nations Environment Programme (UNEP). The data are reported by municipal authorities, which means that results refer primarily to urban areas and waste collected by municipal trucks. The use of census data for this purpose is not mentioned in the questionnaire. However, cross-referencing this information with census data would allow for a better measurement of the population covered by waste collection services.

c) Access to Water and Sanitation

Two indicators for monitoring progress of Target 10 (Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation of MDG7) fall into this category. While indicator 30 refers to the proportion of urban and rural population with sustainable access to an improved water source, indicator 31 asks for the proportion of urban and rural population with access to improved sanitation⁹.

Considering average household sizes and the average quantity of water used per person per day compared to the available water from the sources stated in the census, can determine the sustainability of their use over time as the population continues to grow. Population and household projections could be used to demonstrate the imminence of an environmental crisis caused by the access to water for drinking and sanitation.

d) Other Relevant Questions at the Household Level

Some countries may incorporate further questions that help, particularly, in the identification of vulnerable groups and in the preparation of plans for adaptation to climate change including on the type ~~and~~ of energy used for heating, the availability of piped gas, the type of dwelling, the year of construction, the material used in the walls, floor and roof of the dwelling, the availability of cars, trucks and other means of transportation in the household, the accessibility of IT, property tenure, location of toilet facilities, etc.

2. The Use of the Results from these Questions for Environmental Analysis

In spite of the relevance of these questions, the use for the purpose of environmental studies is still rather infrequent. One of its main uses seems to be the calculation of indicators for sustainable development that have been defined by the United Nations

⁸ See Questionnaire 2008 on Environment Statistics (UNSD).
<http://unstats.un.org/unsd/environment/questionnaire2008.htm>

⁹ United Nations Department of Economic and Social Affairs, Statistics Division (2008). Principles and Recommendations for Population and Housing Censuses Revision. Statistical papers Series M No. 67/Rev.2. p. 250

Division for Sustainable Development of DESA¹⁰. However, as can be seen in Table 1, those indicators are mainly for identifying vulnerabilities and not necessarily for measuring emissions, or at least characterizing the subpopulations by the pattern of emissions.

In order to produce a change in this regard, there is a need for more analysis on the limitations as well as on the potential of census data for environmental analysis. One of the reasons for non-utilization of census data is that the number and type of questions included and the details on the possible options for response is limited. For example, the question on energy used for cooking does not consider how much energy is used. In addition to that, even when electricity is used, households do not know how this electricity has been produced (hydro, nuclear, fuel combustion, etc.).

For these reasons, administrative records and household surveys seem to be more useful. However, censuses have some main advantages: it covers the total population, those living in households or collective residences, it provides information for the whole country and allows for estimation for very small areas. This last characteristic of the census make possible detailed analysis at the local level that is impossible to be done with household surveys. Thus, the need for triangulation of information from different sources: census, household surveys and administrative statistics.

IV. USE OF CENSUS DATA IN ENVIRONMENTAL ANALYSIS

1. Population Size and Spatial Distribution

The use of census data for environmental analysis has its starting point in linking population size to geography. The Principles and Recommendations for Population and Housing Censuses of the United Nations (United Nations, 2008) provide a comprehensive overview of the census process including the suggested questions to be integrated and the tabulations that need to be produced. In relation to environment it concludes that "... Population and housing censuses provide a powerful tool for assessing the impact of population on the environment, for example, on drainage basins and on water resource management systems. The spatial units for such a study may combine a group of local administrative areas. In this situation the availability of census databases with mapping capability (see paras. 1.126–1.128) is of great importance"¹¹

The use of census data in this regard is related to the 'resolution' of the data available (the size of the area in relation to its population). In their paper "*The Global Distribution of*

¹⁰ In other cases the use of census data is even more limited. As an example of this, the International Atomic Energy Agency (IAEA) in collaboration with other international organizations elaborated a framework of energy indicators. Despite the fact that some of these indicators could be calculated (or triangulated) with the information obtained from censuses, there is no mention of the possibility to utilize the census as a credible data source. Among these indicators, the percentage of the population using electricity, the use of biomass, and others could be calculated using census data, allowing for geographically disaggregated estimation

¹¹ United Nations (2008) Principles and Recommendations for Population and Housing Censuses of the United Nations. Revision 2. p.241.

Population: Evaluating the Gains in Resolution Refinement" (2004) Balk and Yetman underline the fact that in recent years, the country-specific average resolution of census data has increased. Significant improvements in the access to a higher resolution of administrative data include: 1) the opening of National Statistical Offices (NSOs) and providers of spatial data, including the fact that many NSOs allow for direct access to micro-data;¹² (2) the beginning of consciousness of and collaboration among providers of population and spatial data, and 3) the increase of capacity to manage, manipulate, and process increasingly large population and geographic data sets. Alongside these developments, new efforts are being made to validate census data quality using satellite information systems. These positive changes do not avoid the difficulties in comparability between censuses and therefore create difficulties for trend analysis, due to a lack of keeping record of census areas at NSOs.

Linking basic census data, such as population size, to the geographic area allows for the calculation of population density, a classic indicator for environmental study, particularly in urban areas. It also allows for the characterization of urban settlements: slums, sprawl, concentration and dispersion of the population. For adaptation policies, this indicator of density is still more relevant when it is combined with variables like the type and quality of housing, source of water, energy, mode of waste disposal, patterns of occupational distribution, land-use and tenure. It helps to define the sustainability of use of resources in particular locations and highlight environmental vulnerabilities. Unfortunately, in most cases, this is the main and only use of population data for environmental analysis.

In urbanization studies, the indicator of density is one of the most relevant and most considered. A study on Chinese and Indian sites explores the use of an alternate way to measure urbanization through density (Long and Ratcliffe, 2001). It includes the use the measurement of density (the % of the population living above and below a certain level of density and the % of land under and above these specific densities) using census data for small areas. However, this methodology is considered to be more useful for making comparative studies. The authors suggest that "... the greater detail on the spatial complexity of each area measured at similar levels of spatial disaggregation could begin to supply the comparative data needed for ecological and other studies across many different societies and landscape".

2. Demographic Dynamics, Including Household Composition

The size and growth of population has been used to prepare the main IPCC emissions scenarios. However, there is a growing consensus that this is a very limited use of the information on population dynamics. Several studies has shown the relevance of the composition and distribution of the population by sex, age, household structure and spatial distribution as a key to understand the future change on emissions.

¹² If the micro-data is available and geo-referenced, it is much easier to define geographic areas environmentally homogeneous. See Balk, Deborah and Gregory Yetman, (2004)

But the relevance of size and growth for adaptation and recovery plans should not be neglected. Specific age-sex categories of the population evidently make varying demands on their immediate environments as they strive to ensure their livelihoods. Adaptation plans need to consider the demographic and socioeconomic characteristics of the population that could be affected.

Census data can be used in this regard, taking care of some of the limitations of census data in particular regarding household composition, which also affects household surveys. *De facto* censuses can provide biased information on household composition, particularly in cases of relevant short-term migration. *De jure* censuses also have their own constraints. These factors need to be considered when using census data for this kind of analysis.

3. Identification of Environmentally Vulnerable Populations

Censuses are an essential source for the identification of vulnerable populations to climate change and environmental disasters. This is the case for populations settled in coastal lowlands, which are at particular risk to climate change, including rising sea level and flooding¹³. In addition to the geographic location, vulnerability is further exacerbated by income and other socio-economic and demographic factors. Besides being at peril to environmental change, dense populations in coastal zones can put further burden on coastal ecosystems. Although this seems to be an easy task, it becomes difficult because censuses publish information by administrative areas that may not coincide with environmental areas (see Balk and Yetman, 2004).

In their paper *The Rising Tide: Assessing the Risks of Climate Change and Human Settlements in Low Elevation Coastal Zones* McGranahan, Balk and Anderson (2007) assessed the distribution of human settlements in Low Elevation Coastal Zones (LECZ) around the world¹⁴. In order to calculate the population at risk and their international distribution in LECZ, McGranahan, Balk and Anderson integrated spatially constructed global databases of population distribution, urban extent and elevation data, overlaying gridded geographic data, thus creating totals of the national population in LECZ.

4. Linking Demographic and Socio-Economic Census Data to Environmental Data

A good example of how census data can be used beyond its traditional use is presented in the recent publication “Mapping a Better Future: How Spatial Analysis Can Benefit Wetlands and Reduce Poverty in Uganda” (2009) by the World Resources Institute and

¹³ These include also those living in slum areas, on steep eroded slopes, in valley bottoms, in catchment areas, on arid land, etc. All these present varying challenges in terms of the way they can be affected by climatic changes and how they impact on the environment

¹⁴ They estimate that 600 million people, of which 360 million urban settlers, live in LECZ; accounting for ten per cent of the world’s population and 13 per cent of the urban population. LECZ, covering 2 per cent of the world’s land area, are defined as the contiguous land area up to 100 kilometers from the coast that is less than ten meters above sea level.

Wetlands Management Department, Ministry of Water and Environment, Uganda. This report provides examples of the development of poverty maps for 2002 and 2005, based on estimations combining data from their 2002 population and housing census with estimation from the 2002–2003 and 2005-2006 household survey, respectively. “The level of detail obtained at subcounty permits more meaningful spatial overlays of poverty metrics and wetland indicators [and provides] first insights into relationships between poverty, wetland status, and use of wetland resources.”¹⁵

5. Migration Data

Censuses provide useful information for the measurement of internal migratory movements, particularly with regard to movements of the past five years prior to the census. Some countries have included questions with a shorter reference period allowing for sudden changes that can be linked to sudden recent environmental changes. The information obtained through the census can be used to monitor the changes in spatial distribution due to migration¹⁶. When associated with environmental changes mapped through other sources, these trends would be of great value. In this regard, census data on internal and international migration can be used not only to measure the impacts of environment but also as the main instrument to identify new emerging pattern of settlement in environmental fragile areas or costal zones.

Census data on spatial distribution could also be useful to identify if people are moving to new locations due to environmental changes. Bordt and Smith (2008) mention that census data could be useful in showing if population is moving to new location, such as more environmentally fragile areas due to the increase of agricultural and forestry production in areas of currently marginal production, which in turn may lead to new or additional population settlements in these locations.

6. The Use of Census Data on Climate Change Induced Disasters, Planning, Evaluation of Impacts and Recovery Plans

The use of population data for preparing for and responding to natural disasters has been widely recognized. The “Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters” (2005) underscores the need for a better understanding of the impact of hazards and the physical, social, economic and environmental vulnerabilities, as well as their interaction. This requires the development of risk maps and systems of indicators of disaster risk and vulnerability at national and sub-national scales.

¹⁵ Wetlands Management Department, Ministry of Water and Environment, Uganda, Uganda Bureau of Statistics, International Livestock Research Institute, World Resources Institute (2009) Mapping a Better Future: How Spatial Analysis Can Benefit Wetlands and Reduce Poverty in Uganda and Wetlands Management Department, Ministry of Water and Environment, Uganda, pp. 4.

¹⁶ See Debora Balk et al. (2008). In their study of Mapping the Risks of Climate Change presented at The Population Association of America Meeting 2009 they use migration data from the 1991 and 2001 Censuses of India to identify migration flows and the fastest-growing cities and towns.

An example of using population data for measuring the impact of disasters: The case of ECLAC Handbook for Estimating the Socio-economic and Environmental Effects of Disasters

The Handbook for Estimating the Socio-economic and Environmental Effects of Disasters produced by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) (2003) includes a complete section on the evaluation of the population affected by different kind of disasters, including those environmentally induced. It presents detailed methodology on how and when to use population censuses to determine the population that could have been affected by disasters. Furthermore, the handbook shows the limitation of censuses and/or the projections derived for them for small areas in the case when censuses are outdated and important population mobility has taken place.

The Manual provides methodologies on how to use population data, including census, to make an analysis of the human impact of a disaster, including: 1) determination of the population with greater or lesser risk of being affected, identifying and defining profiles, 2) estimation of the demographic impact of the disaster, ie, population and households affected by the event, 3) prevention and planning for action before the event occurs 4) generation of plans for evacuation or assistance during the occurrence of a disaster. Additionally, the social characteristics of a population are factors that increase or decrease the exposure to risk of harm, level of education, socioeconomic status, age structure of population and gender, access to services, the structure of the family, among other traits, influence the differential impact of the event.

Source: produced by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) (2003). Elaborated with the collaboration of Alejandra Silva, CELADE-CEPAL.

In situations of humanitarian response, population data is key to help to define the population in need for help and where this population lives.¹⁷ The availability of geo-referenced and updated population data is an essential component of timely emergency response, which requires an important investment in capacity building.¹⁸ Censuses provide the basic information to determine the number and characteristics of the “likely population

¹⁷ National Academy Press. (2007). Tools and Methods for Estimating Populations at Risk from Natural Disasters and Complex Humanitarian Crises. Washington, D.C. USA.

¹⁸ As mentioned in the conclusions of the work of the Committee on the Effective Use of Data, Methodologies, and Technologies to Estimate Subnational Population at Risk (National Research Council of the National Academies), “...the committee found that, at present, relatively few NSOs, especially in developing countries, have sufficient trained expertise in both demography and geospatial tools and technologies. Building appropriate skill sets and establishing more formalized training in countries lacking demographers and people with geospatial expertise are a fundamental part of NSO development. Such training programs could be part of overall capacity building with funding by bilateral aid programs, such as USAID, or through broader country capacity building programs, such as those supported by the World Bank or the United Nations”. (The National Academy Press, 2007).

at risk of natural disasters”¹⁹. However, censuses are conducted every 10 years, at best; therefore if this data are not complemented and updated with other sources (surveys, administrative records, etc.) its use could be limited. The publication of the National Academy Press emphasizes these issues in the cases of Haiti, Mozambique and Mali.

V. RECOMMENDATIONS

- 1) What needs to be done to ensure that relevant questions are included in the censuses or those usually included is adequate to current needs?
 - The process of design of the questionnaire and the plan of analysis of census data must involve researchers and policy makers working in the mitigation and adaptation plans.
 - Census questions must eventually be added in order to measure specific vulnerabilities associated to climate changes. In the case of a recent environmentally-induced disaster, specific questions could be added.
 - The categories for questions that focus specifically on environmental can be adapted to the national needs.
- 2) What needs to be done to ensure that census data are collected and processed to facilitate detailed analysis at very small areas (preferably environmentally homogeneous)?
 - NSO should consider environmental areas in the definition of census areas.
 - NSO should keep record of census areas to allows for inter census comparison
 - Promote collaboration between different ministries and research centers including professionals from different disciplines.
- 3) What needs to be done to ensure that census data are made available, disseminated, analyzed and used for national mitigation and adaptation policies?
 - One of the most important needs in this regard is capacity building²⁰. One of the recommendations from the International Conference on Climate Change, Development and Official Statistics in the Asia-Pacific Region, held in Seoul, in

¹⁹ National Academy Press. (2007). Tools and Methods for Estimating Populations at Risk from Natural Disasters and Complex Humanitarian Crises. P. XI. Washington, D.C. USA.

²⁰ As mentioned in the conclusions of the work of the Committee on the Effective Use of Data, Methodologies, and Technologies to Estimate Sub-national Population at Risk (National Research Council of the National Academies), “...the committee found that, at present, relatively few NSOs, especially in developing countries, have sufficient trained expertise in both demography and geospatial tools and technologies. Building appropriate skill sets and establishing more formalized training in countries lacking demographers and people with geospatial expertise are a fundamental part of NSO development. Such training programs could be part of overall capacity building with funding by bilateral aid programs, such as USAID, or through broader country capacity building programs, such as those supported by the World Bank or the United Nations”. (The National Academy Press, 2007).

December 2008²¹ was that “the use of Geographic Information Systems and other spatial data infrastructure for the spatial analysis of official statistics should be improved and promoted”. This includes holding workshops on the development of spatial frameworks and coding systems that have to be established in order to support these frameworks; building on existing census based workshops on the utilization of GIS systems to cover their use for analysis of climate change, and developing a module on the use of spatial frameworks and GIS systems for the analysis of climate change for training workshops on environment statistics.²²

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²¹ Organized by Korea National Statistical Office (KNSO) and the United Nations Statistics Division (UNSD)

²² Harper, Peter (2008). Climate Change and Official Statistics: The Way Forward.

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ANNEX: TABLES SELECTED

Table 1
Selected indicators of Sustainable Development that can be obtained using census data and/or a combination of census data with other sources

Issue covered	Indicator	Census data that can be used to calculate this indicator	Relevance (Extracted from the source document)
Sanitation	% of population using an improved sanitation facility	Type of sanitation facilities	Assess sustainable development, specially human health. Accessibility to adequate excreta disposal facilities is fundamental to decrease the faecal risk and the frequency of associated diseases
Drinking water	% of population using an improved water source	Access to drinking water	Access to improved water sources is of fundamental significance to lowering the faecal risk and frequency of associated diseases.
Access to energy	Share of households without electricity or other modern energy services. Additional: % of population using solid fuels for cooking	Type of energy for cooking and lighting	Lack of access to modern energy services contributes to poverty and deprivation and limits economic development. Adequate, affordable and reliable energy services are necessary to guarantee sustainable economic and human development. The use of solid fuels in households is a proxy for indoor air pollution, which is associated with increased mortality from pneumonia and other acute lower respiratory diseases among children as well as increased mortality from chronic obstructive pulmonary disease and lung cancer (where coal is used) among adults.
Living conditions	% of urban population living in slums	Data on population and type of materials used for roof, walls and ceiling combined with other sources	This indicator measures the proportion of urban dwellers living in deprived housing conditions. It is a key indicator measuring the adequacy of the basic human need for shelter. An increase of this indicator is sign for deteriorating living conditions in urban areas.
Vulnerability to natural hazards	% of population living in hazard prone areas	Data on population combined with other sources, such as elevation maps, etc.	Measure the level of vulnerability in a given country, thus encouraging long-term, sustainable risk reduction programs to prevent disasters, which are a major threat to national development.
Coastal zone	% of total population living in coastal areas	Data on population combined with other sources, such as elevation maps, etc.	Quantifies an important driver of coastal ecosystem pressure, and it also quantifies an important component of vulnerability to sea-level rise and other coastal hazards.

Source: Based on the document: UN Division for Sustainable Development (2007. The Indicators of Sustainable Development: Guidelines and Methodologies Third Edition. DESA, New York.

Table 2
Number of countries including selected questions related to environment in Latin America, Census round 1980, 1990 and 2000.

Question	Number of countries by census round		
	1980	1990	2000
Energy used for cooking	10	10	13
Access to electricity	11	11	13
Waste Disposal	1	6	10

Source: Elaborated by Alejandra Silva, CELADE.