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URBAN GROWTH IN WEST AFRICA FROM EXPLOSION TO PROLIFERATION

What do we know about urbanisation in Africa? The classification systems of urban/rural areas differ from one country to another. As a consequence, international comparisons of urbanisation indicators or historical analyses of urban growth are difficult to establish. Urbanisation is indeed increasing, but how and where exactly? More in metropolises or in small towns? How many urban agglomerations are there in each country? The first part of the Africapolis programme¹ provides new evidence with respect to West Africa². The Africapolis programme was commissioned by the Agence Française de Développement (AFD) to measure urbanisation and its patterns since the 1950s and project the results to 2020 more accurately than previous work on urbanisation in West Africa. It is part of a global research programme, e-Geopolis³, supported by the Agence Nationale de la Recherche (ANR) since 2008. The aim of e-Geopolis is to establish an international online database on the development of urbanisation, using a harmonised classification of rural/urban areas applied to all countries.

In matters of urban population, the reference used almost exclusively by researchers, experts and development agencies is *World Urbanization Prospects* published periodically by the United Nations Population Division. It is the prime source cited in all comparative global articles on urbanisation, whether in demography, economics, geography or political science. As a multilateral body, the UN works with the statistics supplied by its member countries. The statistics on urbanisation come from national statistical institutes and are consequently based on widely varying definitions of urban areas. Within West Africa, the areas described as “urban” may be defined purely administratively, as in Burkina Faso, Senegal and Guinea, or urban status may depend on the “locality” reaching a simple quantitative population threshold, as in Ghana, Nigeria, Liberia and Sierra Leone. In Nigeria, for example, most of these “localities” are in fact extensive administrative divisions of which only a small part forms an urban agglomeration. Conversely, in Ghana, the Accra urban agglomeration currently comprises not only the city itself but also 35 “localities” with more than 5,000 inhabitants, which are counted as separate “towns” in Ghanaian statistics.

The idea behind *e-Geopolis* is to produce data on urban population developments that are universally comparable and verifiable by using a harmonised definition strictly applied to all countries, whatever their official definition of an urban area.

Before *Africapolis* and *e-Geopolis*, there were two projects that attempted to achieve a similar objective relevant to West Africa: the West Africa Long-Term Perspective Study (WALTPS)⁴ and the Global Rural-Urban Mapping Project (GRUMP)⁵ of Columbia University. WALTPS was initiated in 1990 with broader objectives than *Africapolis* and did not cover exactly the same countries. However, since the project

was based on the exclusive use of demographic data to measure settlement dynamics, its results depended on the administrative divisions used in each country. The Africapolis findings confirm the WALTPS ones and refine them, because Africapolis is more recent and takes account of the urban patterns that emerge from a harmonised definition of urban areas. The GRUMP database, established in the early 2000s, aims to relate Landsat satellite images with urban population figures in 1990 and 2000, by automatically detecting the extent of urban agglomerations. But the shapes defined in this way do not always correspond to reality, and the different definitions underlying the census data used are not taken into account.

Urban agglomeration

Literally, to agglomerate is to collect or form into a mass or group. In human geography, an urban agglomeration is a dense contiguous set of built-up areas. For *Geopolis*, contiguity is defined by a threshold of 200 metres between buildings, except for water bodies crossed by bridges, parks and major transport infrastructure (highway junctions, car parks, airports, etc.). A *Geopolis* urban agglomeration may be either a rural or an urban area in the eyes of the administration of the country where it is located. In the *Geopolis* database, an agglomeration is urban if the total population of the local units it covers exceeds 10,000 inhabitants.

The *Geopolis* approach adopted for West Africa in the Africapolis project is the first applied method to remedy these deficiencies. It uses the lowest common denominator in order to reconstitute all types of urban agglomeration systems, by

comparing three distinct types of information: population statistics, satellite images and geographical maps or coordinates.

The Geopolis approach comprises three basic stages:

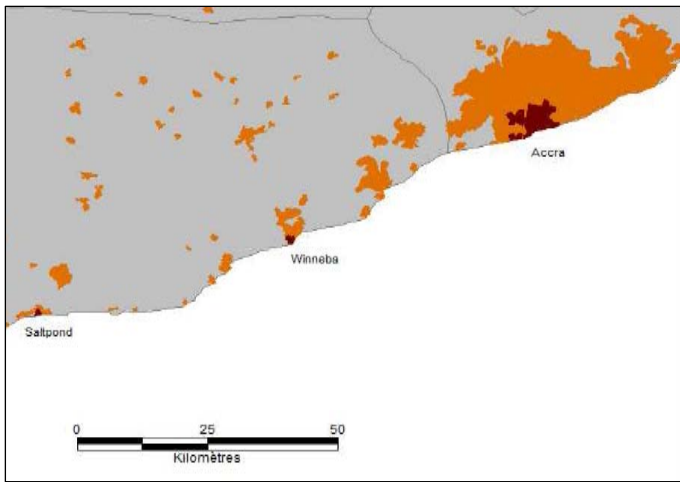
- Data from population surveys and censuses are mapped (geographical coordinates) from a database for West Africa that comprises 160,000 local units. Their population is estimated for harmonised dates (1st July 1950, 1960, 1970, 1980, 1990, 2000, 2010 and 2020) on the basis of census data;

- The land surface is systematically covered in order to identify all the agglomerations with an urban extent exceeding a length of 500 metres on the ground. Urban perimeters are digitised from recent (2001-2008) satellite images of the agglomerations;

- The shapes obtained are overlaid on the database of localities' geographical coordinates with their names and population figures.

The urban agglomerations of West Africa were thus identified in three ways. In order to produce a credible forecast for 2020, the field of investigation was extended to agglomerations with 5,000 to 10,000 inhabitants in order to anticipate the emergence of most of the urban agglomerations of over 10,000 inhabitants by 2020. Africapolis consequently provides the mapping of 2,500 urban agglomerations of more than 5,000 inhabitants in 2000 and makes it possible to track their population growth and urban extent over 70 years.

The extent of built-up areas in the Accra region (Ghana) in 1960 and 2005.



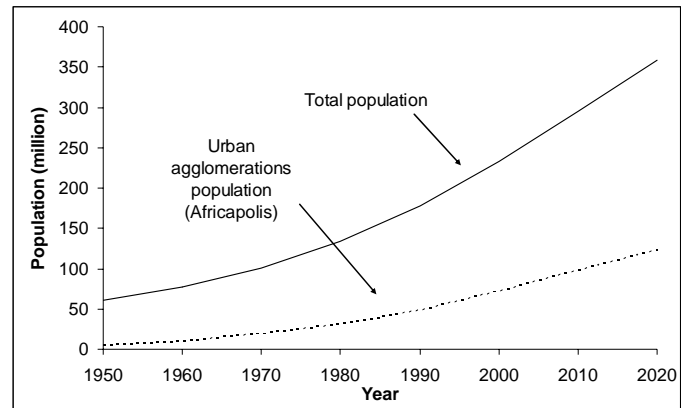
ONLY 124 MILLION CITY DWELLERS IN WEST AFRICA BY 2020

One in three inhabitants of West Africa will be living in an urban area by 2010, compared with one in thirteen in 1950. Despite this rapid increase, the urbanisation level in the region is one of the lowest in the world. The urban population here doubled every ten years from 1950 to 1970. Growth then gradually slowed and it now takes 30 years for the urban population of these 16 countries to double.

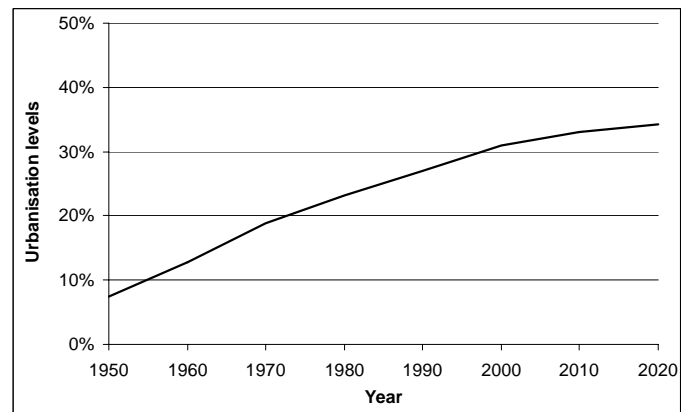
Nevertheless, from 2000 to 2020, 5,000 new urban agglomerations will pass the 10,000 inhabitants threshold. West Africa will then have as many urban agglomerations as

North America. The urban population will reach 124 million, compared with 74 million in 2000. Within 20 years, there will be 50 million more city dwellers.

Urban population growth

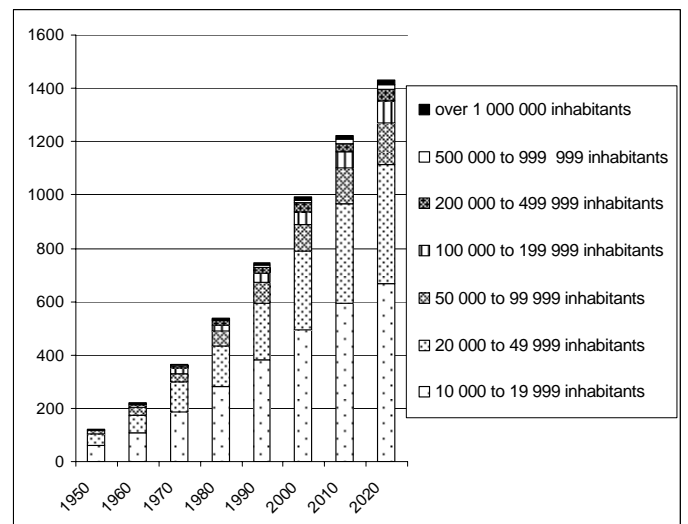


Urbanisation levels 1950-2020



In 1960, no urban agglomeration in West Africa had a population of more than one million. In 2010, there will be 16 of them, with some 28 million inhabitants. At the same time, the number of urban agglomerations of 10,000 to 20,000 inhabitant will have increased tenfold, from 60 in 1950 to 600 in 2010.

Increasing numbers of urban agglomerations in West Africa



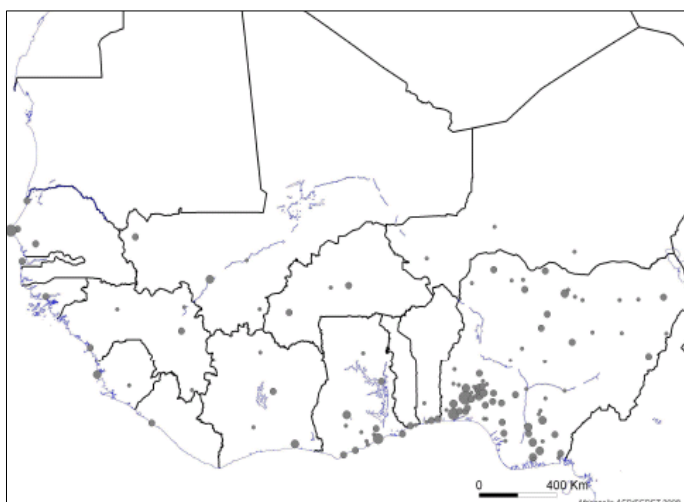
The trend therefore involves both growth in metropolises and an increase in the number of small towns: in other words, there is both a “top down metropolisation” and a “bottom up urbanisation” caused by the structural growth of villages and small towns as residential migration to major cities declines (Beauchemin, 2005).

The fall in the demographic attractiveness of the largest cities in West Africa is not as yet, however, sufficiently significant to have begun to reduce the supremacy of the largest metropolises.

This consolidation of the network of intermediate towns is associated with the current decentralisation process that continues to build and consolidate the matrix of regional administrative and economic arrangements that followed the independences.

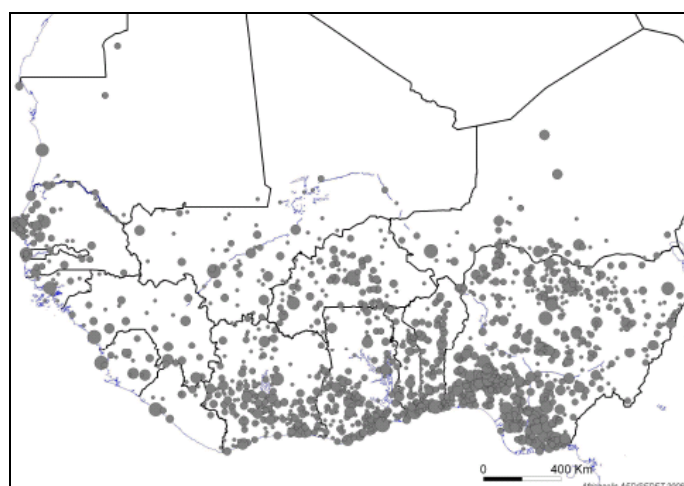
Urban agglomerations of more than 10,000 inhabitants in West Africa in 1950

(125 urban agglomerations, 4 million city dwellers, urbanisation level 7.5%)



Urban agglomerations of more than 10,000 inhabitants in West Africa in 2020

(1 431 urban agglomerations, 123 million city dwellers, urbanisation level 34%)



The period from 1950 to 2020 covers the phase of deployment of town systems across the territory before and after independence. Attempts at industrialisation and the creation of public administrative systems led first to the emergence or enlargement of national capitals. Then the delegation of administrative functions and decentralisation of decision-making raised the status and quality of infrastructure in small towns. This political-social head quarter (chef-lieu) effect enhanced the importance of the administrative matrix for urban growth, but had a negative impact that was unexpected or poorly predicted by the institutions. Urbanisation has been atomised among a large number of small centres (such as the main centres of new “communes” or local government areas, which are the major element of decentralisation) with the admittedly beneficial effect of bringing the town closer to the citizen, but this more tightly meshed system also tends to strengthen the primacy of the capital by weakening the relative importance of secondary metropolises. The growth of most secondary cities is generally not supported by central government, so that the capital city is often the only one able to accommodate foreign investment and modern national facilities (universities, teaching hospitals, airports and international hotels). Yet, this situation is precisely what international institutions wished to avoid.

Metropolis

Etymologically, a metropolis is a mother-city. Politically, the concept of “metropolis” is related to ancient empires: “metropolis” was a title granted to a city by an emperor, and later any institution structured by centralised authority. Consequently, any national capital is a metropolis. National metropolises concentrate the functions of governmental control and are at the same time the interface between the country’s hinterland and the global economy.

Quelques tendances significatives peuvent être dégagées. Parti d'un noyau ancien centré historiquement sur le système de villes nigérian, en pays Yoruba en particulier (Camara, 1993), la trame urbaine s'est peu à peu étendue vers l'Ouest et renforcée dans la bande sahélienne. On observe de 1950 à 2020 la continuation des fortes dynamiques côtières et des dynamiques réticulaires associées mais aussi l'affirmation de pôles régionaux majeurs au contact sahélien, tant autour de Kano au Nigéria qu'à Ouagadougou au Burkina Faso. Le vide forestier intermédiaire reste marqué. Le programme *Africapolis* permet de qualifier de façon précise des tendances observées, notamment sur l'affirmation d'un réseau urbain sahélien (Bruneau, Giraut, Moriconi-Ebrard, 1994).

VARIED STAGES IN THE DEVELOPMENT OF URBAN SYSTEMS IN WEST AFRICA

The development of any urban system occurs in various stages. There are basically four of them and West Africa does not appear to be an exception.

– During the initial phase, urbanisation is based on a small number of urban agglomerations.

This was the case for West African towns at the start of the colonial period, where modern urbanisation is a recent phenomenon, except for Nigeria, where the pre-colonial urban network survived, particularly in Yoruba land.

– Next secondary agglomerations emerge, so that in the second stage the urban network is based on a metropolis and a few small towns. Although the metropolis' primacy is not challenged, the proportion of urban population living there automatically declines as new urban agglomerations emerge.

This now corresponds to the subregion's smallest or least populated countries, such as The Gambia, Guinea Bissau and Togo. It concerned Côte d'Ivoire in the 1950s and 1960s and most of the other countries in West Africa after independence.

– In the third stage, the urban system grows stronger and secondary towns form a hierarchy. These towns comprise agglomerations of varying foundation date. The oldest and best placed have had the time to become cities. Urbanisation levels are high, so that the reservoirs of rural exodus begin to dry up.

This is the current urban system in Côte d'Ivoire, Ghana and Nigeria.

– The fourth stage is that of long-standing urban systems, as in Europe. By this point, urban hierarchies have stabilised. Population growth in towns is slow. The urbanisation level is high, between 60% and 90% according to continent and situation. However the total urban population and number of urban agglomerations remains virtually stable.

No country in West Africa has yet reached this stage, which requires first a control of demographic equilibrium.

MEASURING THE URBANISATION OF NIGERIA

Nigeria was the first country in West Africa to experience major urbanisation. Because of its size it presents the features of coastal settlement in the South and Sahelian settlement in the North. The example of Nigeria is a good illustration of the approach used by the Africapolis project and the new light it throws on urbanisation in West Africa. In the absence of a recent corpus of consistent data for Nigeria's basic settlement units, urban patterns were examined in a systematic manner using satellite images. This approach was then extended to the whole subregion.

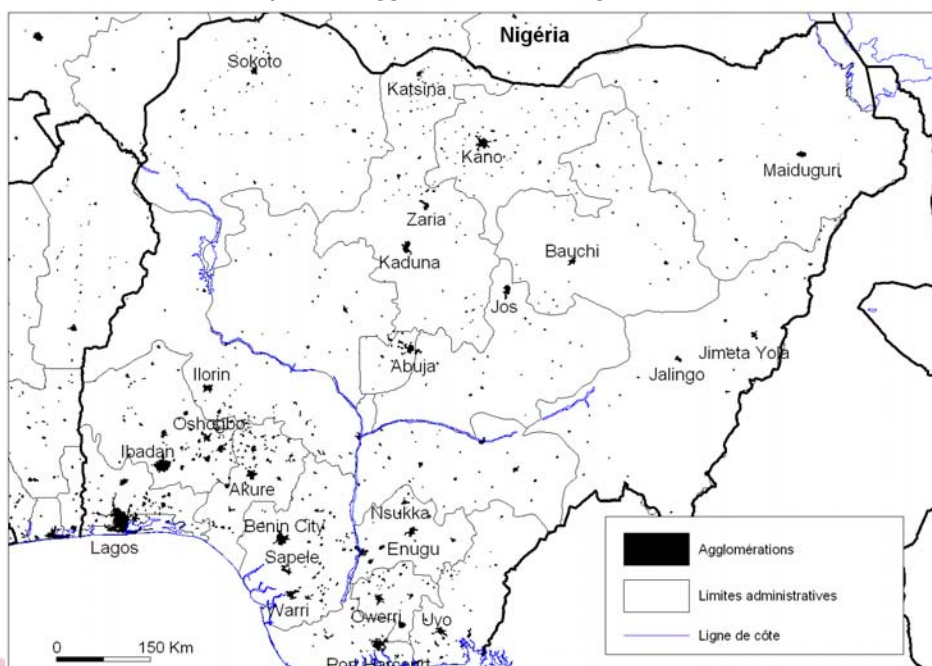
While it is the population giant of Africa, Nigeria is also one of

the countries in which the quality of the figures produced by censuses is most disputed. Demographic data have been collected fairly regularly since the 1950s, roughly every ten years. The 1952 census gives the population of 288 local units of more than 5,000 inhabitants. The 1963 census provides figures for 2,113 units. But this latter census contains massive overestimates, and particularly overestimates that vary widely between regions and towns. The following census, in 1973, was officially cancelled and full results were not published. There was no census in the 1980s and the results of the 1991 census were also highly controversial (Omoluabi and Levy, 1994), because of the gap between the official count and the projections that had been used to estimate the relative size of population in each administrative zone, and also because of inconsistencies between urban and total figures. The provisional results of the 2006 census are available for Local Government Areas (LGAs). These too are controversial and have not yet been confirmed.

These highly fragmentary data have been complemented by satellite images from various sources, first, to confirm the existence of all urban agglomerations with a 1963 population of more than 5,000, and second, to determine their current extent. These urban agglomeration areas were then related to the local units for which 2006 population data are available, and various complete and incomplete time series. In this way a model was developed for population densities, urban and rural, adjusted by region and against the densities observed in neighbouring countries for similar patterns (natural environment, age of town, etc.).

The density approach reveals the inconsistencies in the census figures mentioned above. These come from attempts to overestimate population at two possible levels: either by simply increasing the figures or by counting within local units residents scattered over a much larger area than the urban agglomeration itself. A comparison between the extent of the towns and the data proposed inevitably reveals these biases or confirms the reliability of the source. For example, given the urban morphology observed, it cannot be admitted that Nigerian towns have densities twice as high as elsewhere in West Africa.

Extent of urban agglomerations in Nigeria in 2000



Total estimated population at 1 July 2000 of the ten largest urban agglomerations (Geopolis method)

Agglomération	Population
Lagos	8 052 958
Ibadan	2 489 974
Kano	1 855 340
Kaduna	1 029 918
Port Harcourt	883 919
Benin City	848 162
Jos	766 821
Ilorin	666 031
Maiduguri	506 632
Uyo	488 318

The method of morphological analysis used confirms instances of overestimation and radically revises the estimated size of towns. Overlaying the map of population by LGA on the satellite images similarly shows that the 2006 census contains serious additions of fictitious population in rural areas, particularly in the extreme North, Yoruba land and a number of parts of the Niger delta. Conversely, the data for Lagos and some other regions appear to be realistic.

For nearly half the smaller towns, the Africapolis estimates for 2006 barely reach the reported 1963 population. According to the 2006 census results, the country has a population of 140 million. In fact, it probably has no more than 100 to 120 million, which still makes it by far the most populated country in Africa

CENSUS MAPS MUST BE PROPERLY ARCHIVED

The Africapolis programme of e-Geopolis has identified, located and measured the extent of 2,500 “agglomerations” of more than 5,000 population, reconstructed their population change since 1950 and projected it until 2020. But at what cost?

The main difficulty is locating the necessary census data. Although most censuses include publication of village registers and exhaustive lists of inhabited places, accurate mapping, or even simple geographical coordinates, for these places is often unrecorded. This explains the difficulty of describing the lower parts of urban system hierarchies.

At present, West Africa is one of the least advanced regions for detailed settlement mapping. In most countries there is no updated map available to locate all localities recorded in the census, and where there is one, it is often a time-consuming task to match places, especially place names, with the village registers from the previous census. The geographical units used may not be the same in the two sources or may represent groups of villages or hamlets defined differently from one census to the next. This mapping information, often carefully prepared for each data collection period, then disappears, although it would have aided localised analysis of settlement patterns.

Some countries only have outdated or poor quality statistical series. In Togo, for example, the last census was held in 1981. However, despite these gaps, the existing census coverage of West Africa is far from negligible. All the regional census publications used in the Africapolis project may be consulted at CEPED’s documentation centre.

¹ The Africapolis team comprises Cathy Chatel, Eric Denis, Dominique Harre, François Moriconi-Ebrard, Marion Séjourné (SEDET, CNRS-Paris Diderot) and Ousmane Thiam (ESPACE, CNRS-University of Avignon). Report summaries and atlases referred to in this paper are available on the AFD website: <http://www.afd.fr/jahia/Jahia/home/publications/NotesetEtudes/Africapolis>

² Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Liberia, Ghana, The Gambia, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo.

³ <http://www.e-geopolis.eu>. E-Geopolis uses an updated version of the Geopolis database (Moriconi-Ebrard, 1994), and archives and makes available the data established.

⁴ Club du Sahel/OECD, 1998. *Preparing for the Future, A vision of West Africa in the year 2020. West Africa Long-Term Perspective Study (WALTPS)*. Club du Sahel, OECD, Paris (France), 157 p.

⁵ Center for International Earth Science Information Network (CIESIN), International Food Policy Research Institute (IFPRI); World Bank and Centro Internacional de Agricultura Tropical (CIAT). 2004. Global Rural-Urban Mapping Project (GRUMP), Alpha Version: <http://sedac.ciesin.columbia.edu/gpw/aboutus.jsp>

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Eric DENIS

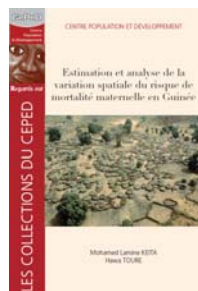
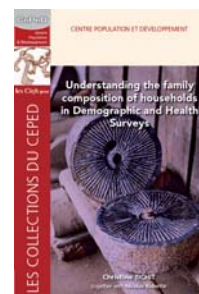
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Improving access to and use of national demographic surveys and population censuses in African countries:

One of the objectives of the ValDemo programme

The Quebec City Declaration* in June 2007 expressed the shared desire of a number of researchers and representatives of national statistical institutes to collectively contribute to the preservation and optimum use of African censuses. As a new wave of censuses in Africa is being prepared, the question arises more than ever of how to preserve all the documents and data relating to previous census operations. Census data are generally analysed under time pressure for the planning needs of the administration and then used by the statistical institutes that produced them as a basis for the surveys held over the following ten years. Censuses are often decried as expensive but they are precious instruments in their own right and for all the economic and demographic data collection operations that are designed using them. Population censuses provide researchers with an essential general framework, even if they cannot (and are not meant to) answer all research questions. Since they are exhaustive, they can be used for spatialised analysis at all levels of simple demo-economic data collected at a point in time. Successive censuses give a clearer picture of changes in the distribution and demographic structure of the population. Comparison of census data from various countries can provide an estimate of regional population dynamics.

How this demographic heritage is to be preserved and used is also a relevant question for national surveys. Except for Demographic and Health Surveys, which are relatively well known and used, although they deserve to be analysed more systematically, other collection operations produce demographic, social, economic, agricultural data at national or transnational level. These data, some of which come from different national institutions, should be taken into account in research projects on related topics. But, like census data, African survey data are still hard to access at present, despite their growing number, even for the academic community of the country concerned.

Since the Quebec City Declaration, it has become essential for researchers and statisticians to work together. Researchers need national data for their projects and have the resources to analyse them in greater depth than statistical institutes, particularly by placing them in comparative perspective, and they need the expertise of the data producers to appreciate their limitations. Statistical institutes can also benefit from closer partnership with researchers, whose own expertise can be called upon both during the preparation phases for a national data collection operation and for data analysis. Researchers' international experience could be used to harmonise the questions asked and the underlying definitions.

However, at present, national data are rarely accessible for a number of reasons. In addition to the work of the United Nations and the African Census Analysis Project (ACAP), a number of initiatives advocate opening up survey and census data to the international scientific community (both in Africa and Asia). In particular, the PARIS21** Accelerated Data Programme (ADP) supports the archiving of micro- and meta-data in many countries in the South and is helping each country define its own dissemination policy for these data. Each national statistical institute that has signed up to this project both archives and documents the available data to the same international standards and defines a national policy for access to the published documents and micro-data. Commendable work in this area has been done in such countries as Cameroon, Ethiopia, Mali, Niger and Uganda.

Concerning population censuses more specifically, it is worth pointing out the role of the IPUMS-International*** project. This uploads to the internet representative samples of census micro-data. In addition to harmonising the documentation of these data to make comparative analysis easier, new variables are devised for better analysis of, for example, family structures. The IPUMS-I initiative rapidly disseminates census data in a format directly usable by the most common statistical analysis software and facilitates comparisons in space and time. At present IPUMS-I provides directly accessible data from 10 censuses in 6 African countries: Egypt (1996), Ghana (2000), Kenya (1989, 1999), Uganda (1991, 2002), Rwanda (1991, 2001) and South Africa (1996, 2001). Each year more samples are uploaded to extend the project's spatial coverage. To maintain anonymity, the data are not available at the disaggregated level, but at least at district level distinguishing between urban and rural. In this way the project meets many of the needs of the demographic research community.

The ValDemo (*Valorisation des données démographiques nationales*) international working group of the research support bureau of CEPED aims at developing the access to and use of national demographic surveys and population censuses in Southern countries. An increasing amount of micro-data from African collection operations are accessible to users, particularly in the academic community, and we intend to support research projects based on more extensive use of this material.

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* http://www.demographie.auf.org/IMG/pdf/Quebec_City_Declaration-Census_Africa.pdf

** PARTnership In Statistics for development in the 21st century, OCDE-World Bank-European Commission-IMF-UN consortium.

*** Integrated Public Use Micro Data Series - International, Minnesota Population Centre, University of Minnesota.