

Setting up a Demographic Surveillance System (DSS) in Dande, Angola

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Physical Geography

of the Demographic Surveillance Area (DSA) Dande



The study area includes 3 of the 5 counties of the Dande municipality, Bengo province, in Angola, about 60 Km northeast of Luanda: Caxito, Mabubas and Úcuá.

The 3 counties cover an area of about 4700 km² between latitude 8°03' and 8°54'S, longitude 13°2' and 14°21'E, and altitude approximately 150 m above sea level. Most of the territory is smooth elevations and plains, with mountains in the interior reaching 600m.

Population concentrates in 69 neighborhoods, 16 of them forming the main town of Caxito (capital of the province). There are 3 other smaller towns – Açucareira, Mabubas and Úcuá. The other hamlets are spread in a distance of 80 km x 48 km at the widest points, large parts of the territory being depopulated.

The climate is tropical dry with an average temperature of 25°C (ranging from 20° to 29°C), rainy and hot season from October to April, cool and dry from May to September.

Average precipitation is 600 mm, with peaks in November/December and March/April. Although generally low in average, rainfall can be strong and destructive including for housing.

Nevertheless, drought is a problem both for agriculture and water supply.

The natural hydrographic network, even relatively dense, has only permanent flow in the rivers Lifune, Dande and Úcuá. Many lakes surround part of the course of river Dande, where some areas are periodically flooded. Furthermore there are manmade irrigation channels in Caxito and Mabubas towns.

Savanna is the main landscape with gallery forest around the river banks and forest in the higher lands.

Two main interprovincial paved roads cross the DSA, all other roads being non paved making it difficult to reach some of the rural communities during the rainy season.

Population characteristics of the DSA- Dande

Background

Three main ethno-linguistic groups are present: Kimbundo (50%), Ovimbundo (30%) and Bakongo (20%). Most people speak Portuguese, the official national language (Administração do Dande, 2006).

Most people are Christian and churches and temples are present in most villages. Agriculture is the main economic activity, attracting migrant workers from the south of the country and is complemented by fishing in lakes and rivers. The main crops are maize, cassava, bananas, sweet potatoes and vegetables, which provide both the local and Luanda markets. Coal exploitation is also an important activity in some areas, leading to a nomadic way of settlement.

The existing industrial activity is linked to stone and sand extraction that supplies the construction business. The war that lasted for more than 40 years, among other consequences, lead the populations to concentrate in cities, seeking for safety and food.

Peace is established for eight years now (2002), and people are still resettling. It is not uncommon for families to have two residences: one in a rural area, where the older members live, working in agriculture; and one in town, where younger people attending school live.

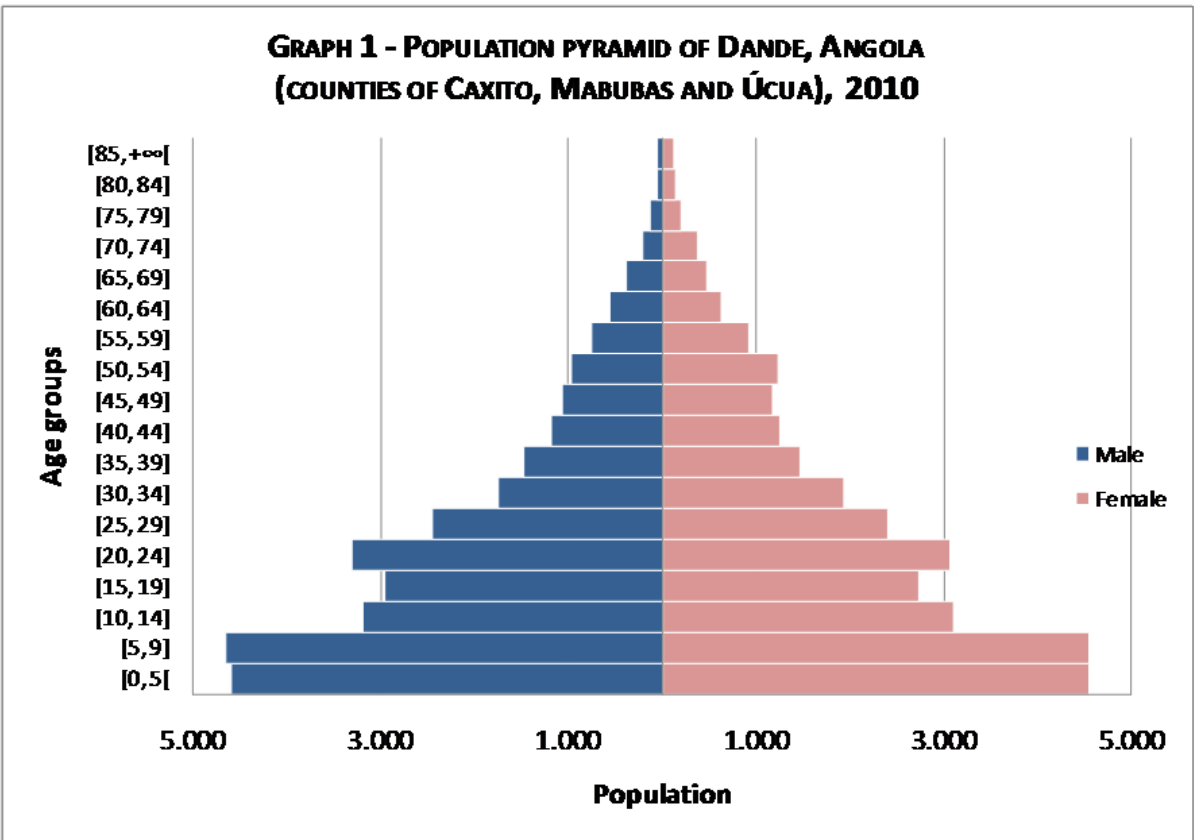
Primary schools (church or state run) are present in 50% of the hamlets (Provincial Education Direction, 2010). In Caxito there are also three secondary schools and 2 institutes for higher studies. They all attract young people from Luanda.

Electricity is still restricted to urban areas and most households don't have access to it. Coal is the main fuel used. Mobile phone is widely used although a large part of the territory has no network. Health problems have been associated with infectious diseases, especially malaria which is commonly referred as a major cause of death. Other infectious diseases prevalent in the area include sleeping sickness and schistosomiasis.

In the DSA there are two hospitals, a maternity hospital, a Tripanossomiase treatment center, a health center and 14 health posts, mostly staffed by nurses and where a restricted number of drugs are dispensed.

Results of the Initial Census

Population structure



The Demographic Surveillance System (DSS) initial census registered, from September 2009 to February 2010, 60075 inhabitants in 15643 households spread over 69 neighborhoods in Caxito, Mabubas and Úcuá counties.

The average number of people per household is 3,8 and the population density is of 12,6 inhabitants per km².

The population is mostly concentrated in urban areas. Caxito is the capital town of the province and the main settlement with 35010 inhabitants, representing 58% of the total population. The rest of the population lives in three semi-urban centers, rural areas, villages and in dispersed settlements.

The sex ratio (male-female) in the total population is 0,977 and 1,008 in the population 15-49 years old. Inequality in the distribution between sexes is more visible after 50 years of age when there is a decline in the male population (graph 1).

The age structure of the population is as follows: those = 1 year old account for 0,8% of the entire population surveyed; 1-4 years old, 14,4%; 25,7%, 5-14 years old; 55,4%, 15-64 years old and 3,6%, = 65 years old. The age dependency ratio is 80,5%. This ratio measures the relation between the dependent population - people younger than 15 or older than 64 - with the working-age population - those aged 15-64.

The population pyramid for persons years illustrate an increase of young people aged between 20 and 24 years old, particularly men, relative to the immediate younger age group, which may be related to the existence of secondary schools and institutes for higher studies that attract these younger ages from Luanda (graph 1).

Aknowledgments

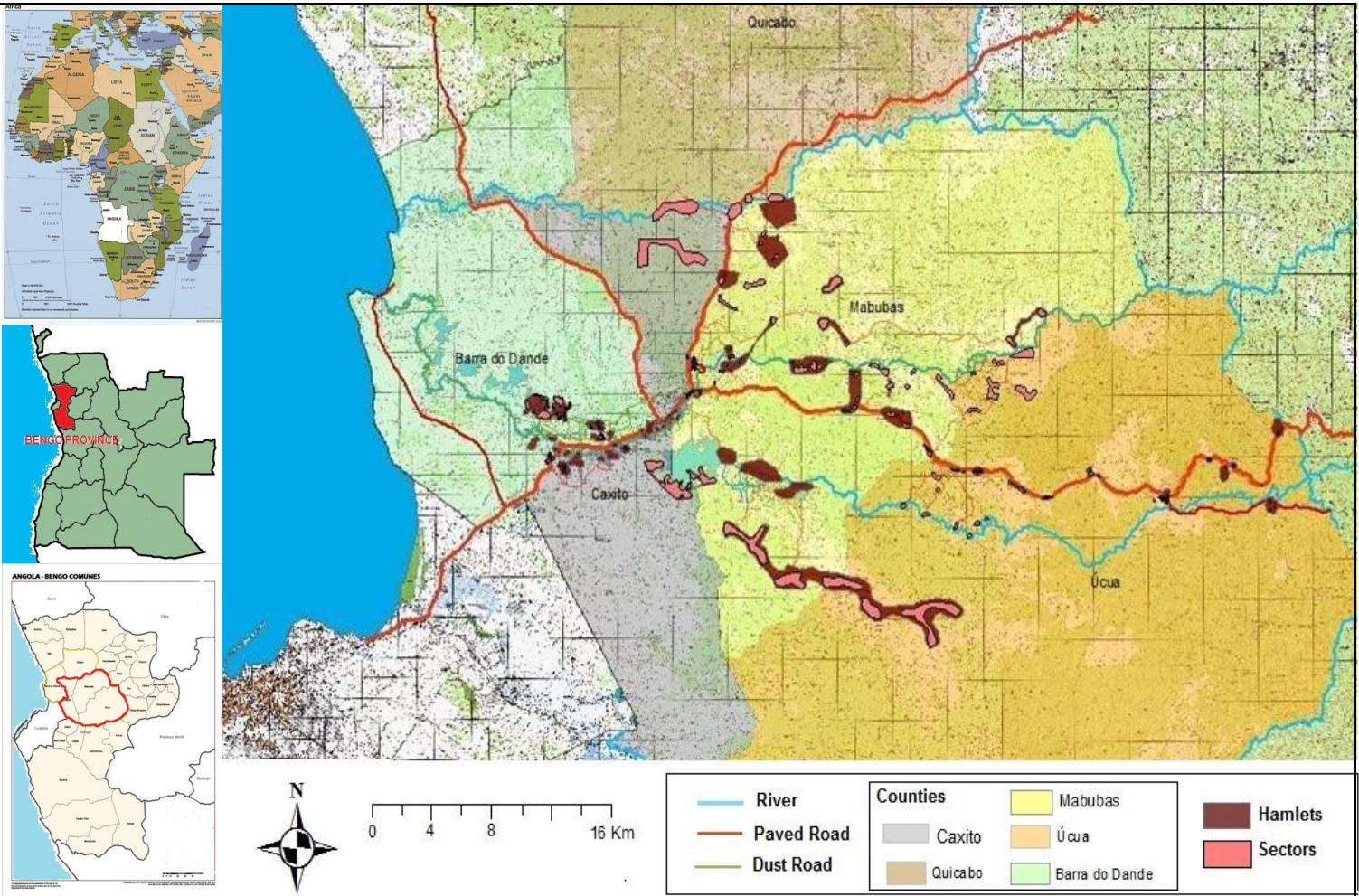
We thank, first of all, the people of the DSA for sharing with us their personal informations, the administration of all levels, specially the Village coordinators who help and facilitate our work.

Then, the young and proficient staff of DSS, that collected and inserted all data.

We also thank Sinfic Angola for supporting the procedures of Geographical Information System and printing of this poster



Demographic Surveillance Area



Demographic Surveillance area - Mabubas, Caxito and Úcuá counties. All households and roads were georeferenced and mapped on top of a military map, provided by Military Geographic Institute of Angola

DSS data collection and processing

The households of the entire area have been georeferenced and mapped with the cooperation of local authorities before the initial census started.

The initial census was conducted between September 2009 and February 2010, with a team of 20 fieldworkers and 6 data clerks. Basic demographic, housing conditions and education data were collected. A single questionnaire was used for each household.

Field supervisors checked the completed questionnaires before being submitted to the data center. All questionnaires were entered twice into a large relational Postgresql Database, using a customized front end (programed in PHP 5) specifically developed for the CISA DSS, and verified by comparing. All discrepancies are resolved. The entered data are checked for inconsistencies and where possible, they are resolved.

The system incorporates built-in validation checks. Implausible data (such as a date of visit occurring before a date of birth) are prevented from entering the database. When these errors occur, the form is put to one side, reviewed by the data manager, and, when necessary, returned to the field supervisors for resolution.

As data are entered, computer checks are done to look for invalid codes, missing values, inconsistencies within and between records, incorrect spellings of place names, and duplicate entries.

Data quality control is assured through monthly checks using Postgresql views. These checks produce lists of inconsistencies, which are then corrected in the field.

The first actualization round was carried out between April and August 2010, the second started in August.

During the actualization rounds, all the households are visited to collect information on births, deaths and migrations.

About 5% of the households are revisited by field supervisors to assure field work quality.

Dande's DSS Affiliation

Dande's DSS is an integrant part of the CISA Project ("Creation of a Health Research Centre in Angola"). The CISA Project, currently being implemented in the Municipality of Dande, Bengo Province, Angola, is the result of a partnership between the Angolan Government, the Portuguese Government and the Calouste Gulbenkian Foundation. The implementation of the project's activities in Angola began with the arrival of an operative team in Caxito, late 2007.

This project aims to provide the basis for the creation of a Health Research Centre in Caxito (CISA) and will consequently act as a catalyst for a series of complementary initiatives to be developed with the aim of improving the health conditions of the local population and undertaking operational research.

The Project's specific objectives are:

- To improve the health conditions of the population living in the Municipality of Dande by strengthening its health services.
- To create a research centre in Angola, that will contribute towards solving the main health problems affecting the country and the region.
- To enhance Angola and Portugal's participation, at an international level, in research into the main diseases affecting Developing Countries.

A Strategic Monitoring Committee, composed of 6 members, is responsible for the overall supervision of the project's strategic aspects.

The Scientific Advisory Board, formally created in 2009, expresses its opinion on the project's scientific agenda, as well as on the technical and scientific quality of the activities that are to be undertaken.

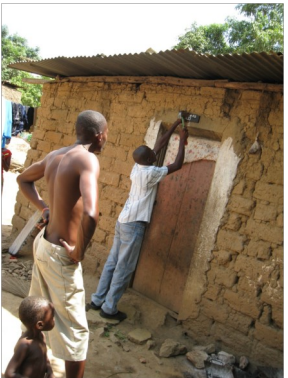
The project's technical and operational management and its implementation are guaranteed through the support services of a back-office, based at the Calouste Gulbenkian Foundation; and by a team of both local and international staff currently consisting of around 70 people.



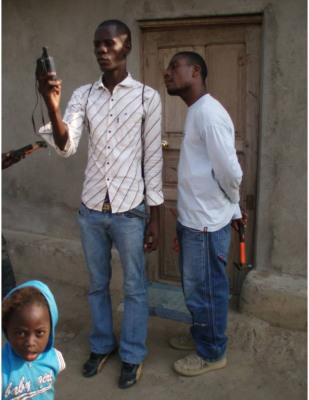
Recognition of the territory with neighborhood coordinators



Meeting the resident people



Enumeration of households



Geo-referenciation



Household identifier



Inquiring

DSS Dande Timelines

The aim of the DSS – Dande is to provide reliable population denominators and demographic information for the epidemiological studies to be carried out by the CISA Project.

May to December 2008

Recognition of the territory and mapping of urban neighborhoods
Design of field procedures
Contacts with the Local Administration and local leaders
Field workers recruitment
Pilot of the household survey

January 2009 to April 2009

Initial counting of households
Community meetings
Beginning of household enumeration and geo-referentiation
Design of the data base
Pilot of census survey questionnaire
Admission and training of half of the team: 10 fieldworkers+4 data clerks

May to August 2009

Mapping and geo-reference
Fine tuning of data base
Admission and training of another half of the team: 15 fieldworkers+2 data clerks
Registration at the Angolan National Statistics Institute

September 2009 to February 2010

Initial census
Beginnuing of Geographic Information System
Team: 25 fieldworkers+6 data clerks

April to August 2010

1st Actualization Round
Cleaning of census data
Team: 30 fieldworkers +10 data clerks

August 2010 to present

2nd Actualization Round
Cleaning 1st round data
Team: 30 fieldworkers +10 data clerks

Near Future

Onset of a network of local informants for births and deaths
Onset of a verbal autopsy system
Application to INDEPTH membership



Results of the Initial Census

Housing conditions

The Initial Census questionnaire included a set of questions on housing conditions, including sanitation, water supply, existence of kitchen and type of housing construction (walls and roof) (graphs 2 to 6).



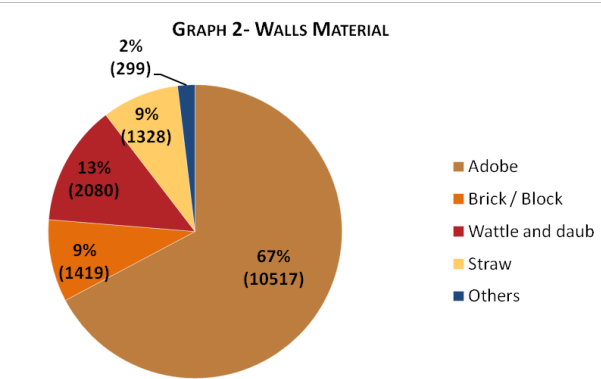
Walls: wattle and daub

Roofing: other



Walls: adobe

Roofing: iron sheet



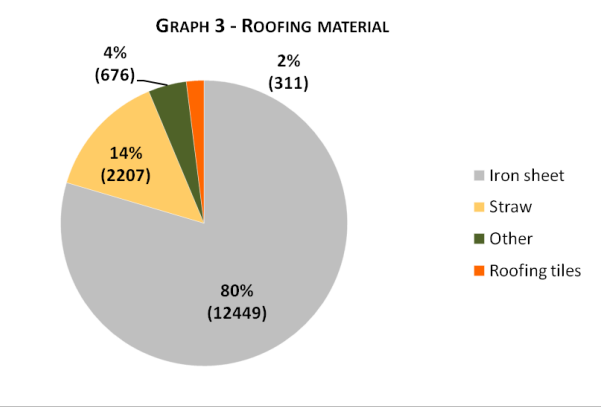
Walls: block

Roofing: iron sheet



Walls: brick/block

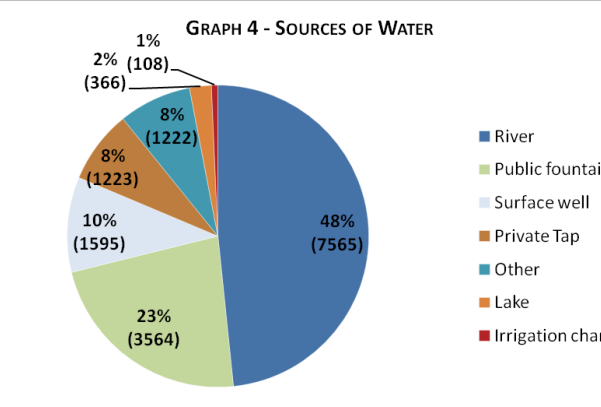
Roofing: iron sheet



Surface well



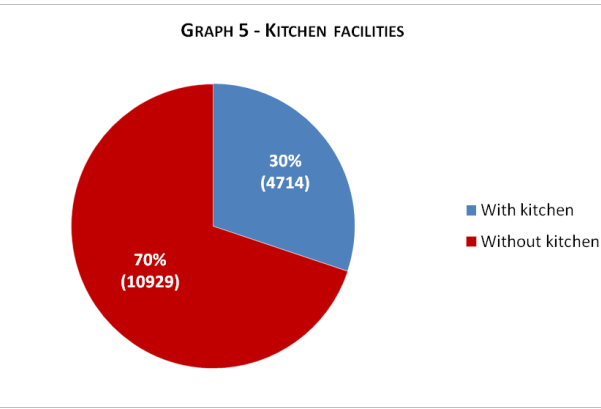
Public fountain



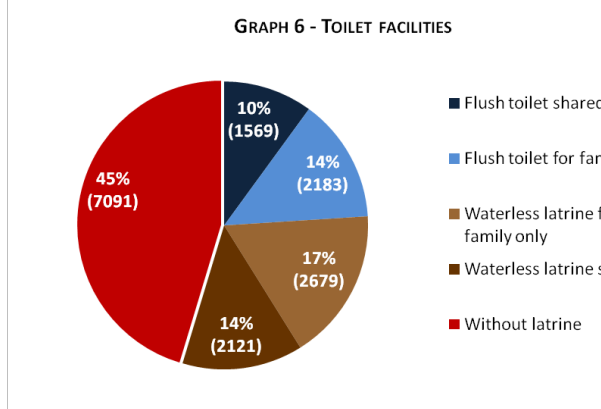
No kitchen



With kitchen



Waterless latrine for family only



67 % of the households has adobe walls. Wattle and daub, brick and block and straw are also used as wall materials, although less common (graph 2).

Various types of housing are found, ranging from rudimental straw dwellings to cement brick houses, the most common being adobe bricks with tin roof. In 80% of the households, iron sheet is the material used for the roof, followed, by far, by straw, with 14% of the households (graph 3).

Water is collected by women and children. Water shortage is a problem in most villages. Treated (tap) water is only available in Caxito and Açucareira, as we were able to confirm during the mapping field activity. The main water source is the river (used by 48% of the households), followed by public fountains (23%), and surface wells (10%) (graph 4). Only 8% of the households have private taps, whereas 3% of households use water from irrigation channel and lakes.

It was considered that a household has a kitchen when people have a covered area for cooking that can be indoors or outdoors. The majority of the households don't have a kitchen (70%) (graph 5).

45% of the households don't have a latrine. Of the households with latrine or toilet, a significant number (43%), share the toilet facilities with neighbors and the majority (56%) has waterless latrines (graph 6).

