



# **The 2007 Population and Housing Census of Ethiopia**

**Recent Experiences of Census Undertaking in Pastoral  
Areas  
And  
Application of New Technologies**

**Samia Zekaria Gutu  
Director General  
Central Statistical Agency of Ethiopia  
February 2008**



# Background

---

- *Ethiopia is the second largest countries in Africa in terms of population size and total area with diversified culture, linguistic composition and large ethnic compositions.*
- Ethiopia is situated in the horn of Africa between 3 and 5 degrees north latitude and 33 and 48 degrees east longitude.
- The total area of the country is about 1.1 million sq. km.
- Total projected population of the country for July 2007 was 77.1 million.



# Background

---

- The topographic features range from the highest peak, Ras Dashen, (4,550 meters above sea level), in the north east down to the Affar Depression at 110 meters below sea level in the east.
- The climatic condition of the country varies with the topography, ranging from 47<sup>0</sup>C (116.6<sup>0</sup>F) to 10<sup>0</sup>C (50<sup>0</sup>F).
- Ethiopia is a home to about 80 ethnic groups that vary in population size from 1000 to about 18 million persons.



# History of Population and Housing Census in Ethiopia

---

- Despite the long history as independent nation, census undertakings that attempted to cover the entire country began only recently.
- The first ever Population and Housing Census was conducted in 1984 covering about 81 % of the country.
- The lowland areas which were predominately inhabited by the pastoral population & some of the rural and urban parts of the country were not covered.
- The 1984 total population of the country was 42.6 million (*this figure includes Eritrea which was part of the country*).



# History of Population and Housing Census in Ethiopia

---

- The 2<sup>nd</sup> Population and Housing Census was conducted in 1994. It has covered relatively larger proportions of the country as compared to the first census.
- The total population count in 1994 was 53.5 million including estimated population number for those areas not covered by the census( i.e. 345,008 persons were estimated).



# The 2007 Population and Housing Census of Ethiopia

---

- The 3<sup>rd</sup> Population and Housing Census was planned to be conducted in 2005 but postponed to 2007.
- The Census Commission had fixed two census dates for the sedentary and pastoral area of the country for various reasons.
  - May 28, 2007 for the sedentary population
  - November 28, 2007 for the Pastoral Regions of Affar and Somalie.
- For the first time in its history the third population census canvassed the entire country.



## New Tech Used in the 3<sup>rd</sup> Population Census

The application of new technologies that were introduced for the first time found to be very useful:

1. **Application and acquiring of satellite imageries** for preparation of enumeration area maps improved the coverage problem particularly in **pastoral regions**,
2. **Utilization of scanning technology** for data capturing, has shortened the data capturing period; and
3. **The use of GIS** is expected to facilitate data disseminations data presentation.



## Acquiring Satellite Imagery for Somalie Region

- Data from Satellite has been acquired for demarcation of EAs in Somalie Region and for other future development plans.
- The Satellite Project involves:
  - 5m **SPOT** Panchromatic Satellite Imagery
  - 60cm QuickBird for high populated areas
  - Image processing : Enhancement, Mosaicing and Orthorectification
- Establishment of GIS infrastructure - Manage and maintain database system
- Training of technical team members,
- Provision of Hardware & Software to build the capacity of CSA





# Implementation of Satellite Project

---

- The Project was implemented in close collaboration with other stakeholders (Ethiopian Mapping Agency and Information Network Security Agency, INSA).
- Prior to the implementation of the project experience in remote sensing was obtained from study tour to South Africa.
- EA demarcation methodology was set well ahead of time by the technical team comprised of different stakeholders.



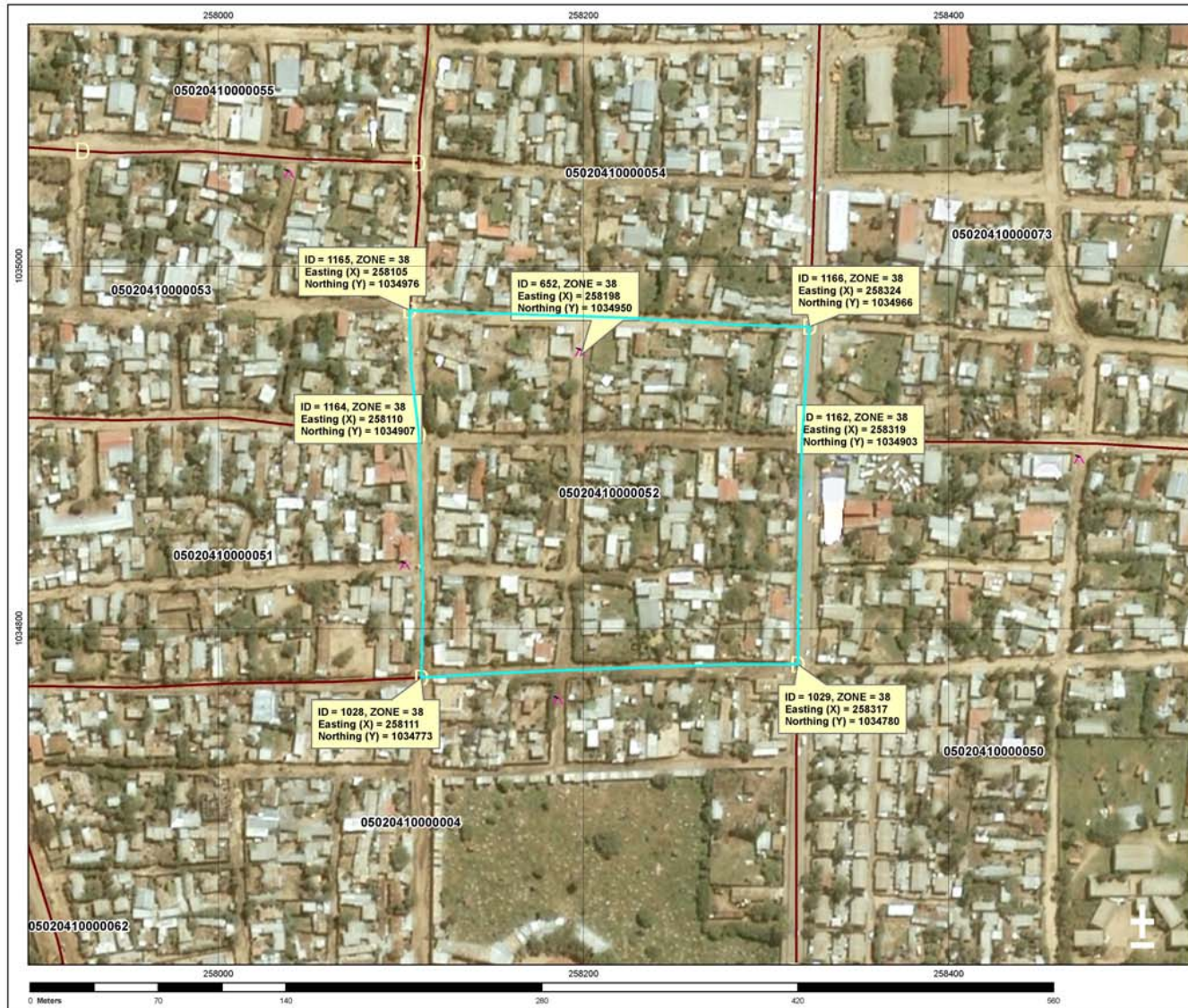
## Implementation of Satellite Project (cont'd)

---

- Additional auxiliary data were obtained from Somalie Region that enriched the satellite database and used as reference points on the EA Maps.
- GPS coordinates were also included on the EA maps.
- ARC GIS was used in the GIS lab with high capacity severes, printers and plotters.
- The EA demarcation using the satellite imagery, and its printing was done in-house by local staff members from CSA, EMA, and INSA..



# Sample of EA Map



**2007 POPULATION & HOUSING CENSUS**

**ETHIOPIA**

**Enumeration Area Map**

**EA MAP**

EA No: 0502041000052  
 SA No: 91  
 Region: SOMALIE  
 Zone: JIJIGA  
 Woreda: JIJIGA  
 Est Families in EA: .....  
 EA Area: 0.04 Km sq.  
 EA Type: Urban  
 Kebele Name: .....  
 Kebele Chair Person: .....

**Map Legend**

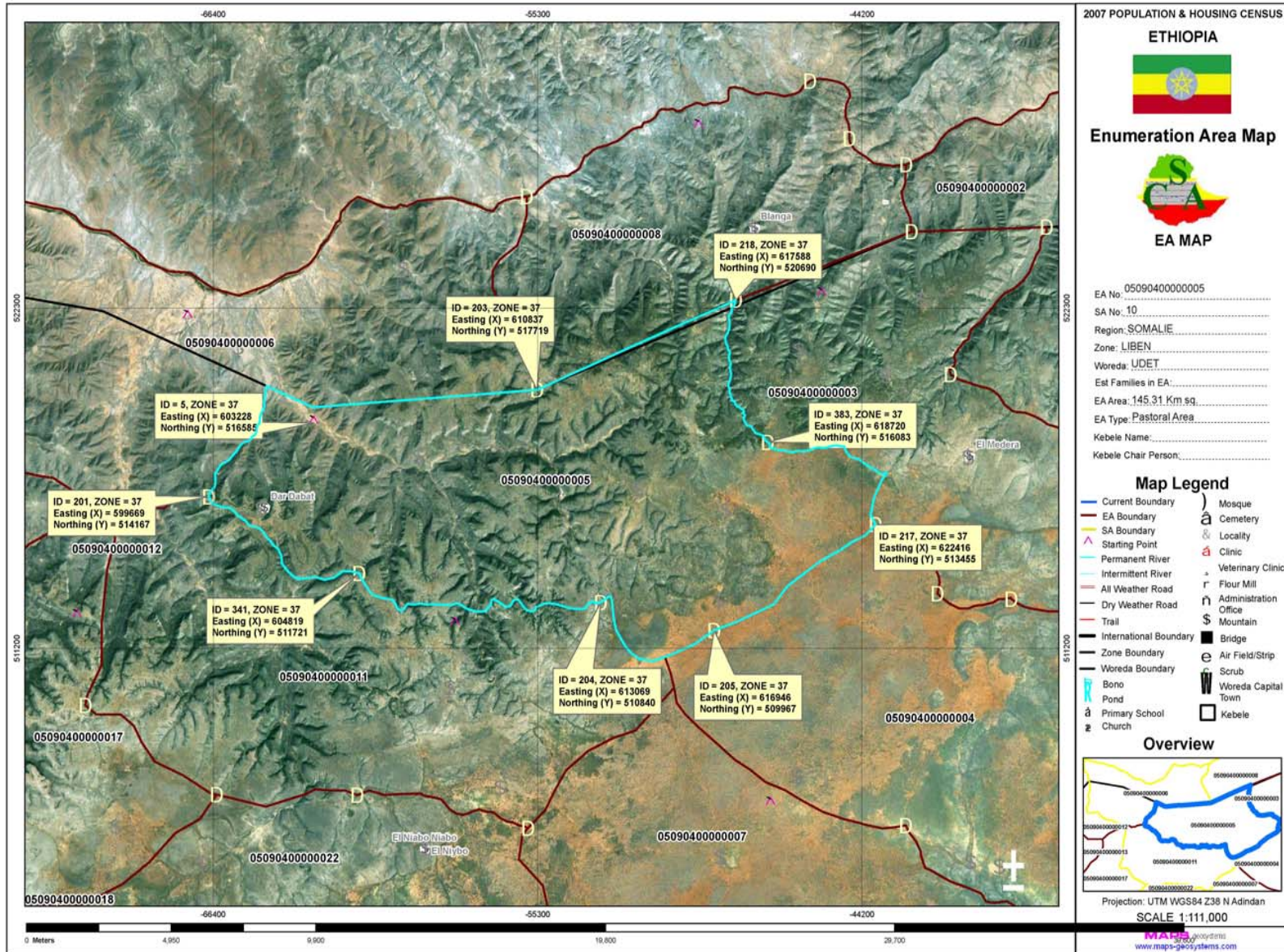
— Current Boundary	⌘ Mosque
— EA Boundary	⌘ Cemetery
— SA Boundary	⌘ Locality
▲ Starting Point	⌘ Clinic
— Permanent River	⌘ Veterinary Clinic
— Intermittent River	⌘ Flour Mill
— All Weather Road	⌘ Administration Office
— Dry Weather Road	⌘ Mountain
— Trail	⌘ Bridge
— International Boundary	⌘ Air Field/Strip
— Zone Boundary	⌘ Scrub
— Woreda Boundary	⌘ Woreda Capital
— Bono	⌘ Kebele
— Pond	
⌘ Primary School	
⌘ Church	

**Overview**

Projection: UTM WGS84 Z38 N Adindan  
 SCALE 1:2,000  
 MAPS geosystems  
 www.maps-geosystems.com



# Sample EA Map





## Application of New Scanning Technology

- Experiences obtained from the study tours to Tanzania and Ghana convinced us that scanning could be applicable in Africa.
- For the benefit of doubts, we conducted two types of pilot censuses; i.e. using conventional and OMR scanning type questionnaires with one scanner.
- The experiences gained during pilot census was encouraging.
- ***The technology is appropriate and effective, if properly planned and necessary cautions could be taken.***



## Advantage of Acquiring Machines and Related Services from One Source as a Package

- 10 additional PS900 iM2 Scanners were purchased and installed,
  - Printing and designing of census questionnaires in local language was done by the supplier of scanning machines,
  - Provision of TA and on job training by the supplier contributed to the success of using the new technology.

### PS900 Photoscribe OMR / Image Scanner

Up to 8,000 Double sided Forms per hour

Simultaneous data validation

Bitonal & /or Greyscale Images & Clips (200dpi)

3 programmable output hoppers

SOSKitW software utilities





## Main Activities Related to Scanning

---

### **Census data processing work plan consists:**

- Recruitment of temporary staff
- Staff training (scanning technology, CSPro)
- Retrieval & re-arranging of the completed questionnaires
- Scanning and validation
- Computer editing and tabulation

### **Scanning mainly involves:**

- Scanning / Data Capture
- Key-correction or validation of scanned data
- Exporting the scanned and key-corrected data into ASCII or format suitable for processing



The actual scanning started mid-July and it was completed in November 2007 – i.e. *in 4.5 months*.







# Application of GIS

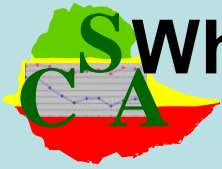
- GIS is believed to be useful for the presentation, analysis and dissemination of census results in an easier ways.
- It provides a powerful means for visualizing the census result in more simpler way even among the less educated people.
- Digitization of enumeration area maps have been carried out since 2003 and it is planned to be completed in the near future



# Application of GIS (cont'd)

---

- CSA will use GIS to produce, analyze and disseminate the census results.
- The Agency's plan also includes the preparation of population atlas using GIS.
- To fully utilize the advantages of this new technological development additional technical and financial assistance is still needed.



## What Were the Challenges in Pastoral Regions of Somalie and Afar?

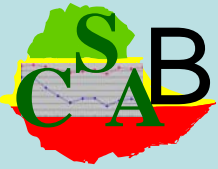
- Most obvious challenges are inaccessibility, mobile nature of the dwellers, high level of illiteracy rate, and the vastness of the area.
- About 7000 school teachers were recruited and trained for Somalie and these enumerators had to be mobilized from sedentary areas of the country,
- A series of planning and follow up in logistics and transportation was the most challenging task.
- The need to set up special census education program for elders and clan leaders in advocacy was also another challenge.



## Current Status of Data Processing

---

- Data capturing for all regions has been completed.
- 50 percent of Key correction is completed
- Preparation of edit specs and tabulation plan have been completed.
- Data validation and data cleaning is underway
- Currently, three regions' data are readily available for reviewing.
- Preliminary result is planned to be disclosed by **April/May 2008 ( *Miazia, 2000 E.C.* )**



# Best Practices of Ethiopian Govt.

- Statistical activities in Ethiopia has been mainstreamed and is included in its five-year PASDEP program as one of important sectors. The PADEP document is available on [www.mofaed.org](http://www.mofaed.org)
- Resource Allocation for Statistical Activities and Censuses could be cited as good practice in Africa
  - For Example: Government contribution for Third PHC was 76.7 percent i.e. about 50 million USD .
  - The contribution of Development Partners account for 23.3 percent (15.1million USD).



*Thank You*

