Use of Geospatial Information in Census-taking

2019 Census Kenya Experience

by

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Outline

- ✓ Introduction
- ✓ Geospatial data and Census
- ✓ Requirements For Collection and Preparation of Geospatial Data
- ✓ Challenges While Dealing With Geospatial Information

Introduction

- Geo spatial information is information associated with location on earth surface.
- Geospatial information used in the 2019 census process included :-

❖ Collected from the field

- ✓ **Locations of households and point Features- collected to facilitate** EA delineation

❖ Produced

- ✓ **Boundary file** (shape file or feature class)
- ✓ **Geo-file**
- ✓ **Enumeration Area (EA) Maps**

- This information was collected and prepared 2 to 3 years prior to the census enumeration;

Introduction

- One of the UN recommendation for the 2020 round of censuses was use of technology
- Technology embraced included
  - ✓ Tablets for data collection
  - ✓ Aerial photographs and satellite imageries- base maps
  - ✓ GIS software in data collection and map production
  - ✓ Soft copy maps (georeferenced PDF) - interactive maps that were loaded in Tablets
  - ✓ Dash board to monitor progress and coverage

Geospatial data in 2019 Census

2019 Census Geo-file: A list of all enumeration areas with their administrative details

County Code	County Name	Sub-county Code	Sub-county Name	Division Code	Division Name	Location Code	Location Name	Sub-location Code	Sublocation Name	EACode	EAName
01	Mombasa	01	Changamwe	01	Changamwe	01	Chaani	01	Chaani	001	Kasarani
01	Mombasa	01	Changamwe	01	Changamwe	01	Chaani	01	Chaani	002	Kasarani
01	Mombasa	01	Changamwe	01	Changamwe	01	Chaani	01	Chaani	003	Kasarani

EAType	EAStatus	EAUniverse	ConstCode	ConstName	WardCode	WardName	TotalHHs	EACodeFull	Area_SqKm
2	9	6	001	Changamwe	0002	Kipevu	80	0101010101001	0.013692
2	9	6	001	Changamwe	0002	Kipevu	139	0101010101002	0.017208
2	9	6	001	Changamwe	0002	Kipevu	113	0101010101003	0.006160
2	9	6	001	Changamwe	0002	Kipevu	110	0101010101004	0.006025

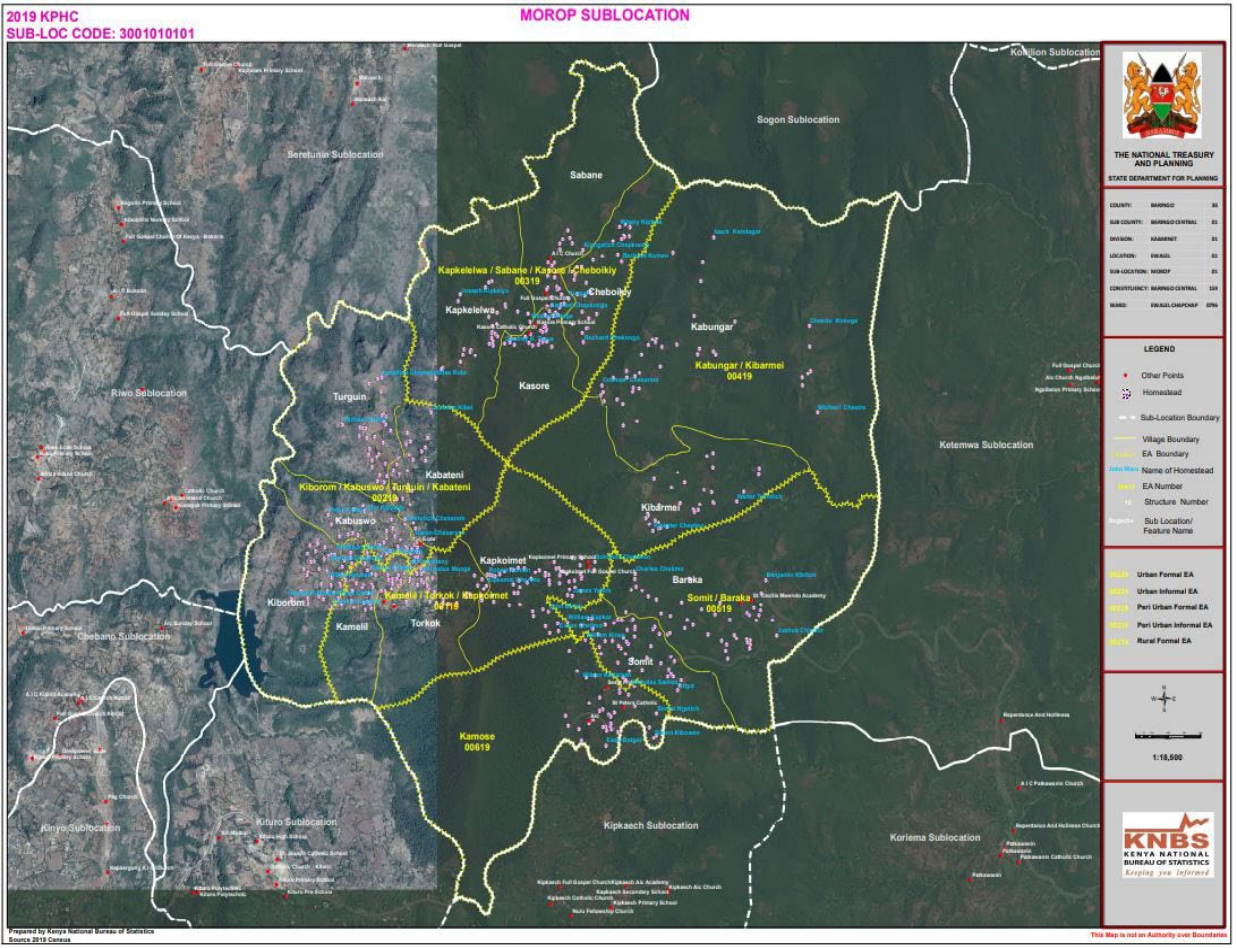
Use of Geospatial data in Census Planning

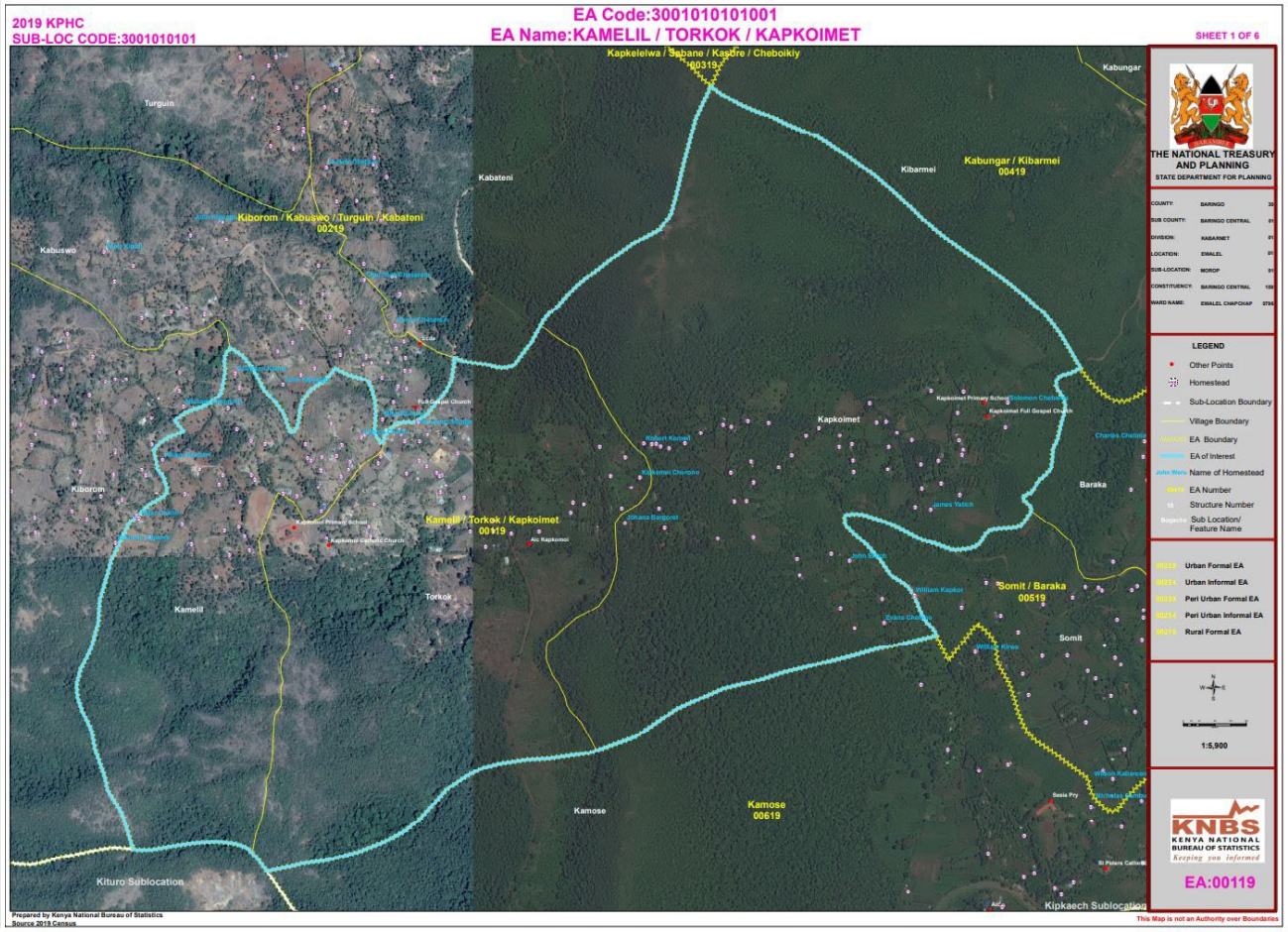
Uses of Census Geo-file:

1. Budgeting for Personnel and logistics during actual enumeration.
2. Ensure total coverage of the entire country
3. To counter omission and overlaps
4. Estimate of Population and Households

Use of Geospatial data During Census Enumeration

Enumeration Area Maps





Use of Geospatial data During Census Enumeration

- **Uses of EA Maps:**
  - ✓ EA identification
  - ✓ Locate Households
  - ✓ Monitor progress of enumeration (coverage)
  - ✓ Distribution of work
  - ✓ Ensure no omission and overlaps

- **Use of Household Locations data (GPS Coordinates)**
  - ✓ Quality Check during enumeration process;
  - ✓ Checking completeness of enumeration;

Use of Geospatial data During Analysis of Census Data

Visualization of Census Data

- Integration of geospatial data with census data file using a unique identifier common in both files e.g. CouCode

Geo file

Coucode	County
01	Mombasa
02	Kwale
03	Kilifi
04	Tana River
05	Lamu

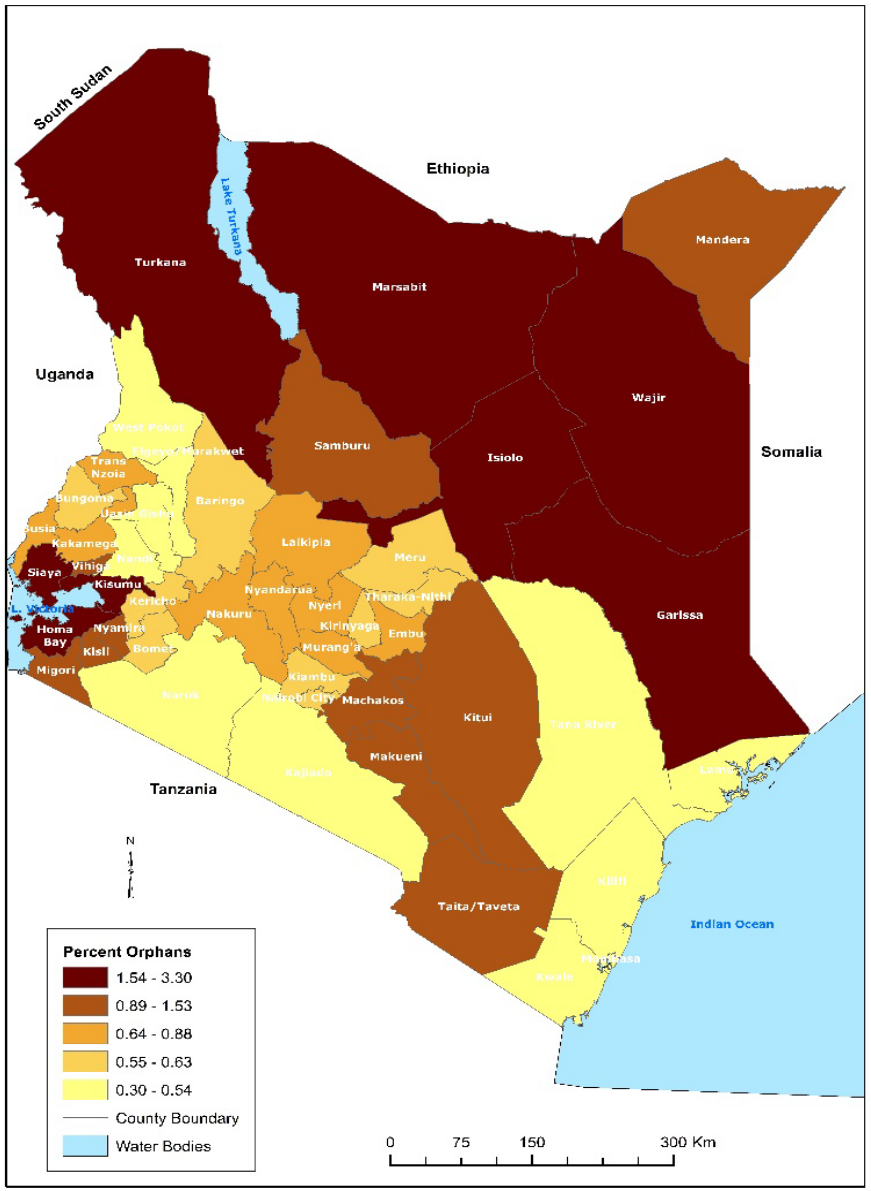
From Census File

Coucode	County	Orphans
01	Mombasa	0.5
02	Kwale	0.5
03	Kilifi	0.4
04	Tana River	0.4
05	Lamu	0.5

FID	Shape *	CouCode	FIRST_CouN	Coucode_1	County	Orphans
0	Polygon	01	Mombasa	01	Mombasa	0.5
1	Polygon	02	Kwale	02	Kwale	0.5
2	Polygon	03	Kilifi	03	Kilifi	0.4
3	Polygon	04	Tana River	04	Tana River	0.4
4	Polygon	05	Lamu	05	Lamu	0.5
5	Polygon	06	Taita/Taveta	06	Taita-Taveta	0.9

Use of Geospatial data During Analysis of Census Data

- Data Visualization



Requirements For Collection and Preparation of Geospatial Data

- Cloud server for uploading data from the field
- Servers with adequate space to hold data in the office
- High processing desktops with enough space
- Laptops
- GIS and ICT Specialists
- Current imageries
- Well maintained GIS software

Challenges While Dealing With Geospatial Information

- Displacement of GPS coordinates especially in urban areas due to tall buildings and congestion of structures
- An application to read interactive maps
- Capacity to integrate both statistical and geospatial data during census enumeration.
- It is costly to maintain geospatial software and hardware
- Boundary disputes
- Capacity to undertake geospatial data analysis after enumeration

THANK YOU