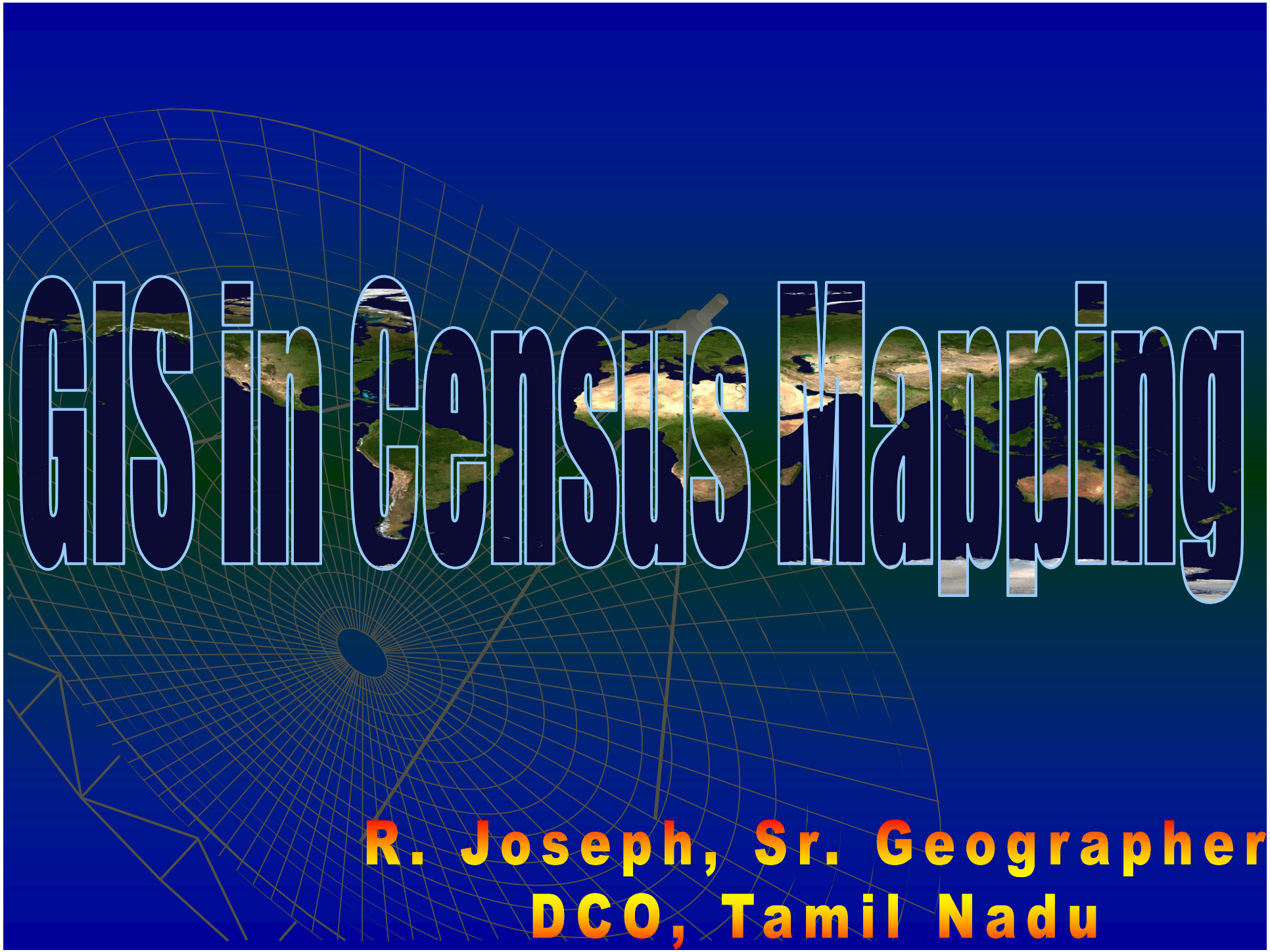

GIS in Census Mapping
R. Joseph, Sr. Geographer
DCO, Tamil Nadu

GIS IN CENSUS MAPPING

A Census is a complex and expensive operation. It must be well planned and carefully carried out so that it produces reliable data at reasonable cost.

In any survey maps are essential.

Maps are needed during all stages of a Census. They are needed in planning, in data collection, in presentation and analysis of the results.

Maps are tools which make the Census accurate, timely and useful.

Good maps are required in various stages of a Census for the following reasons.

1. Planning operations: Reasonably up-to-date maps are needed to set up enumerator assignments.

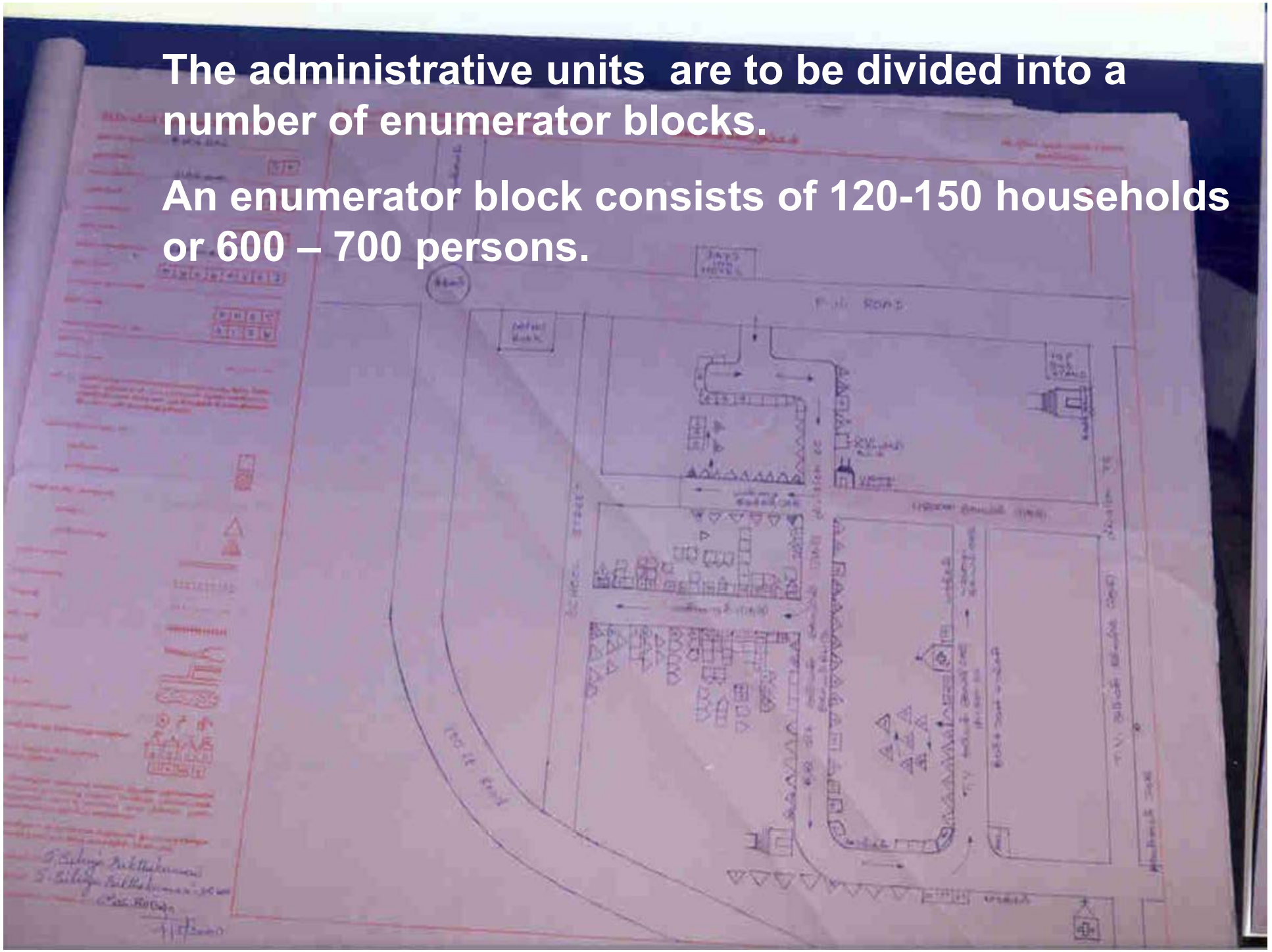
Census is a continuing survey which can afford to put more resources into mapping for future operations.

Hence the boundary stability for statistical area is important.

It requires constant updating and filling up of maps for later use.

The administrative units are to be divided into a number of enumerator blocks.

An enumerator block consists of 120-150 households or 600 – 700 persons.



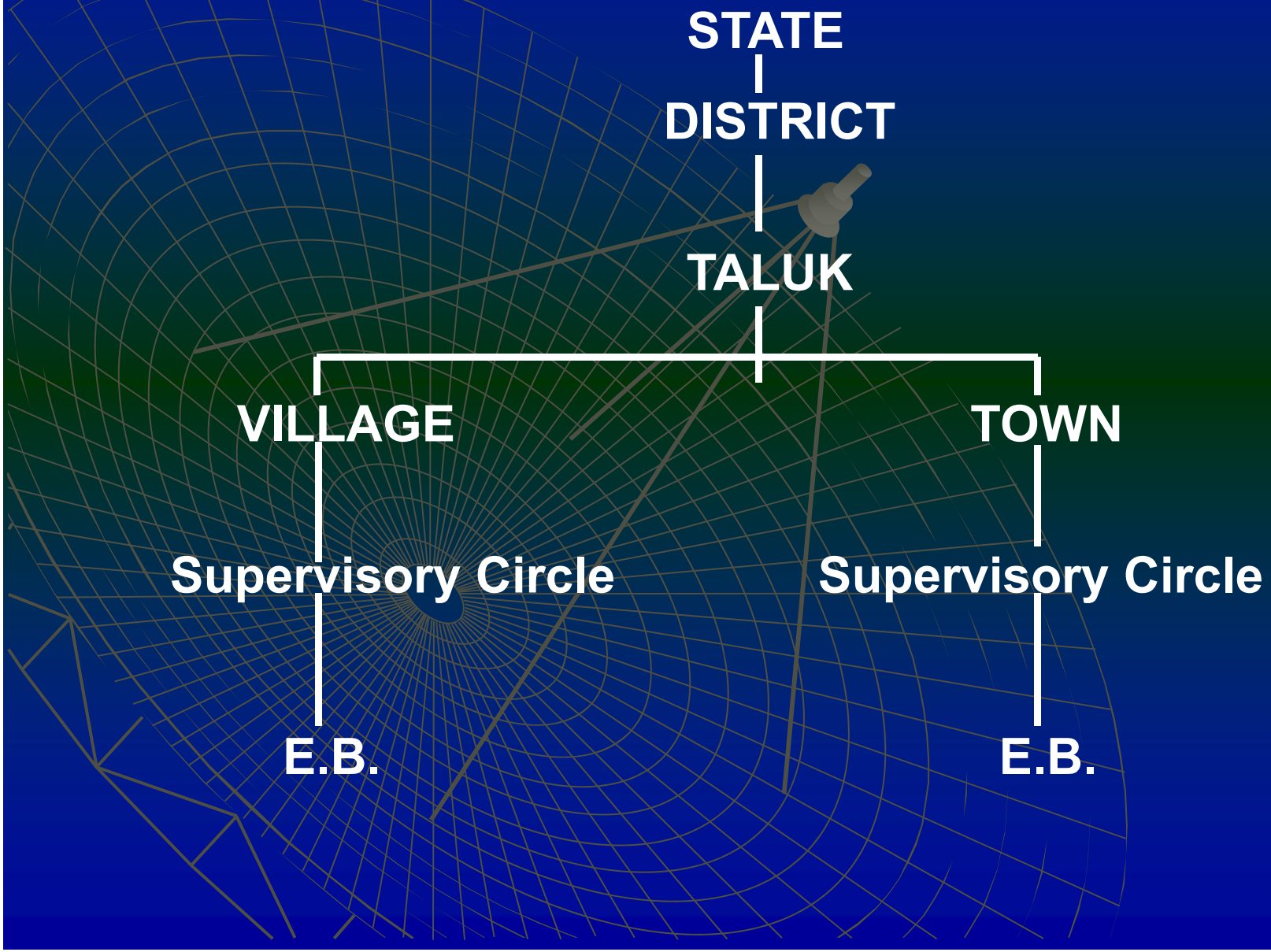
Six enumerator blocks form a supervisory circle which is controlled by a supervisor.

A number of supervisory circles form a charge, that is a taluk or municipality which is controlled by a charge officer.

Many charges or taluks form a district and many districts into a state and many states into a country.

Like this the whole country is divided into a number of enumerator blocks which is the lowest and basic unit.

The following is the administrative set up of Census in our country.



Before taking Census, the administrative units must be updated. The jurisdictional changes that might have taken place between the last and present Censuses must be incorporated.

We collect the updated taluk and district maps from Survey and Land Records and town maps from the Municipal administration. We update the taluk and district maps by referring to G.Os.

We send these maps to the concerned District Collectors for verification and certification.

After receiving the certified maps we assign Census Location Code to each village and town. By doing so, we assure that all the area is covered

GIS as tool:

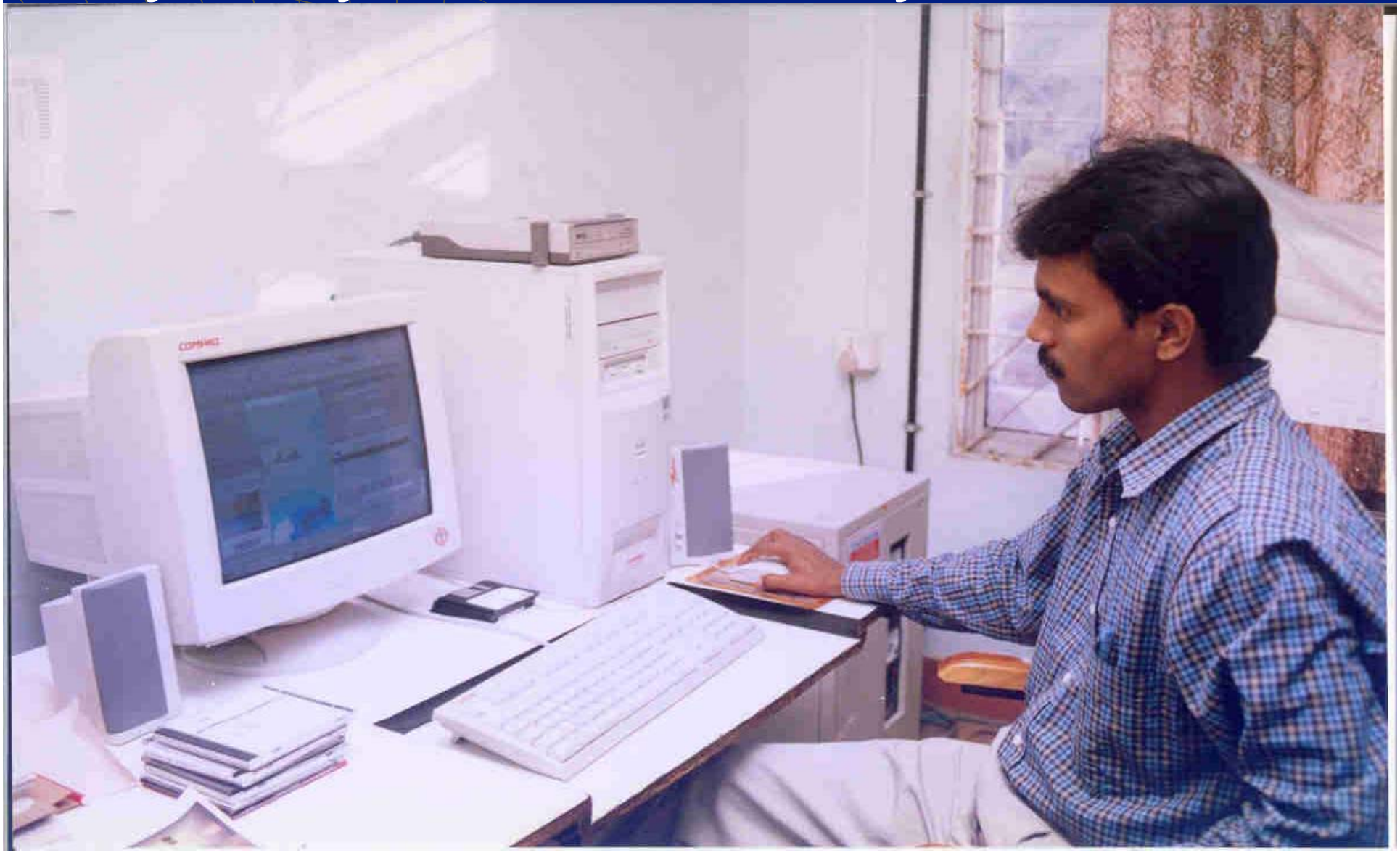
GIS is an enabling technology that can be made use of in digitizing, editing / updating and Coverages which could be the administrative divisions map.

By creating digital data base, we have permanent data base, and that can be altered at any time, and no need to repeat the previous exercises.Any changes to be marked can be done immediately at no cost.

Creation of Digital Data base

The authenticated maps are digitized in different layers by using the GIS software-ARC/INFO which gives data in vector format.

We edit the maps in ARCEDIT and keep the boundaries updated. By doing so, we get good quality maps and they are very accurate and reasonably error free.



Certificate and Clearance from Survey Of India.

As per rule any map facing International Boundary or coastal line or categorized as ‘Restricted Map’ should get certificate and clearance from Survey Of India and Ministry of Defence for publication.

We prepare the restricted maps without any theme on it and send them to our Map Division, New Delhi to get certificate from the Survey Of India and Ministry of Defence.

The next reason for the requirement of maps for Census is

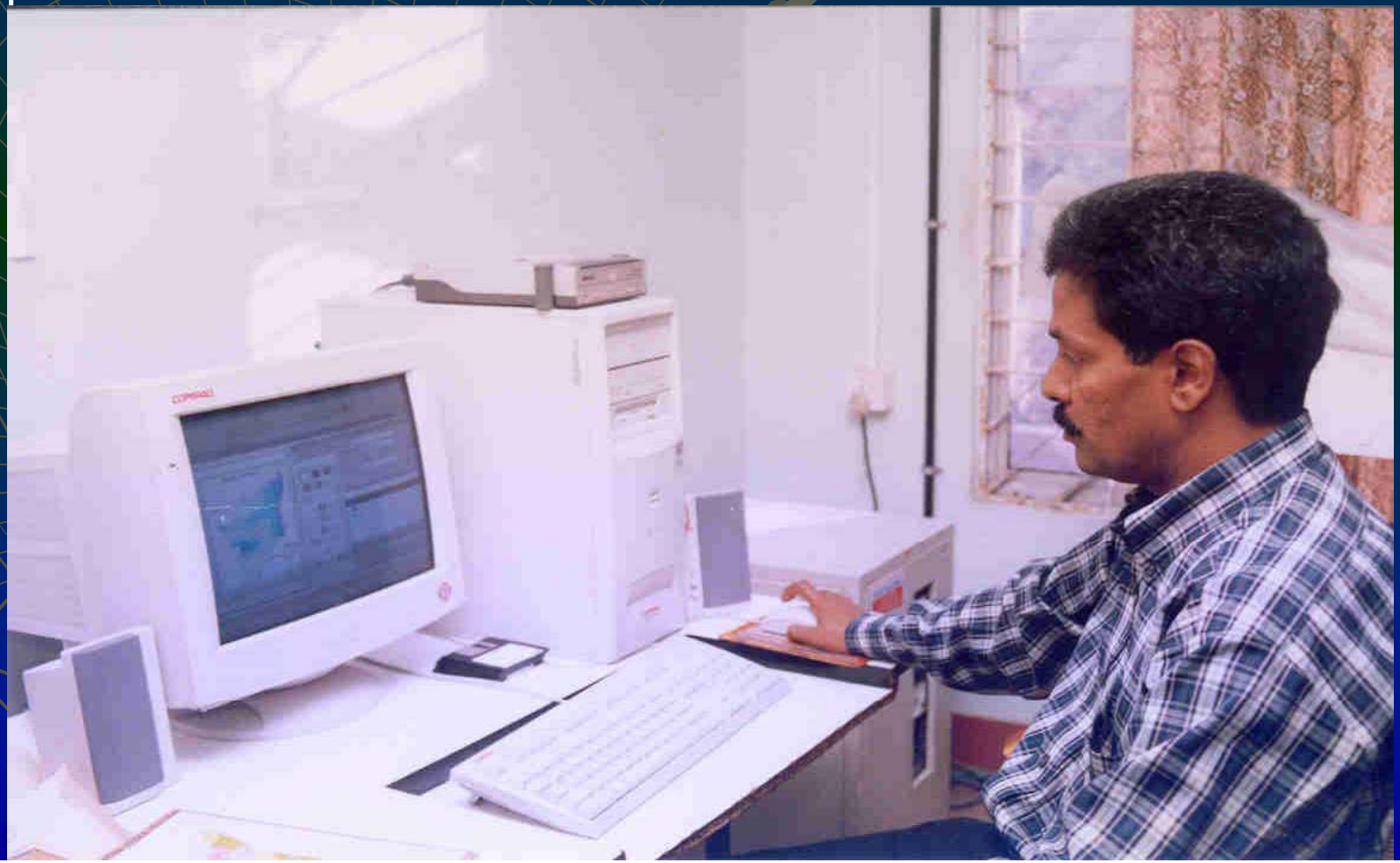
<u>Data collection:</u>

Maps of appropriate size and detail are needed to ensure complete coverage of an area without any omission or duplication. Once we create database up to village level, the charge officers divide the area into different supervisory circles and further into enumeration blocks.

The third reason is,

Presentation and analysis of results:

Maps are used effectively to relate statistical data with the geographical area to which the statistics apply,make the statistics easier to understand and ensure use of the data by the public.



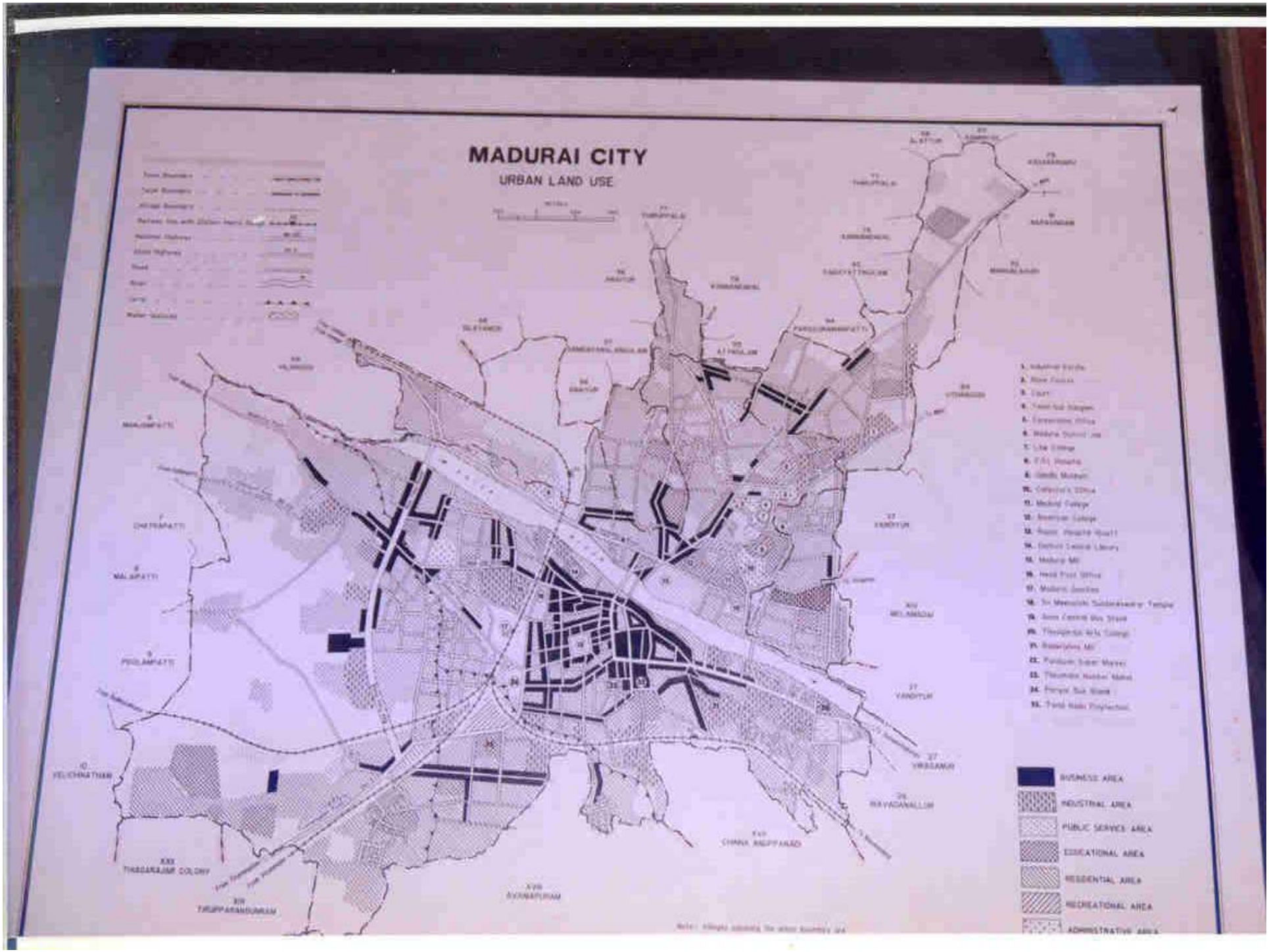
We prepare different kind of maps related to different series of publications:

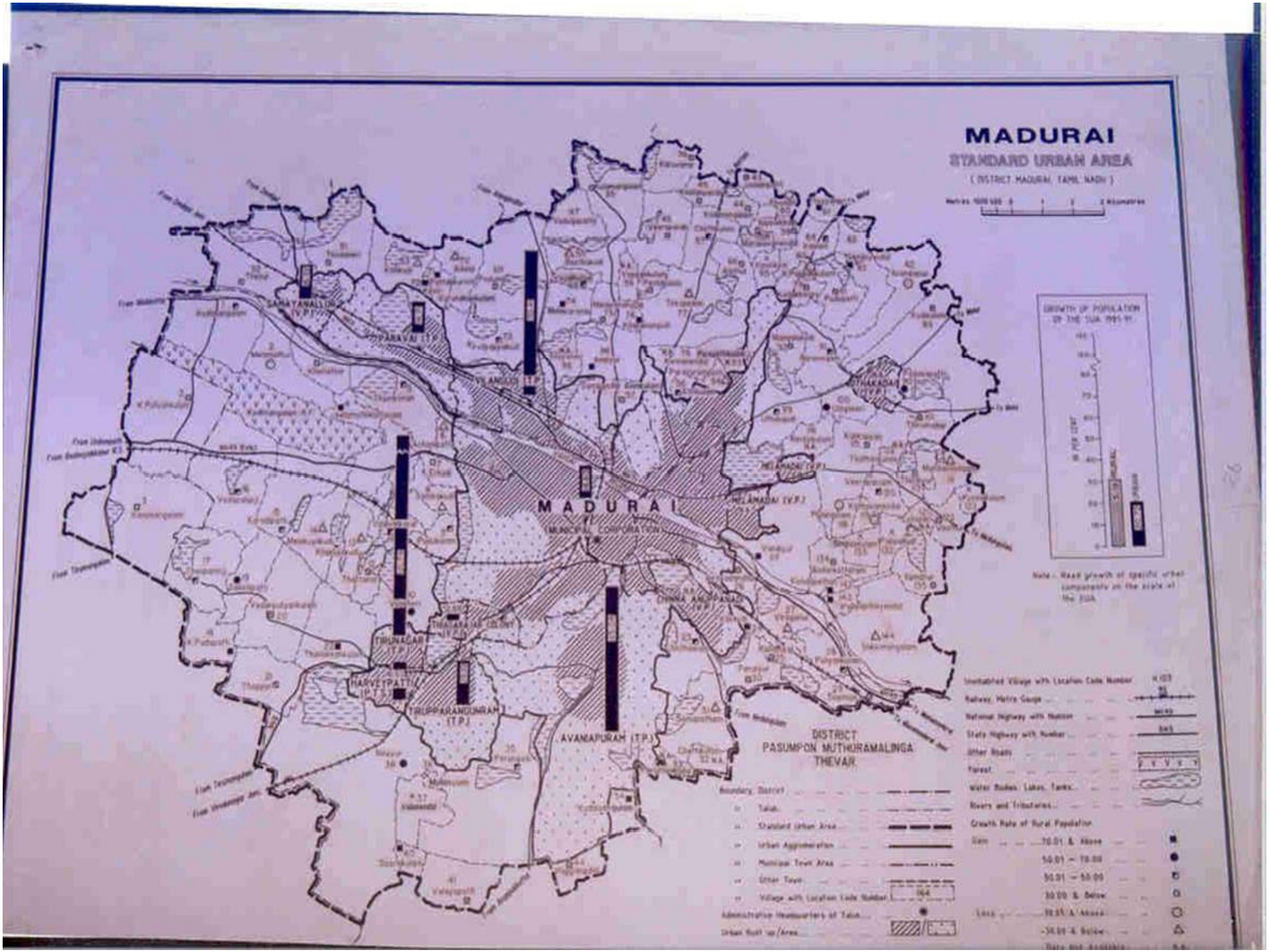
Maps for District Census HandBook:

In this publication, we prepare taluk and district maps. In taluk map we show all the villages and town boundaries with location codes and also the transport network and amenities like school, post office, police station, hospital etc

Maps for Town Directory:

We procure land use maps from the Town and Country Planning Dept. and create database as per our requirements restricted to 6 categories like administrative, public, educational, recreational, commercial, and industrial.


MADURAI CITY
URBAN LAND USE
BUSINESS AREA
INDUSTRIAL AREA
PUBLIC SERVICE AREA
EDUCATIONAL AREA
RESIDENTIAL AREA
RECREATIONAL AREA
ADMINISTRATIVE AREA


MADURAI
STANDARD URBAN AREA
(DISTRICT MADURAI, TAMIL NADU)
MADURAI
(MUNICIPAL CORPORATION)
SAMAYANALLUR (T.P.)
VILANGUDI (T.P.)
MELAMADAI (T.P.)
MELAMADAI (V.P.)
THIRUNAGAR (T.P.)
HARVEYPATTI (T.P.)
TIRUPPARANKUNRAM (T.P.)
AVANIAPURAM (T.P.)
DISTRICT
PASUMPON MUTHURAMALINGA
THEVAR
Boundary, District
Taluk
Standard Urban Area
Urban Agglomeration
Municipal Town Area
Other Town
Village with Location Code Number
Administrative Headquarters of Taluk
Urban Built up Area
Railway, Metre Gauge
National Highway with Number
State Highway with Number
Other Roads
Forest
Water Bodies, Lakes, Tanks
Rivers and Tributaries
Growth Rate of Rural Population
Dam
70.01 & Above
50.01 – 70.00
30.01 – 50.00
30.00 & Below
Lake
30.01 & Above
-30.00 & Below

Maps for Census Atlas

In this publication we show thematic maps based on demographic,economic,and socio-cultural features. We show Physiographic maps too.

Maps for General Population Tables:

The town maps generally class I and class II maps are published in this volume

Apart from above some maps are shown in General Economic tables, Socio-Cultural tables, Houses and Household Amenities tables and in special studies.

Conclusions

1.Delineation of EB

2. Administrative set up

3..Mapping and reasons for mapping

4.Authentication / updation

5.Certification

6.Creation of Database

7.Mapping for different themes

8.Long run benefits from mapping