

# A CELLULAR AUTOMATA APPROACH FOR PREDICTING LAND USE CHANGE USING GEOSPATIAL TECHNIQUES



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## INTRODUCTION

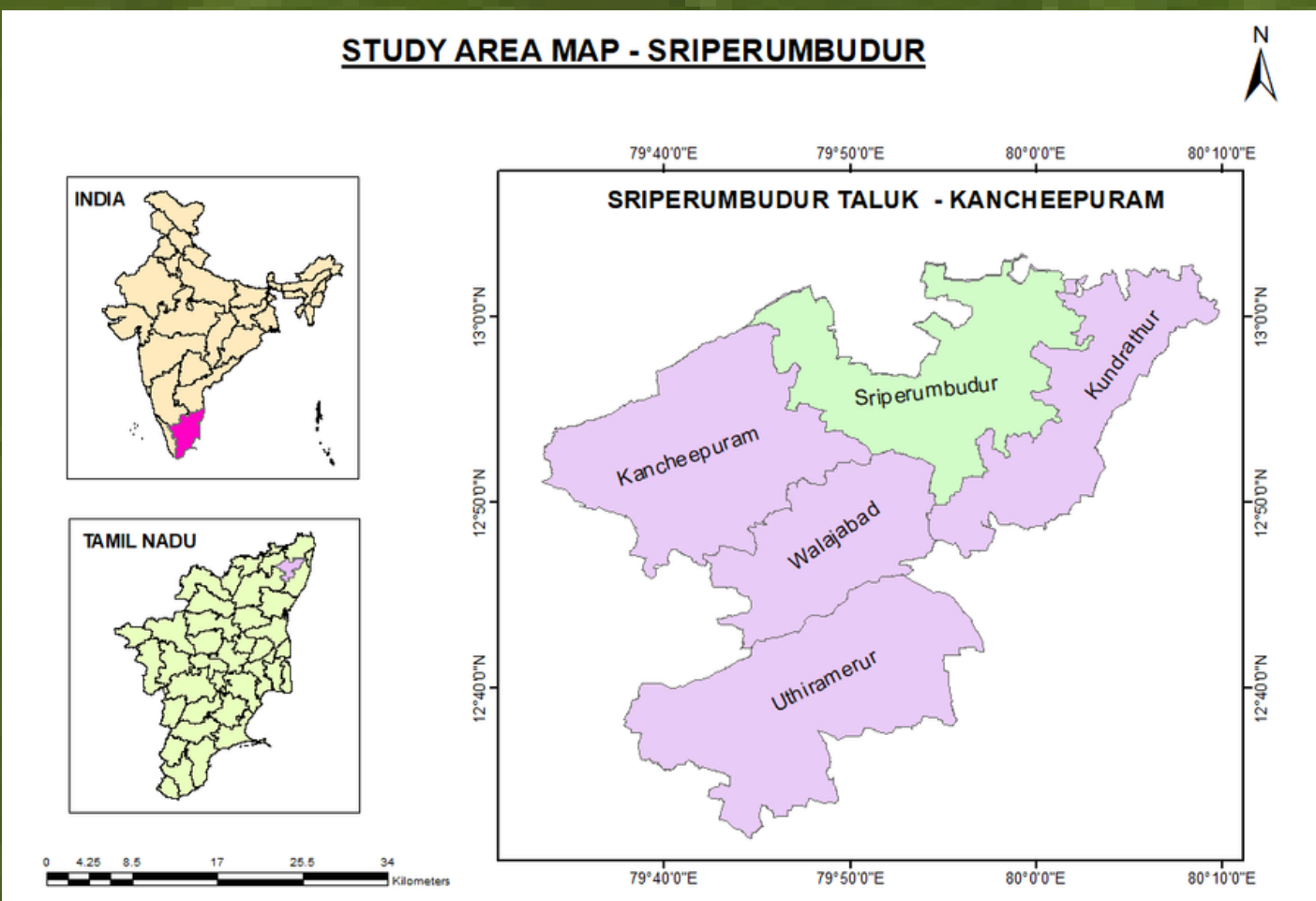
Land Use Land Cover (LULC) analysis plays a vital role in understanding and tracking how landscapes change over time due to urbanization, deforestation, and agricultural expansion. These changes impact climate, biodiversity, and disaster vulnerability, making LULC monitoring crucial for sustainable development. By analyzing current patterns and forecasting future trends, LULC studies support efficient infrastructure planning, resource management, and evidence-based policymaking.

## OBJECTIVES

- To prepare Land Use Land Cover (LULC) maps for the years 2016, 2020 and 2024 using satellite imagery.
- To analyze and quantify the land use changes that occurred between 2016 and 2020.
- To identify spatial variables influencing land use change and generate thematic maps for these factors.
- To predict and validate the LULC pattern for the year 2024 using the Cellular Automata (CA) model and to simulate future land use for the year 2028.

## STUDY AREA

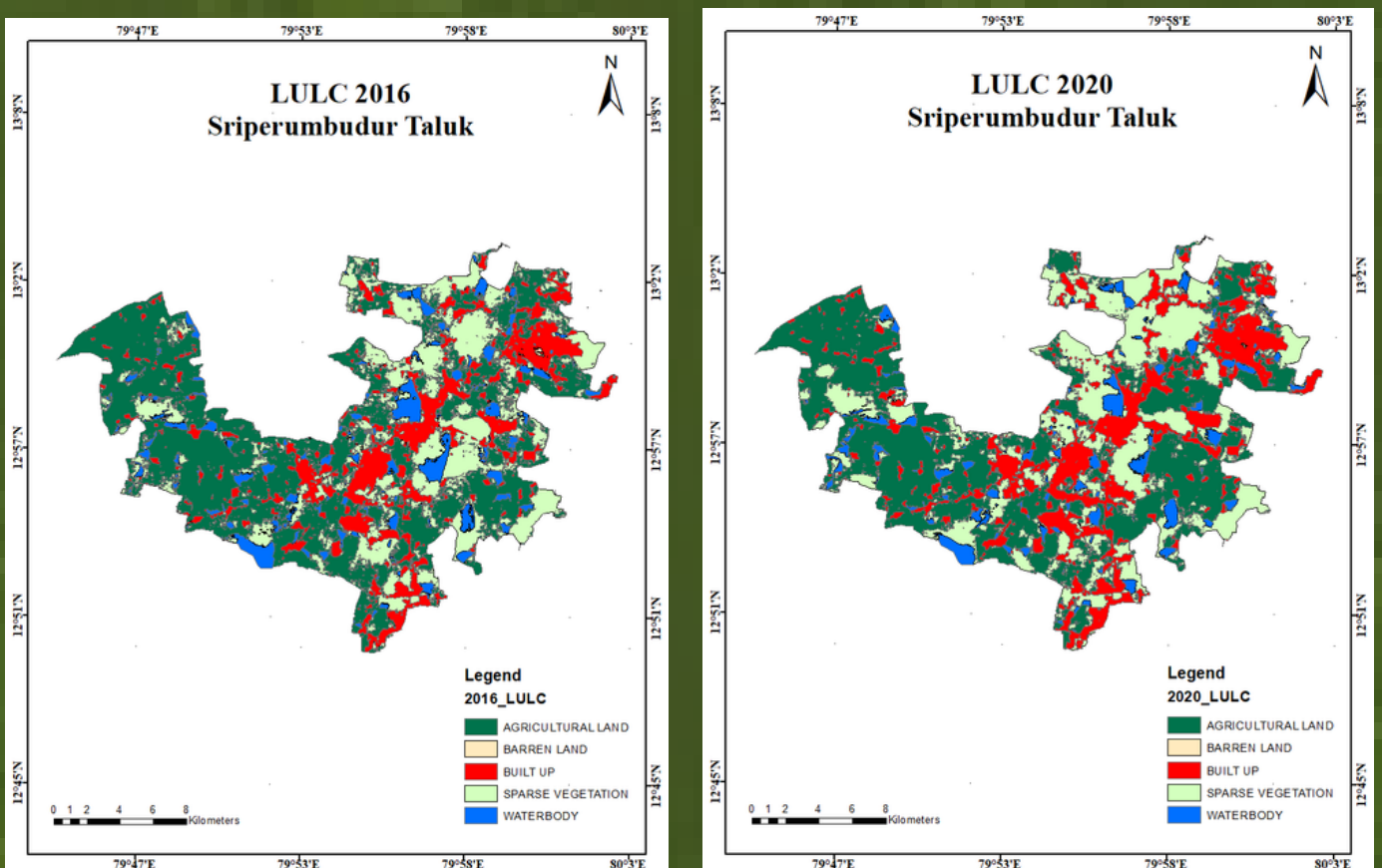
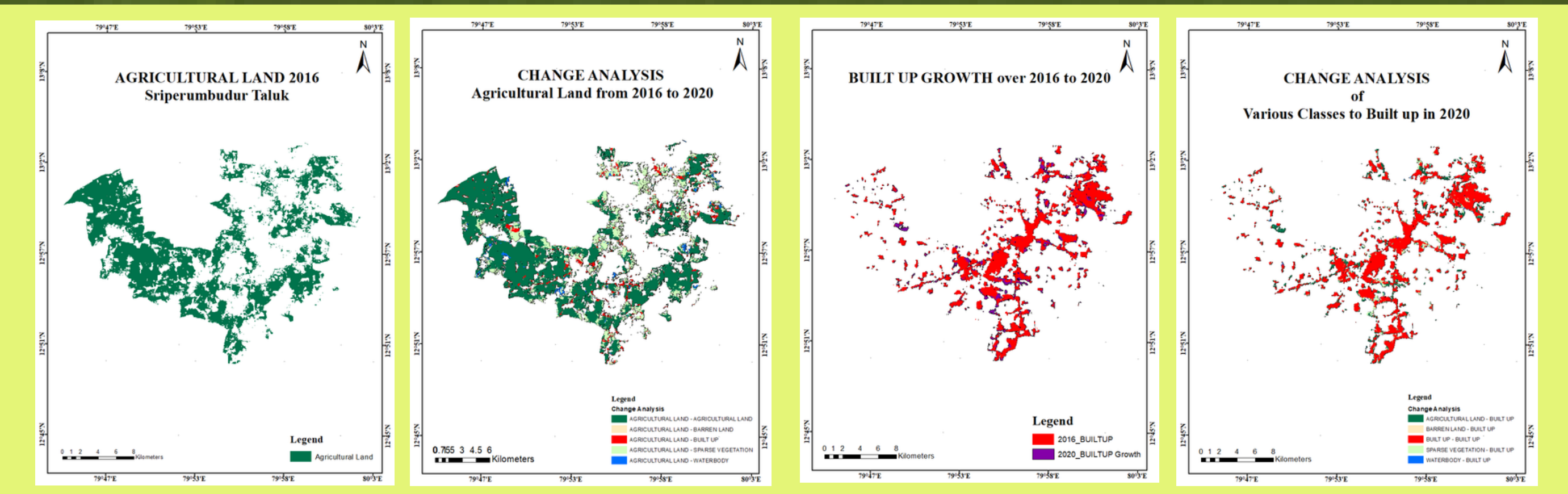
REGION: The Sriperumbudur Taluk, Kanchipuram District



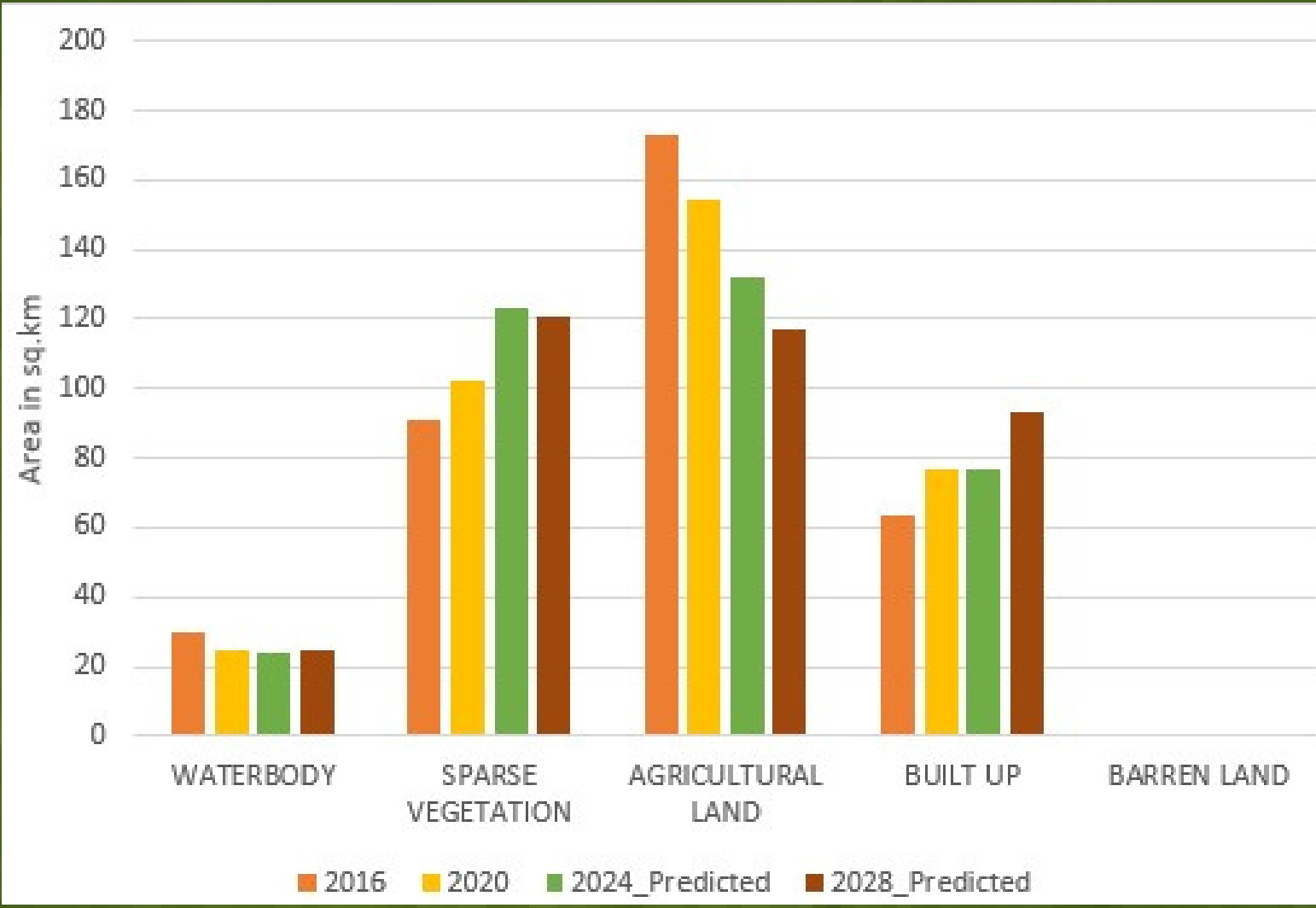
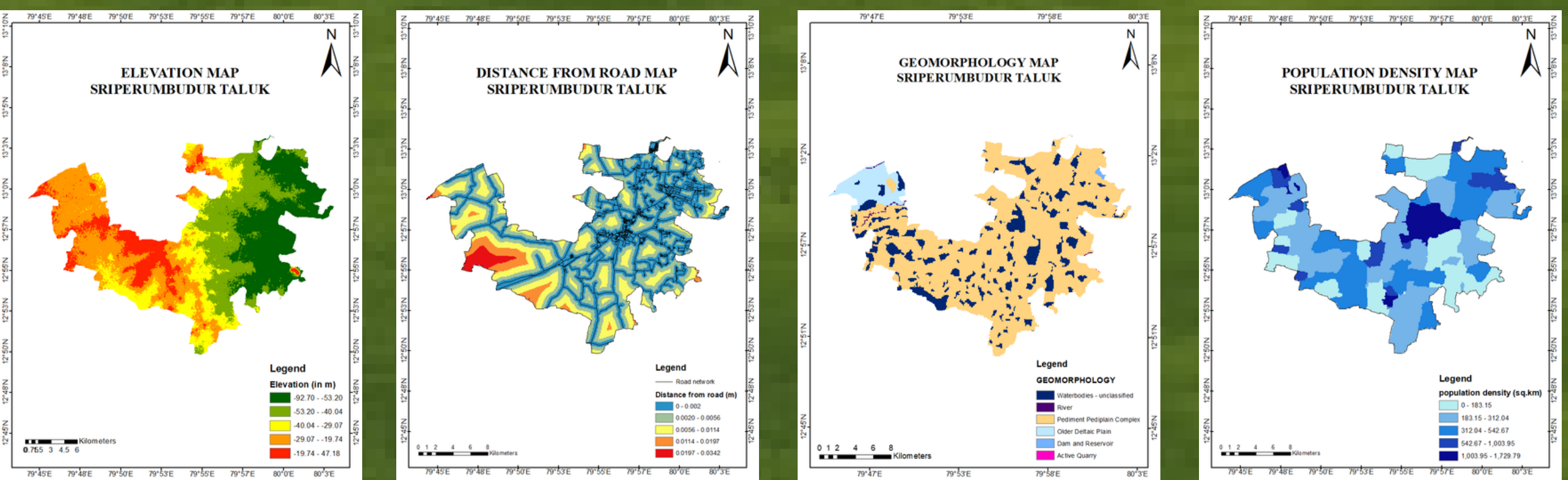
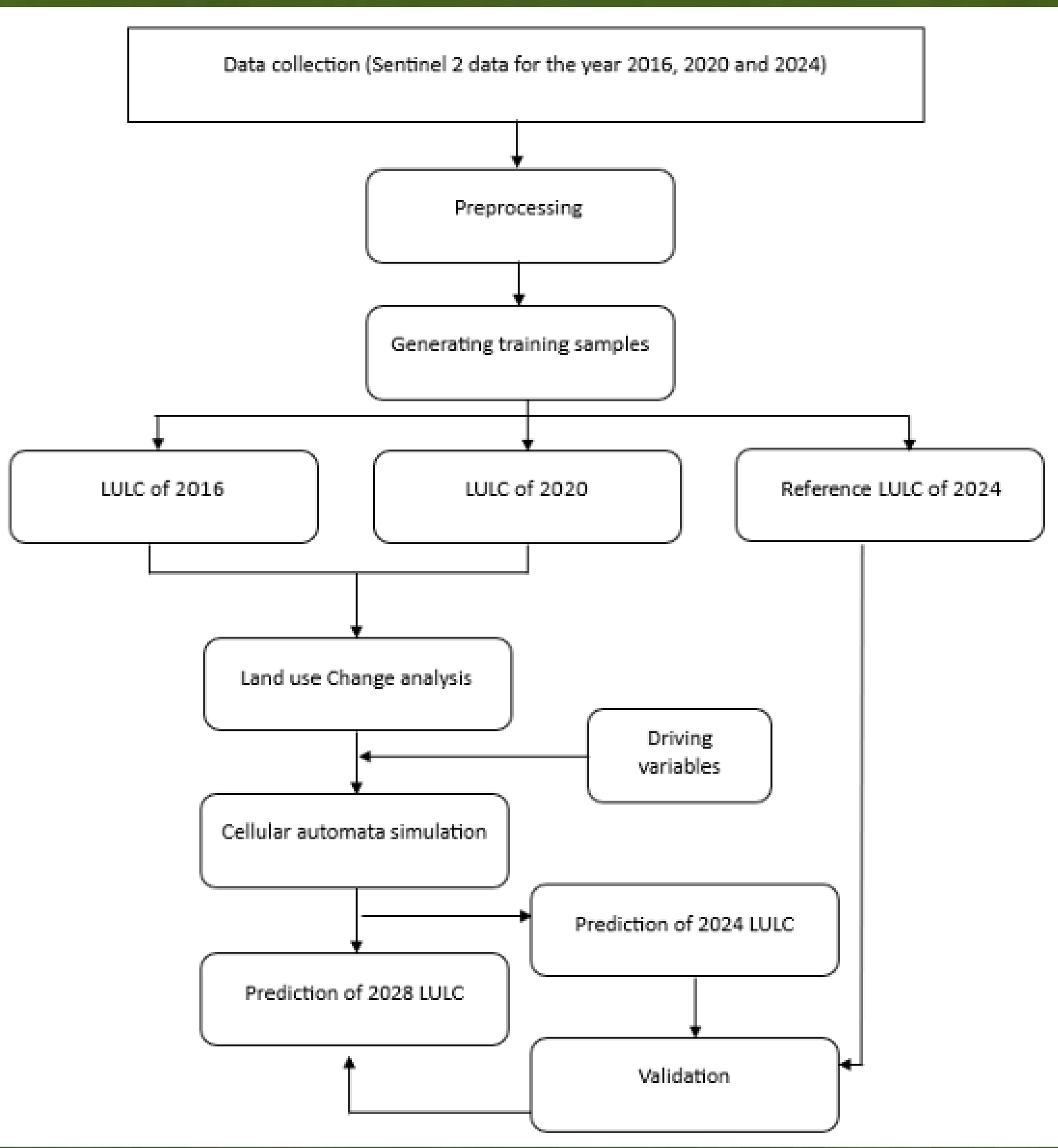
## DATA USED

| S.NO | DATA            | SOURCE          |
|------|-----------------|-----------------|
| 1    | Sentinel 2A     | Copernicus      |
| 2    | Road shapefile  | Bhukosh         |
| 3    | Population data | Census of India |
| 4    | Elevation data  | Open Topography |
| 5    | Geomorphology   | Bhukosh         |

## RESULTS



## METHODOLOGY



## Driving Variables for Land use Land cover Prediction

## Class wise area change over the years 2016 to 2028

## CONCLUSION

The LULC change analysis for Sriperumbudur Taluk highlights rapid urbanization marked by expanding built-up areas and declining agriculture and waterbodies. Driving factors like elevation and population density played key roles in these changes. With an 83.72% accurate prediction model, the 2028 LULC forecast aids proactive planning. These findings support sustainable urban growth and resource management strategies.

A Cellular Automata approach for analyzing and forecasting Land use change

## PREDICTED RESULTS OF LANDUSE AND LANDCOVER FOR 2024 &2028

