The 2nd International Electronic Conference on Land



04-05 September 2025 | Online

Land Use Dynamics and Built-up transformation of Industrial Cities along the Corridor: Case of Ahmedabad and Surat

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INTRODUCTION & AIM

- Cities are active agents for economic growth, as there is a positive interrelationship between urbanisation and economic growth.
- 21st century is marked by rapid urbanisation driven by industrialisation, population expansion and policy intervention, reshaping land use land cover (LULC) globally. Constant evolution leads to changes in land use, urban growth pattern and city fabric.
- Remote Sensing and GIS-based spatio-temporal analysis acts as an effective tools to map, classify, and assess these changes.
- In India, INDUSTRIAL CORRIDORS have triggered major LULC transformations.

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 Analysing spatio-temporal built-up transformation and LULC dynamics of industrial cities using geospatial techniques

OBJECTIVES:

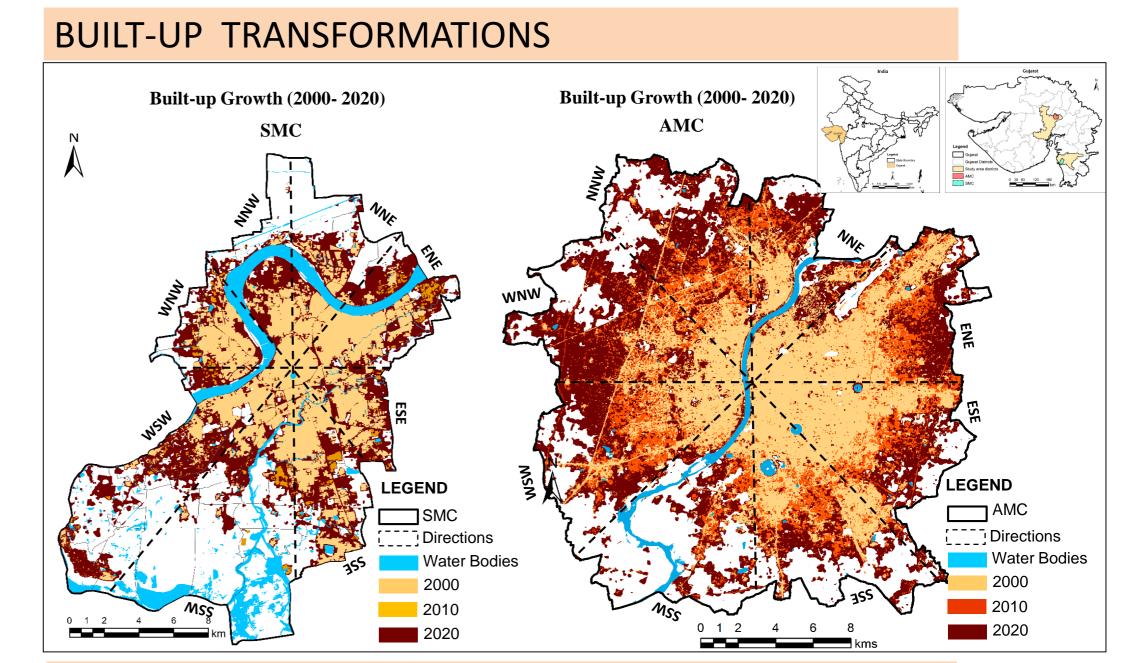
- To identify the built-up transformation pattern and changing urban land-use land cover
- To assess spatio-temporal implications of industrialisation on urban form and urban sprawl over last two decades
- To assess and compare the morphological evolution and LULC dynamics of the two cities over time (SURAT & AHMEDABAD)

METHOD Data Collection Dataa Processing Mapping **Analysis & Assessment** Arc GIS 10.4, Arc GIS, ERDAS **Arc GIS 10.4 LULC Mapping Image Pre-processing Image processing Landsat Images** Image calibration METHODOLOGY and classification Landsat TM 5 (2000) Spatio-temporal changes Line editing Project raster Landsat TM 7 (2010) LULC Distribution Cloud masking Stacking & clipping Landsat TM 8 (2020) Decadal changes Pixel editing · Classify and reclassify **Built-up** Creating training Delineation of study sample for LULC **Transformation** area boundary Accuracy classification (AMC, SMC) Assessment Spatio-temporal changes Image classification • % of distribution Reference point from through Maximum Directional Changes Google Earth Pro **Change Detection** Likelihood Method Comparative analysis of changing pattern of two cities City Level Morphological and LULC transformation **FACTO Spatio-Temporal LULC Directional Built-up** Urban **Distribution Changes** Changes **Transformation** Sprawl Upcoming Emerging Corridor and Urban Expansion **Existing City** Capital **Primary City clusters** Secondary **Growth Pole Existing** Existing Industrial Secondary City **Growth Pole** Transport Corridor (Rail/ Road)

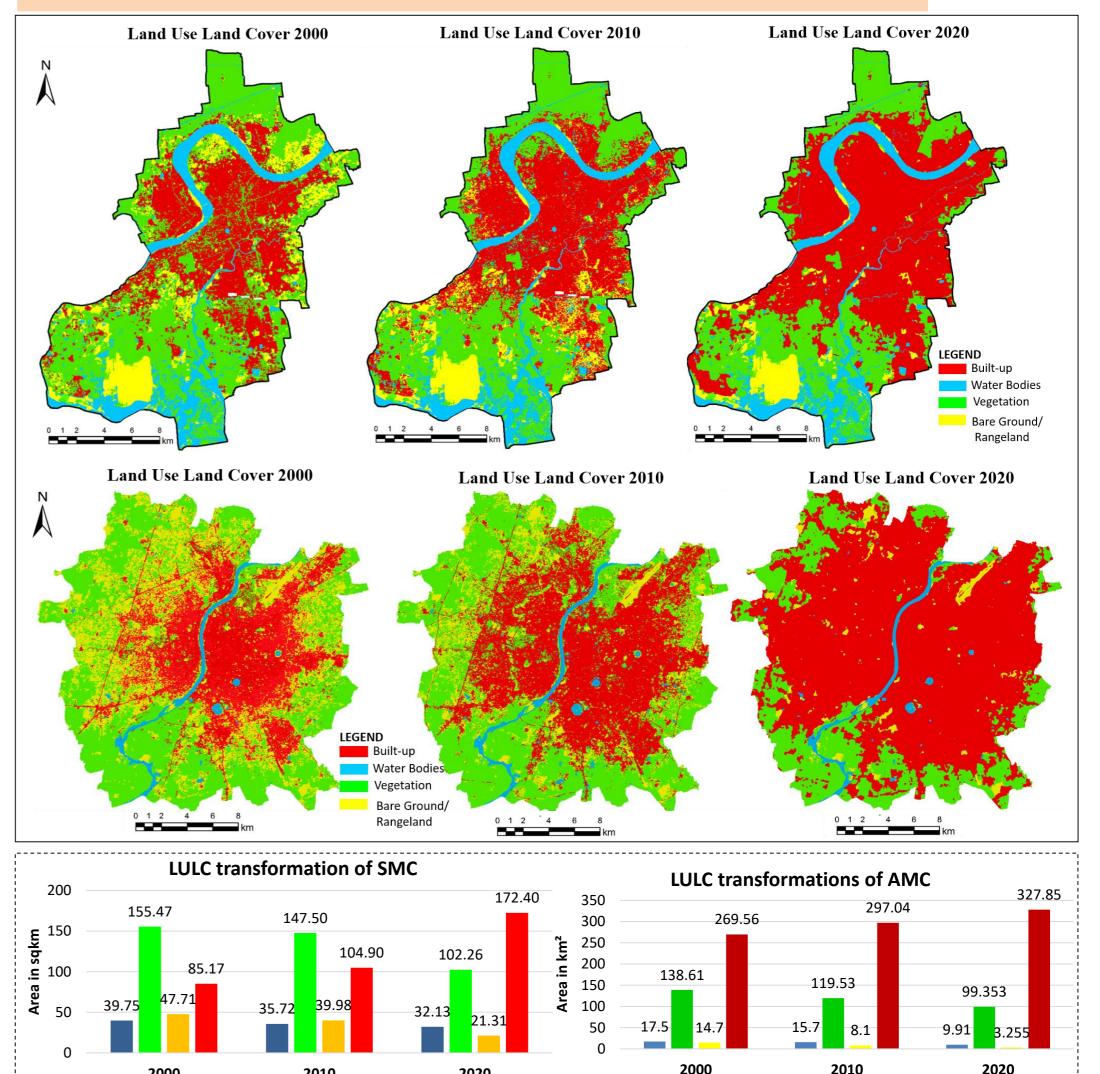
 Transport / Economic Corridors development affect the overall urban pattern and LULC at local, regional and national level by giving opportunities to flourish Economic Growth.

Lateral Economic Zones

RESULTS & DISCUSSION



LULC TRANSFORMATIONS



• Surat's growth is fragmented and sprawl-dominated, in southern and western directions, reflecting industrialisation and migration-driven pressure.

■ Water Bodies ■ Vegetation ■ Rangeland / Bare Ground ■ Builtup

• Ahmedabad's growth is structured and radial, with directional spread towards industrial and transport corridors, but with compact morphology.

CONCLUSION

- Both cities reveal evidence of peri-urban sprawl, agricultural land loss, and ecological fragmentation, with industrialisation acting as the primary driver of LULC change.
- Need to do detail study about spatial changes and changing trends before plan formulation & new investments using new tools and technology.

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