UN-SPIDER International Workshop Space-based Technologies for Disaster Risk Reduction – Assessing the Unseen Risks 7 - 9 December 2022 Bangkok

GEOSPATIAL TECHNOLOGIES FOR ENVIRONMENTAL PLANNING AND ASSESSMENT OF CHANGES IN VEGETATION COVER OF THE TROPICAL RAINFOREST

VIJAYALAKSHMI THATIPARTHI* & K.S.P.V. PAVAN KUMAR

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERISTY HYDERABAD

HYDERABAD, TELANGANA, INDIA

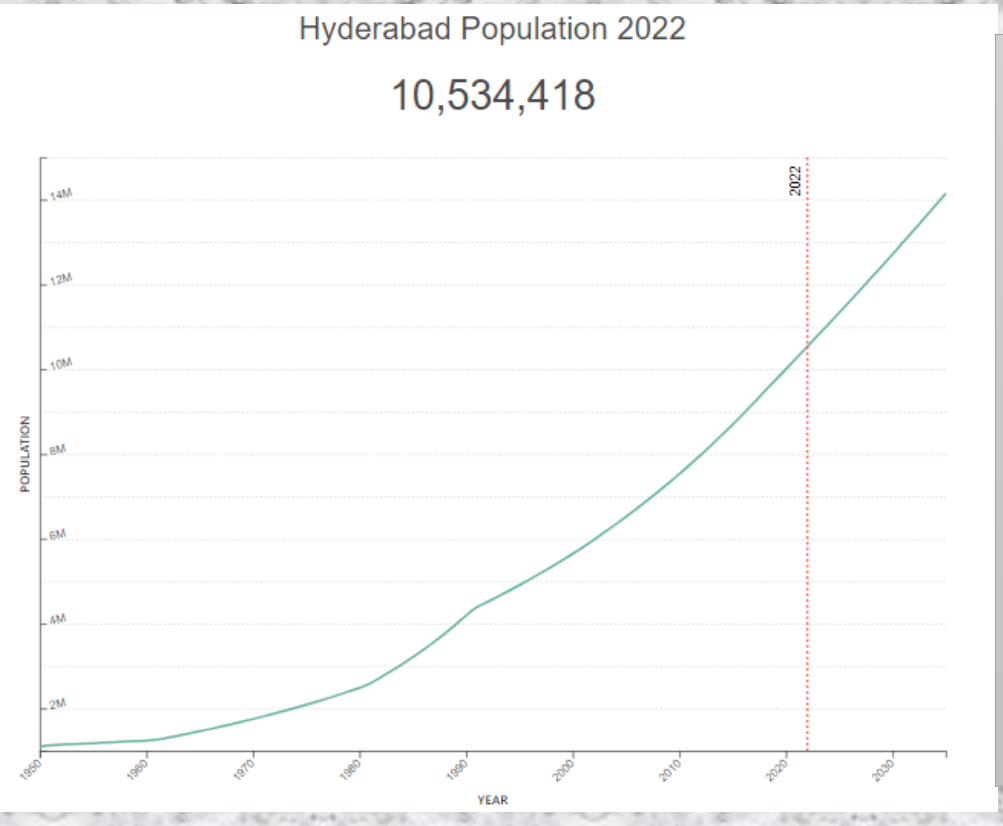
tatiparti@jntuh.ac.in & kspv.pavankumar@gmail.com

SEE : SOCIETY, ECONOMY AND ENVIRONMENT

Sendai Frame Work : 7 global targets, 4 priorities for actions and 13 guiding principles

People	Population
Planet	Problems
Prosperity	Pollution
Peace	Poverty
Partnership	Policies

SDG2030 : 17 goals, 169 targets and 232+ indicators



- **expansion** of urban populations
- **increased** vulnerability of populations and infrastructure.

Incorporation of disaster vulnerability into land-use planning, and Introduction of regulatory measures in industrialized zones

issues, which are directly influencing the vulnerability of urban population:

- ❑Environmental degradation,air pollution,
- ❑ Urban Flooding : storm water drainage/ surface water bodies
- ❑Urban Heat island effect
- ❑Infrastructure and others.

Geospatial technologies

- Specific
- Measurable
- Acceptable
- Relevant
- Timeliness/Frequency

Few studies focused on application of GST for environmental planning

- **Land use Land cover mapping**
- **Land consumption Vs Population growth**
- **City rating indicators**
- **Drainage analysis**
- **Air pollution Studies**

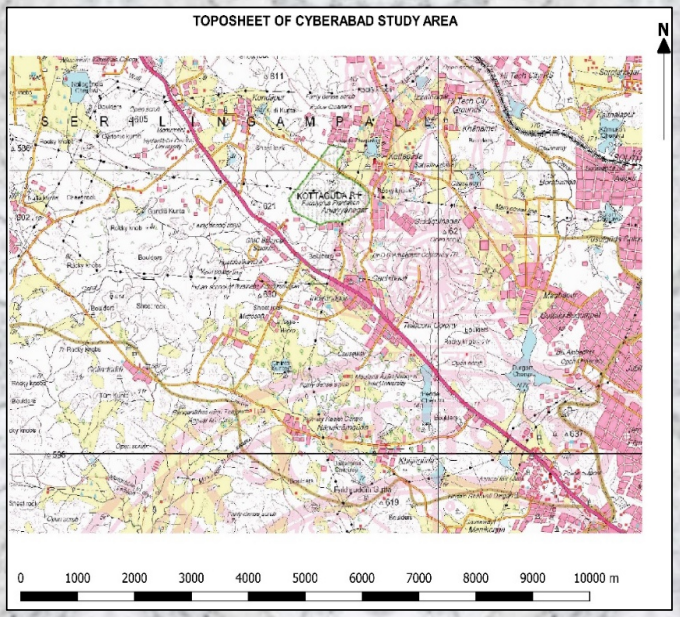
- *Comprehensive analysis of existing green city indicators with respect to the level of implementation of the selected green indicators for State, National and International.*
- *Developing a suitable database which has the details of Geospatial technology practices undergone at various global and national levels.*

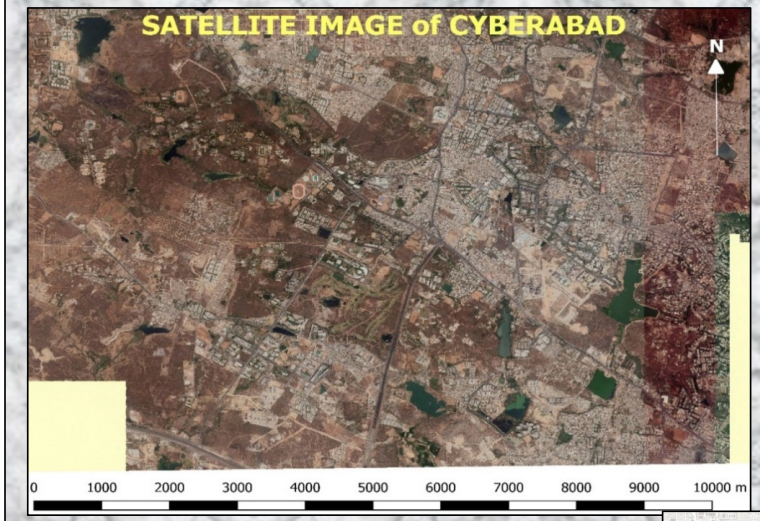
1. *Preliminary studies of suitable remote sensing products for assessment of green city indicators.*
2. *Application and analysis of selected data products for the green indicators.*
3. *Integration of satellite derived information with attribute database.*
4. *Adaptation of geospatial technologies for the assessment of green city indicators*

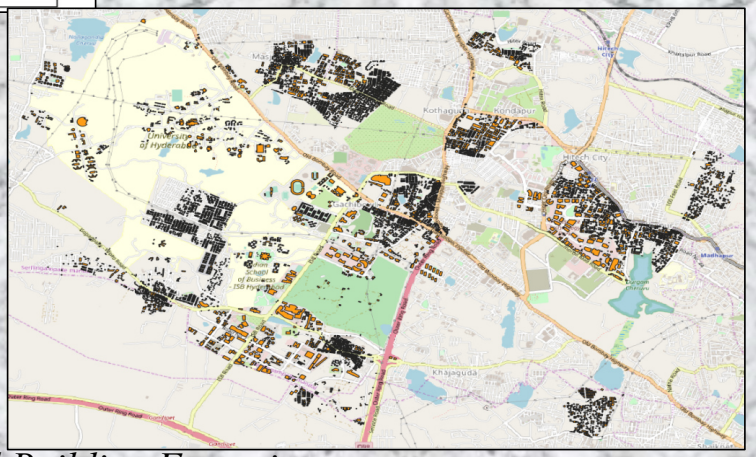
AREAS WHERE "GST" CAN BE APPLIED TO:

1) Resilient measures for Climate and disaster
2) City soil preservation
3) Preservation of water bodies and tree cover
4) City landscape
5) Encourage development in Environmentally degraded areas
6) Urban Heat island Mitigation
7) Social Initiatives- Slum Redevelopment
8) Integrated Land Use
9) Green Built Environment
10) Encourage use of Public Transport
11) Smart Parking Programme
12) Enhance Pedestrian Pathways on Public Streets
13) Rain Water Harvesting
14) Solid Waste Management
15) Lighting Efficiency
16) Use of Renewable energy for built environment

STUDY AREA AND DATA USED





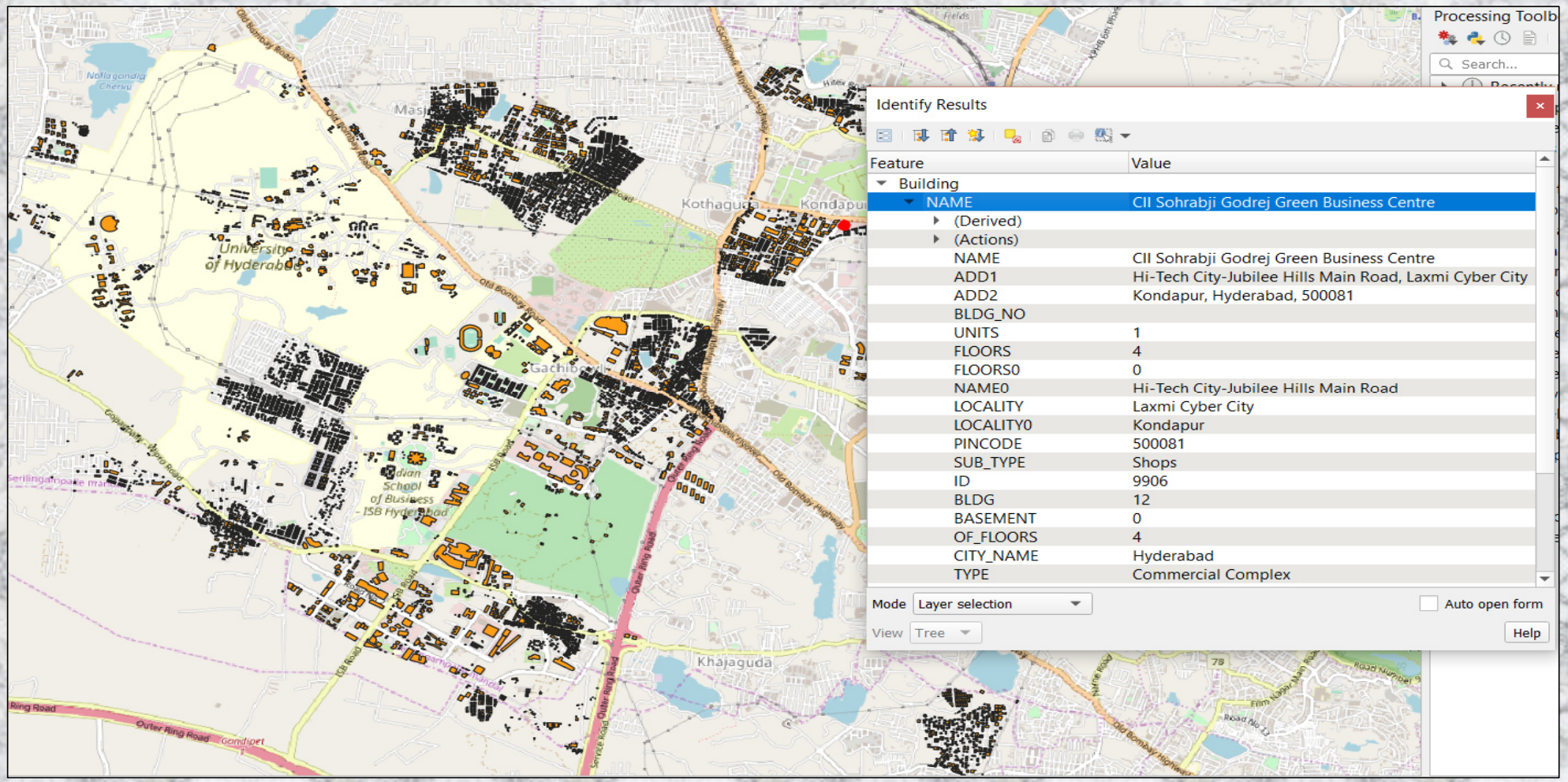


: Digitized Building Footprint

STUDIES OF SUITABLE REMOTE SENSING PRODUCTS FOR ASSESSM

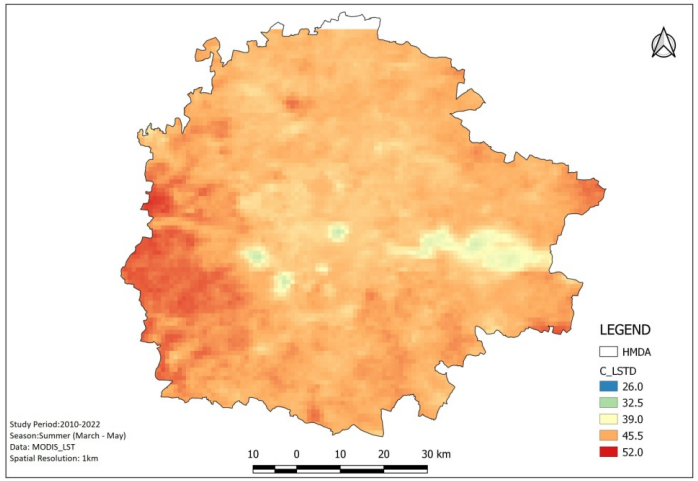
Snapshot of satellite data and tools

S.NO	GREEN INDICATOR	SATELLITE DATA	SOFTWARE/TOOL
1.	Resilient Measures for Climate and Disaster	a) Toposheet of Cyberabad b) Sentinel-2: Year 2019 c) DEM	ArcGIS 10.5- Contour delineation and Buffer analysis
2.	City Soil Conservation	-	QGIS 3.4-Bhukosh Layer
3.	Preservation of Water Bodies and Tree Cover	a) Landsat-7: Year 2000 b) Sentinel-2: Year 2019	ArcGIS 10.5- Generation of NDWI and NDVI map layers
4.	City Landscape	a) Resourcesat-1: Year 2011 b) Sentinel-2: Year 2019	ArcGIS 10.5- Interactive Supervised Classification
5.	Encourage Development in Environmentally Degraded Areas	a) Google Clipped Imagery	ArcGIS 10.5- Delineation of Waste Land Boundary
6.	Urban Heat Island Mitigation	a) Sentinel-2: Year 2019	ArcGIS 10.5- NDVI Map Layer generation

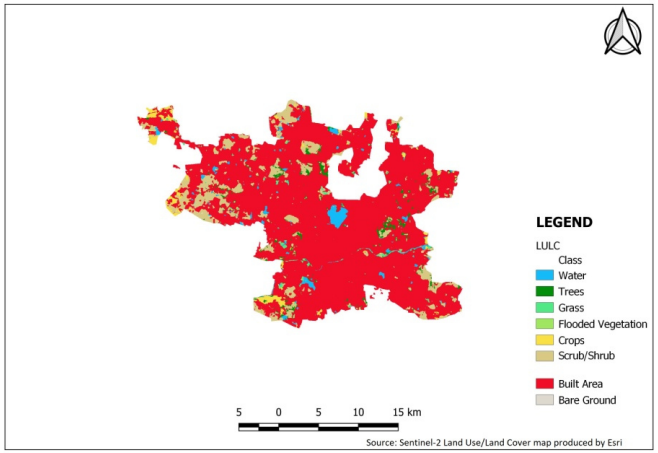


DELINEATION OF BUILDING FOOTPRINT AND APPENDING GROUND LEVEL DATA

MODIS Land Surface Temperature (Day Time)



GHMC LULC MAP



MODIS Land Surface Temperature (Night Time)