

## Urbanization's Toll on Indian Cities: A Call for Sustainable Development

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### ***Unchecked Growth, Land-Use Changes, and Flood Risks in the City of Lakes:***

Hyderabad, once celebrated as 'the City of Lakes,' is grappling with the aftermath of rapid urbanization, leading to significant alterations in its land-use pattern. The impact of this transformation has not only altered the city's landscape but has also increased the risk of urban flooding, a phenomenon exacerbated by the surge in population and climate change.

Over the past two decades, Hyderabad's population has surged, growing at an average rate of 3.46%. This has placed immense pressure on land use, resulting in unchecked expansion and the disappearance of many natural features that once defined the city. A comprehensive study examining land-use changes from 1972 to 2013 highlights the extensive transformation of city, turning water bodies, drainage paths, and fertile lands into a sprawling built-up environment.

Satellite imagery reveals a stark reality – the once-interconnected lakes of Hyderabad have dwindled, and natural streams crucial for the city's floodwater management have vanished due to encroachments and unregulated urbanization. The loss of these water bodies disrupts the historical 'cascade system' that connected lakes through a network of natural drains, designed to carry floodwater from one lake to another.

A closer look at the alarming trend shows the extent of encroachment in lake command areas from 2001 to 2020, captured by Google Earth projections. Lakes have witnessed a significant reduction in area due to massive encroachments, leading to visible impacts during recent flooding events. The October 2020 flood event, though less severe than the catastrophic August 2000 event, showcased an 8.42% increase in flooding extent, causing substantial damage to property and human life.

The flood events in Hyderabad are a culmination of climate change, alterations in rainfall patterns, uncontrolled urbanization, and changes in land use driven by anthropogenic activities. As urbanization and climate change continue to intertwine, the threat of urban flooding and its associated damage looms larger in the foreseeable future.

To combat these challenges, a paradigm shift in urban planning is imperative. Implementing flood-mitigation measures, revitalizing natural wetlands, upgrading storm sewer drainage systems in alignment with future population projections, and adopting nature-friendly engineering solutions must become integral parts of smart-city planning. Strict regulation of urbanization, coupled with robust stormwater drain systems, is essential to address the increasing population and prevent further environmental degradation.

Rejuvenating water bodies and streams is crucial to absorb excess flow during the monsoon season. Stricter regulations against the encroachment of water bodies must be enforced, and satellite imagery, alongside geospatial technologies and hydrological models, can play a pivotal role in assessing and planning mitigation measures.

In conclusion, Hyderabad stands at a crossroads, where the path to sustainable development must be chosen over unbridled urbanization. The City of Lakes can regain its identity and resilience through a holistic approach that prioritizes environmental conservation,

smart planning, and the integration of innovative solutions to mitigate the impact of urbanization on land-use changes. The time to act is now, ensuring a harmonious balance between urban growth and environmental preservation.



**Figure 1:** Encroachment in lake command area from 2001 to 2020 (Source: Google Earth Images).

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