

# Seven reasons why Bengaluru is growing to become an unlivable city

A research paper published in this week's 'Current Science' magazine mentions seven major implications for India's fastest growing city



Emissions from the transport sector is about 43.83% (in Greater Bengaluru) on account of large-scale usage of private vehicles. Photo: Hemant Mishra/Mint

**Bengaluru:** Unplanned development is making Bengaluru progressively unlivable, says a research paper published in this week's *Current Science* magazine. Authored by Indian Institute of Sciences' T.V. Ramachandra and Bharath H. Aithal, the research paper mentions seven major implications for India's fastest growing city. Edited excerpts from the research paper:

## Urbanization and loss of natural resources (wetlands and green spaces):

Urbanization during 1973–2016 (100% concretization or increase of paved surface) has had a telling influence on Bengaluru's natural resources, such as decline in green spaces (88% decline in vegetation), wetlands (79% decline), higher air pollutants and sharp decline in groundwater table.

There are only 1.5 million trees to support Bengaluru's population of 9.5 million (remote sensing data), indicating one tree for every seven persons in the city. This is insufficient even to sequester respiratory carbon (ranges from 540 to 900 g per person per day).

Geovisualization of likely land uses in future shows 93% of Bengaluru's landscape would be filled with paved surfaces (urban cover) by 2020. This drastic reduction in open and green spaces would make the region rich with green house gases, water-scarce, non-resilient and unlivable, depriving the city-dwellers of clean air, water and environment.

## Disappearing lakes

Field studies during 2015–16 of 105 lakes revealed that 98% of the lakes have been encroached upon for constructing illegal buildings (such as high-rise apartments, commercial buildings, slums) and 90% of the lakes are sewage-fed. Indiscriminate disposal of solid and liquid waste has enriched nitrate levels in the surrounding groundwater resources, threatening the health of residents (such as kidney failure or cancer).

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## Fish deaths

Large-scale fish mortality in recent months further highlights the level of contamination and irresponsible management of water bodies. Sustained inflow of untreated sewage has increased the organic content beyond the threshold of remediation capability of the respective water bodies. Ever increasing summer temperatures has also enhanced the biological activities that lower the dissolved oxygen levels leading to fish death due to asphyxiation.

## Frequent flooding

The frequent flooding witnessed by the city even during normal rainfall post 2000 is a side effect of ecologically destructive actions such as encroachment of natural drains, conversion of wetlands to residential and commercial layouts and removal of vegetation cover.

## Decline in groundwater table

The water table has declined from 28 meter to 300 meter (even 400-500 meter in intensely urbanized area such as IT hub Whitefield), over a period of last 20 years.

### **Heat island**

Surface and atmospheric temperatures of the city have increased due to the loss of natural green cover. Temperature has increased by ~2-2.5°C during the past three decades, highlights the implications of explosive urban growth on local climate, necessitating appropriate mitigation strategies.

### **Increased carbon footprint**

Emissions from the transport sector is about 43.83% (in Greater Bengaluru) on account of large-scale usage of private vehicles. Mobility related to job accounts for 60% of total emissions due to lack of appropriate public transport system. Majority of Bengalureans commute longer distances with private vehicles, thus contributing to emissions.