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Waterbody pays heavy price for concretization, shows IISc study

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BENGALURU: Unchecked concretisation and acute loss of wetland and vegetation over the years are the two key reasons causing frequent flooding during a spell of heavy rain or monsoon in Bengaluru, according to an IISc study.

Researchers from the Indian Institute of Science (IISc) said high-density urban development in catchment areas leads to an increase in impervious areas (where easy water flow is hindered, thus causing waterlogging or flooding) in the city.

The IISc study -Frequent Floods in Bangalore: Causes and Remedial Measures -says paved surfaces in the city have increased up to 78% due to years of unplanned urbanisation. Researchers have established the extent of concretisation by comparing the spatial maps of the city over the years and contrasting them with the ground situation.

The study says concretisation, narrowing of storm water drains, lack of appropriate drainage maintenance are resulting in urban floods -a phenomenon almost regular since the year 2000. If this trend continues, then 94% of Bengaluru will be concrete by 2020.

Prof TV Ramachandra from the Centre for Ecological Sciences, IISc, who led the study , said lack of planning and enforcement of laws has resulted in significant narrowing of waterways. He said floodplains (areas next to waterbodies) had been consumed by illegal developments, further leading to flooding in the city.

"Encroachment of floodplains, obstruction of sewer pipes, manholes, dumped construction material and solid waste have blocked the system," he added. Bellandur Lake -which sees fire, smoke and froth every second month as an example of how not to preserve a waterbody -finds a detailed mention in an IISc study on the factors that cause flooding in the city.

The story around Bellandur Lake in east Bengaluru, cited in this study along with many others, drives home the point of concretization and narrowing of drains tellingly. At Jakkasandra village, which is upstream of Bellandur Lake, the main storm water drain has shrunk and 50% is concretized between 1908 and 2017, the study adds. Another highlight is 11.03sqkm Kaikondarahalli Lake, which joins downstream of Bellandur Lake. "This catchment is dominated by infrastructural (residential and commercial) establishments," the IISc report notes.

The study, conducted with assistance by researchers Vinay S and Bharath H Aithal of IISc, says there was no need to concretize the channel of storm water drains as vegetation in these drains bears the load in peak monsoon. "Drains with vegetation and without any bottlenecks would be the best option to mitigate floods. Narrowing channels and concretizing will increase the quantum of water and velocity, which would be disastrous," it added.