CLIMATE CHANGE

EXTREME RAIN MAY DAMAGE 38% BUILDINGS: STUDY

EXPRESS NEWS SERVICE
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A STUDY by BITS Pilani on the impact of climate change and extreme rain events on GHMC limits has predicted that nearly 38.19 per cent of buildings in the city are at high risk in case of a historic rain event, wherein nearly 440.35 mm of rain occurs in a period of 17 days.

The study, titled 'Urban flood risk analysis of buildings using HEC-RAS 2D in climate change framework,' has predicted that going by the frequency of extreme weather events due to climate change, by 2050, a weather event may occur that leads to submersion of 334 square km out of 625 square km of GHMC limits.

The study gauges the impact of such flooding and submergence of the city on buildings and categorises the buildings themselves as high, medium and low risk. "In this study, we have analysed how much area of the city will be submerged and how buildings will be affected," said Prof K Srinivas Raj, Department of Civil Engineering, BITS Pilani, Hyderabad.

"What we found is that when water enters a building, it will naturally weaken the structure. In fact, even from short spells of high-intensity rain where the water may drain immediately, the walls will get damaged. With this in mind, it is imperative to have flood-proofing done up to a certain height from the base, to extend the life of the building," the Professor added.

The study becomes more crucial in light of the fact that the Old City has been prone to various wall collapses in recent years. In addition to this, as per the study, some of the flood prone areas are highly congested ones. These include Kukatpally-Alwal, Charminar, LB Nagar and Saroor Nagar.

"Zone 12, which is around Kukatpally, along with Zones 1, 2 and 3 around LB Nagar and Saroornagar, have roughly 84.91 square km of area susceptible to get submerged. And in this area, there are 5.26 lakh buildings," added R Madhuri, the lead author of the study and research scholar, Civil Engineering Department, BITS-Pilani.

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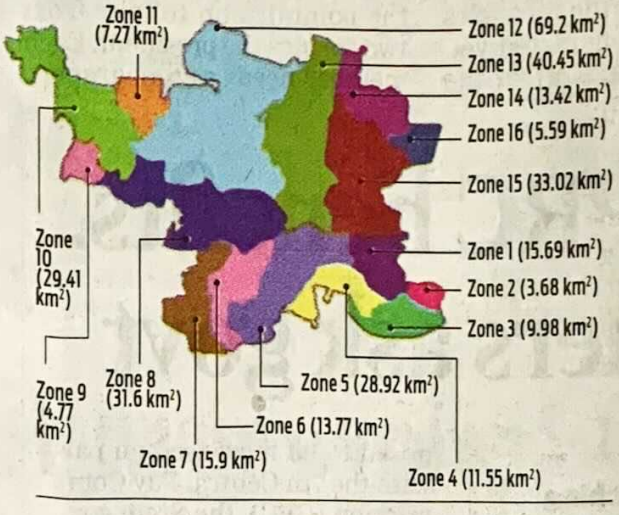
Prof K Srinivas Raj, Dept of Civil Engineering, BITS-Pilani, Hyderabad

Vulnerable areas

The map shows the area in each zone susceptible to inundation in case of heavy rains of over 400 mm in 17 days



Charminar, LB Nagar most prone to floods

FROM P1

Across the city's various flood points, some stormwater zones were more vulnerable than others. Most predominantly, areas vulnerable to flooding were seen in zones 1, 2 and 4 (parts of current day LB Nagar and Charminar zone) and sections of zones 12 (parts of current day Kukatpally and Alwal zone), finds the study. In fact, Zones 1, 2, and 4 were found to have terrains that aid the flooding process. This has been visible during the 2020 and 2021 rains as well.

The report also says that these areas are specifically more flood prone because of the terrain and also due to the high level of concretisation of the area leading to less percolation of water. In the entire GHMC limits, the "impervious land" of areas with water-resistant structures have gone from 55% in 1995 to 73% in 2016 and it would eventually rise to 85% by 2050.

"This is a climate modelling system where the variables like rainfall, elevation of the topography, distance from stream, areas for absorption all come into play. With this system, we can also predict the flooding caused by rains of much lesser capacities, if the data is more and more refined," added Professor K Srinivas Raju.