

# Monitoring drains to generate flood alerts

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Staff Reporter



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The floods of 2017 in Bengaluru carried a lesson: never to under-estimate the drainage network.

While the civic body is slowly rebuilding the network, Karnataka State Natural Disaster Management Centre (KSNDMC) is in the process of installing sensors that could send alerts if major, vulnerable Storm Water Drains (SWDs) overflow.

KSNDMC is in touch with a local manufacture to supply more than 25 of these sensors, which will be installed in places which civic officials have identified as vulnerable to flooding.

“These sensors will be put at outlets and inlets of major lakes, which tend to overflow, as well as important SWDs. They will measure water levels, and can send out alerts to officials and residents if the drains are liable to overflow,” said G.S. Srinivas Reddy, Director, KSNDMC.

The sensors are expected to be installed within a month.

KSNDMC sees this as an important cog in the flood alert system. Coupled with data from their 36 telemetric weather stations and rain gauges, the system can be a guidance for civic officials to prioritise their disaster preparedness.

“If intense rainfall is recorded at one of the rain gauges and the nearby drain sensor is not picking up correspondingly higher flows, then we know there is a blockage in the drainage network. This can be addressed immediately before the area is inundated,” said Mr. Reddy.

The city, in effect, is a pilot to test whether such a system can be extended to other urban sprawls where flooding is a frequent phenomena during monsoons. This is part of a three-year project, funded by the Department of Science and Technology (DST), which recognises ‘the technological solution’.

A key part of the project is to create an urban flood model that simulates hydrologic and hydraulic behaviour using high-resolution terrain data, inundation maps, and analyse vulnerable zones. Eventually, a control unit for pre- and post-flood management will be created along with a mobile app, states the project brief.

## Issues of scaling up

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The project takes off from the pilots conducted by the Interdisciplinary Centre for Water Research at the Indian Institute of Science, which, for the past four years, has been attempting to create a model for flood flows in the city. Researchers used two watersheds in Bengaluru south — Hulimavu and Madiwala — which comprise nine lakes. Using a series of sensors and laboratory experiments, they developed a robust flood model.

“The proof of concept is there and the idea is to practically apply it now,” says P.P. Mujumdar, Professor, Department of Civil Engineering at IISc. and Chairman of the Interdisciplinary Centre.

However, there are challenges to surmount, particularly as the models are being scaled from two relatively small microsheds to the entire city.

“It is a complex process, even to apply it to one (of the three) valley system in the city. High-resolution terrain data is needed, and a lot of other variables need to be looked at to fine-tune this model to the expanse of the city,” he says.