

INTERVIEW | KUSALA RAJENDRAN KERALA

'Unplanned land utilisation, poor river management to blame'



G. KRISHNAKUMAR, SEPTEMBER 01, 2018 22:25 IST
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Kerala rains 2018

Prof. Kusala Rajendran from the Centre for Earth Sciences, Indian Institute of Science in Bangalore sounds a warning bell against unchecked urbanisation and unplanned land utilisation in Kerala.

“Leave the floodplains in **Kerala** out from construction and development of the hilly regions should follow slope stability studies,” says Kusala Rajendran, Professor at the Centre for Earth Sciences, Indian Institute of Science in Bangalore. Winner of the first National award for Women Scientist for Ocean Sciences and Technology and Atmosphere Sciences Technology instituted by the Ministry of Earth Sciences, Prof. Kusala has been actively involved in the study of earthquakes and tsunami reported in the country. In an e-mail

interview, the noted earth scientist sounds a warning bell against unchecked urbanisation and unplanned land utilisation in Kerala.

Do you think that the scale and intensity of the lethal floods that hit Kerala was an outcome of its unplanned/unchecked urbanisation?

A natural process turns into a disaster when people live in the affected areas, and only when people are affected we take such events as disasters. Unplanned and unchecked urbanisation is undoubtedly the common denominator that adds to the intensity of any disaster, particularly in densely populated, developing nations. Development of human societies lead to inevitable conflicts with nature and the impacts would depend on the setting of the landscape, and the utilisation of the land and water resources. The rugged eastern highlands that transform as the midlands and as coastal regions make Kerala's landscape spectacular, but it is also vulnerable to natural processes that can lead to disasters. While urbanisation (poorly planned drainage, underpasses, lack of waste, recycling, etc.) is an important factor in causing floods in large cities (Chennai, Mumbai) the story of Kerala is different. It is not just urbanisation, it is the unscientific use of its land and water resources that has added to the severity of damage. Unchecked **tourism** and illegal constructions, mostly related to tourism (again arising from lack of regulations) is another factor that is so relevant as they provide the triggering conditions enhanced by the rain.

The other issue is with our river management, including construction of dams. Unlike other large **rivers** (like Godavari, Narmada), the rivers in Kerala are smaller and narrower.

The numerous dams across these rivers have reduced the flow into the rivers and over time, their floodplains have shrunk, and people have occupied these floodplains. Not just for cultivation, but also for construction.

A large number of deaths from this 2018 rain disaster was from landslides. The impact of excessive quarrying, deforestation and destabilisation of hill slopes by construction of roads have been discussed and debated by many, especially in the context of the Gadgil report.

What are the key lessons for Kerala on how its development models should be for the future in the wake of the devastating floods?

Leave the floodplains out from construction; possibly they can be used for coconut plantation and a **flood** would only enrich it with fertile alluvium. Development of the hilly regions should follow slope stability studies, and preservation of its forest cover. Deforestation leads to loosening of the soil profile and to landslip. Development should not be at the cost of filling of wetlands, paddy fields and other natural systems that act as buffers.

How can we step up alert monitoring and warning systems to minimise the impact on lives during such calamities?

Dam operations need to be monitored from the perspective of floods. The relation between the amount of rainfall, inflow to various dams, inflow to the rivers (both from surface and dams, as the shutters are opened) and the potential flooding limits in each of these situations needs to be evaluated. This should form the basis for developing region-based alert systems.

With a proper water engineering master plan and data collection, it should be possible to compute the expected surface and subsurface recharge to the river. In the event of opening the shutters of dams, it should be possible to estimate how much water will reach the rivers and what would be the inundation limit and to what height.

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