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# ‘Development activities caused 41% decline in evergreen forests of central Western Ghats’

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Land use analysis of four neighbouring riverscapes in the central Western Ghats between 1973 and 2018 has revealed 41% decline in evergreen forests and 60% fragmentation of intact or contiguous forests, according to a new study, which also highlights the perils of degradation of riverine ecosystems – a primary cause for increasing water insecurity.

The study on landscape dynamics by researchers across the west-flowing major rivers of Uttara Kannada district reveals degradation of forests from 74.19% in 1973 to 48.04% in 2018 with loss of evergreen forests from 56.07% to 24.85%. The study published in Current Science recently says this is due to large-scale development activities such as construction of dams, power projects, forest-based industries, expansion of roads, urbanisation, and encroachment for horticultural and agricultural practices.

‘Insights into riverscape dynamics with the hydrological, ecological and social dimensions for water sustenance’ was done by researchers from the Indian Institute of Science (IISc.) and Indian Institute of Technology, Kharagpur.

Stressing on the importance of watershed of rivers, the study says alterations to landscape structure in the catchment areas influence the hydrological regime leading to variations in the hydrological status. “Sub-basins with forest cover with higher proportion of native species have higher eco-hydrological index, suggesting that the availability of water can satisfactorily maintain biotic demands, whereas sub-basins dominated by monoculture have low index which indicates water scarcity,” it says.

About annual water availability, it says that the sub-basins between coasts and the Western Ghats have perennial river streams, whereas transition zones between the Western Ghats and plains towards the east show deficiency of water for six to 10 months a year with intermittent and seasonal flow. This is explained as the result of catchments with perennial rivers supporting rich biodiversity and aquatic diversity. Aghanashini has the highest diversity followed by Gangavali, Kali and Sharavati, which have altered salinity conditions due to river flow that is regulated by reservoirs, the study says.

“Anthropogenic activities (industries, horticulture, etc.) in the upper reaches of rivers have a negative impact on the pristine nature of water. High pollution levels have been observed in the catchments of towns/cities with high population (Hubballi, Dharwad, Sirsi, Sagar) and industries (Dandeli). Forests help in remediation and maintenance of water quality in the downstream regions. They also help in moderating micro-climate. Regulation of water flow in the river impacts people’s livelihood downstream, as evident from the lowered values of ecosystem goods and services as in Kali and Sharavati estuaries compared to river basins with natural flow as in Aghanashini estuary,” it explains.

## **Ecological solutions**

T.V. Ramachandra from the Centre for Ecological Science, IISc., one of the authors, said the study aimed at comparing free flowing rivers and those with dams etc. and how they impact livelihoods of people downstream as well as the ecology.

Rainfall patterns, water availability and salinity differ largely between the two scenarios, he said.

“We need to have native species forests in the catchment of the rivers. Or else rivers will not retain water. We have seen instances of drought and floods happening simultaneously in Kodagu and Kerala. It can be repeated throughout the country. So, in river basin management, we need to

give importance to watershed intervention. In addition to engineering solutions, we have ecological solutions and we should look at retaining water through vegetation instead of dams,” he added.