

Business Standard

How large-scale activity is eroding the ecosystem in central western ghats

Perennial streams were found in regions that have greater than 70% of forest cover, showing the link between ecology and hydrology with land use

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A recent study has found that unplanned

Azhiyar dam and Western Ghats near Pollachi | Photo: Wikipedia

developmental activities and haphazard land use are reducing evergreen forest cover and perennial streams in the central region of the Western Ghats.

Indian researchers have mapped how large-scale activities have eroded the ecosystem in central Western Ghats, a biodiversity hotspot known for its rich ecology, natural forest systems and perennial rivers. The study focussed on the Kali river, which originates in Uttara Kannada district of Karnataka and joins the Arabian Sea at Karwar. The river is as old as the Western Ghats, supports 325 species of flora and 190 species of fauna. It also has six major dams.

Using remote sensing data, the researchers found that between 1973 and 2016, forest cover around the river reduced from 85 per cent to 55 per cent. In addition, land use patterns in the region changed substantially between 1980 and 2000 due to developmental projects such as dams built on the Kali, the Kaiga nuclear power plant and the Dandeli paper mill. The paper mill has in fact led to large-scale conversion of forests to crops.

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Evergreen forests have also shrunk from 62 per cent to 38.5 per cent during this period, and large water reservoirs have been constructed at the expense of forest cover, the study noted.

The eco-hydrological footprint is a measure of how the ecology of a region responds to changes in the water cycle and water use. This can be measured by assessing the ratio of available water and water lost due to usage and evaporation. Around 2,309 million cubic meters of water are required for people's needs and livestock in the region. Another 4,700 million cubic meters is required to maintain ecosystems and aquatic life.

An analysis showed that although the Kali river has sufficient water supply and perennial streams in the Ghats and the coastal area, regions that lie in plain lands with higher degree of agriculture and cultivation have an intermittent and seasonal flow that has led to water scarcity for four to nine months in a year.

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Perennial streams were found in regions that have greater than 70 per cent of forest cover, showing the link between ecology and hydrology with land use. "Forests with native species of vegetation play a pivotal role in enhancing the water retention capability of the catchment," T.V. Ramachandra, a scientist at the Indian Institute of Science and a member of the research team, told India Science Wire.

"Villagers in the vicinity of native forests earn Rs 1.54 lakh per acre per year compared to Rs 32,000 in villages with stream catchments experiencing deforestation. This confirms the vital role of native forests in sustaining water and people's livelihood," he added.

The study said that management practices adopted by engineers were contributing to erosion of water retention capability in the river catchment with severe water scarcity. The government agencies should establish better management and conservation strategies to maintain forest cover for food and water security.

P Surat writes for India Science Wire and tweets at @psurat22.

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