

# The Sunday Read: On World Environment Day: By the rivers dark

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*Vishabhavathi River in Bengaluru is polluted as it has to take in all the industrial and domestic effluents*

**By Garima Parasher**

*Quality of 25% of Karnataka's rivers degraded; water in Lakshmanthirtha, Cauvery and Arkavathi rivers fit only for irrigation, industrial cooling*

The water quality of around 25% of the rivers in Karnataka has deteriorated, says a recently conducted water quality test report by the Karnataka Pollution Control Board (KSPCB) in association with the Central Pollution Control Board (CPCB).

The analysis was performed at 63 monitoring stations covering 19 rivers in the state. The results show that while 24% of the river stretches have degraded (joined Class E), 60% remained consistent (Class C) and just 16% of the stretches improved (to Class B).

The water in Lakshmanthirtha, Cauvery and Arkavathi rivers conformed to E-Class, making it fit only for irrigation, industrial cooling and controlled waste disposal.

As per CPCB specifications, water from Class 'B' waterbodies can be used for outdoor bathing, from Class 'C' can be used as drinking water after conventional treatments followed by disinfection and from Class 'E' can only be used for irrigation, industrial cooling and controlled waste disposal purposes.

Water samples were analysed for 28 parameters, which included core, physicochemical and bacteriological parameters along with field observations. Besides this, eight trace metals and 15 pesticides were inspected once a year to assess the water quality. The monitoring locations wherein one or more parameters were exceeded were identified as polluted.

The water quality monitoring results were investigated concerning the indicator of oxygen-consuming substances (Bio-chemical demand) and pathogenic bacteria (total coliform and faecal coliform).

According to Dr Vidyadhar Atkore, an aquatic ecologist working on the biodiversity of rivers and wetlands in India, the presence of faecal coliform or pathogenic bacteria indicates a eutrophic condition of the waterbody. This means that water is not potable, and biota is not healthy.

“Presence of faecal coliform leads to high Biological Oxygen Demand (BOD). If the BOD value of a waterbody is consistently high, measures should be taken to improve the water quality. High BOD is an outcome of a stagnant river stretch. This happens when there is a dam upstream leading to inconsistent water flow. This flow should be regulated during the lean season (summer). This will increase the Dissolved Oxygen (DO), which will further improve the biotic conditions of the river,” said Dr Atkore.

Experts say stagnant water also leads to the growth of invasive species that in turn depletes DO. This leads to the presence of only certain types of exotic species, hampering biodiversity.

He further added that some river stretches in Karnataka need to be monitored in terms of flow regulations, as this impacts native biota including certain endemic and threatened fish species.

### Threats are umpteen

Although the headwater region of many rivers of Karnataka is relatively undisturbed, river ecosystem experts opine downstream stretches are in a poor state because of various reasons such as the construction of dams, pollution from surrounding townships, agricultural run-off and industrial effluents.

“Sand mining is yet another big threat. When sand is taken out of the riverbed, it creates a deep pool and water stagnates. This degrades water quality which favors only exotic species of biota,” explained Dr Atkore.

According to Dr TV Ramachandra, Centre for Ecological Sciences, Indian Institute of Science (IISc), while monitoring river water quality is a great exercise, it should be done cautiously.

“The water quality data monitored by us rarely matches with the water quality data made available by KSPCB. Many times, a lower BOD is shown by the agency, whereas at some of those locations we recorded higher values,” said Dr Ramachandra.

“ In most of the rivers in the state, riparian vegetation is missing, and agricultural runoff is entering rivers. While we have a poor regulatory mechanism in place, location-specific recommendations by KSPCB will help other agencies in reviving the rivers

—TV Ramachandra, IISc

Experts say monitoring is not enough and the pollution watchdog should also provide location-specific recommendations to improve the water quality, as different river streams have distinct pollution sources.

For instance, while River Kali is heavily polluted due to the paper mill industry, the Vrishabhavathi River in Bengaluru is taking in all the industrial and domestic effluents, which is not only degrading the waterbody’s health but is also impacting the livelihood of farmers and local communities. Whereas Tungabhadra River’s downstream is impacted due to the presence of a dam.

“If sewage is entering, we should have Sewage Treatment Plants (STPs) so that it is treated to a tertiary level and BOD value does not shoot up. STPs have not come in many locations along these rivers’ stretches, except in major cities. In most of the rivers in the state, the riparian vegetation is missing, and agricultural runoff is entering the rivers. While we have a very poor regulatory mechanism in place, location-specific recommendations by KSPCB will help other agencies in reviving the rivers,” said Dr Ramachandra.

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