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But beyond the plants, jogging tracks and fancy benches, the systemic faults remain potent: Continued inflow of untreated sewage, dumping of solid waste on lakebeds, unchecked encroachments and poor maintenance. (Credit: DH)

How long can cosmetic beautification hide the ugly truth beneath a 'restored' lake's surface? This disturbing question has surfaced for a reason: A stinging, recent Indian Institute of Science (IISc) study report that clinically exposed the poor water quality in a majority of the city's restored lakes.

Pristine, serene and aesthetic, many of these rejuvenated lakes might look pleasing to the eyes. But beyond the plants, jogging tracks and fancy benches, the systemic faults remain potent: Continued inflow of untreated sewage, dumping of solid waste on lakebeds, unchecked encroachments and poor maintenance.

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Authored by the IISc research team of Dr T V Ramachandra, Since V and Asulabha K S, the 2019 study

Raw sewage inflow

So why did the water quality, measured on multiple parameters, deteriorate to such an extent? The primary reason was found to be the unchecked inflow of untreated, raw sewage. “Domestic wastewater, mainly detergents and organic wastes; industrial effluents and agricultural run-off contribute to higher levels of phosphates in surface water.”

If restored lakes once gave people the confidence to consume the water, poor maintenance gave that consumption a dangerous dimension. “Consumption of polluted water causes cholera, typhoid fever, diarrhoea, vomiting, headache, stomach ache, dizziness,” the report warns of the health hazards.

As the Jakkur lake experience has shown, constructed wetlands can potentially regulate water quality and quantity, control nutrients, recharge groundwater and erosion, regulate the microclimate and mitigate floods. But, as the study notes, wetlands require regular maintenance. This was seen clearly lacking in the restored lakes.

Unfit for drinking

Dividing the 45 lakes it monitored under five categories of water quality, the IISc research team had concluded that none of them was fit for ‘drinking.’ This was reconfirmed by a CSIR-National Environmental Engineering Research Institute (Neeri) study, which found that 18 of the 45 lakes it tracked had water quality fit only for domestic and irrigation purposes.

On the directions of the High Court, the Palike had commissioned the Neeri study to assess Water Quality Index (WQI) of 206 city lakes under its jurisdiction. The study’s interim report was released recently.

Categorising WQI under five heads – excellent, good, poor, very poor and unsuitable for drinking --, the study chose to certify 18 lakes as ‘good.’ However, the IISc study focused on 24 lakes found to be with ‘very poor water quality’ fit only for irrigation with restrictions.

This meant their WQI score was between 76 and 100. Among these were the Puttenahalli, Uttarahalli, Kasavanahalli and Kaikondrahalli lakes. Only those water bodies with an index score less than 50 are considered fit for drinking.

Sampling issues

notes Friends of Lakes co-founder V Ramprasad.

Composite sampling, he informs, is a process where the samples are collected from the same spot at different times. The samples are mixed and the final composite sample is sent for testing. This method should be repeated at the lake's inlet, middle of the water body and outlet. "Weather conditions can also affect sample data."

Most studies are clear that rejuvenation efforts should be mandatorily followed up with measures to let in only treated water. This implies building Sewage Treatment Plants (STPs). However, in practice, sewage is diverted to the lakes downstream.

Sewage diversion

Preferring anonymity, a citizen activist involved with Bellandur lake conservation efforts draw attention to this diversion problem on a massive scale. "Until now, I was under the impression that the restored lakes are in good shape although they divert their sewage to Bellandur lake. Sewage has to be treated locally and only treated water should enter those lakes," the activist notes.

"There are many issues with restoration. Diverting sewage leads to the lakes drying up since monsoon rains are not enough to sustain the water levels. We need to build the resilience of the lakes, treat them to the maximum extent," notes Elangoven Kulandaivelu from Whitefield Rising.

While preparing Detailed Project Reports, he says, only civil engineering inputs are taken. "Environmental, hydrogeological aspects are ignored." He also raises questions about the efficiency of the existing STPs linked to restored lakes.

Recommendations

Seeking a 'sensible rejuvenation plan' to decontaminate the eutrophic lakes, the IISc report recommends that the accumulated silt be removed completely. Removing only a portion of the silt that is required for shoreline work will not do.

The report also emphasizes on fencing the lakes. Treatment of wastewater through constructed wetlands and algal ponds (similar to Jakkur lake) is another key recommendation. This, the study notes, will help in removal of nutrients.

To keep a lake alive, restrictions on dumping solid and liquid waste should be in place. "Allow only

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maintained around the lakes, and construction activities in the valley zones be totally banned.

Threshold on development

The study also wants a threshold on high-rise buildings in the region. “There is a need to protect valley zones considering the ecological function,” it notes, drawing attention to these areas marked as ‘No Development Zones’ in the Comprehensive Development Plans of 2005 and 2015.

Wet dredging of the sediments deposited in the lakes, installation of fountains/aerators in the water bodies, a ban on phosphate use in detergents and public awareness and participation are among other recommendations.

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