

Chennai, Tamil Nadu

Significance: Buffer zones of wetlands can minimise flooding

What Now?

Rampant encroachment and illegal development destroyed 25-30% of the city's wetlands

The Result: About 290 lives lost in flooding last year, as the city's battered natural flood defences failed to cope



were built on their banks," she says. "We had been asking for trouble and this time it truly delivered." About 280 people died in the floods that hit Chennai.

Despite all the negative press accorded to

wetlands, Kumar of Wetlands International admits that some progress has been made in governing them.

For example, the 1,165 sq km Chilika Lake in Odisha is seen as a model of how to stop denu-

ation and start the restoration of a wetland. Elsewhere, states like Bihar and Rajasthan have set up an institutional framework to try and safeguard their wetlands, while others such as Karnataka have a Lake Development Authority in place.

The Union environment ministry has set up the National Plan for Conservation of Aquatic Ecosystems to aid the protection and restoration of wetlands. "For any of these programmes to be successful, there has to be a convergence of development planning. Wetlands, for instance, have to be included in programmes such as Smart Cities," says Kumar. "Dealing with wetlands can't be an afterthought."



"As we deal more with the effects of climate change, the role of these wetlands as a buffer has only become more important"

Ritesh Kumar,
conservation programme manager, Wetlands International - South Asia

In Bengaluru, a city where construction has become a constant, people are asking if this is indeed the case. While Ulsoor Lake may have been the latest water body to hit the headlines, it was Bellandur Lake, a few months ago, which foamed over and even caught fire.

Locals wonder which water body is next. Already, a 400 acre water body connecting Varthur, Bellandur and Agara lakes in the city is under strain, with a storm water canal reduced by one metre in the last two years. Some 74 acres have been walled off for an SEZ, say activists, and hopes are fading of rescuing this wetland too. "If this continues, people may start leaving Bengaluru in the next two or three years," says Ramachandra of IISC.

This may be a watershed moment in the fight to save India's wetlands. ■

Fish in Troubled Waters

Thousands of dead fish surfaced in Bengaluru's Ulsoor Lake recently, the latest symptom of the pollution plaguing the city's water bodies

:: Indulekha Aravind

Ulsoor Lake, a 50 hectare expanse of emerald green water in Bengaluru, is a lovely sight in spring when the trees lining it are blooming with the yellow of the tabebuia or covered in the purple of the jacaranda. But this spring, residents were greeted with the horrific sight of thousands of dead fish that had washed up on its shores early morning on March 7. Photos and videos of the piles of fish went viral, provoking shock and calls for action, and various dignitaries visited the lake, from the local MLA, Roshan Baig, to the head of the state pollution control board, Lakshman.

Among those who visited the lake was Priyanka Jamwal, a fellow at Ashoka Trust for Research in Ecology and the Environment, who came to collect water samples, at the suggestion of a citizens' group. But while the tests showed that no chemical or poisonous substance had suddenly been released in the lake, the results should still concern the city's residents. "We found that there was very high ammonia content in the water, which comes from untreated sewage and is toxic to the fish," she says.

A Sip of Ammonia

The dissolved oxygen in the lake had also decreased because of high temperatures during the day and the spread of algae, which was consuming the oxygen, reducing its availability for the fish. "These fish are not natural to the lake, they would have been released by the department of minor irrigation. The fish would have got very weak because of the ammonia," says Jamwal, who studies water pollution. TV Ramachandra of the Indian Institute of Science's Centre for Ecological Sciences concurs that the depletion of dissolved oxygen in the water would have caused asphyxia in the fish. "At the inlet, the dis-

MARCH 2016	MAY 2015	APRIL 2015	JANUARY 2011
Nearly 1,00,000 fish wash up on the shores of Ulsoor Lake	Foam on Bellandur Lake, one of the largest in the city, catches fire	Huge clouds of foam spill over from Varthur Lake on to the roads in Whitefield	Dozens of dead fish found floating in Iblur Lake



Reasons for large-scale death of fish in lakes

High ammonia content from untreated sewage

Lower dissolved oxygen due to sewage, rapid growth of algae

High temperatures during the day



Source: Indian Institute of Science

Smoke on the Water

Locals around Bellandur and Varthur lakes had got used to the sight of clouds of foam on the surface, but last year, high winds lifted the foul-smelling foam on to the roads. A few days later, parts of the foam caught fire. Ramachandra found that untreated sewage was again a major culprit, along with the presence of phosphorous, coming from indiscriminate use of detergents. While a family on an average uses 1-1.5 kg of detergent a month, families in this region were using 4-5 kg on an average, he says. The phosphorous, along with untreated effluents in the lake and an accidental spark led to the fire, says a report by the Centre for Ecological Sciences.

Like the US, India should gradually move towards banning phosphates in detergents, which kills lakes, says Ramprasad V, a member of a citizens' initiative to save the city's lakes called Friends of Lakes. "We should begin by making detergent companies display the amount of phosphates they use, and gradually reduce it," he says. Groups like Friends of the Lake have made some progress in conservation, succeeding where the government hasn't. Activities include cleaning the lake surroundings, keeping a check on the growth of algae and ensuring that sewage treatment plants are working. Such groups, believes Ramprasad, are the solution to the current crisis plaguing the lakes.

Jamwal, however, believes the civic agencies need to step in here. "The first thing is to have a sewage-treatment plant that will treat organic matter and convert ammonia into nitrate, which is not toxic to fish," she says. At present, the city releases 1,400 million litres of untreated water every day, while sewage-treatment plants have the capacity to treat just 721 million litres. Of this, only 40-50% of installed capacity is being used, with the rest of the untreated water ending up in the lakes.

If untreated water keeps getting pumped into the lakes, it would soon contaminate groundwater resources, as is evident from the higher nitrate levels in the borewells in the vicinity of polluted lakes in Bengaluru, warns Ramachandra. Major health disasters like kidney failure would then be just a few sips away. ■