

The alarming rate of the levels of pollution and the contamination of water have made fresh water a scarce commodity these days. Last fortnight 40 water fowls including migratory ducks such as Showellers and Carganys died due to water pollution in Lingabudhi tank in Mysore. About a month back, a major foaming incident occurred in Bellandur tank, which attracts thousands of birds every year. A few years ago a sewer pipeline broke at the Sonkey tank, led to the death of many varieties of fish. Incidents such as these are becoming more frequent. It is high time we gave a serious thought to our wetlands.

A wetland simply means any land that is submerged under water for at least a part of the year. This term takes into account diverse habitats including lakes, rivers, floodplains, mangrove swamps, salt marshes and artificial ones such as tanks. Wetlands have various uses including being reservoirs of water. Even the early signs of human civilisation are traced to wetlands where water from wetlands were used for drinking and irrigation purposes. This continues even today. Wetlands also help in recharging the groundwater and influencing the micro-climate.

"A wetland is not just another swimming pool or a tub of water. It is a living system supporting a variety of life-forms," says Dr M B Krishna of the Birdwatchers Field Club of Bangalore. The most attractive life-forms talked about are the birds. Some of the wetlands of Bangalore and elsewhere support thousands of birds during winter including migratory ones.

"Apart from birds, they also support other varieties such as frogs and insects like dragonflies exclusively dependent on waterbodies for completion of their life-cycle. We need to look at them more as wildlife habitats having a variety of plants and animals rather than mere water reservoirs," points out S Karthikeyan of WWF-India.

Sadly, instead of using wetlands for imparting education on wildlife and on water resources, they are more commonly used for recreation such as boating. Boating was introduced in Lalbagh tank three and each time expert committees have found that boating affects migratory birds. It was discontinued only to be revived later, adds Dr Krishna.

The tanks around Bangalore and elsewhere in the State originally were constructed mainly for harvesting rainwater for irrigation and drinking water supply by impounding the monsoon run-off in the valleys. Rapid industrialisation and urbanisation in the recent years have undoubtedly affected lakes and

tanks in the city in Bangalore and the surrounding region most of the effects of pollution irrespective of their origin generally end up in wetlands turning them into cess pools.

In spite of harbouring wildlife and holding a life-supporting resource such as water, wetlands are not given their due. They are instead used for dumping garbage, construction materials, discharge of sewage and industrial effluents. Wetlands are increasingly drained and converted into housing sites, stadium and commercial complexes. A recent study conducted by the Indian Institute of Science shows that Bangalore has lost about 50 per cent of its wetlands over a period of 25 years. Of the remaining ones about 40 per cent of them are polluted by sewage.

"A policy of assessing the environmental impacts of any city expansion plan by the BDA should be done

in order to prevent wetlands from being converted into sites and used for discharging sewage. The town planners should be made aware of the importance of wetlands," says a senior official from the Ministry of Environment and Forests.

One of the current approaches, and the laws to control pollution, are outdated.

The present approach in the eco-system approach. Any effluent should be allowed into a water body only after assessing whether the receiving water body can take that amount of pollutants. If it cannot, then don't pollute the water body, even if the pollutant adheres to the current standard set under law," says Dr Lenin Babu of the Centre for Environmental Education Research and Advocacy (CEERA) of the National Law School of India University. The fine for polluters are nominal now. The cost of restoration and rehabilitation of the water body to its original state should be recovered from the polluters," adds Dr Lenin Babu.

The Centre and the State government do not have a policy for conservation of wetlands although India is a signatory to the 1971 Ramsar convention on Wetlands of International importance. This makes India obligatory to protect, improve and conserve at least some of its important wetlands. But for some wetlands nothing is done for the rest.

Proposals for framing a wetland policy by the Centre has been there for almost a decade. Until a wetland policy emerges and agencies begin to act, polluted waterbodies with dead birds, wetlands choked with garbage and construction debris will be a common sight.

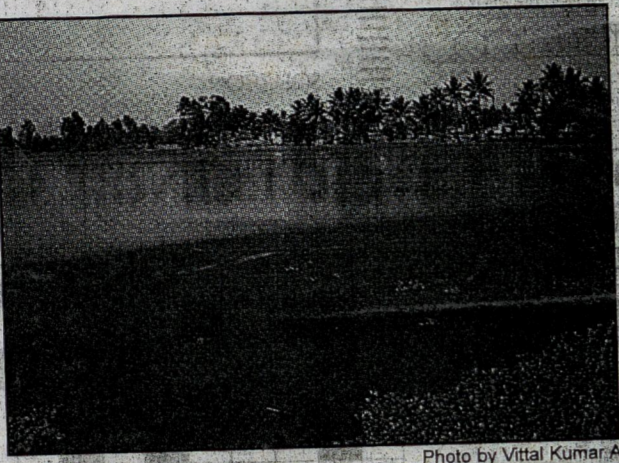


Photo by Vital Kumar

Wetlands or wastelands?

Until a wetland policy emerges and agencies begin to act, polluted waterbodies with dead birds, wetlands choked with garbage and construction debris will be a common sight, writes

SUNIL KUMAR M



Shoveller
Photo by E Hanumanth Rao

Bird watchers say no to 'people-friendly' lake

Water birds of Puttanahalli Tank will soon disappear if boating is allowed

SANGEETA CAVALLE
Times News Network

PARADISE LOST

Puttanahalli Tank is perhaps the only waterbody in the city that can boast of both nesting and roosting birds. More than 125 species have been recorded here indicating that it supports over 30 per cent of the bird species recorded in Bangalore. But all this could change if authorities decide to desilt it and add a sewage treatment plant.

Bird watchers do not want to see the tank converted into a 'people-friendly' lake with walking and jogging tracks, boating and other facilities as has been done with other tanks in the city. This would simply destroy the perfectly balanced ecosystem and scare the birds away, they say.

Puttanahalli Tank is a veritable bird paradise. Every evening between 3,000-5,000 birds flock to the tank to roost. The tank is a shallow

waterbody located on the Bangalore-Hyderabad road, about 16 km north of the city. Ten species of large water birds nest on the trees that grow on the two islands created by the state forest

department. This is the only species, little cormorant, little egret, grey heron and purple heron. Winter visitors include pintail duck, wigeon, spotted sandpiper and greenshank. The rarely seen, majestic red-headed falcon is an occasional visitor. S Subramanya one of the authors of *Threatened Birds of Asia* and considered a leading authority on birds of south Asia says, "We have to save them for posterity. There's no use showing pictures of rare birds from a book to children. Once you see them close, you will fall in love with them." With water birds making the tank home, bird watchers keen that the area be bird refuge.



BIRDS OF PUTTANAHALLI TANK
spot-billed pelican
cormorant
egret
grey heron and purple heron
pintail duck
wigeon
spotted sandpiper
greenshank

Lakes are our lung spaces; we must save them, say experts

Express News Service

February 9

Be green, save blue goes the saying. The city lakes today are choked with sewer and garbage. But there is hope, say experts. Every one from politicians, bureaucrats, citizens have a role to play. Here is more on what they can do to help our lakes recover:

CREATE AWARENESS, says Central Ground Water Board Regional Director C.S. Ramasesha.

We have managed to convert the Krishabhavathi river on Mysore Road into a drain. Will it possible for a rapidly changing city to save its lakes when a river was converted to a sewer? I don't want to say NO. It is possible to conserve what we hold dearest if we ensure that awareness reaches all.

GET THE COMMUNITY



Despite heavy rains and measures like a separate idol-immersion pond (right), the water level in the Yediyur Lake in Jayanagar remains low — Express photo

INVOLVED, says environmental scientist and engineer Ramanand, who works for JSYS.

Lakes are the lung spaces of the city. Bangalore had so many lakes in the past; nobody really knows why they were neg-



Lakes should not be given to private enterprises to be converted into amusement parks. This simply brings in a lot of pollution through garbage disposal and water sports might pollute the water, which could otherwise be used for drinking in a locality. Instead, lakes should be parks for developing the flora and fauna of the city.

lected. All we have now is housing colonies out of tank areas.

What has to be done is to recover what is lost and get a community feel into the "lake saving" activity. If citizens do not participate in saving lakes thi-

ngs cannot improve. The citizens should be responsible enough to find time to watch over the conservation process of what rightfully belongs to them.

NETWORK OF PEOPLE AND AGENCIES IS NECESSARY, says University of Agricultural Sciences chief programme co-ordinator of tank conservation N. Nagaraja.

Cauvery water is not enough to sustain the city's growing needs. We need to look at lake

Water sports at your doorstep

BDA plans to put in place these facilities at 12 city lakes. But conservationist advises caution

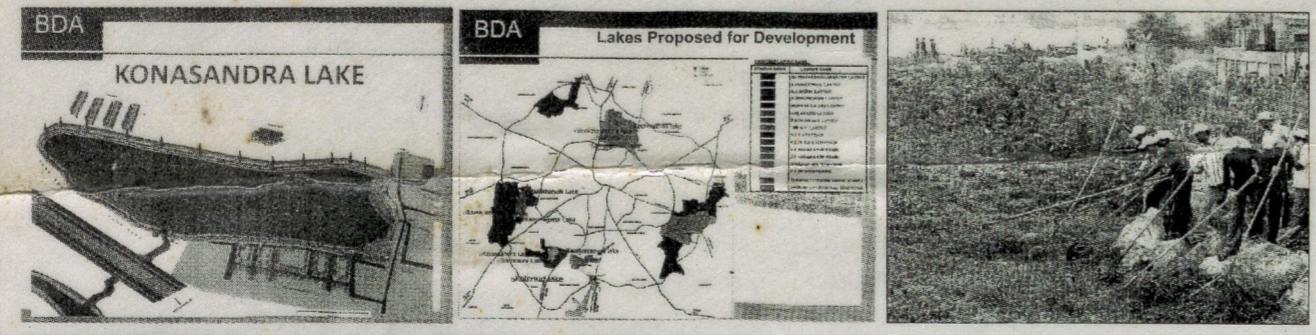
CHITRA B RAO
BANGALORE EXPRESS

Water sports-loving Bangaloreans need not leave the city for wet thrills. If the Bangalore Development Authority (BDA) as good as its word, these facilities will soon be available in lakes across the city.

Speaking to Bangalore Mirror, BDA officials said the cities will be established out of a Rs 150-crore project over 12 lakes. "The detailed project report for four lakes is ready. The list includes manjula lake along the NICE riparian road and the chennahalli lake along the rd to BIA," they said.

A senior BDA official said the bid work on the lakes will start after four months and the 11 package comprising four lakes will be completed by May 09. "By next summer, water sports for Bangaloreans will be a reality," he added. An official said the entire project cost, while BDA (50 per cent) and the state government (15 per cent) will share the remainder. "In its budget for 2008-09, BDA has set aside Rs 25 crore for the purpose," said an official.

Following caution, environmentalist Vellappa Reddy said, "Conservation and development should be mutual. By introducing water sport activities, we could be destroying the fragile ecosystem which has developed over many hundred years. But we can take measures to prevent that damage. We should divide the lake into core area and fringes. Sporting ac-



OTHER FEATURES
In addition to water sports facilities, the lakes will have the following features:
• Fencing around the perimeter
• Walkways
• Parks, gardens and trees

triverters should be allowed only on the fringes, and ecological activities and conservation in the core area."

He added, "Besides, we need to take expert opinion on the model and supplement the environment by planting aquatic plants and rearing aquatic fowl. Further, maintenance should happen on a seasonal basis as the animals and birds

restrict their activities according to the seasons. The three important activities of birds — courtship, breeding and feeding — should be kept in mind by the agencies involved. We

also need to regulate the number of visitors, ban plastic and eatables, and use only non-polluting boating practices like paddling, rafting, canoeing and kayaking."



Lake to be recreation centre

BY G S SRINIVAS

TUMKUR
July 10: The Karnataka State Lake Development Authority, in association with the Tumkur Urban Development Authority (TUDA), will convert Anani Kere, a lake situated in the heart of the city, into a Kalyani for idol immersion and a food court will come up at the proposed site. The authorities have sought

Bengaluru. The proposal has come as a big relief as there are no parks in the entire city. The proposal is pending with the department of environment and forests. As per the proposal, two children's parks, two islands, a boating terminal, a fountain, a Kalyani for idol immersion and a food court will come up at the proposed site. The lake was once the lifeline of many villagers but has

become a garbage-dumping site due to negligence of local authorities. About 50 acres used to be irrigated with water from the lake which is no longer the case. Minor irrigation department officials claim that the lake is empty due to heavy rain. A recreation centre will come, said Umashankar, resident of the city.

Assistant engineer in the minor irrigation department, Gujanra Prasad told Deccan Chronicle that TUDA will give the responsibility of the project. The lake was once the lifeline of many villagers but has become a garbage-dumping site due to negligence of local authorities. About 50 acres used to be irrigated with water from the lake which is no longer the case. Minor irrigation department officials claim that the lake is empty due to heavy rain. A recreation centre will come, said Umashankar, resident of the city.

Fish in Ulsoor Lake killed due to depletion of oxygen levels

Express News Service
January 27

DEPLETION of dissolved oxygen (DO) to as low as 1.1 milligrams a litre has led to the death of a large number of fish in Ulsoor Lake over the last three days. Normal fish require at least 4 milligrams a litre of DO for their survival.

Even as the Bangalore City Corporation (BCC) and Karnataka State Pollution Control Board (KSPCB) are investigating the exact causes, Mayor R. Narayanswamy has come down heavily on official neglect and has suspended assistant executive engineer concerned Himachala.

A senior KSPCB official's initial assessment was that DO depletion must have occurred due to eutrophication.

What is eutrophication? Eutrophication is a common occurrence in closed lake systems where waste discharge increases the phosphorus levels in the lake water. Phosphorus is the critical nutrient for the growth of algae.

Due to constant increase in phosphorus levels, algae concentration increases till the growth cannot be sustained by the available phosphorus. Then the algae "bloom" starts to die, leading to decay. The decay of dead algae uses up the DO in the water which soon deprives the fish of

its oxygen turning the water body into a dead lake.

For maintaining the DO level, there has to be huge discharge of waste containing phosphorus compounds.

Recent wastewater flush from the adjoining swimming pool containing huge quantities of chlorides is suspected to have caused chemical deterioration of oxygen levels in the lake.

"Guppy" fish: BCC had released a special species of fish called "guppy" to control the mosquito menace last year. This fish grows at low oxygen levels and thrives on the larvae of mosquitoes.

Member Secretary to KSPCB K.S. Sai Baba suspects the excessive growth of guppy for DO depletion. However,

chief horticultural officer of BCC denies this. He maintained that BCC has not released guppy fish into Ulsoor Lake.

Sources in Madras Engineering Group and Centre (MEG and Centre) however steered clear of the problem. "We have been assisting BCC in maintaining the lake and we have nothing to do with the episode," said an MEG officer.

Saibaba told this paper KSPCB is conducting a detailed analysis of the lake water quality and in four days the specific causes would be known. "We will look into all the aspects of pollution like phosphates, sulfates, chlorides, biological and chemical oxygen demand," he said.



Ease of life for Hebbal Lake

Times News Network

Hebbal Lake, one of the city's most scenic spots, looks set to regain its lost glory and de-weeding work will begin soon.

The work is estimated to cost Rs 16.5 crore and is being implemented in three phases. The first phase involves de-weeding of the lake and the second phase involves the construction of a dam across the lake.

The BDA has begun work on a well around the lake. Sewage flowing from nearby areas will be diverted to the STP and the treated water will be let into the lake. The 100-acre lake is choked by weeds in some places. The work will be completed in three months," said an BDA official.

The BDA has begun work on a well around the lake. Sewage flowing from nearby areas will be diverted to the STP and the treated water will be let into the lake. The 100-acre lake is choked by weeds in some places. The work will be completed in three months," said an BDA official.



DAYS OF GLORY TO RETURN: Work is on to clear the weeds that choke Hebbal Lake

Froth leaves locals fuming

Villagers grow vegetables and greens using water from Bylamangala reservoir

Subhash Chandra N S

BANGALORE: A thick froth that chokes the canals of Bylamangala reservoir near Bidadi has caused consternation and anger among villagers and environmentalists alike.

The reservoir supplies water to the city's feeder zone, where crops are grown, but it is not quite clear to environmentalists what caused the froth. They suspect it to be the result of toxic effluent deposits in the canals. What is causing worry is the pungent smell that emanates at the point where the canals meet the reservoir.

"The evaporated air appears to have settled on the trees nearby and is forming black and dark brown soot. This is a sudden development. Earlier, there were just weeds, but now it seems like there is a larger, serious problem at hand," says Abhishek J. Jumble, a research scholar at Environment Science Department (ESD) at Bangalore University (BU), pursuing a PhD under ESD professor Dr. Arundhanii.

When asked about the possible cause, an official said recent rains could have carried a lot of chemicals discharged by washing units in the area to the reservoir. The froth could have been formed by the "churning" effect of the water.

The leaves of the trees around the reservoir have turned brown because of the vapour effect. According to Dr. Nandini, this could affect the photosynthesis process, finally leading to the death of the trees.

Farmers are worried that vegetables, paddy and coconut, which are widely grown in the area, could be affected because of fears that the suspected toxic effluents might seep into the soil. Environmentalists agree that the resulting contamination of the water used for irrigation could, in turn, prove harmful to consumers. Earlier, Bylamangala was known for its sewage-fed crops.



DANGER SIGN: Froth flowing in one of the canals of Bylamangala reservoir.

Best reservoir: Bylamangala reservoir, situated at a distance of 25 km from the city, was constructed in 1940 to irrigate over 2,000 acres of land. It is the biggest reservoir near the city built across river Vishahavathi. The tank has two 11-km-long canals. The left bank canal has two branch canals measuring 10 km and six km. Agriculturists in the region still rely on the two branch canals.

Despite the pollution and the stench, sewage water farming continues in the region due to lack of other alternatives. Charan, a resident of Bylamangala, says, "We know that the water is not good. But what can we do? This is our only livelihood."

Karnataka State Pollution Control Board Chairman Sharathchandra said that the board would not be able to act and find remedial measures until it was yet to receive any complaint. He, however, promised to look into the issue and address the concerns of the villagers.

ULSOOR LAKE'S glory sinks with stink

Garlands, Vegetable Peels, Plastic Bottles, Polythene Float On Oily Water Surface

Times News Network

Bangalore: People living near Ulsoor lake hardly take off their face masks these days. It's not the stench that prevents them from even leaving their windows open or coming out for a breath of fresh air.

Blame it on algae formation and garbage dumping in the lake. Garlands, vegetable peels, plastic bottles and polythene covers float on the oily surface of the lake. To make matters worse is the night soil by the lakeside. The algae also keeps forming as no fresh water is being added to the lake regularly.

All this whips up an unbearable stench.

Not a good experience: "My office is half a kilometre inside MEG Centre. When there's a light breeze, the stench reaches even there," said Jayaraj Joseph, clerk, MEG. The pathetic state of the lake is despite the huge amount spent on maintenance. BBMP pays Rs 95,000 to contractors to clean it. Cleaning programmes, the latest after Ganesh Chaturthi, are also done after occasions. The combined budget for all these is nearly Rs 1 lakh.

BBMP claims the lake is cleaned regularly with potassium permanganate. But, the effort is not enough, it admits. "The clean-up with eight to ten labourers is not enough for the entire area. Some parts are left out every day. The stink comes from those areas," said a BBMP official.

Cause of the unpleasant decay
The source of the garbage is storm water drains and people hurling waste into it. "People dump garbage in these drains. We have seen it even bath tubs come floating into the lake from it," said the BBMP official.



Welcome to inconvenience: People living near Ulsoor Lake hardly take off their face masks these days.

Not a good experience: "My office is half a kilometre inside MEG Centre. When there's a light breeze, the stench reaches even there," said Jayaraj Joseph, clerk, MEG. The pathetic state of the lake is despite the huge amount spent on maintenance. BBMP pays Rs 95,000 to contractors to clean it. Cleaning programmes, the latest after Ganesh Chaturthi, are also done after occasions. The combined budget for all these is nearly Rs 1 lakh.

BBMP claims the lake is cleaned regularly with potassium permanganate. But, the effort is not enough, it admits. "The clean-up with eight to ten labourers is not enough for the entire area. Some parts are left out every day. The stink comes from those areas," said a BBMP official.

Cause of the unpleasant decay
The source of the garbage is storm water drains and people hurling waste into it. "People dump garbage in these drains. We have seen it even bath tubs come floating into the lake from it," said the BBMP official.

Residents have become fearful. "There's a threat of dengue and chikungunya. We cannot sit here for a moment without a mosquito biting us. We are worried about our health," said Sukhdev N, a resident.

Others are staying away from Ulsoor Lake and the nearby Vivekananda Park. "The number of people coming has decreased and this has affected my business as well," said Venkatesh, a shopkeeper in the area.

Joggers are taking new routes. "Usually from 5 am, I'd see many people come to the park for a walk. Last week, there were very few," said Shivajji M, a security personnel in Aqua Forte, an adjoining apartment.

The MEG as well as Trishna Boating Club members have abandoned their daily rowing due to this unbearable stench. We have appealed to Ulsoor corporator M Saravana and BBMP assistants, said Vijay R. Rokhi, president and managing director, United Spirits Ltd.

— Sruthy Susan Ullas

choked



Water hyacinth and weeds cover Saravali Lake in Puttenhalli, J.P. Nagar 1, Bangalore. The city could lose another water body if the lake is not cleaned soon.

Ulsoor Lake raises a stink

The condition of Ulsoor lake in the City has gone from bad to worse with the authorities failing to clean up the lake after the Ganesh immersion.



The condition of Ulsoor lake in the City has gone from bad to worse with the authorities failing to clean up the lake after the Ganesh immersion.

ers away from the area. "We cannot stand near this lake. The BBMP should have cleaned the water by now but it is not bothered," said Suresh Nair, a resident of the locality.

Students of a private college situated opposite the lake are the most affected. The condition of the water has deteriorated in the past couple of days.

A BBMP health official said the lake was being cleaned as this water had never been changed after the immersion of Ganesh idols. "The water was supposed to have been changed on Friday. But that was a technical problem. It will be done in the next 24 hours," he said.

Layouts on lake beds vulnerable to quakes

Bengaluru, July 14: The city could pay in many ways than one for allowing encroachment of its lake beds. Not only has it lost water bodies that once charged its ground water and gave it much needed lung space, but it has now been revealed that the buildings which have occupied the lake beds are more vulnerable to earthquakes than others in the city.

Experts from the Indian Institute of Science who have prepared a report on the "seismic microzonation" of Bengaluru, say the earthquake hazard can amplify by two to three times for structures built on lake beds. "Since the soil composition beneath the lake bed is less hard than normal soil, the impact of an earthquake here can be

"The shifting of the race course to Chick-kajala is the latest threat to the lake system which has vanished due to unplanned development by successive governments. The new study should force the government to look at how to preserve natural resources even while expanding the city."

more than in other parts of the city," says a seismic expert.

While the city has lost several wetland systems to development over the last two decades, with many making way for residential layouts, the government seems to have learnt little from it and seems determined to do more of the same. It can only harm the ecology of Bengaluru, which has no perennial rivers to fall back on, warn environmentalists.

"When the existing wetland systems are in a pathetic state, the government is planning to build on more lake beds. The shifting of the race course to Chick-kajala, is the latest threat to the lake system which has vanished due to unplanned development by successive governments. The new study should force the government to look at how to preserve natural resources even while expanding the city," says a biodiversity expert.

Think lakes in Bengaluru, and you can barely count five of them today. The city that once boasted over 100 big tanks is now home to just a few beautiful water bodies. Rapid urbanisation, expansion and unplanned growth has dried the city up of its natural beauty.

"The city was once filled with so many lakes, but today most of these are gone and we have big residential colonies on top of the city. The lakes have disappeared and animals are disappearing from the city. This is bad for the ecosystem," says Chetan Kumar, an environmental activist.

Don't even know Chennamma Lake or Koramangala Lake existed," says Ananda Rao, retired professor.

The Karnataka Golf Association, off Airport Road, stands on the Chalaghatta Lake. Can you imagine the big Majestic Bus Stand was once the Obamanabathi Tank built by Kempegowda. The National Games Complex in Jigjira stands on the Koramangala Lake. The Kantarava Sports Complex once used to be the Sampangi Lake. "The sudden disappearance of many of these lakes has led to many types of plants and animals disappearing from the city. This is bad for the ecosystem," says Chetan Kumar, an environmental activist.

Lakes die, city turns dry

SUNAYANA SURESH

Padmanabhanagar and the area close by were all built on the Chennamma Tank. This was one of the biggest tanks. Puttenhalli Tank near J.P. Nagar 6th Phase is now half gone, because of big apartment complexes. The host of concrete edifices that lie between Queen's Circle and Cantonment Railway Station like the Guri Nanak Bhavan, Badminton Stadium, etc. have been developed over what was once Miller's Tank. "We do have some good lakes like Agara Lake, but anyone who lives in the city a decade ago will know the difference. The road had two beautiful lakes on either side, but today, with expansion and building ring roads, we have one small water stretch," says Srinath B., urban planning expert. A large number of lakes have disappeared in a big way.

"It is said that Bengaluru once boasted of 141 lakes. Today many of these cannot be traced, seven are seen as small pools of water. Many of these big lakes were not encroached by either slum dwellers or builders. Others have just dried up because of poor maintenance and still others, given away by the government, today we have hardly any lakes left," says an official in the BDA. What'll become of the few lakes left? Only time will tell.

Fish death in lake linked to road work

Bangalore: Karnataka State Pollution Control Board and Lake Development Authority on Sunday said the death of fish in the Vengianakere lake was a result of sewage water flowing into the lake as drains were clogged due to debris dumped during road widening works.

The two agencies will issue notices to National Highway Authority of India (NHAI) and K.R. Puram City Municipal Corporation (CMC) in a regard.

"The dumping has decreased the level of dissolved oxygen to four mg per litre, killing the fish," he added.

BWSSB officials have been asked to divert sewage water from blending with rain water flowing into the lake," said an official from LDA said.

KSPCB has sent samples of water and fish to laboratory for tests and the next week will report.

The lake was desilted a year ago by the Lake Development Authority at a cost of Rs 1.5 crore under the National Lake Conservation programme.

It may be recalled that a similar incident had occurred in Feb 2005 killing lakhs of fish in Ulsoor lake.

A lot has changed with the rapid growth and development of the city making it vulnerable to heightened damage in the event of a calamity such as an earthquake. The reason why mapping the zones of all urban centres, according to the intensity of probable seismic activities in that area, has become more essential in these times.

PROF. T.G. SITHARAM
dept of civil engineering, IISc

GEORGE KURUVILA
Town planner

DEVENDRA SWAMY
former deputy chief drilling engineer
Dept. of geology

TICK TALK



After 44 years, Spain has won the Euro 2008, by beating Germany 1-0 in the final. Are you happy with the result?

Xavier Vijay Kumar, State Football Team Captain

I could just manage to watch the first half of the final and was supporting Spain through-out 2008. They have been my favourites and it has been memorable as they won after a gap of 44 years. They had a great outing and all credit to their team effort and they also played better than Germany to claim the title.

water. Many of these big lakes were not encroached by either slum dwellers or builders. Others have just dried up because of poor maintenance and still others, given away by the government, today we have hardly any lakes left," says an official in the BDA. What'll become of the few lakes left? Only time will tell.

Stench lingers around Siddapura Lake

Thousands of fish found dead in the lake on Wednesday

Staff Reporter

BANGALORE: A day after thousands of dead fish surfaced in the Siddapura Lake, a strong stench lingers in the air. The reason is simple: the 27-acre lake has been visited by officials from the Karnataka State Pollution Control Board, Bruhat Bangalore Mahanagara Palike (BBMP), Department of Fisheries and the Lake Development Authority — but no action has been taken by them.

The cleaning operations have instead been undertaken independently by R. Manjunath, who has taken the lake on a contract from the Department of Fisheries. "No one else came forward to clean the lake, so I took it upon myself to prevent the situation from getting any worse," he said. Locals who have been hired to clean the lake, operate in small boats and are using buckets to scoop out the thousands of dead fish, but they will then buried in fields nearby, on the instruction of Fisheries Department.

Losses: The Department suspects that untreated sewage from nearby residential areas, including M.A. Layout, Aditya Vilas, Balakrishna Apartments and Sobha Apartments among others have contaminated these waters. "The KSPCB and others have taken samples of the water to measure contamination levels



LOSS: The Fisheries Department claims overstocking of the lake may have led to the fish kill.

- Untreated sewage blanketed for fish kill
- Officials from various departments visit the lake

but have not taken any other action at the site. An official complaint was lodged when the sewage spill was first noticed a few months back, but to no avail," said Gopal Gowda, former gram panchayat president. L. Shivaramappa, Supervisor, Department of Fisheries, told *The Hindu*, "We had no clue about the contamination of this lake until we saw the pictures of dead fish in the newspapers. We are aware of the massive losses that will be incurred. The Department has requested that

statement of these losses be produced along with estimates of the clean-up process, in order to consider a full compensation."

Lake overstocked?

The Fisheries Department also claims that one of the possible reasons for the mass kill could be the overstocking of the lake by the lessee.

J. Nagaraj, Assistant Director of Fisheries, Bangalore Urban, said, "The lake has capacity for 20,000 to 25,000 fish seeds. But many more seeds were introduced."

Shivaramappa, Supervisor, Department of Fisheries, told *The Hindu*, "We had no clue about the contamination of this lake until we saw the pictures of dead fish in the newspapers. We are aware of the massive losses that will be incurred. The Department has requested that

Burgeoning Bangalore City saps its lakes dry

By SUBHASH CHANDRA N S
DH News Service

BANGALORE: Of the 265 water bodies in Bangalore and its surroundings, many have disappeared and just 80 remain today. Many more water bodies are gasping for survival, according to a study by the Indian Institute of Science.

Apprehensions about disappearing wetlands seem to be coming true, as indicated by the latest study by Dr T V Ramachandran, scientist, Centre for Ecological Sciences (CES), IISc.

"Since 1975, we have lost 40 per cent of lakes as they have been changed into development and residential plots," he said.

"These lakes act as kidneys for the cities, but unfortunately these water bodies have paved the way for built-up areas in the City. The core City is left with just 17 good lakes as opposed to 51 healthy lakes in 1975. The problem is the same with the peripheral



A view of the dried up Puttenahalli lake.

areas too, not even hundred lakes are there today," he added.

According to the study, 8.84 per cent of the City's area comprised water bodies. Since then, the depletion of the water bodies has accelerated. By 2007, the water bodies of the City were down to 1.47 per cent (1,066 hectares). But the water bodies shrank and in 1992 made up for about 2.66 per

cent (1,790 hectares) of the City area, while the built-up area increased to 27.30 per cent (18,650 hectares).

Since then, the depletion of the water bodies has accelerated. By 2007, the water bodies of the City were down to 1.47 per cent (1,066 hectares) of its area, while the built-up area had gone up to 45.19 per cent (30,478

hectares), endangering the City's groundwater level, increasing the risk of life, as well as endangering aquatic and avian life.

Urbanisation
Dr Ramachandran's recent study (2007) cites rapid urbanisation is the prime reason for the loss of water bodies. Unauthorised encroachments that have encroached into the lakes in Greater Bangalore region, 60 per cent of the lakes are first with sewage, 54 per cent are surrounded by slums and 72 per cent are faced with loss of catchment areas.

He said the loss of water bodies in the core of the City has led to frequent flooding and micro-climate changes.

"This will have an adverse impact on the diversity of flora and fauna, decrease in the number of migratory birds and catchment, and deplete the groundwater level. These like the fishing community will be robbed of their livelihoods."

Saving The City's Water Bodies Before It's Too Late From 264 lakes to only 84

TIMES NEWS NETWORK

Bangalore: Not even hundred lakes are there today, rather ways to save their remnants across the city was the focus of a seminar on 'How to save lakes of Bangalore', jointly organized by the Bangalore Environment Trust and Arghyam on Saturday. So what's the solution? Collectively act and consistently educate. Win the final war with 'public opinion' that puts pressure on the legislature to work on a balanced water plan for Bangalore.

Bureaucrats are asking people for support and citizens are replying, "Yes, we're ready, show us how."

But amidst this encouraging sign, the alarming number of encroachments upon lakes and water bodies drying up make people feel that the government is not doing anything to solve this issue.

"Nothing much can be done unless the government stops 'regulation' of tank bed encroachments. All these lakes must be restored through stringent measures," said former secretary of Bruhat Bangalore Mahanagara Palike, U. Subramanian.

LESSON FROM SINGAPORE
"Singapore once had problems with the Singapore River, which got mixed up with sewage. But they restored it. Much of it through governance, unlike poli-



More and more lakes are drying up, yet there's no concrete action plan

cies here that change from one budget period to another," explained Ravi Narayan, advisor to Arghyam.

"We need a sequential plan of events where projects are built around a policy developed within a comprehensive system. This should involve the people too. In short, we need a vision that translates into political will," he said.

There were 264 lakes in 1970, they have been reduced to 84 today. The actual number is less. This, despite having at least 11 government departments working on lakes. The twin issues are floods that occur after every 50-mm rainfall, and shortage of drinking water. Till 1972, many of these lakes had potable water.

UNCOMFORTABLE REALITY
Lakes in Bangalore are drying up. Phosphate levels to sewers and sediment are some even to development of new layouts. A few are lost to rising phosphate content in detergents. River banks are eroded due to construction activities and brick manufacturing



There were 264 lakes in 1970, they have been reduced to 84 today. The actual number is less.

work, while inlets are clogged by waste. Above all these, encroachment is the major culprit.

Many slums are located on the mouth of tank beds. But politicians see slum-dwellers as vote-banks and don't tell them to leave tank areas. A bill of the Lake Development Authority is pending, which can give some teeth to fight encroachments.

There were 264 lakes in 1970, they have been reduced to 84 today. The actual number is less. This, despite having at least 11 government departments working on lakes. The twin issues are floods that occur after every 50-mm rainfall, and shortage of drinking water. Till 1972, many of these lakes had potable water.

UNCOMFORTABLE REALITY
Lakes in Bangalore are drying up. Phosphate levels to sewers and sediment are some even to development of new layouts. A few are lost to rising phosphate content in detergents. River banks are eroded due to construction activities and brick manufacturing

Burgeoning Bangalore City saps its lakes dry

By SUBHASH CHANDRA N S
DH News Service

BANGALORE: Of the 265 water bodies in Bangalore and its surroundings, many have disappeared and just 80 remain today. Many more water bodies are gasping for survival, according to a study by the Indian Institute of Science.

Apprehensions about disappearing wetlands seem to be coming true, as indicated by the latest study by Dr T V Ramachandran, scientist, Centre for Ecological Sciences (CES), IISc.

"Since 1975, we have lost 40 per cent of lakes as they have been changed into development and residential plots," he said.

"These lakes act as kidneys for the cities, but unfortunately these water bodies have paved the way for built-up areas in the City. The core City is left with just 17 good lakes as opposed to 51 healthy lakes in 1975. The problem is the same with the peripheral



A view of the dried up Puttenahalli lake.

areas too, not even hundred lakes are there today," he added.

According to the study, 8.84 per cent of the City's area comprised water bodies. Since then, the depletion of the water bodies has accelerated. By 2007, the water bodies of the City were down to 1.47 per cent (1,066 hectares). But the water bodies shrank and in 1992 made up for about 2.66 per

cent (1,790 hectares) of the City area, while the built-up area increased to 27.30 per cent (18,650 hectares).

Since then, the depletion of the water bodies has accelerated. By 2007, the water bodies of the City were down to 1.47 per cent (1,066 hectares) of its area, while the built-up area had gone up to 45.19 per cent (30,478

hectares), endangering the City's groundwater level, increasing the risk of life, as well as endangering aquatic and avian life.

Urbanisation
Dr Ramachandran's recent study (2007) cites rapid urbanisation is the prime reason for the loss of water bodies. Unauthorised encroachments that have encroached into the lakes in Greater Bangalore region, 60 per cent of the lakes are first with sewage, 54 per cent are surrounded by slums and 72 per cent are faced with loss of catchment areas.

He said the loss of water bodies in the core of the City has led to frequent flooding and micro-climate changes.

"This will have an adverse impact on the diversity of flora and fauna, decrease in the number of migratory birds and catchment, and deplete the groundwater level. These like the fishing community will be robbed of their livelihoods."

65 city lakes contaminated: Report

SHILPA P.

July 16: Bengaluru, which boasted of several lakes in the past, has very few left now. Even these are under threat due to various factors including encroachment of lake beds and unscientific discharge of sewage into the water bodies. A study on the quality of water by the Lake Development Authority (LDA) has revealed shock-

ing facts: 65 lakes in the city were found contaminated with varied levels of nitrates and phosphates. The report was submitted to Karnataka State Pollution Control Board (KSPCB) for required regulation on June 30," said M.S. Gaudar, member secretary, KSPCB.

Of the 593 city lakes that come under BBMP, the LDA, minor irrigation department, zilla panchayat and forest department, the

LDA has chosen 77 lakes for the analysis on quality of water.

"We have found all the 65 lakes to be contaminated with different levels of phosphates and nitrates. The next round of reports will be submitted on October 31, which will give a comprehensive picture of the city lakes," said U.V. Singh, Lake Development Authority.

While nitrate levels are the highest in Kagadapura lake, the level of phosphates are high in 29 lakes including Kagadapura lake, Jaraganahalli lake and Madavara lake. It is highest in Bellandur lake, says the report.

"While the tolerance level of nitrate is 45mg/litre, for phosphate it is 5mg/litre," says Dr Aika Singh, consultant biochemist at Apollo International. "If the nitrate level in water exceeds the tolerance level, it affects the

function of the kidney and poses, generating large quantities of sewage every day. Only 15 per cent of sewage is treated in treatment plants. The rest enters storm water drains, which are meant to route excess rainwater to lakes. The presence of detergents in sewer water causes phosphatic tannation of lakes, which eventually leads to growth of algae and cyanobacteria, choking lakes to death."

Even though the city is reeling under the impact of a severe water shortage, Bangaloreans continue to waste nearly 30 per cent of water. This has been found in a study which states that citizens waste fresh water during gardening, cleaning their vehicles, watering their lawns etc, said N Prabhu Dev, Vice Chancellor, Bangalore University.

This tendency of citizens with the expected population growth in the city in the coming years have sent the alarm bells ringing. "The population of Bangalore is likely to increase by 10 lakh by the year 2020. To prevent urban disaster, we must immediately take measures to conserve water. Instead of using clean water for cleaning vehicles, people should opt for treated water."

The government should make it mandatory for the hotels not to serve water until people ask for it," he said.

Prabhu Dev said hotels always supply more glasses of water than required and then throw them off, if not used. Those countries that have focused on saving water being wasted under these heads can save at least two billion barrels of water every day.

As per another study conducted by the department of ecology and environmental sciences (unpublished dissertation paper)—Lake system in Bangalore by Kiran R), at least 80 per cent of the water supplied goes as waste. "In Bangalore, of the 100 litres of water supplied to households per day, 80 litres of waste water is generated. This means only 20 litres is used," said RK Somashankar, chairman, department of environment studies. He added that 50 per cent of waste water can be reused if it is recycled.

in the Ecumenical Christian Centre (ECC) used the same water for washing and bathing four or five years ago. It was even used for drinking," recalls ECC Director Rev Dr M Mani Chakro.

As the state of the lake deteriorated, the ECC requested the Department of Mines and Geology, State Ground Water Cell to conduct a test. The results showed extremely high content of Phosphate and Nitrate. Environmental (Protection) Act, 1986 prescribes nitrate con-

tent at 6.0 mg/l with phosphate at 0.1 mg/l. The nitrate content was found to be 54 mg/l and phosphate at 6.88 mg/l in Nellurhalli lake.

With Lake Development Authority yet to act, the pathetic situation of the lake has now been brought to the notice of the Bruhat Bangalore Mahanagara Palike (BBMP) officials and the MLA from the area, Higher Education Minister Arvind Limbavali, according to residents of Whitefield.

Treatment Plant. However, authorities claim that only seven lakh tons of waste is generated by the medical institute.

Authorities said that the sewage line that carries the hospital waste is also used by other industries in the area. "The line is up to Graphite India Industry. The effluent discharged by the industries connected by this line also adds up to the pollutants discharged into the lake," the official said.

The lake in such bad condition a few years ago. "The work-

discharges high content of solid and liquid waste matters into the lake. A foul smell pervades the area near the lake.

When questioned, hospital authorities did not deny the allegations. "We have a treatment plant that filters the waste, but some of it is discharged into the lake," said an official.

Hospital authorities also blamed the local merchants for dumping meat and other waste in the lake. Vaidichi Hospital currently has a capacity to treat 13 lakh tons of waste in its Sewage

Rejuvenation of lakes
The Lake Development Authority (LDA) and Bangalore Development Authority (BDA) would take up the rejuvenation

measures. Dr R Nagendran, professor, centre for environmental studies, Anna University Chennai, underlined that there were 280 tanks in 1950s. By 1993, the number had come down to 80. At least 18 lakes have been converted to bus stands, golf courses, playgrounds and residential areas.

He added that the reduction of water bodies is as high as 35.09 per cent. In terms of water spread area, there is a decrease of 0.86 per cent in the city. "The pressure on lakes



WHERE IS THE WATER?: Garbage and construction debris dumped on the Vibhutapura lake bed

Another water body falls prey to callous urbanisation

Chitra V. Raman

BANGALORE: The lakes in our city are falling prey to increasing urbanisation. They are being converted into dumping grounds for construction debris and garbage. What is more depressing is that people rarely seem to take the initiative to do something about the issue and protect what is remaining of the ever-shrinking lakes.

Uthkars, a residents' welfare association of L.B. Shastri Nagar, is an organisation that is different and is striving hard to protect Vibhutapura Lake.

Sridhar Chakravarty, a resident, told *The Hindu* that the lakebed had been encroached upon and several

hutments have come up. "That is not all. Every day, there are at least five to 10 lorries that come and dump debris, construction material and garbage in the lake," he said, adding that hutments have also come up on the lakebed.

"All these activities have been shrinking the area of lake at an alarming rate. When we came to the area in 1998, the place was beautiful and pleasant. Now, construction is going on every where and debris and garbage is being dumped in the lake," he added.

Mr Chakravarty said that the residents had tried to dissuade lorry drivers from dumping the debris in the lake. "They would not listen

to us. They were very indifferent and just went ahead and dumped the debris right in front of us."

Members of Uthkars, through the Right to Information Act, found out that the lake came under the jurisdiction of the Forest Department.

"A few of us went to the Forest Department and met with the Conservator of Forests U.V. Singh and Deputy Conservator of Forests A.M. Anniah, and explained our case to them. It was surprising that they did not know about it. We showed them the pictures of the shrinking lake that we had taken," Mr Chakravarty said.

He said that they urged the officials to take steps and ensure that what is left of Vibhutapura lake is preserved. They urged them to fence the lake, conduct surprise checks and initiate legal action against those caught dumping debris and garbage in the lake.

Mr. Anniah told *The Hindu* conceded that the members of Uthkars met him and Mr. Singh recently. He also said that the Forest Department would do its best to protect the lake.

"We are trying to do our best. The problem is that we have only one security guard for six to seven lakes in that part of the city. Dumping of debris is going on aggressively everywhere." He also said that he would discuss the issue further with Uthkars.

City of a thousand cesspools? 33.5

Staff Reporter

BANGALORE: At the receiving end of the city's sewage, undated with debris and encroached upon by unauthorised buildings, the 937 lakes that once gave Bangalore the epithet "city of 1,000 lakes" have shrunk to 84. Government departments and statutory bodies will legal powers to protect the lakes "are shirking their responsibility" according to a recent concept paper on

lakes authored by V. Balasubramanian, former Additional Chief Secretary.

These government bodies include Karnataka State Pollution Control Board, Revenue Department, Bruhat Bangalore Mahanagara Palike, Bangalore Development Authority and Bangalore Water Supply and Sewerage Board.

Dire need
To meet the projected water needs of the city "there is no alternative except to restore and clean up the 900 lakes... and draw water from them as was done till 1970s when the Cauvery schemes were implemented," wrote Mr. Subramanian, and added, "Drinking water needs of Bangalore's population by the year 2020, which will exceed one crore, cannot be met as there is no scope for sourcing Cauvery river due to inter-State sharing limitations."

19/7/09

FROM 280 LAKES IN AND AROUND THE CITY IN THE 1960S, THE NUMBER CAME DOWN TO 80 BY 1993

Water! Water! Down the drain

Senthil S. BANGALORE

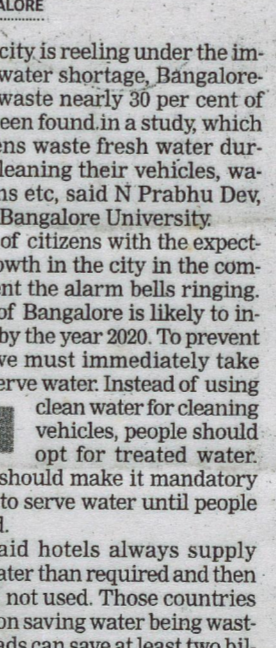
Even though the city is reeling under the impact of a severe water shortage, Bangaloreans continue to waste nearly 30 per cent of water. This has been found in a study which states that citizens waste fresh water during gardening, cleaning their vehicles, watering their lawns etc, said N Prabhu Dev, Vice Chancellor, Bangalore University.

This tendency of citizens with the expected population growth in the city in the coming years have sent the alarm bells ringing. "The population of Bangalore is likely to increase by 10 lakh by the year 2020. To prevent urban disaster, we must immediately take measures to conserve water. Instead of using clean water for cleaning vehicles, people should opt for treated water."

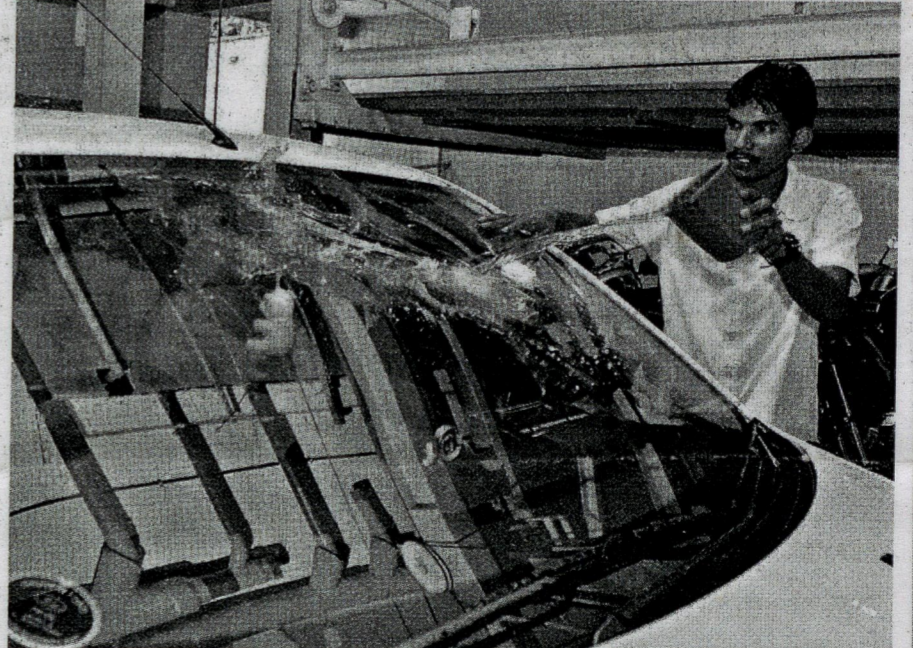
The government should make it mandatory for the hotels not to serve water until people ask for it," he said.

Prabhu Dev said hotels always supply more glasses of water than required and then throw them off, if not used. Those countries that have focused on saving water being wasted under these heads can save at least two billion barrels of water every day.

As per another study conducted by the department of ecology and environmental sciences (unpublished dissertation paper)—Lake system in Bangalore by Kiran R), at least 80 per cent of the water supplied goes as waste. "In Bangalore, of the 100 litres of water supplied to households per day, 80 litres of waste water is generated. This means only 20 litres is used," said RK Somashankar, chairman, department of environment studies. He added that 50 per cent of waste water can be reused if it is recycled.



IN SHORT SUPPLY: Using potable water for cleaning cars is a drain on limited resources



Rejuvenation of lakes

Against the backdrop of the dwindling water bodies in the city, the Lake Development Authority (LDA) and Bangalore Development Authority (BDA) would take up the rejuvenation

measures. Dr R Nagendran, professor, centre for environmental studies, Anna University Chennai, underlined that there were 280 tanks in 1950s. By 1993, the number had come down to 80. At least 18 lakes have been converted to bus stands, golf courses, playgrounds and residential areas.

He added that the reduction of water bodies is as high as 35.09 per cent. In terms of water spread area, there is a decrease of 0.86 per cent in the city. "The pressure on lakes

measures. Dr R Nagendran, professor, centre for environmental studies, Anna University Chennai, underlined that there were 280 tanks in 1950s. By 1993, the number had come down to 80. At least 18 lakes have been converted to bus stands, golf courses, playgrounds and residential areas.

He added that the reduction of water bodies is as high as 35.09 per cent. In terms of water spread area, there is a decrease of 0.86 per cent in the city. "The pressure on lakes

measures. Dr R Nagendran, professor, centre for environmental studies, Anna University Chennai, underlined that there were 280 tanks in 1950s. By 1993, the number had come down to 80. At least 18 lakes have been converted to bus stands, golf courses, playgrounds and residential areas.

He added that the reduction of water bodies is as high as 35.09 per cent. In terms of water spread area, there is a decrease of 0.86 per cent in the city. "The pressure on lakes

measures. Dr R Nagendran, professor, centre for environmental studies, Anna University Chennai, underlined that there were 280 tanks in 1950s. By 1993, the number had come down to 80. At least 18 lakes have been converted to bus stands, golf courses, playgrounds and residential areas.

He added that the reduction of water bodies is as high as 35.09 per cent. In terms of water spread area, there is a decrease of 0.86 per cent in the city. "The pressure on lakes

Nellurhalli Lake crying for immediate attention

Sandeep Moudgal

BANGALORE: The Nellurhalli lake in Whitefield is in a state of total decay, with sewerage lines discharging effluents from factories and a private hospital in the vicinity.

The lake has been reduced to a polluted water body with hyacinths and carcasses, garbage

discharges high content of solid and liquid waste matters into the lake. A foul smell pervades the area near the lake.

When questioned, hospital authorities did not deny the allegations. "We have a treatment plant that filters the waste, but some of it is discharged into the lake," said an official.

Hospital authorities also blamed the local merchants for dumping meat and other waste in the lake. Vaidichi Hospital currently has a capacity to treat 13 lakh tons of waste in its Sewage

Rejuvenation of lakes
The Lake Development Authority (LDA) and Bangalore Development Authority (BDA) would take up the rejuvenation

measures. Dr R Nagendran, professor, centre for environmental studies, Anna University Chennai, underlined that there were 280 tanks in 1950s. By 1993, the number had come down to 80. At least 18 lakes have been converted to bus stands, golf courses, playgrounds and residential areas.

He added that the reduction of water bodies is as high as 35.09 per cent. In terms of water spread area, there is a decrease of 0.86 per cent in the city. "The pressure on lakes

measures. Dr R Nagendran, professor, centre for environmental studies, Anna University Chennai, underlined that there were 280 tanks in 1950s. By 1993, the number had come down to 80. At least 18 lakes have been converted to bus stands, golf courses, playgrounds and residential areas.

He added that the reduction of water bodies is as high as 35.09 per cent. In terms of water spread area, there is a decrease of 0.86 per cent in the city. "The pressure on lakes

measures. Dr R Nagendran, professor, centre for environmental studies, Anna University Chennai, underlined that there were 280 tanks in 1950s. By 1993, the number had come down to 80. At least 18 lakes have been converted to bus stands, golf courses, playgrounds and residential areas.

He added that the reduction of water bodies is as high as 35.09 per cent. In terms of water spread area, there is a decrease of 0.86 per cent in the city. "The pressure on lakes

measures. Dr R Nagendran, professor, centre for environmental studies, Anna University Chennai, underlined that there were 280 tanks in 1950s. By 1993, the number had come down to 80. At least 18 lakes have been converted to bus stands, golf courses, playgrounds and residential areas.

He added that the reduction of water bodies is as high as 35.09 per cent. In terms of water spread area, there is a decrease of 0.86 per cent in the city. "The pressure on lakes

measures. Dr R Nagendran, professor, centre for environmental studies, Anna University Chennai, underlined that there were 280 tanks in 1950s. By 1993, the number had come down to 80. At least 18 lakes have been converted to bus stands, golf courses, playgrounds and residential areas.