

TUMKUR

THE WATER-WASTE PORTRAIT

The bulk of city's sewage flows into the Shimsha river and the Amanikere Lake, leading to severe pollution in both. This is the situation in spite of Rs 22 crore having been spent on the sewage network between 1998 and 2004



Tumkur

Tumkur, an administrative district, is located 70 km north of Bengaluru.¹ With a decadal population growth of about 40 per cent, scarcity of drinking water is one of the key problems the town faces.

WATER

DEMAND AND SUPPLY

According to the Karnataka Urban Water Supply and Drainage Board (KUWSDB), there is no shortage of water in Tumkur. But the town's water demand, as of estimates at the time of the CSE survey in 2005-06, was expected to rise by 8 per cent by 2011, forcing a gap between demand and supply.²

The estimates of demand, however, differed (see Table: *The water*): the Central Public Health and Environmental Engineering Organisation (CPHEEO) estimation stood higher than the figure put forth by the Karnataka board. The water was being supplied through pipelines to individual houses, with a leakage loss of about 5 million litre a day (MLD). Water is also supplied through 1,260 community taps and 217 handpumps: about 27 per cent of the people in the town got their water supply outside their houses.³

SOURCES AND TREATMENT

In the past, the town had received water from the Maidala tank. At the time of the survey, the town was sourcing its water from the Bugudanahalli reservoir (also referred to as Bugudanahalli improvised tank), located 8 km west of town. The reservoir received its water through canals from the Hemavathi Dam in Gorur village.⁴

The raw water is treated by rapid sand filtration in a treatment plant located just 200 metre (m) from the source. Apart from this surface water source, the city also extracts 3-5 MLD of groundwater through its 348 borewells.⁵

In 2005, a survey conducted by the state department of mines and geology had found that groundwater levels were dipping at the alarming rate of 6-8 m from their 1999 levels (see Graph: *Groundwater check*). The preliminary chemical analysis done by the department also found that nearly 50 per cent of the water samples had nitrate content as high as 200-400 milligramme per litre (mg/l), against a permissible limit of 50 mg/l. The samples were collected from borewells in the old localities of the town, where the population is dense. Since the town's underground closed drainage system was non-functional during the time of the survey, it is possible that the groundwater was contaminated by sewage.⁶

THE CITY

Municipal area	52 sq km
Total area (Tumkur Urban Development Area)	133 sq km
Population (2005)	0.3 million
Population (2011), as projected in 2005-06	0.3 million

THE WATER

Demand	
Total water demand as per city agency (KUWSDB)	27 MLD
Per capita water demand as per KUWSDB	100 LPCD
Total water demand as per CPHEEO @ 150 LPCD	41 MLD
Sources and supply	
Water sources	Hemavathi Dam
Water sourced from surface sources	100%
Total water supplied	27 MLD
Per capita supply	100 LPCD
Leakage loss	20%
Actual supply (after deducting leakage losses)	22 MLD
Per capita supply (after leakage losses)	80 LPCD
Population served by water supply system	NA
Demand-supply gap (after leakage losses)	5 MLD
Treatment	
Number of WTPs	1
Total treatment capacity	30 MLD
Actual treatment	27 MLD
Future demand and supply	
Demand (2011), as projected in 2005-06	29 MLD
Augmentation needed to meet the demand	2 MLD
Required increase in supply	8%

THE SEWAGE

Generation	
Sewage generated as per CPCB	34 MLD
Sewage generated as per city agency	9 MLD
Collection	
Length of sewerage network	182 km
Population covered by sewerage network	NA
Area covered by sewerage network	60%
Treatment	
Number of STPs	2
Total treatment capacity	24 MLD
Actual sewage treated	9 MLD
Disposal	
	Shimsha river, Amanikere Lake

Source: Anon 2011, 71-City Water-Excreta Survey, 2005-06, Centre for Science and Environment, New Delhi

Note: KUWSDB: Karnataka Urban Water Supply and Drainage Board

To meet its future demand, Tumkur was planning a stage II water supply scheme. Under this, the Hebbaka tank, located upstream of Bugudanahalli reservoir, would be developed. It was also proposed to store water from the Hemavathi for four to five months between August and December. This water can be treated and pumped to the town.⁷

THE ECONOMICS

At the time of the CSE survey, Tumkur followed a three-fold water tariff structure. Since the town’s water supply was un-metered, the billing was done on flat charges:⁸

- For households, the tariff was Rs 45 per month (with tap connection).
- For commercial establishments it was Rs 90 per month.
- For industries, the tariff was fixed at Rs 180 per month.

The production cost for 27 MLD of water worked out to about Rs 3 per kilolitre (kl); the selling cost was a little over Re 1 per kl. The agency, thus, managed to recover over Rs 2 crore of its annual expenditure of almost Rs 3 crore.⁹

The total annual expenditure by Tumkur’s public water agency on capital assets was about Rs 27 crore; the agency was spending about Rs 4 crore per year on its operation and maintenance activities. A total of 215 employees worked in the department (public water and sewage systems); Rs 0.95 crore went into their salaries and establishment costs.¹⁰

SEWAGE

The sewage estimation of Tumkur (see Table: *The sewage*) indicates that the actual water consumption in the town would be about 42 MLD (including 27 MLD of official supply and about 15 MLD

sourced from private borewells). Privately owned water supply sources, therefore, accounted for more than 57 per cent of the total supply in Tumkur.¹¹ The official estimates, however, completely ignore the private sources.

In 2005-06, barely 6-8 MLD of the town’s sewage was collected; the remaining went into nearby waterbodies. Sixty per cent of the sewage was carried in a closed sewerage system (underground drains), and 30 per cent flowed through open drains and into the local tank. For the remaining 10 per cent, there was no drainage. The unconnected areas used septic tanks and soak pit systems, where the sewage seeped into the ground. The length of the underground drains was about 182 km.¹²

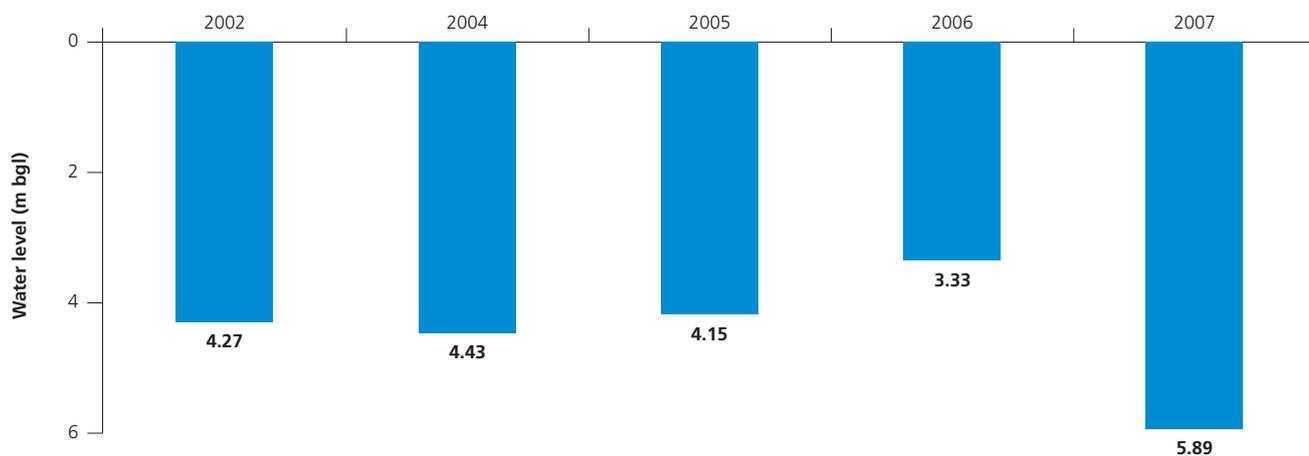
There were two sewage pumping stations. The town also has two STPs – a primary treatment plant at Veerasagara and a secondary plant at Bheemasandra – with a treatment capacity of about 24 MLD; but the town managed to treat just 36 per cent of its sewage. The treated waste was disposed off into a tank bed attached to the plant at Bheemasandra, and used as soil conditioner in farming.¹³

The bulk of Tumkur’s sewage flows into the Shimsha river and the Amanikere Lake, leading to severe pollution in both. According to tests conducted in January 2006 by the Karnataka State Pollution Control Board, the total coliform level is about 6,000 per 100 millilitre (ml), while the faecal coliform level is 2,000 per 100 ml. There is a proposal to convert the Amanikere Lake area into a picturesque spot by stopping all sewage flow to the lake and beautifying the tank bund area – at a cost of Rs 20 crore.¹⁴

An estimated Rs 22 crore have gone into building Tumkur’s sewage network between 1998 and 2004; Rs 0.187 crore has been spent on operation and maintenance of the STPs. The local agency does not charge anything for managing sewage. There was a

GRAPH: GROUNDWATER CHECK

Water level in Tumkur in 2002 was 4 metre (m) below ground level (bgl), and declined to 6 m bgl in 2007. Thus, in five years, the water level had dropped by 2 m at the rate of 0.32 m per year



Source: National Data Centre, Central Ground Water Board, Faridabad

proposal, however, to collect Rs 20 per house as a sewage management charge.¹⁵

LOOKING AHEAD

In 2006-07, the Tumkur City Municipal Council had approved a Rs 606-crore budget. Interestingly, the council itself proposed to generate only 3 per cent – Rs 17 crore – of this money. Of the rest, it expected Rs 500 crore from the Karnataka Urban Infrastructure Development Financial Corporation and the Asian Development Bank.¹⁶

This money would be used to implement the second phase of the Hemavathi Drinking Water Project by transforming the Hebbaka tank into a reservoir. Creation of infrastructure and

implementation of the second phase of the underground drainage works have also been proposed.¹⁷

On August 4, 2008, the Hemavathi river waters which were released into the Tumkur Canal reached the city. The water was diverted to the Bugudanahalli tank, which is the balancing reservoir for the supply of drinking water to the town.¹⁸

The government is now toying with the idea of introducing a 24x7 water supply project for Tumkur, according to a report in *The Hindu* in April 2010. Based on a study conducted in a few towns by a Swedish firm, the government has decided to implement the Rs 932-crore 'Kannada Ganga' Drinking Water Project in 16 towns in four divisions of Karnataka. Tumkur is one of them. Funds would be made available under the North Karnataka Urban Sector Investment Programme (Rs 10.30 crore). The state government would also seek funds from the Centre.¹⁹