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BANGALORE'S WATER FAMINE – 2016 !

1. BANGALORE'S POPULATION AND REQUIREMENT OF DRINKING WATER:

POPULATION:

In 1941 the population of Bangalore was 4.11 lakhs and the city's area was 29km². In 2010 when the elections to the Bruhat Bangalore Mahanagara Palike (BBMP) was held its population was 87 lakhs and its area 776km². According to the 2011 Census, the population of Bangalore is 95.89 lakhs. The Compound Annual Growth Rate (CAGR) in population is thus over 3.91%. Thus the population of Bangalore will cross 1 crore in just one year. At the same growth rate of 4% per annum, by 2020, the population of existing BBMP area will be 141 lakhs. This excludes the floating population and the homeless.

There is no way in which population growth in Bangalore Metropolitan Area (BBMP) can be controlled except the physical checks which Thomas Malthus warned namely, when population grows at geometrical progression, the population growth will be checked by diseases, crime and breakdown of law and order. China controls its growth of slums in cities by a rigorous system of Residential Permit (*Hukou*) and Work Permit (*Danwei*) which India with its constitutionally assured Fundamental Right of Freedom of Movement cannot enforce. Therefore the population of Bangalore will continue to grow by at the current rate of 4% per annum in the decade 2010-2021 and reach around 1.5 crores !

SUPPLY OF DRINKING WATER:

Prior to 1974 when the Cauvery Water Supply Scheme

(CWSS) was launched, Bangalore was getting its drinking water from the tanks of TIPPEGONDANAHALLY, HESSARGHATTA AND A FEW OTHER TANKS. But now there is no water being drawn from the tanks except from TIPPEGONDANAHALLY whose water supply has fallen from 143 MLD (Million Litres per day) to just 73 MLD, or about half, because of the blocking of upstream inlets by encroachments and construction of buildings. BWSSB was formed in 1964 and the Cauvery Water Supply System (CWSS) was started in 1974. At present 850 MLD is pumped from Cauvery from a distance 98 kms. The final phase of CWSS is now under progress and this is expected to be completed by 2012 when another 500 MLD will be added to the current CWSS to reach a total supply of 1,350 MLD from Cauvery. TG Hally is the only other source of supply and it supplies only 70 MLD. **THUS THE TOTAL GROSS WATER SUPPLY TO BANGALORE WILL BE 1,420 MLD FROM 2012.**

Of this 1,420 MLD, 150 MLD is for non-domestic purposes such as for industries, commercial and educational institutions. Admittedly at least another 30% or about 450 MLD is the "Unaccounted For" leakages. Thus the net available water supply for domestic purposes within BBMP will be only 820 MLD (1,420 – 600(150 + 450) = 820.) This is a per capita availability of 82 LPCD for a population of 1 crore, which will go down to 73 LPCD by 2016 when the population of Bangalore will reach 112 lakhs. The Government of India norm for metropolitan cities is 150 LPCD. Thus in 2012 the per capita availability for Bangalore will be

just about half of the GoI norm. WHEN THE POPULATION INCREASES TO AT LEAST 140 LAKHS IN 2020, ASSUMING THAT IT WILL GROW ONLY AT 4% AND NOT MORE, THE PER CAPITA AVAILABILITY FOR BANGALORE WILL BE ONLY 58 LPCD.

LIMITATIONS TO INCREASE SUPPLY FROM CAUVERY:

The CWSS which has been executed at a project cost of Rs.4,811 crores which may exceed Rs.5,000 crores, cannot be increased from 1,350 MLD because the Cauvery Tribunal's allocation for Bangalore city is only 19 TMC feet of water which is exhausted with the supply of 1350 MLD. The BWSSB has no viable scheme on the anvil to meet the increasingly huge demand for water. It is vaguely being said that water will be brought from Almatti Dam to Bangalore by surface canal or from Hassan. Almatti Dam is 400 km from Bangalore and from its elevation of about 1,200 above Mean Sea Level water has to be pumped to 3,000 feet which is Bangalore's elevation. Apart from its huge

cost it is certain that water will not reach Bangalore because of the demand from villages and towns *en route* the 400 kms. Similar is the case with other river-water sources. Another equally bizarre scheme which is being talked about is to divert the West-flowing rivers towards Bangalore by gravity over the hills.

These schemes are Contractors' Dreams and Environmentalists' Nightmares. Yet another scheme is to dig borewells in Bangalore to augment the water supply. There are already more than 150,000 borewells in Bangalore and their average depth is 200 meters or about 650 feet. As there are no adequate underground aquifers in the rocks of Bangalore, digging more borewells will only increase the water-depth of these existing borewells. Some months ago the Minister in charge of Bangalore City (and now a resident of Parappana Agrahara) even suggested that *New Lakes will be formed to store the Rain-water*. Apart from the huge cost of land acquisition, the same fate of encroachment as that of existing lakes will befall the new lakes also if and when they are created.

RESTORATION OF LAKES – THE OBVIOUS SOLUTION

This brings us to the obvious solution of restoring at least 30 to 40 of the 937 lakes in Bangalore U. district which are at present in varying stages rapid death. Most of the Cascading System of Lakes devised from Kempe Gowda's time and perfected by Major R.H.Sankey in 1830s in Bangalore have mostly been destroyed due to

- Government breaching the tanks and giving them away for other uses – e.g. Challaghatta lake for Karnataka Golf Association; Shoalay tank for Football Association part of which having been illegally sold away by the Association to Raheja Plaza; Kadirenahally tank for Cooperative Training Institute, and other lakes for Police Housing, ISRO, Medical College, etc.
- Builders, Middlemen and "Leaders" forming layouts and selling sites to poor and middle-class people;

- Householders, Apartment Owners and even BWSSB letting in untreated sewage into the lakes, such as Kaggadasapura, Vibhuthipura lake, etc. ;
- Builders dumping debris in the storm water drains/ lakes and filling them;
- Encroachment of tank bed lands by vested interests and instant temples;

Inaction by Pollution Control Board to prosecute polluters under the Water Act;

The tank bed area of the 937 lakes in Bangalore Urban district according to the Survey and Village maps is 26,368 acres of which 1,848 acres are under encroachment by 1,848 persons and institutions. Mainly, due to the letting in of untreated sewage almost all the lakes are completely polluted. Because of this weeds have grown in all the tank beds and when they dry up encroachment takes place.

LAKE DEVELOPMENT AUTHORITY

The BDA and BBMP who are now asked to "maintain" some 135 lakes in Bangalore city area have many other civic duties to perform and restoration of lakes is not their primary objective nor a mandatory duty. On the other hand, THE LAKE DEVELOPMENT AUTHORITY was constituted with the sole objective of protecting and developing the lakes in Karnataka. However, the

LDA is only a Society registered under the Societies Act and it has no legal powers to remove the encroachments and penalize the offenders. Though LDA is chaired by the Chief Secretary, it is only nominal body and the LDA does not meet even once in three months. Therefore, a Draft Bill has been prepared two years ago to vest the LDA with powers as a statutory

body. According to the draft Bill the LDA is to be headed by a serving senior officer of the rank of Additional Chief Secretary to ensure coordination of civic bodies like BBMP, BDA, BMRDA, etc. Unless the LDA is vested with powers to protect the lakes, the destruction of lakes will continue unabated and no amount of exhortation and promises that BDA and BBMP will protect lakes will be of any worth. The LDA should be empowered immediately by legislation and it should prepare plans forthwith identifying about 40 lakes or so in BBMP area which should be restored for augmenting the water supply to Bangalore.

Though a Government Order was passed in 2010 entrusting 135 lakes to BBMP to maintain and develop, recently the BBMP decided that they have funds for maintaining 17 lakes only and have requested for transferring the others to the BDA. Even in these 17 lakhs the main work done is fencing and removing a few encroachments (which are indeed useful), desilting the lake in a "soup bowl" model, without taking into account the gradients of the tank bed and constructing Jogging Paths with decorative tiles. As every jogger knows, hard-paved tracks are injurious to the knees and if grass is costly to maintain, the bund-track should be just earth and not tile-pavements.

What should therefore be done is, constructing Secondary Treatment Plants (STPs) with tertiary filtration and cleaning the polluted water taking into

account the peak inflow for about 40 to 50 monsoon days in a year. The BWSSB has already built STPs of a capacity of 500 MLD or so but these are in disuse due to non-maintenance and lack of supervision. The storm-water drains which are now encroached upon with debris, obstructions and constructions and which are now functioning as sewage channels should be cleaned up and sewage should be diverted by means of pipes so that sewage will not flow into the lakes. At the entrance of the lake, STPs of sufficient capacity should be built so that cleaned water only will flow into the lake. Such STPs are also being built in a few lakes by the BBMP and BDA but they are of insufficient capacity. Where a 8 MLD STP is required to treat the entire sewage flow, only about 2 MLD capacity STP is being built. An 8 MLD STP costs on an average about Rs.10 crore fixed cost and Rs.1 crore recurring cost for electricity and operation. Once in 5 years the membrane has to be replaced at a cost of about Rs.5 crores. Hence, the recurring cost per year will be about Rs.1.2 crores per year and the one-time fixed cost Rs.10 crore. The water so purified will be of potable standard. There are such STPs with tertiary treatment constructed by private companies in Karnataka in the private sector.

Therefore, stopping the sewage entering the lake, clearing the encroachments of the inlets and the outlets of the lakes of about 850 kms. are the primary requirements, rather than paved jogging tracks.

LONG TERM PLAN FOR RESTORATION OF BANGALORE'S LAKES:

While the short term plan should be for the augmenting of about 500 MLD of water from the restoration of about 40 or so lakes to meet the increasing population's demand within 5 years, the long term plan in about 15 years should be to restore all the lakes (about 3,200 or so) in the jurisdiction of the Bangalore Metropolitan Area Development Authority (BMRDA) which includes the districts of Bangalore Urban, Bangalore Rural and Ramanagaram districts. All the three were one composite district till the 1980s when Bangalore Urban district was created and in 2008 the Ramanagaram district was created from the Bangalore Rural District. However, taluks like Hoskote, Nelamangala, Doddaballapur, Devanahally and Ramanagaram are

completely urbanized and therefore the entire BMRDA area of about 8,000 km² should be treated as one for the purpose of urbanization and the lakes in the BMRDA area should be planned for restoration. There are about 3,200 water-bodies in this area and a plan for the 4 natural valleys where these lakes are situated should be prepared. Such a long term plan will cost about Rs.15,000 crores and the LDA should prepare a comprehensive plan and pose it for assistance from funding bodies such as the Asian Development Bank, World Bank and the Japan Bank for International Cooperation etc, besides the central assistance. Such a plan is a must for the future development of Bangalore Megalopolis whose growth is inevitable and fast.

IMPROVEMENTS IN REDUCINGLEAKAGES AND MAINTENANCE OF WATER SUPPLY SYSTEM.

As much as 40% of the water distributed is lost in distribution just as T and D Losses in Electricity supply. By reducing this loss to even at 20%, about

250 MLD of water can be saved and supplied. The BWSSB has not been successful in controlling this loss. In this regard it is necessary to look at the experience

of Hubli-Dharwad, Belgaum and Gulbarga Municipal Corporations where a Demonstration Project of 5 Year Maintenance by name "24/7" has been successfully done by the efforts of KUIDFC and the Government. Under this Karnataka Urban Water Sector Improvement Project (KUWASIP), plugging leakages and Maintenance has been done jointly by the concerned Corporations and a private sector French Company by name LEOLIA. Funded by the World Bank through the KUIDFC, payments in instalments are made to the Maintenance Company on reaching targets prescribed under the Project and as certified by an independent Agency. The Water rate is fixed by the Municipal Corporations and the Project Authority. Any savings made by the Maintenance Company is its margin. In turn, water supply is assured twenty four hours a day, seven days a week, throughout the year. Any complaint is attended to by the Maintenance Company within 24 hours. The KUWASIP has covered only about one-tenth of the wards as a Demonstration Project. As it has been successful and the householders and the Municipal Corporations concerned have insisted upon extension of the project to all the wards in the three corporations, a second phase of the project is now under sanction, the DPR being prepared by the Tata Consulting Engineers. While the emphasis is on maintenance, certain amount of capital works to increase pressure, improvements in new valve systems, etc, have also been done as included in the project.

On the model of the Hubli-Dharwad/ Belgaum/ Gulbarga it is necessary to try a similar project for Bangalore Metropolitan area also. This is not Privatization as only maintenance of the system, as in Annual Maintenance Contracts of any computer system, machinery, etc. is contemplated. The Water Rate is NOT fixed by the Maintenance Company and payments are made in instalments only on reaching prescribed targets. Seeing the success of the Hubli-Dharwad/ Belgaum/ Gulbarga example, there are a few Municipal Corporations such as Mangalore have also demanded such project.

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