

# PRESENTATION

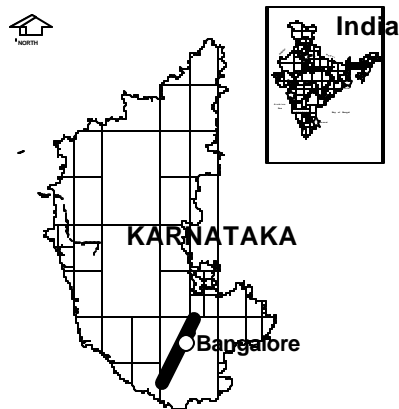


## Improving the performance of Public Water Utilities - A case study of Bangalore

By

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### LOCATION MAP OF BANGALORE





## **OVERVIEW OF BWSSB**

- A Statutory authority of Government of Karnataka
- Established in the year 1964.
- Responsible for providing water supply and sewerage, sewage treatment and disposal with in Bangalore Metropolitan Area
- Board consist of 7 members appointed by Government of Karnataka.
- Since inception Board has executed several water supply augmentation schemes to meet the growing water demand from time to time.
- Presently Supplying 900 to 950 MLD water from a distance of 100 Kms., against head of 540 mtrs.

## **OVERVIEW OF BWSSB**

- Population served is 6.0 millions
- All connections are metered
- Billing is made on the basis of consumption recorded by meter
- 477,000 connections
- 2500 Staff
- 330 Sq. Kms., Service area
- 5 hours of water availability on alternate days.
- 90 to 100 LPCD
- Rs.470 million - annual revenue
- Rs.420 million - annual budget

## OVERVIEW OF BWSSB

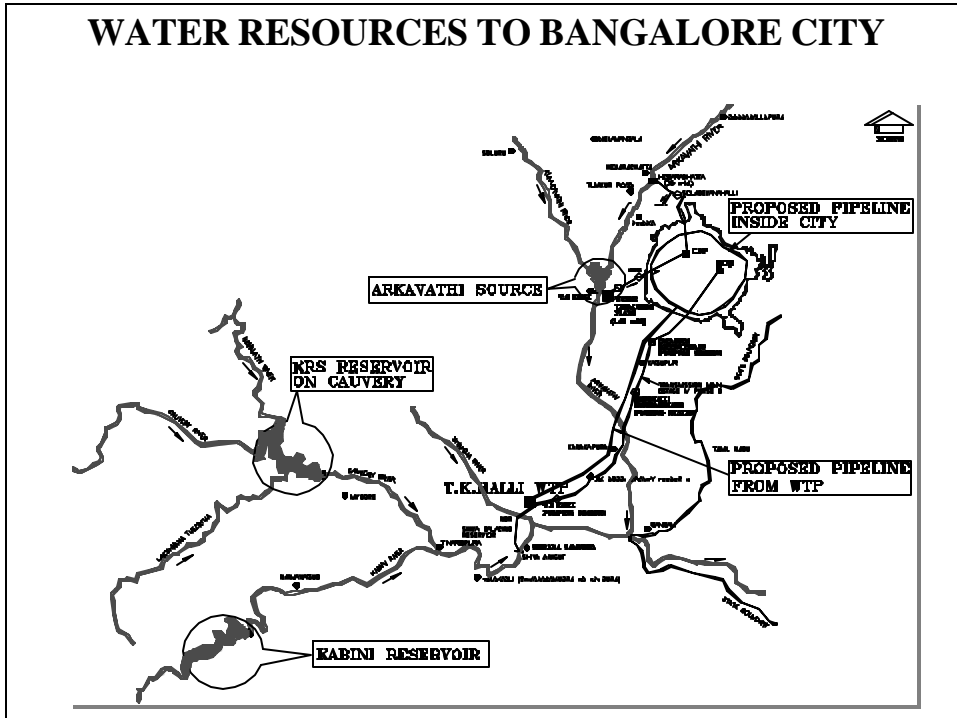
- Rs.290 million O & M cost
- UFW 40 to 42%
- UGD system exists since 1922.
- Major programme of UGD expansion was taken up in 1950
- 14 Nos. of STP's with a total 718 MLD capacity is treating up to secondary levels
- 2 No.s of TTP with total 70 MLD capacity is treating up to tertiary levels

## FUTURE DEVELOPMENT PLAN WITH LINKAGE TO POPULATION GROWTH

### Existing Scenario

- |                      |                                  |
|----------------------|----------------------------------|
| • 2005 population    | 6.80 Million                     |
| • Water Demand       | 1153 MLD                         |
| • Service area       | 330 Sq. Kms.,                    |
| • Present supply     | 900 MLD                          |
| • Gap / short fall   | 253 MLD                          |
| • supplies           | 5 to 6 hours<br>(Alternate days) |
| • Per capital supply | 90 to 100 ltrs.,                 |
| • UFW / NRW          | 40 to 42%                        |

## WATER RESOURCES TO BANGALORE CITY



## FUTURE DEVELOPMENT PLAN WITH LINKAGE TO POPULATION GROWTH

### Scenario by 2011

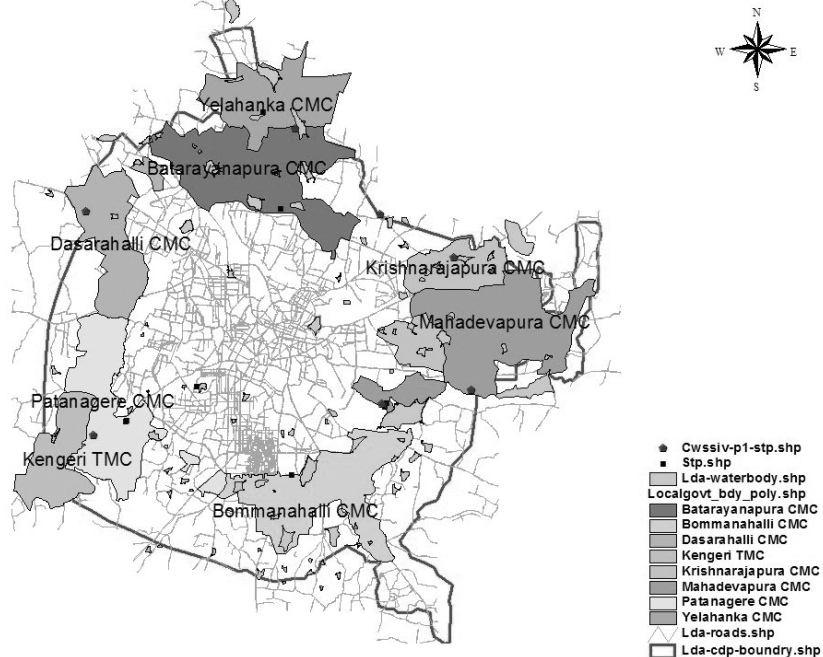
- Projected population (2011) 7.34 Million
- Water Demand 1576 MLD
- Service area 598 Sq. Kms.,
- Present supply 900 MLD
- Gap / short fall 676 MLD

## FUTURE DEVELOPMENT PLAN WITH LINKAGE TO POPULATION GROWTH

### Proposals for augmentation

- |  |                   |
|--|-------------------|
| • CWSS Stage IV Phase II Scheme        | 500 MLD           |
| • Cost of water component              | Rs.17590 Millions |
| • Cost of sewerage component           | Rs.8320 Millions  |
| • Sewage Treatment Plant's             | 11                |
| • Intermediate Sewage Pumping Stations | 8                 |
| • Trunk sewers                         | 90 Kms.,          |
| • Scheme programmed for commissioning  | 2011 - 2012       |

### CDP WITH 7 CMC & 1 TMC BOUNDARIES

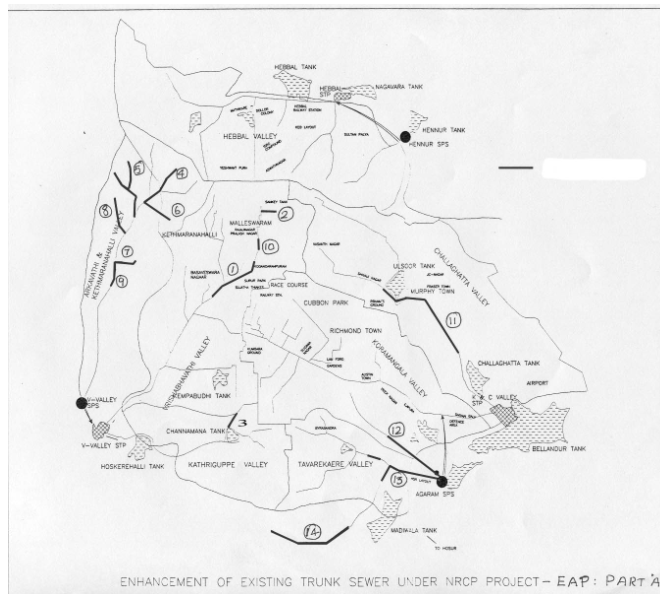


## **FUTURE DEVELOPMENT PLAN WITH LINKAGE TO POPULATION GROWTH**

### **Greater Bangalore water supply and Sewerage project**

- Providing water supply facilities in 7 CMC's and 1 TMC at a cost of Rs.4100 Million
- Work is in progress and programmed for completion by Dec. 2006
- Providing sewerage facilities in 7 CMC's and 1 TMC, Road restoration etc., at a cost of Rs.3920 Million
- Work programmed for commencement by Jan. 2007 and completed by Dec. 2009

### **WORKS UNDER EAP-PART(A)**



## **FUTURE DEVELOPMENT PLAN WITH LINKAGE TO POPULATION GROWTH**

### **Environmental action plan-A**

- Objective - Replace / rehabilitate / enhance capacity of sewers in core area of the city.
- 450 to 1800mm Dia sewers are being replaced
- Length : 22 Kms.,
- Cost : 463 Million
- Work in progress

### **WORKS IDENTIFIED UNDER EAP (PART B)**





## **FUTURE DEVELOPMENT PLAN WITH LINKAGE TO POPULATION GROWTH**

### **Environmental action plan-B**

- Objective - Replace / rehabilitate / enhance capacity of sewers in core area of the city.
- 450 to 2000mm Dia sewers proposed to be replaced
- Length : 100 Kms.,
- Cost : 1950 Million
- DPR in progress

## **FUTURE DEVELOPMENT PLAN WITH LINKAGE TO POPULATION GROWTH**

### **Asset Renewal Programme**

- Objective - Rectification of distressed structures / pipelines
- Replacement of corroded pipeline in distribution network is taken up in a phased manner to improve the system pressure and water quality.
- Repairs to two distressed GLR's taken up and rest are programmed for rectification in a phased manner

## **INSTITUTIONAL AND POLICY REFORMS – ITS IMPACTS**

- Commissioning of comprehensive GIS in Year 2002

GIS is helping the utility as a Management tool for taking timely suitable decisions

- Establishing two wastewater recycling plants at a cost of Rs.600 Million in the year 2003.

Recycled water is being supplied to some of the identified industries depending on the geographical location from the respective plants and use of the same is slowly picking up thereby saving fresh potable water

- UFW pilot project in central core area of city covering 362 Kms., pipeline and 32000 connections taken up at a cost of Rs.480 million.

UFW pilot project has accrued the benefit of control over distribution losses, reliability in supplies, increase in system pressure, improvement in water quality and increase in water revenue.

## **INSTITUTIONAL AND POLICY REFORMS – ITS IMPACTS**

- Bangalore Water Supply, Sewerage and Environmental Sanitation Master Plan commissioned during the year 2002 at a cost of Rs.200 Million.

- Master Plan studies helped in ascertaining the status and adequacy of existing infrastructure, condition of assets, timing of replacement / rehabilitation required, investment required, availability of raw water sources, Institutional capacity etc.

Exposure to the staff in various fields for better understanding about the latest technologies available for implementation.

- Pilot projects for Urban poor in 4 identified slums

The pilot project has demonstrated that urban poor are willing and able to pay for improved sanitation and water supply services, if procedural barriers and property taxation norms are simplified.

## **INSTITUTIONAL AND POLICY REFORMS – ITS IMPACTS**

- Based on the experience gained from these pilot project better water supply and sanitation facilities are being extended to various slums settlements in a phased manner.
- Transparent measures such as simplification of procedures for sanction of water supply and sewerage connections, customer charter, informative website, monthly water adalath, fully automated bill payment KIOSK established have been welcomed by the consumers.
- Private sector has been involved through service contracts for O & M of water treatment plants, sewerage treatment plants, Pump Houses, Chlorinators etc., which has resulted in reduction of recurring cost and improved efficiency.

## **KEY AREAS NEEDING STRENGTH AND CAPACITIES**

- Self sustainability of utility – Financial capability of utility is under great stress due to enormous amount of UFW levels, requiring huge investments for asset renewal/rectification and dearth of dedicated staff to sustain the UFW at reasonable levels.
- Exposure of the staff to the modern technologies and methodologies – Adequate exposure / training and opportunities to the staff for implementing best practices in day to day activities.
- Institutional capacity building – ear marking identified staff to be trained in specific areas and utilizing the services in their area of expertise.
- Involving private sector in bringing efficiency and improvement in the O & M services for self sustainability.

## **STANDARDS APPLIED TO MANAGE WATER QUALITY TO MEET THE BASIC REQUIREMENTS**

- Water is treated at source for WHO standards.
- To maintain residual chlorine at the consumer end re-chlorination is done at city reservoirs.
- 1500 to 1600 samples collected monthly from the distribution network and tested for potability.
- About 2 to 3 % samples are found to be not suitable for potable purposes under bacteriological test.
- Wherever quality is affected (at the location of 2 to 3% of samples) distribution network is checked for the source of contamination/ plugging of leaks, scouring of pipeline and disinfection.

## **WATER MANAGEMENT MEASURES BEING IMPLEMENTED AND THEIR IMPACT**

- Present demand for water is 1153 MLD
- Present supply is 900 MLD
- Deficit 253 MLD
- Per capita supply 90 LPCD
- Alternate day supplies of 4 to 5 hours introduced.
- Promotion and use of recycled water for non potable purposes
- Discouraging consumers from using more water and wasting for non potable uses by increasing water tariff at the lowest slabs in the domestic category also.
- UFW studies taken up in pilot areas to identify NRW and sustain the same at reasonable levels
- Rain water harvesting is being encouraged

## **STRATEGIES TO GENERATE RESOURCES TO MEET THE FINANCING GAP**

- 60% of the revenue is spent towards power charges.
- Utility is managing finances to meet regular O & M cost, Administrative charges etc.
- Utility is not in a position to finance capital works for implementing schemes
- To generate additional revenue and at the same time postponing fresh water augmentation schemes, use of recycled water for non potable uses is being promoted.
- Private sector participation is limited to service contracts for O & M of water treatment plants, waste water treatment plants, Pump Houses, attending leaks.
- Outsourcing GIS maintenance services, Computer maintenance services, providing security and transportation services etc., have yielded desired results.

## **NATURE OF PARTNERSHIP AND OTHER UTILITIES**

- BWSSB is a role model for other water utility in India for emulating some of the innovative measures initiated and its success stories.
- Several Indian water utilities are regularly visiting BWSSB to learn more about GIS, Recycling plants, Water Audit, Consumer Redressal mechanism, billing and collection, 24 x 7 KIOSK etc.
- Various water utilities are holding interaction and exchanging their experiences for mutual benefits of both the utilities.

## **KEY RECOMMENDATIONS**

- Creating public awareness in economic use of potable water for non potable uses by way of improved less consuming flushing techniques.
- Promotion and Adoption of rainwater harvesting methods.
- Introduction of dual water supply system in new multistoried buildings.
- Reduction of non-revenue water through proactive maintenance.
- Restoration of Lakes for improving ground water recharge.
- Provide individual connections to all urban poor settlements for better water supply and sanitation services and conservation of water.

**THANK YOU**