

**Moving Towards
24x7 Water Supply**
An Endeavor of
Nagpur Municipal
Corporation through
Public Private Partnership



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Praveen Datke, Mayor, NMC

Reliable supply of good quality potable water to all strata of society including slums is made possible through 24x7 water supply project.



Shraavan Hardikar (IAS), Commissioner, NMC

Sustainability, accountability and equity along with professional management of complex city water systems is expected from this PPP initiative.



Zero Mile



Diksha Bhoomi



Ramjehula

PREAMBLE

Nagpur a second capital of Maharashtra has population over 2.5 million spread in 217 sq km. Pursuant the Constitutive Act of Nagpur Municipal Corporation (NMC), this institution is responsible of providing water supply services to the city of Nagpur. The total water supply to city was over 500 mld per day through nearly 225 thousand connections in 2008, now water supply capacity upgraded to 765MLD & about 350 thousand connections in 2015. The distribution network consists of over 3000 km of pipe line network. Nagpur City Development Plan states that NMC mission includes achieving "Water for all and 24 x 7 supplies with focus on safety, equity, and reliability".

The existing situation in 2008 had intermittent water supply with many areas getting alternate day supply & Non-Revenue-Water was well above 50%. NMC intends to entrust the realization of Full-City uninterrupted 24x7 water supply system in Nagpur through Public Private Partnership (PPP), which will be required to finance the capital expenditure required to rehabilitate, repair, maintain and to provide for appropriate refurbishing and replacement of water supply infrastructure as required to achieve the objectives of this project. NMC has entered in to the agreement with Orange City Water Pvt Ltd (JV of Veolia Water, a global water giant and Vishvaraj Infrastructure, a local company with PPP projects in India).

Nagpur is a first mega city water distribution on PPP basis in India. About 3.5 lakh population is already converted from intermittent supply to 24x7 water supply (Largest in country) and by March 2017 entire 2.5 million population is expected to get 24x7 water supply to become a first million plus city in India with continuous water supply. The road map followed by NMC as given below.

ROAD MAP

- Master Planning of water sector, including Recycle & Reuse of water.
- Water Audit & Energy Audit Projects.
- Augmentation to water supply (Recycle & Reuse, Kanhan & Pench IV).
- Implementation of pilot 24x7 and NRW reduction in Dharampeth Zone.
- Stake holder consultation.
- Telescopic Tariff for O& M cost recovery.
- Water supply policy for Urban poor.
- Full city rehabilitation plan under funding from Jnnum.
- Ring fencing of water supply through formation of SPV (NESL).
- Rehabilitation & 25 years O&M contract on PPP with OCW (JV of Veolia & Vishvaraj).

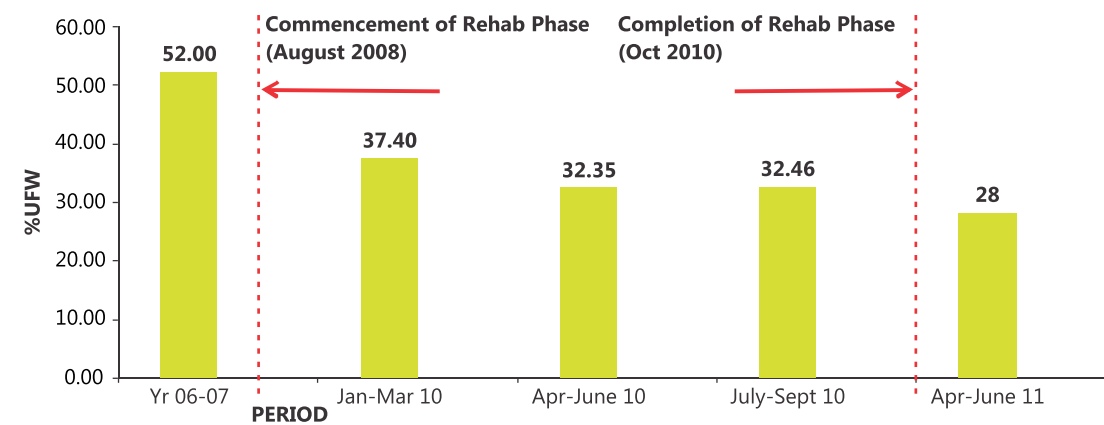
DEMO ZONE DHARAMPETH - 24x7 PILOT PROJECT RESULTS

Indicator	Status in 2008	Status after Dec 2010
No of Connection Registered - Non Slum	9682	10727
No of Connection Registered - Slum	1657	5168
No of Stand Post	179	15
Length of Network (km)	180	204
% of existing network replacement		32%
Payment Collection Points	4	7
Supplied Volume (mld)	43	52
Billed Volume (mld)	21	36
UFW	51%	32% (28% 2011)
Bills Distributed	11339	15731
Pressure at Customer Point(m)	2-6	9-12
Hour of Supply	2-8	14550 Customers -24 Hrs 1395 Customers -12-16 Hrs
Chlorine content less than 0.2ppm	37%	0%
Average Pressure	3-5 m	12 m

SLUM POLICY RESULTS

- 100% dis-connections of public stand pipes resulted in saving of water & improvements in slum culture in term of hygiene, disputes.
- All slum dwellers (5200 nos) connected to water supply network through individual house service connection resulted in minimize the wastage of water.
- Slum dwellers are ready to pay water charges .
- Dedicated cash counters for payment collection.
- Total water bill distributed till date amounting Rs. 17,29,610 and collection made is Rs. 11,79,038 i.e. 68 % recovery compare to less than 20% earlier.
- Now demo zone urban poor people are happy with service provided to them.

UFW REDUCTION PROGRAM - RESULTS



Happy owner of legal connection - Khamla Slums Nagpur.

100 mld Bhandewadi STP under up-gradation to 200 mld for Recycle & Reuse.



Power Plant, Koradi

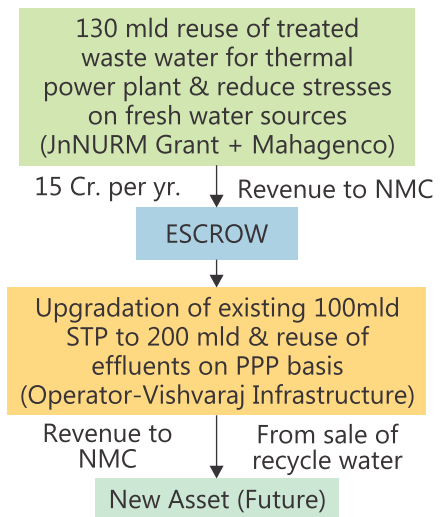


130 mld STP to reuse water for TPS Koradi

NMC WATER REUSE = MORE WATER FOR CITY, IRRIGATION & INDUSTRY



INNOVATIVE* FINANCING



*No financial burden on NMC

Consumer	Water Reuse Potential In mld
MAHAGENCO	130 (Agreement Executed)
Industrial / TPS	150 (PPP-Operator Appointed)
MIHAN	40
IRRIGATION	70
CITY BULK	25
TOTAL	415

AUGMENTATION TO WATER SUPPLY

Before **470 mld**

Augmentation under Jnnurm

- | | |
|-----------------------------------|---------|
| 1. Upgradation of old WTP / Pumps | 60 mld |
| 2. Augmentation of Kanhan | 120 mld |
| 3. Augmentation of Pench | 115 mld |

Present Water Supply Capacity **765 mld**

Total Investment (JnNURM) **1206.95 Cr.**

Investment through PPP **185.00 Cr.** against the share of NMC

All new WTPs are fully automatic and built under PPP mode and long term 10-15 years of performance based contract



Kanhan WTP

New ESRS

Pench-4 Pipe Line

WATER SUPPLY IMPROVEMENT & AUGMENTATION PROJECTS BENEFIT

JNNURM Projects	Cost In Rs crore	Outcome
Leak Detection	3.23	<ul style="list-style-type: none"> Flow Meters from source to ESR Reduction in BW – UFW to 2% from 23%
Water Audit	38.43	<ul style="list-style-type: none"> 24x7 for 15000 connection from Sep 09 Replacement of 20000 consumer meter Reduction in UFW < 25% in Pilot
Energy Audit Part PPP	27.64	<ul style="list-style-type: none"> Replacement of All Pumps installed prior to Year 2000 with minimum efficiency of 70% Reduction in system head by 12m for Pench-1 Centralized monitoring system Infrastructure for equitable dist.
Expansion of Network	42.89	<ul style="list-style-type: none"> Connectivity to 572 layouts Population over 2.0 lakhs covered in piped water network
Kanhan Up-gradation - PPP	87.65	<ul style="list-style-type: none"> New Plant of 240 mld and discarding the old plant of 120 mld with Pumps
Pench-4 Project	619.29	<ul style="list-style-type: none"> Replacement of Canal by 2300 mm pipe Additional Raw water of 115 mld from reduction in water losses in canal New WTP of 115 mld at Godhani PPP Trunk main up to MBR Service Reservoirs 25 nos Feeder Mains 35 Km Distribution system of 225 Km
24x7 Project for full city - PPP	387.86	<ul style="list-style-type: none"> Initial Performance Improvement Program (IPIP)
Total JNNURM Phase-1	1206.95*	<ul style="list-style-type: none"> Total Production Capacity 765 mld to meet demand up to 2031 Energy Audit projects saved energy by 20% 10% of Area will be converted in to 24x7 NIT Phase-1 : Water Supply coverage to 1.5 lakhs Population (EWS/LIG)

*Excluding water distribution projects in NIT area



Rehabilitated WTP



Rehabilitated House Service Connection



Leak Detection



First NESL Board Meeting



Stake-holder Consultation



Agreement

24x7 FULL CITY - PROJECT BENEFITS & TARGET

Service Level Benchmark (SLB)	Status Before	Benchmark (MoUD)	Targeted Year*
Coverage of Water Supply	84%	100%	5 Yrs
Per Capita Supply of Water	240 LPCD	150 LPCD	10 Yrs
Continuity of Supply	3 – 8 hrs	24 hrs	5 yrs
Extent of Metering of Water Connections (working meter)	<50% (accuracy?)	100%	5 yrs
Extent of Non-revenue water	60 –70 %	20%	10 yrs(< 40% 5yrs)
Efficiency in Redressal of Complaints in 24 hrs	No tracking	80%	5 yrs
Quality of Water	Mix supply	100%	5 yrs
Operating Cost recovery in water supply services	70 - 75%	100%	6 yrs
Efficiency in collection of water related charges	70 - 75%	95%	10 yrs

*From the commencement date 1st March 2012



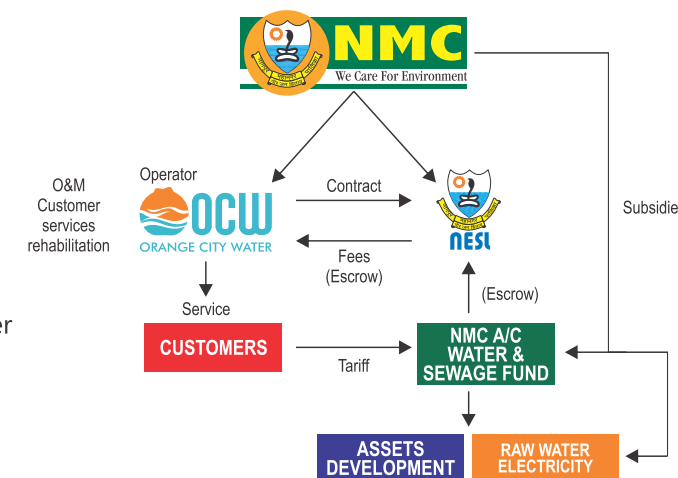
PPP MODEL (PUBLIC PRIVATE PARTNERSHIP)

NMC

- Asset ownership
- Tariff Decision
- Payment to Operator Fees
- Connection-Disconnection Authority
- Augmentations to water supply
- Raw-water & electricity

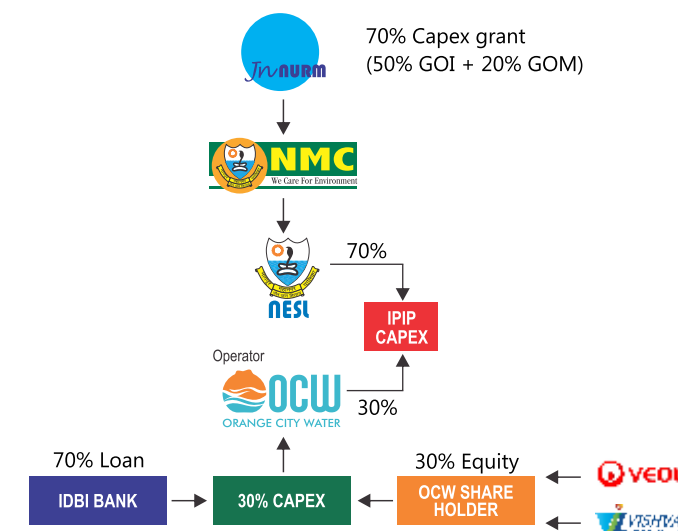
OPERATOR

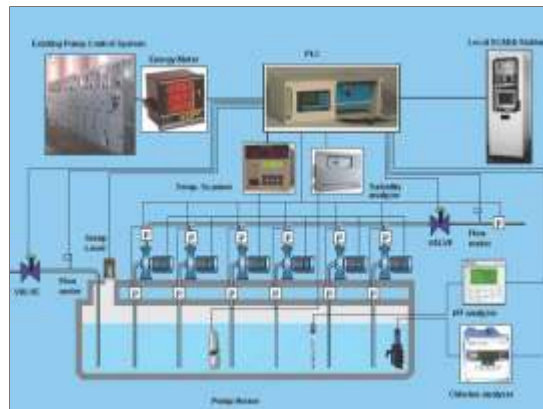
- O&M from source to consumer meter
- Technical efficiency
- Commercial efficiency
- Replacement & repairs of assets
- Customer Services
- Partial (30%) capex in IPIP



INITIAL PERFORMANCE IMPROVEMENT PROGRAM (IPIP)

Project Cost	Amount in Crore Rs.
Grant (JnNURM)	
Gov. of India	193.93
Gov of Maharashtra	77.57
SubTotal	271.50
OCW's share	116.36
TPC	387.86





Scada for Pumping



GIS Based Modeling



EMF Flow Meter

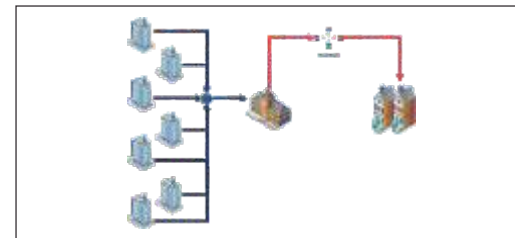
TECHNOLOGICAL EDGE TO BUSINESS MANAGEMENT

IIIMS, GIS MAPPING, COMPLAINT MANAGEMENT TOOL, TANK CLEANING SYSTEM, SCADA & TRENCHLESS TECHNOLOGY

- 100% Business transformation through Integrated Information Management System tool (SAP & ERP) in O&M, IPIP and Customer Service.
- Implementing GIS mapping for Water Network and Consumer data for entire city.
- Leak detection: use of modern leak detection equipment to stop invisible and visible leakages.
- OCW have developed automatic tank cleaning technology for cleaning of service reservoirs with 150 bar capacity pumps. This technology cleans reservoirs with minimum time avoiding inconvenience to citizens. This technique is being recognized as Best Practice in IUKAN 2014.
- Round the Clock Customer Attention: 24x7 call Centre in place with Toll Free no. 1800-266-9899 to serve consumers.
- New SCADA System - Implementation of World's most advanced 3D 64Bit SCADA Iconics Genesis64 for new & old ESR, GSR & WTP
- Trenchless technology (HDD) introduced for pipe laying to minimize inconvenience to citizens & reduce the damage to roads.



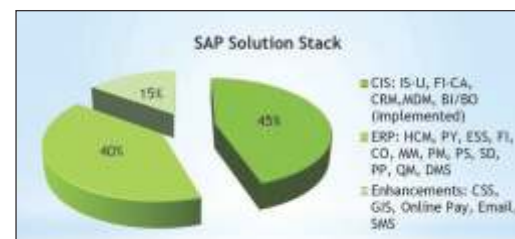
GIS Mapping



IIIMS Infrastructure Underlying



Leak Detection



ESR Tank Cleaning



Trenchless laying of pipe line - No Digging of Roads





Consumer Facility Center

Call Center

Water House

CUSTOMER SERVICE DEVELOPMENTS

BILL STAGGERING, MONTHLY BILLING, ONLINE PAYMENT FACILITIES, PHOTO METER READING

- Staggering of Consumers in 3 batches for uniform billing & collection.
- Main consumers identification for better customer service and revenue generation.
- Monthly bill generation for main consumers & quarterly for remaining consumers.
- Water Bill with complete billing details.
- Online facility for bill payment.
- SAP generated payment receipts.
- Photo meter reading implemented from July 2014.
- Communication with Consumers through Announcement Vans, Mohalla Meetings, Group Meetings, Sr. Citizens-Garden Meetings, Public Representatives, one to one communications, Participations in Local social Events and Health Camps.
- Educating consumers on the importance of 24X7 water supply and conservation of water to avoid excess billing.
- Customer Feedback: Time to time feedbacks are taken from the consumers from every strata of the society.
- Authorization of Unregistered Consumers through Amnesty Scheme with the help of NMC General Body Resolution.



SAP Generated Bills



Complaint Management

