



REFORMS IN WATER SECTOR : NAGPUR MUNICIPAL CORPORATION



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NEED FOR REFORMS IN WATER SECTOR

Annual expenditure of Municipal Corporation on water supply : **Rs 95 crores**

Total demand from consumers against water bills: **Rs 71.5 crores** (deficit of Rs 23.5 crores)

Total recovery against water bill : **Rs 50 crores** (arrears of Rs 21.50 crores)

STATEMENT OF WATER BILLING DEMAND TO CONSUMER AND IT'S RECOVERY

YEAR	DEMAND (IN Rs. CRORES)	RECEIPT (IN Rs. CRORES)	% RECOVERY	WATER SUPPLY
2001-2002	70	44	63	370 MLD
2002-2003	73.50	45	63	370 MLD
2003-2004	71.50	50	69	490 MLD

*RECOVERY INCLUDES ARREAR

Municipal Corporation Makes Payment to Irrigation Department for : **600 ml/Day** (annual avg.)

Municipal Corporation Supplies Treated Water to City : **490 ml/Day**

Municipal Corporation Billing to all consumers against water supply: **240 ml/Day** (annual avg.)

Total Water Losses /UFW/ NRW are 360 ml/Day i.e. 60 % of supply.



**COST OF TREATED WATER IS Rs 5.30/ 1000 ltrs.
ANNUAL ENERGY BILL OF Rs. 22 CRORE /YEAR**

NMC Water Supply: Income Expenditure (in Rs.Lakhs)

	2003-04 Actual	2004-05 Actual	2005-06 Actual	2006-07 (Estimated for last 4 months)	2007-08 (Budgeted)
Establishment Expenses	501.96	574.85	623.86	640.00	670.00
Energy	2186.32	2110.02	2040.02	2600.00	3000.00
Raw water	1173.25	939.35	1356.12	900.00	1000.00
Other expenses	195.90	274.85	191.74	346.00	439.00
M & R	480.20	397.46	679.53	676.50	792.00
Total General Expenses	4537.63	4296.51	4891.27	5162.50	5901.00
Water Charges recovery	4891.20	5146.01	4840.70	5701.00	7500.00
Old Loan Repayment	3208.47	2111.31	3711.40	4451.48	1879.51
Capital Expenses	1852.88 (Pench-3)	527.91	720.87	1425.44 JNNURM	3775.00 JNNURM

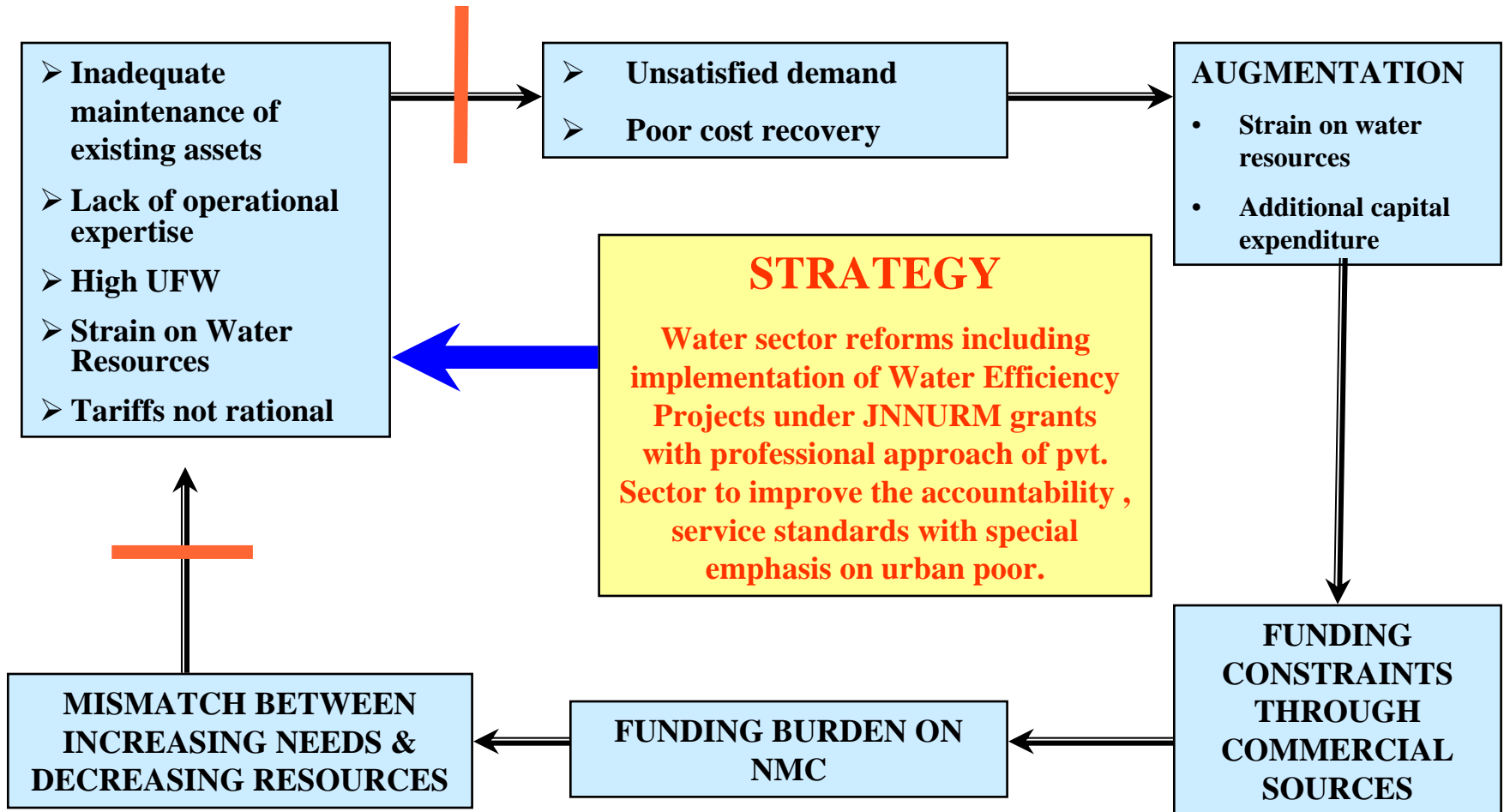


Water sector Challenges: NMC

- Availability of adequate quantum of water and at economical cost to meet future demand.
- Reduce the cost water supply to consumer
- Water Losses and UFW
- Equitable distribution (Alternate day / 20 hrs/day)
- Accountability
- Water to Slums (inefficient system)
- Water network coverage and inadequacy of network
- Water supply management during summer peak demand
- Old and inefficient assets
- Delay in capacity augmentation for future demand from Limited water sources.
- Capital availability
- Low water tariff and Poor billing mechanism.
- Lack of professional approach.



Vicious circle and strategy





NMC Strategy for Reforms in Water Sector

- Fixing of Benchmarking and Performance indicators through Water audit, Energy audit & Financial reforms.
- UFW/NRW reduction program with investment plan
- Assets Up gradation plan for better serviceability and efficiency
- Cost reduction program (Energy, Water & O & M Cost)
- Improvement in services to consumer special emphasis to urban poor
- Implementation of augmentation plans with inbuilt efficiencies.
- Low cost Funds / Grant from Jn-NURM/ Tax free bonds/ PPP
- Performance based contract with 10 to 15 years of O & M for private participation
- Quality & Cost based selection criteria for contractors, consultants and Operators.
- Rationalization of Water Tariff and Billing with Meterisation.
- Capacity building of NMC employees by exposure and training.
- Review of water supply master plan with inclusion of water reuse option

..... *Moving towards Continuous Water Supply in Nagpur*



STEPS TAKEN BY NMC FOR BETTER EFFICIENCY IN WATER SUPPLY

1. Water & Energy efficiency Project worth Rs. 96 crore has been approved and funds received from JNNURM
2. Reduction in Raw water UFW by 100 mld (*Annual savings of Rs. 2.0 Crore on investment of Rs. 35 lakhs*)
3. Water Audit & Leak Detection Phase-I of Rs. 28.0 Crore. (*Step towards bringing down the UFW to less than 25%*)
4. Energy Efficiency Program of Rs 25.00 Crore is under implementation. (*Reduction in energy consumption by 20%*)
5. Up gradation & Expansion of Distribution Network of Rs 43 Crore (*To increase the coverage of piped water network to 100% and equitable distribution of water*)



STEPS TAKEN BY NMC FOR BETTER EFFICIENCY IN WATER SUPPLY

6. Pench-4 : *Aug. water to supply project through reduced water losses in canal.* : Rs 422 crore has been sanctioned under JNNURM
7. New Water Supply Policy for Slums. *To reduce UFW and service to urban poor.*
8. Rationalisation of Water Tariff. *(To recover O & M Cost + Telescopic tariff for water conservation)*
9. Up gradation of Kanhan water supply systems (Project cost Rs. 83 crore sanctioned under JNNURM)
(Optimum Utilisation of water resources)
10. Water Reuse Projects under WENEXA-II: *To make the region water surplus : Project cost Rs. 131 crore sanctioned under JNNURM*



Tariff revision for cost recovery and water conservation

- Tariff Revision as approved by General Body
 - Telescopic tariff
 - Minimum domestic tariff increase from Rs 3 per 1000 ltrs to Rs 7.50 per 1000 ltrs.
 - Subsidized tariff for life line consumption up to 8000 ltrs per family per month
 - Supply at cost for consumption beyond life line supply and up to 20000 ltrs per month per family
 - Premium tariff on excessive consumption (>20000 ltrs)
 - Linking of tariff with variation in cost of energy and raw water
 - Energy and Raw water cost make 50% of total O & M cost
 - Variation in raw water or energy cost shall be adjusted as surcharge from consumers.
 - Meter replacement program for all consumer a important part of 24x7 project.



Implementation of 24 x 7 through PPP

- General Body passed the resolution in the month of January 2008 to adapt the PPP mode for Implementation of 24x7 water supply in city.
 - Objectives
 - To reduce the UFW and water losses
 - Better service to consumers
 - Reduced financial burden of NMC on capital and revenue expenditure

Description	Rs (in Crore)
Investment for Augmentation & Improvements Under JNNURM	615.00
NMC share 30%	185.00
24 x 7 System Improvement Rs12000/ connection	240.00
Immediate Funds requirement	425
Annual Burden (10 years repayment @ 10% IR)	70.00
Project Savings/Revenue (with tariff revision and existing collection efficiency)	30.00
Balance Annual Burden	40.00
Energy & Raw water cost	40.00
Future Source development Rahari (10 years)	500



Private Participation in Water Sector :Old Model of NMC

- All new assets created since 1999 is managed through service contract.
- Existing assets also managed through service contract for Pumping station/ WTP O&M / Valve operations/ Billing distribution/ Annual maintenance contract for Zonal level
- Disadvantages
 - It is only a labor contract replacing retired employees.
 - No link with performance
 - No accountability towards consumer
 - Short term Contracts break up in small parts with no feasibility for private investment
- Advantage :
 - Reduced number of NMC employees as of now 80% of assets managed by private contractors
 - Short term annual contract can be replaced by better contract
 - Non performing contractor can be replaced by better one
 - Reduced O & M cost
 - Over the period of time capacity built up for local contractors in O & M
 - Prepared the ground for larger involvement of Private participation without affecting the NMC employees. Hence, less resistance for PPP.



Present NMC approach for Private Participation

- Performance based long term contract
- Private Participation in capital cost from Operator
- Technology by operator for lower life cycle cost
- New assets to generate income rather than increase financial burden on NMC or at least reduce financial burden on NMC
- Better service to consumer and urban poor
- Asset ownership with NMC
- JNNURM funding for better viability of project and reduced cost of capital.
- No NMC employee for operating the New assets for Augmentation to water supply projects

Public Private Partnership in Water Sector

- Project Finalized Under JnNurm
 - Pench-I WTP Improvement & Up gradation (Rs 6.42 Crore)
 - 70% grant in aid, 30% by private operator (Veolia Water)
 - 5 Years O & M by operator
 - Water reuse For Power Plant (Rs 130 Crore)
 - 70% grant in aid, 30% by Mahagenco
 - 30% O & M by Mahagenco & pay to NMC the raw sewage charges @ Rs1.07 – 1.50 per 1000 Ltr for 110 MLD. Annual revenue to NMC Rs 4.50 – 6.00 crore from sewage
 - 24/7 Water Supply (Rs 20 Crore)
 - 5 years O & M with performance based targets to reduce UFW and improvement in service level to customers in a pilot zone of 1.25 lakhs population.
- Projects Under Tendering for 30% share from private sector
 - Improvement to Kanhan Water Supply (Rs 83 Crore)
 - Pench-IV Part –I raw water pipe line project (Rs. 200 Crore)
 - Pench IV Part-2 WTP project (Rs 25 Crore)
- Upcoming Projects for Private Participation
 - Water production and distribution management of Nagpur City as a whole.
 - 2.5 million population, 585 mld of water supply, 2.0 lakhs connection
 - Water reuse for 200 mld of raw sewage for power, industrial and other non potable uses.



PPP in UN-INTERRUPTED WATER SUPPLY : OBJECTIVES

- UN-INTERRUPTED WATER SUPPLY at desired pressure.
- 100 % Meterisation including NMC properties.
- Optimise the UFW (Real + Apparent Losses) < 15%
- Efficient billing mechanism.
- Sufficient supply to meet the water demand of Urban poor (Slums).
- Reduction in consumer complaint and attending it within 48 hrs.
- Improved Satisfaction for stakeholders.
- Implementation of successful experience in other parts of the city.



Performance Contract for Operator

- Ufw : Cut off Ratio 60-70% for Bonus/Penalty
- Billing : Bonus for additional billing over baseline
- Pressure : Penalty for not maintaining the prescribed Pressure at minimum 10 observation points for cont. 24 hrs
- Quality: Penalty on Failure to meet the desired chlorine level.
- Customer Complaint : Penalty on unsolved complaints within 3 working days.



UN-INTERRUPTED WATER SUPPLY : PAYMENT AND PERFORMANCE

- Payment terms are as follows
 - Technical Services (lump sum)
 - 50% fixed in equal installment in 74 months.
 - 50 % based on milestone achievement.
 - Rehabilitation Work (As per measurement)
 - As per measurement of actual quantity executed.
 - Bonus / Penalty (% over & above lump sum)
 - Increase in billed quantum
 - Reduction in UFW
 - Reduction in consumer complaint
 - Cost benefit target



Pench-I WTP Up gradation :PPP model

- WTP
 - rated capacity : 113 mld
 - Actual Operating capacity : 95 mld
 - Age : 25 years
- Objective
 - Upgrade to 136 mld
 - Rehabilitation /Replacement of equipments for additional 10 years of service
 - Improvement of energy efficiency
- Model for private participation
 - 70% grant from JNNURM
 - Balance from Operator's investment
 - Technology for upgradation by operator
 - Operator to recover by efficiency improvement and upgradation of plant
 - Plant O & M for minimum 5 years for repayment of operator's investment.
 - Monthly payment (Fixed Charges + variable charges) +/- Performance linked Bonus/Penalty



North Zone STP : PPP Model

- Existing Central Zone STP
 - 100 mld operates at 70 mld
 - NMC repay the loan on capital cost taken for construction.
 - NMC to spend 4 – 5 crore/ annum for O & M
- Proposed PPP Model for North Zone STP
 - 70% grant from JNNURM
 - Balance investment from Mahagenco (Power generation company)
 - Plant will be operate by Mahagenco for 30 years.
 - Mahagenco will pay 4-6 Crore /year for 30 year to NMC for raw sewage of 110 mld
 - Mahagenco will use treated sewage for power plant (2x800 MW)
 - Agreement between NMC and Mahagenco is finalised.



Projects in Pipe Line for PPP

- Pench – IV for built and long term O & M contract
- Kanhan with DBO, 10 years performance based operating contract for 120 mld WTP
- Consumer meterisation & Billing
- Water distribution concession agreement for O & M, Service to consumer, billing, recovery and investment from operator. The agreement proposed for 15-20 years.



THANK YOU