

Challenges in the delivery of Water and Sanitation

Urban Team

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The challenge of delivering water

- Rapid urban growth leads to greater demand for water
- Rising incomes of consumers create higher expectations on the quality of service delivered



This calls for

- Investments in source works, networks, maintenance and replacement of aging systems, and
- Efficient delivery mechanisms

The challenge of delivering water (*contd...*)

- The result will be more water and better delivery
- The challenge is to do this in a financially and environmentally sustainable manner

Stress Points

- Increasing financial stress from rising energy costs and unwillingness to raise user charges
- Increasing environmental stress from inadequate investment in sewage treatment and neglect of solid waste management

Critical dimensions of a well run utility

- **Autonomy** - being independent to manage professionally without arbitrary interference by others.
- **Accountability** - being answerable for performance to customers
- **Market orientation** - making greater use of markets and incentives

How do India's Urban Service Providers compare against these criteria?

Status of Water and Sanitation: Haryana

Water

- Per Capita Supply: 95-105 lpcd
- Duration of Supply: 0.5 – 6 hours per day
- Coverage of piped network: 74 %
- Limited metering of households

Bulk source of Water: Yamuna and Ghaggar

Lowering of water table: 0.33 meters per annum

Sewerage

- Coverage of piped network: 49.4 %
- Number of Sewage Treatment Plants: 17
- Capacity of all Sewage Treatment Plants together: 322,000 m³ per day
- Capacity utilisation of Sewage Treatment Plants : ???

Coverage of Toilets: 90% of urban population

Status of Water and Sanitation: Punjab

Water

- Per Capita Supply: 128 lpcd
- Duration of Supply: 0-6 hrs
- Coverage of piped network: 68%
- Limited metering of households

Bulk Source of Water: Satluj and Beas
Lowering of water table: 0.5 m per annum

Sewerage

- Coverage of piped network: 63.7 %
- Number of Sewage Treatment Plants: 95
- Capacity of all Sewage Treatment Plants together: ???
- Capacity utilisation of Sewage Treatment Plants : ???

Coverage of Toilets: 93% of urban population

Environmental Challenge

Punjab

- Area under paddy cultivation: 27.5 lakh h.a.
- 13.8 lakh tube wells for irrigation, of which 2.2 lakh operating on diesel
- Water table reduced by 50 % between 2001 and 2010

Deterioration in soil quality: domination of wheat-paddy in food grains cultivation, stagnating productivity and the absence of breakthrough in new high yielding varieties

Haryana

- Area under paddy cultivation: 11 lakh h.a.
- 7 lakh tube wells for irrigation, of which 2.3 lakh operating on diesel
- Water table reduced by 33 % between 2001 and 2010

Deterioration in soil quality: About 50 % of area under cultivation is severely affected with alkalinity, salinity and water logging

Financial Challenge

Punjab

WATER

- Flat rates for agriculture and non- agriculture
- Last tariff revision in 2005

ELECTRICITY

- Tariffs revised to 65p per kW in 2011-12
- Subsidy of Rs 5000 crore- 2% of GSDP.

Haryana

WATER

- Flat rates for agriculture and non-agriculture
- Last tariff revision in 2006

ELECTRICITY

- Block tariffs for domestic, commercial and industrial use
- Block tariffs for metered agricultural connections
- Flat tariffs (charged per month) for unmetered connections
- Subsidy of Rs 4300 crore- 2.4 % of GSDP.

No separate feeder networks for agriculture in Punjab and Haryana

Making the most of what you have

- 1. Maximizing revenues without raising tariffs**
- 2. Reducing Costs**
- 3. Managing networks better**

Making the most of what you have (*contd...*)

1. Maximizing revenues without raising tariffs

- *Update customer database* – both for existing customers and categorisation
- *Improve billing and collection systems* – bill and collect what you are owed
- *Introduce metering* – on a priority basis, starting with connections with high volume consumption
- *Review tariff block structure* – to target subsidies at the poorest

Making the most of what you have (*contd...*)

2. Reducing costs

- *Improve energy efficiency* – updating pumps and motors
- *Reduce leakage* – providing more water for sale, and reducing energy usage per cubic meter of water sold

Making the most of what you have (*contd...*)

3. Managing networks better

- Allowing introduction of metered 24x7 to actively manage leakage and reduce total water demand
- Other approaches? Maharashtra Sujal Nirmal Abhiyan? IT solutions for Vijayawada and Vishakhapatnam?

Reaping the benefits

Improvements in efficiency and management enable ULBs to

- provide greater access to water and sanitation services
- deliver better services
- create an enabling environment for investors to finance present and future investment needs

Evidence from India

1. Karnataka

3 cities and 4 wards pilot projects (PPP)
Hubli-Dharwad, Gulbarga and Belgaum

2. Maharashtra

Nagpur (PPP)
Maharashtra Sujal Nirmal Abhiyan
Amravati, Malkapur and Badlapur

3. Andhra Pradesh

IT based models
Vijayawada and Vishakhapatnam

Hubli-Dharwad, Gulbarga and Belgaum: 24x7 Water (Public Private Partnership)

Initiatives

- Amendment of Municipal Rules to facilitate PPP
- Volumetric tariff for domestic consumers.
- Tariff for commercial users four times higher than domestic users
- Project cost for all 3 pilots : Rs 1760 crore

Achievements

- Non-Revenue Water reduced from over 42 % to 12 %, on average
- Frequency of delivery increased from an average of 2-3 hours once in 3 days to 24x7 water
- Coverage of households increased from 50 % to 100 %

Challenges

- High investment costs in up scaling
- Any adverse experience from pilots ?

Maharashtra Sujal Nirmal Abhiyan

Initiatives

- Household level surveys to gauge demand and consumption patterns and detect illegal connection
- Water and Energy audits
- Public Private partnership | Operations and Maintenance
- Increasing metering by 80%

Achievements

- 24x7 water supply in Amravati, Malkapur and Badlapur
- Revenue collected through tax increased by around 50%
- Regularisation of illegal connection. For instance, in Ambejogai around 14 lakh new connections given

Challenges

- Increasing the number of cities with 24x7 water supply

Vijayawada and Vishakhapatnam: IT to augment service delivery

Initiatives

- GIS to map water distribution network,
- SCADA for monitoring quality and detecting leakages online,
- Management Information System to regulate water pressure and O&M of booster pumps

Achievements

Vijayawada

- Coverage of water network increased from 24 % in 2006 to 92 % in 2011,
- Non Revenue water decreased from 45% to 23%

Vishakhapatnam

- Metered connections increased by 213% from 1490 in 2005-06 to 4666 in 2008-09
- Revenue increased by 58% from Rs 43 crore 2005-06 to Rs 68 crore in 2008-09

Evidence from other countries

- ***Change management program within the utility***
 - The Public Utilities Board, Singapore
 - Phnom Penh Water Supply Authority
- ***Performance Based Leakage Contract***
 - Ho Chi Minh city
- ***Public Private partnership***
 - Manila

The Public Utilities Board: Singapore

Initiative to build Institutional Capacity

- Autonomy to define its pay scales, to hire & fire
- Clear promotion policies based on merit
- Extensive training of staff (1.8% of operational budget)
- Clear definition of responsibilities and processes (ISO-9001)
- Well defined internal communications channels

Phnom Penh: Improvements in service delivery

Initiatives

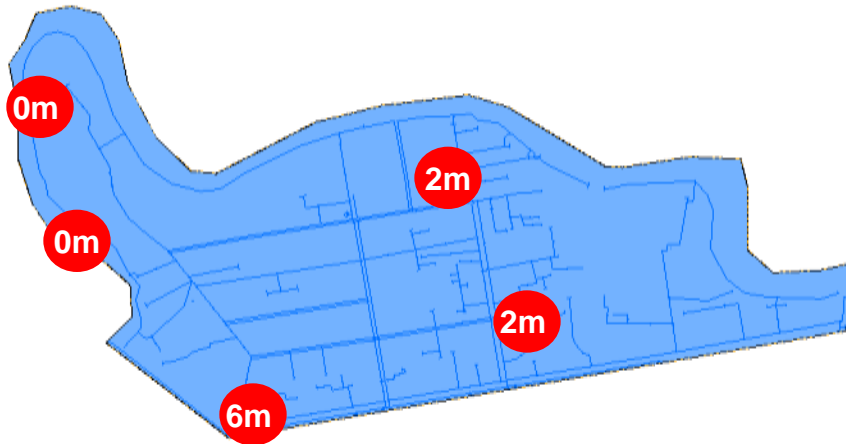
- Financial Autonomy - independent operations and tariffs based on costs
- Restructuring of management- creating a transparent system of incentives for performance and penalties
- Maximising collection of bills and reducing non-revenue water
- Supported through external assistance by the World Bank and the Asian Development bank

Achievements

- Non- Revenue water was reduced from 72% in 1993 to less than 6% in 2010
- Collection efficiency increased from 48% in 1993 to 100% in 2010
- Connections increased from 27,000 in 1993 to 202,000 in 2010
- Water supply increased from 10 hours per day to 24 hours per day

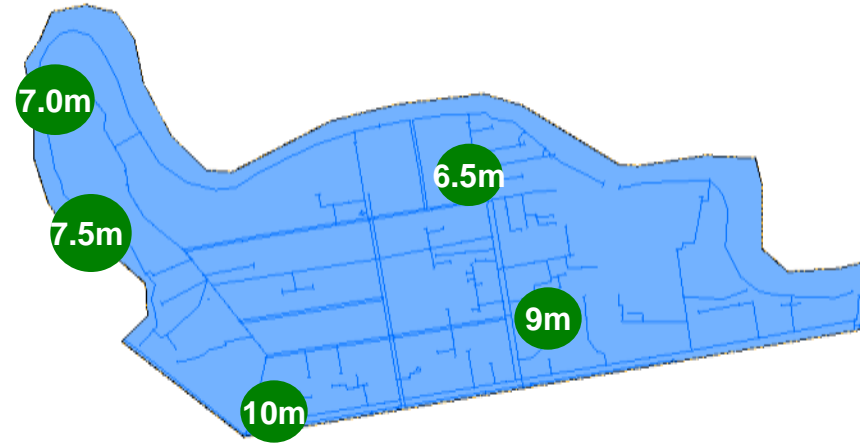
Ho Chi Minh city, Vietnam: Benefits of Leakage Reduction

DMA 1K-01



Pressure Before

DMA 1K-01



Pressure After

BEFORE (August 2010)		NRW Reduction	AFTER (October 2011)	
Supply (cu.m/day)	13,049		6,513 cu.m/day	Supply (cu.m/day)
Consumption (cu.m/day)	3,637	Consumption (cu.m/day)		3,533
Average Pressure (m)	2	Average Pressure (m)		8
NRW Volume (cu.m/day)	9,412	NRW Volume (cu.m/day)		2,899
NRW %	72%	NRW %		45%

Performance based leakage contract was entered into with a private company

Manila: Privatization of the Metropolitan Waterworks and Sewerage System (MWSS)

Initiatives

- New MWSS head appointed to drive process within the organisation
- Study tours in England, France and Argentina to determine best model
- Tariffs increased from Php 4 to Php 8 per cubic meter
- Tariff adjustments well conceived including rate rebasing every 5 years
- Massive public information campaign
- International tendering
- Performance bond to guarantee concessionaire obligations

Critical Factors

- Risks assessed and assigned to most capable parties
- Near-cost tariff prior to a concession
- Transparent bidding and award process
- Regulatory capacity created

Think about new models of provision for mega-cities

- No cost advantage with size, and size is sometimes a cost disadvantage
- Need for coordination and cross subsidy

Summary

- Multiple challenges to urban water delivery
- Improved governance and incentives critical to creation of well run companies that can cater to the rising demand
- Improvement of capacity for planning within the ULB necessary
- Partnering with private sector may augment existing capacity and sometimes financial resources