
# **Excreta Matters:** 7th Citizens' Report on the state of India's Environment

An agenda for water-prudent and waste-wise Jaipur


## Our study

- file://localhost/Users/sunitanarain/Desktop/Excreta matter vol.1 PDF/Final chapters for book/Master Excel Checked.xls



71 city data analyzed
City water-waste profiles
Where does water come?
Where does waste go?
Simple questions
But not asked
Never answered


## Water story in cities

1. Planners obsessed with water, **not supply**

Water sourced from further and further away
Leads to increasing cost of supply
Leads to high distribution losses
Less water to supply at end of pipeline
Less water means more costly water
Cities not able to recover costs of supply, have no money to invest in sewage


## ‘Loss’ not just inefficiency

- Distribution loss is **not just** about inefficiency
- Distribution loss **intrinsic to supply system**

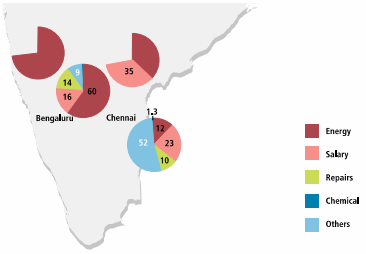
-- distance leads to high transmission losses
-- distance leads to high costs of energy
-- distance leads to high O&M costs of repair

But **‘augmentation’** is name of water supply
Build, pipe, pump and do not worry about supply


**Pumping adds to costs**

**Cost of energy high and growing component of water supply**

COMPONENTS OF WATER SUPPLY IN DIFFERENT CITIES (IN PER CENT)




Source: Anon 2011, *71-City Water-Excreta Survey, 2005-06*, Centre for Science and Environment, New Delhi


# Groundwater: **abused**

2. Water supply does not reach all, only few. No alternative but to move to groundwater

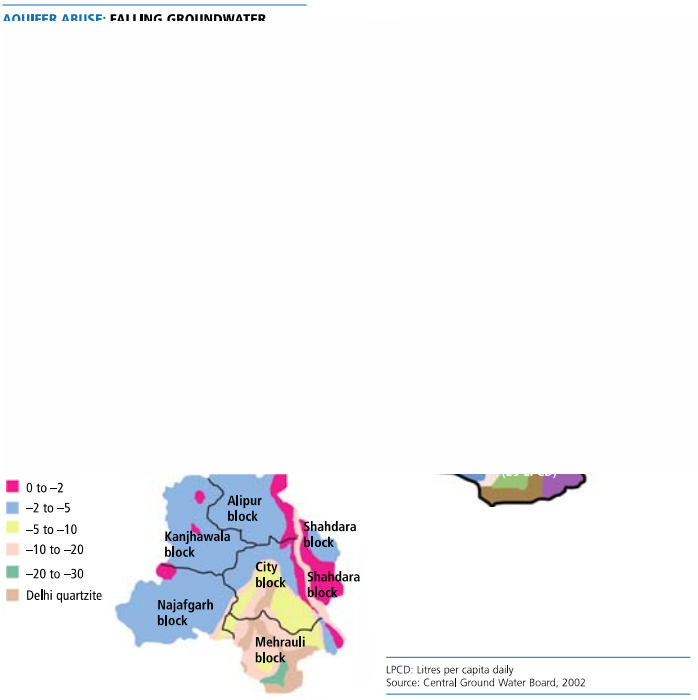
But this is not accounted for

Cities only consider 'official' groundwater use

Millions depend on private wells, tanker mafia, bottled water

**No recognition** of this water source; **no respect** for its management

**Where pipeline does not reach People depend on groundwater Falling groundwater levels tell us about inequity**




# Lakes: **Present lost**

3. Groundwater is not considered as critical for water supply, recharge is neglected

Land is valued, **water is not**

No legal protection for city lakes, catchment and drainage systems

Sponges of cities being destroyed. **Deliberately**


## Lakes: **Future lost**

- Climate change is new threat
- Extreme rainfall events will grow
- More rain, fewer rainy days
- Cities need sponges to capture rain, recharge for scarcity
- But not considered in planning
- Cities **see land,** not water


## Water=waste

4. Cities plan for water, **forget waste**

80% water leaves homes as sewage

More water=more waste

Cities have **no accounts** for sewage

Cities have **no clue** how they will convey waste of all, treat it, clean rivers


## Excreta: **sums**

- 2009:

Sewage generated = 38,255 mld

Capacity to treat = 11,788 mld (30%)

Sewage actually treated = 8,251 mld (22%)

Delhi and Mumbai alone have **40 per cent** of sewage treatment capacity in the country

**78 % sewage** is officially untreated and disposed off in rivers, lakes, groundwater

**We flush, we forget**


## Planning for **hardware**

5. **Cities plan for treatment not sewage**

- Treatment plants are not simple answers
- Can build plants to treat, but there is no waste being conveyed for treatment
- Most cities do not have underground sewage But engineers sell pipe-dreams of **catching up with infrastructure**
- Politicians buy pipe-dreams
- We lose rivers. Generations of **lost rivers**


# Counting toilets: 2011

| Census 2001 | Census 2011 | |
|---|---|---|
| No latrine | **Flush/pour toilet latrine connected to** | **72.6** |
| Service latrine | a. Piped sewer system | 32.7 |
| Pit latrine | b. Septic system | 38.2 |
| Water closet | c. Other system | 1.7 |
| | **Pit latrine** | |
| | With slab/ventilated improved pit | 6.4 |
| | Without slab/open pit | 0.7 |
| | Night soil disposed into open drain | 1.2 |
| | **Service latrine** | |
| | Night soil removed by human | 0.3 |
| | Night soil serviced by animals | 0.2 |
| | **No latrine within premises** | |
| | Public latrine | 6.0 |
| | Open | 12.6 |

Source: Census of India 2011, Houses, Household Amenities and Assets: Latrine Facility,


**Cities do not have drains**
**New growth cities are growing without drains**
**Backlog and front-log impossible to fix**
**As cities fix one drain, another goes under**

**71-CITY SURVEY: AREA COVERED BY CLOSED DRAINS SHOWS REAL STATE OF SEWAGE COLLECTION**

| % of area covered | |
|---|---|
| 0-10 | Cuttack, Guwahati, Jabalpur, Jammu, Ranchi, Thane, Aizawl, Bathinda, Bhilwara, Siliguri, Srikakulam |
| 10-30 | Agra, Alwar, Aurangabad, Indore, Mathura, Meerut, Puducherry, Thiruvananthapuram, Dehradun, Dewas, Hubli-Dharwad, Jhansi, Kozhikode, Lucknow, Solapur, Tumkur, Udaipur, Ujjain, Dhanbad |
| 30-50 | Allahabad, Bengaluru, Bhopal, Delhi, Lucknow, Patna, Srinagar, Amritsar, Bhubaneswar, Jodhpur, Mumbai |
| 50-70 | Faridabad[2], Hyderabad, Jaipur[1], Kanpur, Kolkata, Nagpur, Gwalior, Mussoorie, Nainital, Rajkot, Vadodara, Yamunanagar |
| > 70 | Chennai, Pune, Surat, Gurgaon[2] |

[1]Claims 80% coverage in CSE survey, 65% in City Development Plan for JNNURM; [2]Faridabad and Gurgaon: only old-city within municipal limit included
Source: Anon 2011, *71-City Water-Excreta Survey, 2005-06*, Centre for Science and Environment, New Delhi

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Guwahati, Jabalpur, Jammu, Ranchi, Thane, Aizawl, Bathinda, Bhilwara, Jammu, Jabalpur, Siliguri, Srikakulam


## Bengaluru: **not** reaching

- 3610 km of sewage pipes
- 14 sewage treatment plants = **781** mld
- Generates 800-1000 mld of sewage
- **But treats only 300 mld**
- Rest does not reach
- Now plans to build 4000 km more
- **Builds, grows and more lines need repair**
- Catch-up that does not catch-up


## Partial treatment=pollution

6. **Cities do not control pollution**

**The current water-sewage technology paradigm does not work because it is both capital intensive and resource intensive**

**Cities cannot build new sewage systems or refurbish old systems**

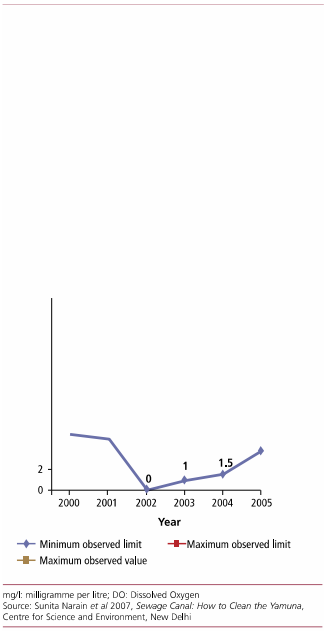
**As a result sewage is treated partially or not at all**

**This leads to pollution**

**High cost to human health and environment**

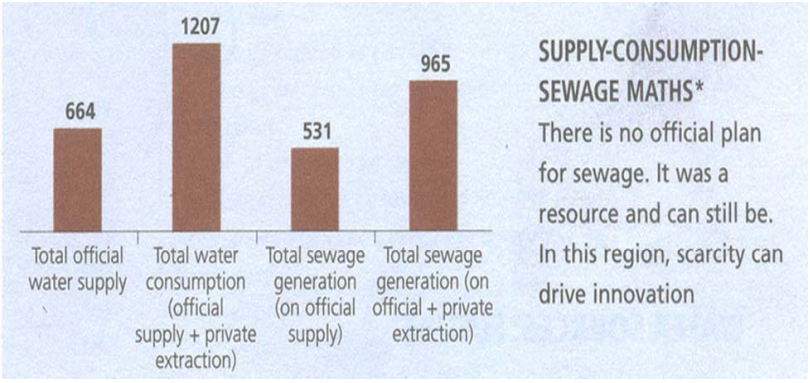
**Agra: will spend more on treating water than it costs to treat sewage**
**144 mld**
**water treatment plant**
**Capital cost: Rs 1 crore/mld**
**Operation costs: Rs 3-4/kl**

**Cities forget:**
**we all live downstream**




mg/l: milligramme per litre; DO: Dissolved Oxygen
Source: Sunita Narain *et al* 2007, *Sewage Canal: How to Clean the Yamuna*, Centre for Science and Environment, New Delhi

## Sewage sums in desert cities

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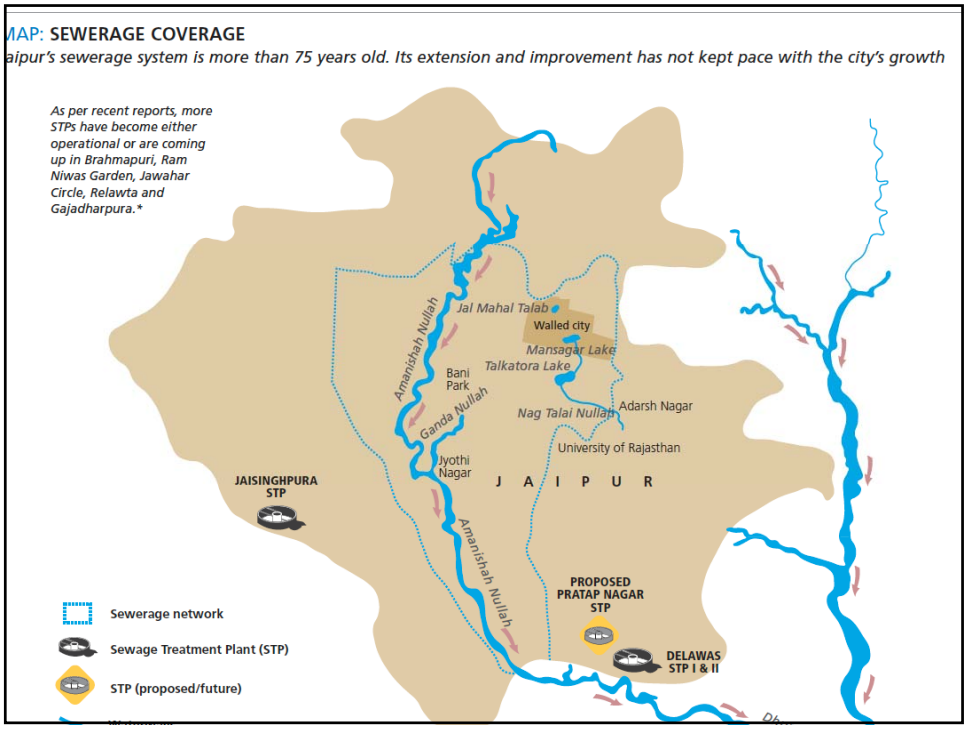


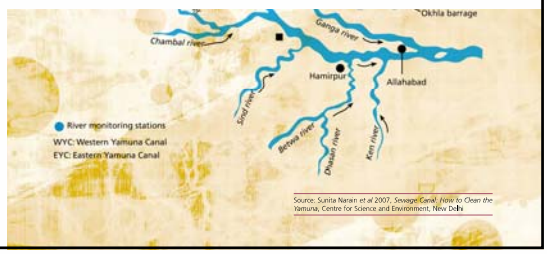


# Generation of **lost** rivers

- Delhi knows only Najafgarh – a dirty drain of Yamuna
- Delhi does not remember that this was Sahibi – which once flowed from the Aravalli into a jheel
- Mumbai knows only Mithi – a dirty drain. It even calls it a drain. But this was its river
- Ludhiana knows Budha Nullah as a drain. But this was a darya – a river

Generation of lost rivers. **How many more will we have to lose before we remember**

We all live dow




# Cannot pay **full** costs

7**. Infrastructure is not simple answer**

Assumption that infrastructure is about costs is **flawed**

1. Water tariffs are high in many cases
2. Tariffs are high but recovery is poor because meters do not work
3. Poor pay high costs; money or with their health
4. Where tariffs are high, people move to groundwater; cities cannot recover
5. Water-sewage-pollution costs are high and unaffordable by all


## Reform agenda

1. Plan to cut costs of water supply
2. **Invest in local water systems**: learn and innovate on decentralised water supply
3. Reduce water demand
4. Spend on sewage not on water
5. **Cut costs on sewage systems**: innovate on redesign of the sewage system
6. Plan to recycle and reuse every drop


## 12th Plan: JNNURM II

Water-energy efficient cities

Waste-water-wise cities

- Plan deliberately for sewage, before water
- Plan to recycle-reuse waste
- Plan to protect local water systems
- Plan for intra-city equity

Plan for affordable and sustainable solutions so that we can provide clean water to all; treat waste of all