



Ganga and city's water pollution: new approaches for implementation

Joining the dots for successful
implementation of Namami Ganga
and Swachh Bharat

CSE Delhi



Excreta Matters I

- [file:///localhost/Users/sunitanarain/Desktop/Excreta matter vol.1 PDF/Final chapters for book/Master Excel Checked.xls](file:///localhost/Users/sunitanarain/Desktop/Excreta%20matter%20vol.1%20PDF/Final%20chapters%20for%20book/Master%20Excel%20Checked.xls)

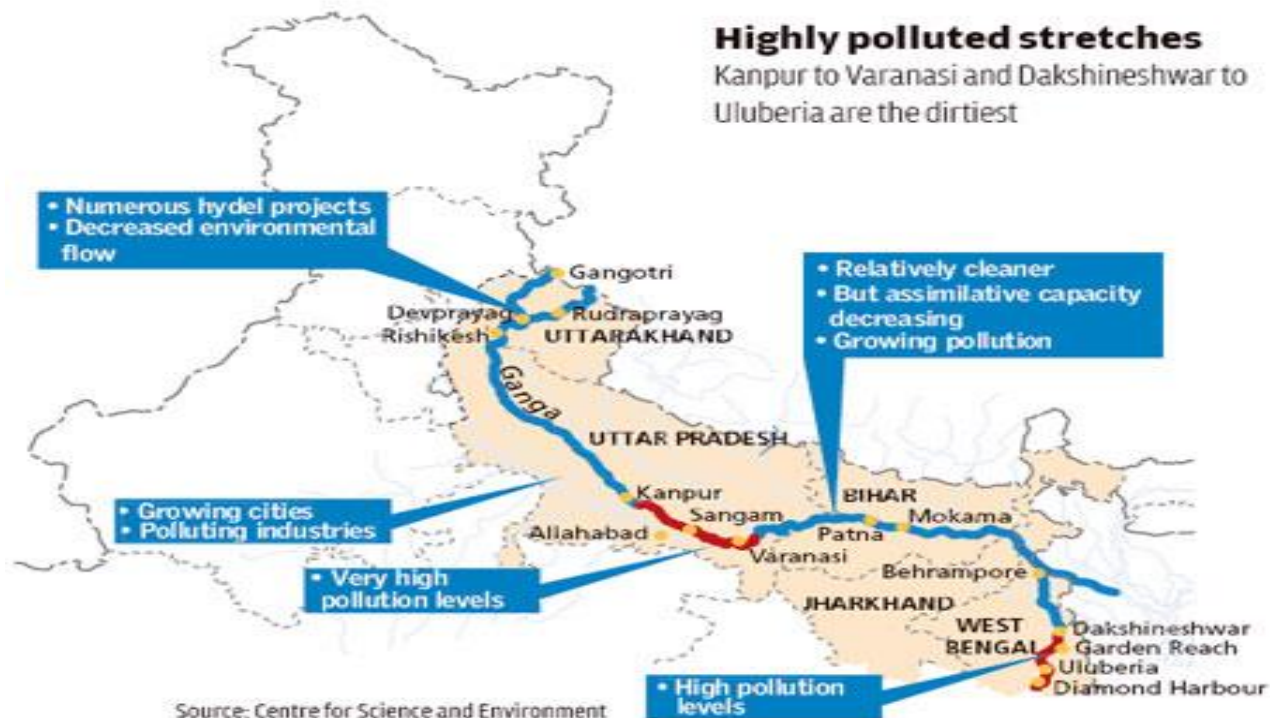


71 city data analyzed
City water-waste profiles
Where does water come?
Where does waste go?
Simple questions
But not asked
Never answered



Ganga cleaning very important

CPCB data shows more is needed to reduce pollution. New approach





Water=**=**waste

Cities plan for water, **forget waste**

80% water leaves homes as sewage

More water=**=**more waste

But we have **no accounts** for sewage

Toilets without intercepting sewage; conveying it to sewage treatment plants; cleaning it and then disposing it = **pollution**



Excreta: **sums**

Challenge

Most of our cities do not have underground sewerage

Where there is pipeline; broken; sewage does not reach treatment plants

Most treatment plants are **under-utilized**

Building hardware will not clean rivers

So what do we do?



First count of toilets and their connections: where waste goes

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,



Recognise our reality...

- People are not connected to sewage system
- They have 'on-site' treatment
- Septic tanks – connected to soak pits or connected to drains or with no underground lining
- CSE research shows situation is the same in UP as in the rest of the country
- This is where **new opportunity lies**



Landline or mobile?

- 20 years ago, India was building landlines to connect people with phones
- Today, we go through satellites – mobile phones
- 10 years ago, world was building energy grids to connect people with electricity
- Today, people are installing solar systems on rooftops
- If we can jump-skip-leapfrog the landline-grid route in connectivity in telephones and energy access then why not in sanitation?



NIMBY

- Systems are cost-effective
- Governments do not have to build underground sewerage
- People are managers
- If septic tank is overflowing then people will have backflow – will call and get cleaned
- **NIMBY**
- Already exist – do not have to re-engineer entire cities for sewerage networks



Can scale up; clean up

- Our analysis shows;
- Roughly 70% of state is 'on-site'
- 80% 'septic tanks' in state are connected to open drains where liquid is discharged
- 50% of the 'septic tanks' are mechanically cleaned – whenever there is need
- 90% of septic tank waste is not treated – disposed off in drains/rivers/land



Agenda

- **Recognition:** official acceptance that these are not part of the past but the future and regulations for transport and disposal
- **Step 1:** Bring policy guidelines/bylaws for enforcement and implementation
- Our recommendation is that this could be done under the EP Act, SWM Rules 2016



Agenda

- **Step 2:** Focus on regulating transport and not construction of septic tanks to begin with
- States are working with GPS to regulate this 'business'
- Give it incentives so that each transporter is registered and collection is monitored
- Do not intervene in rates; but monitor and provide information so that people know
- Charge tipping fee – ask for payment for treatment and disposal



Agenda: treatment

- **Step 3: Treatment for reuse**
- Most important step
- Co-processing where treatment plant exists
- Otherwise
- New treatment plant to be built but designed for **recycling and reuse**



Opportunity: Re-use

- **Today's sewage system is water-based – water for flush and water to convey sewage and then after treatment disposal into water**
- Destroy the nitrogen-cycle of world
- Nutrients lost
- Food security lost
- Water polluted
- **Land-based** sewage systems can repair this



Land-based: agenda

- Nutrients-Food-Excreta-Nutrients-Food
- Excreta can be used as nutrients for soil – reused in agriculture or compost
- Septic systems have higher load of BOD/solid
- Separate and treat to remove pathogens
- Best option is to mix with compost and then reuse
- Cities are doing this. Can scale up



Ganga pollution: join dots

- Segregate and compost and reuse
- Transport and compost and reuse on land/
recycle water
- Treat the liquid in drains by building sewage
treatment plants on drains/near rivers – treat
and dispose of clean water directly into river;
not in drain
- Change approach to river cleaning --
Remember



**We forget
We all live
downstream**



Source: Sunita Narain et al 2007, *Sewage Canal: How to Clean the Yamuna*, Centre for Science and Environment, New Delhi