



## COVID-19 and the water- sanitation connection: water- toilet-waste-pollution-**HEALTH** nexus

CSE Delhi



### Excreta dots

- Important to join the **excreta-dots**
- In urban areas toilets have to be linked to disposal and treatment systems
- In rural areas toilets have to be linked to poverty, behavioural change (health connection), water, toilet design and waste disposal



## COVID-19: Connects dots

- Availability of **clean water** is the most important determinant of health
- We are told that to keep protected from COVID-19 we must wash hands for 20 seconds
- Millions do not have access to clean water – is now critical agenda
- Availability of clean water is linked to untreated sewage – excreta contaminates and degrades water; increases **health burden**



## Co-morbidity

- Health compromised people are most susceptible to the virus attack
- Need to build water-sanitation security for health security
- COVID-19 teaches us that we are as weak as the weakest link in the chain
- Public health – its water and wastewater management is the most critical agenda in this fight against the deadly virus



## Rural sanitation **challenge**

- Complex; extensive and inhuman
- “More cell phones than toilets” about gender
- **World’s wicked problems are about gender** – cooking fuels; toilets or clean water
- Opportunity to fix much more than toilets
- This is what we want to discuss
- Not what is going wrong – but what is working **and why?**



## Wicked problem

**Productivity loss** | Cost of children missing school due to diseases each year; this doesn't include days lost by adults

Nigeria	<b>\$13 million</b>
Kenya	<b>\$2.7 million</b>
Burkina Faso	<b>\$0.8 million</b>
Niger	<b>\$0.6 million</b>
Chad	<b>\$0.9 million</b>
Mozambique	<b>\$1.1 million</b>
Benin	<b>\$0.7 million</b>
Ghana	<b>\$1.5 million</b>
Madagascar	<b>\$0.3 million</b>
Zambia	<b>\$1 million</b>
Tanzania	<b>\$1.6 million</b>
Mauritania	<b>\$0.4 million</b>
Uganda	<b>\$1.1 million</b>
The Democratic Republic of Congo	<b>\$1.1 million</b>
The Republic of Congo	<b>\$1.1 million</b>
Malawi	<b>\$0.3 million</b>
Central African Republic	<b>\$153</b>
Liberia	<b>\$80,000</b>

**Health costs** | Amount of money lost each year due to expenses incurred due to treating water-borne diseases

Nigeria	<b>\$191 million</b>
Kenya	<b>\$51 million</b>
Burkina Faso	<b>\$8.3 million</b>
Niger	<b>\$9.2 million</b>
Chad	<b>\$4.3 million</b>
Mozambique	<b>\$22 million</b>
Benin	<b>\$3.1 million</b>
Ghana	<b>\$54 million</b>
Madagascar	<b>\$9 million</b>
Zambia	<b>\$10.6 million</b>
Tanzania	<b>\$19 million</b>
Mauritania	<b>\$5.7 million</b>
Uganda	<b>\$21 million</b>
The Democratic Republic of Congo	<b>\$17 million</b>
The Republic of Congo	<b>\$4.5 million</b>
Malawi	<b>\$12 million</b>
Central African Republic	<b>\$2.3 million</b>
Liberia	<b>\$7.1 million</b>





## India's sanitation story: success

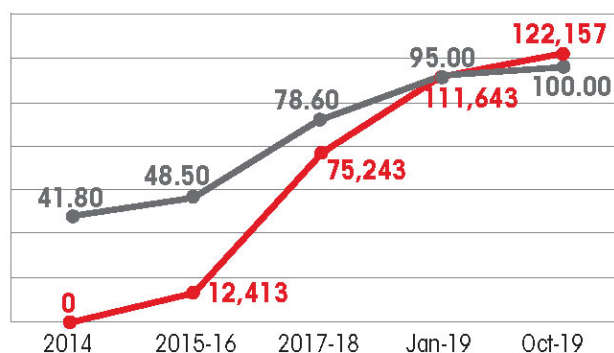
- Built 100 million toilets in its 600000 villages and another 6.3 million in its cities.
- In 2019, declared itself mostly open defecation free (ODF) – a seemingly impossible task just some years ago.
- According to government estimates, by 2019, over 93 per cent of the country's households had access to toilets; in over 93 per cent of the villages people do not defecate in the open; over 96 per cent who had access, also used the toilets suggesting an important change in behavior.



## Advantage sanitation

Since SBM, deaths due to unsafe sanitation are declining

— Deaths from diarrhoea avoided compared to baseline (2014) — Household sanitation coverage with basic facilities (in %)



Source: Swachh Bharat Mission—Preliminary estimations of potential health impacts from increased sanitation coverage by the World Health Organization, as cited in Economic Survey 2018-19 based on data available till June 2018

## India's sanitation story

**Important and successful**

**But still we have to do more**

### What worked

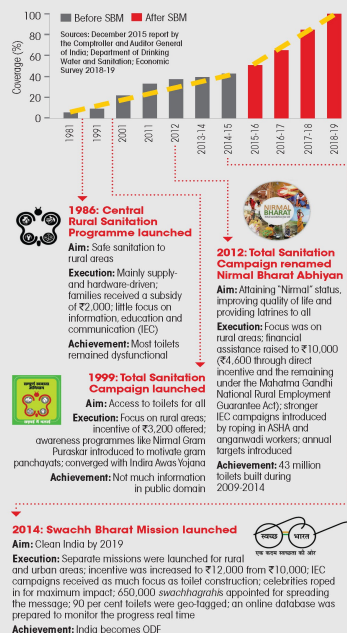
1. Top political interest
2. Focus on behavior change – nudging people to use the asset created
3. Providing subsidy to people to build the toilets

### What still needs to be done

1. Ensure there is no slippage – need to be sustainable
2. Focus on septage – excreta management

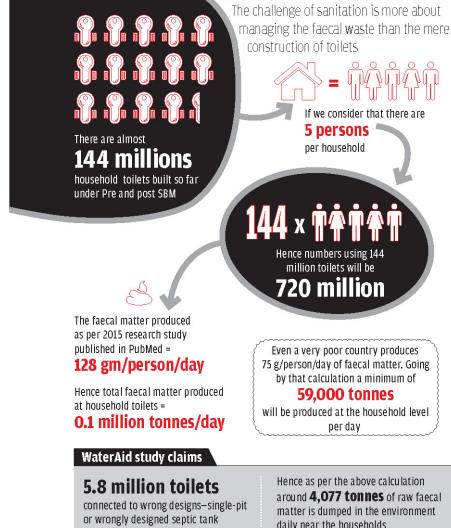
### Thirty-year journey to ODF

Sanitation programmes remained a mirage until the government shifted focus to information, education and communication



### Faulty toilets and faecal matter

The challenge of sanitation is more about managing the faecal waste than the mere construction of toilets



### Two options

**1. Construct toilets so that excreta is safely managed**  
 Twin pit with honeycomb for decomposition; 'retention' time

**2. Construct waste management systems in villages – combine human waste with organic waste**

**Deliberately plan for reuse of waste**

Source: MWPS and Rino, C., et al. 2015. The Characterisation of Faeces and Urine: A Review of the literature to Inform Advanced Treatment Technology.



## Opportunity: Re-use

- **Water-based** sewage systems destroy the nitrogen-cycle of world
- Water used to flush excreta; water as conveyance; water for disposal
- Nutrients lost
- Food security lost
- Water polluted
- **Land-based** sewage systems can repair this



## Opportunity: Land-based

- Nutrients-Food-Excreta-Nutrients-Food
- Excreta is segregated in septage systems (mostly and challenge is to keep it like this)
- Excreta can be used as nutrients for soil – reused in agriculture or compost



## Learnings from India

- 1. People need access – subsidy to pay for toilets – in homes and community
- 2. People need behavior change – connection to health; building awareness/education
- 3. **Toilets must be affordable and sustainable – need water; need management of excreta. Otherwise we will transfer problem from health burden because of lack of toilet to health burden because of pollution**



## What then do we do?

- Toolkit on rural faecal sludge management is the beginning of this work
- What technologies will work in-situ (toilet design so that waste is treated and can be safely reused)
- What technologies will work ex-situ (when excreta is treated and then can be safely reused)
- What do we know today? What must we do tomorrow?