

# ***Mainstreaming City Wide Sanitation :***

## ***SFDs & Septage Management for Indian City's journey beyond ODF***

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**Session 3 : Planning and implementation of (urban sanitation) in India**

**23<sup>rd</sup> SuSanA Meeting**



# National Urban Sanitation Policy - 2008

## Vision

All cities & towns become -

1. **totally sanitized, healthy and liveable** ,
2. and ensure and sustain good public health and environmental outcomes for all their citizens
3. with a special focus on hygienic and affordable sanitation facilities for the urban poor and women.



TOWARDS CITY WIDE SANITATION

## Specific goals

1. Awareness Generation and Behaviour Change
2. **Achieving Open Defecation Free Cities**
3. **Achieving Integrated City-Wide Sanitation**

MOUD, GOI launched a NUSP to address all aspects related to urban sanitation in a comprehensive manner on November 12, 2008.

# Major initiatives - Timeline

- 2008 - Release of the National Urban Sanitation Policy
  - **Service level benchmarking** : benchmarks adopted in six critical areas incl. WS and Sewerage etc.
- 2009 - Capacity building schemes for ULBs – supported by creation of CoE at nine reputed institutions
- 2010 - **Ranking of 436 Class I** cities in 2010 under NUSP



- 2011 – CSE Policy paper on Septage Management



- 2013 – MoUD Released **Advisory** on Septage Management **to ULBs**

# Major initiatives - Timeline

- Mizoram, Agartala, Tamilnadu, Karnataka **states issued notification / policy** on septage management **including pilot projects.**



- **2014/15** – Swacch Bharat (U/R), Smart Cities – 100 no.s , AMRUT – 500 no.s cities & NMCG – 118 town / cities along river Ganga



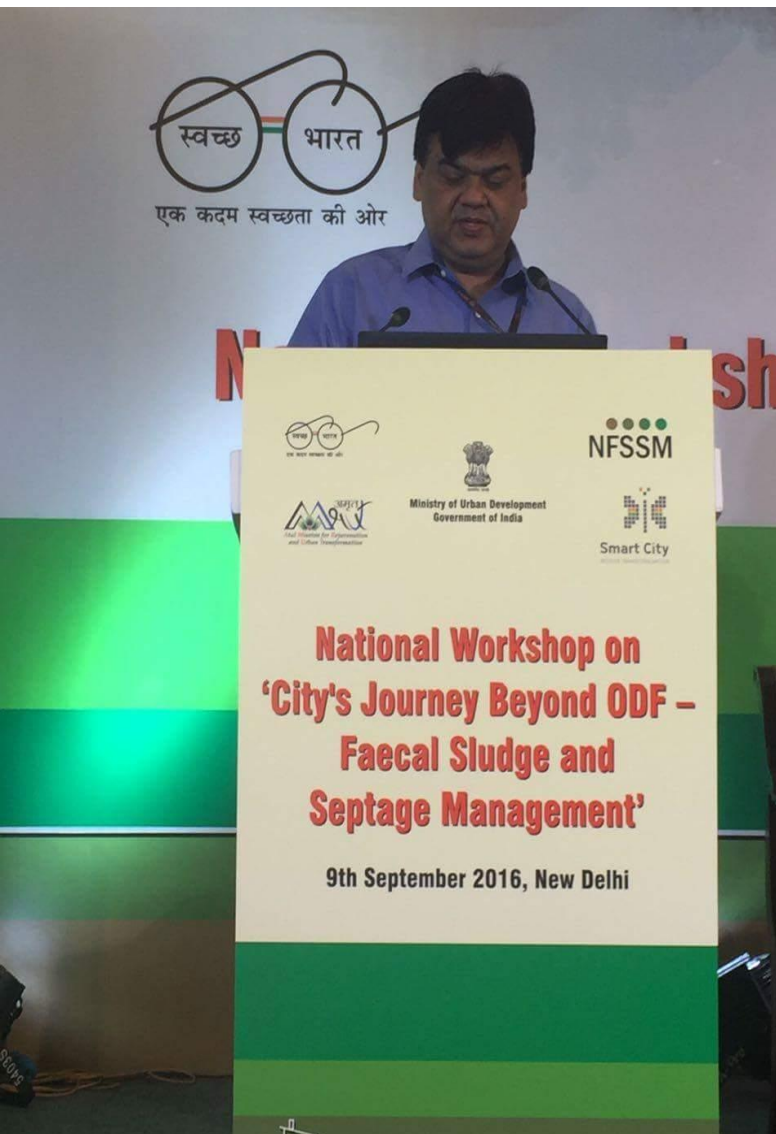
***All national flagship programmes and states now focusing on sanitation focusing on solid and liquid waste management **incl. septage management.*****

# National Programmes on Urban Sanitation

SBM	AMRUT	NMCG
<ul style="list-style-type: none"><li>• Covers all (4040 no.s) statutory towns</li><li>• 100% elimination of open defecation</li><li>• Targets by 2019 : 1.05 million toilets, 5 lakh community toilets, 100 collection, processing and disposal of solid waste</li></ul>	<ul style="list-style-type: none"><li>• Cover 500 towns/cities</li><li>• 100% coverage with water supply</li><li>• 100% coverage with sewer connections or <u>septage management system</u></li></ul>	<ul style="list-style-type: none"><li>• Basin wide addressing pollution both rural - urban</li><li>• Focus on 118 towns/ cities along River Ganga</li><li>• Focus on river pollution abatement – sewage and industrial effluents</li></ul>

# City's Journey Beyond ODF ...

Sept. 09, 2016



**No SAAP, SLIP or Smart Cities proposal from states to be funded Without Effective Septage / Faecal sludge**

Announces other **29 cities as torch Bearer / flagship town** cities to be supported by MoUD

Target for **Rapid Assessment for Septage / Faecal Waste to be completed by 30th Sept. 2016**



Ministry of Urban Development  
Government of India



Smart City



# National Workshop on 'City's Journey Beyond ODF - Faecal Sludge and Septage Management'

## National Declaration on Faecal Sludge & Septage Management

We, the participants of National Workshop on Faecal Sludge & Septage Management held on 9th September 2016 at New Delhi, hereby:

- Endorse that a major development challenge for India is to ensure insulation of the people, including the poor and marginalised, against faecal-orientated contamination as emphasized in the Sustainable Development Goals and end manual scavenging.
- Recognize that following the launch of Swachh Bharat Mission (SBM) note worthy progress has been made in provision of safe toilets and a sanitary environment.
- Recognize that the end objectives and corresponding benefits of SBM can only be achieved through complete Faecal Sludge and Septage Management (FSSM) that is, safe handling (capture, transportation, treatment, re-use) and disposal of all faecal sludge, septage and other liquid waste.
- Unanimously agree that success in meeting this challenge requires innovative solutions for onsite treatment, adequate resource allocation, bench marking indicators and performance, enabling regulation and infrastructure, skill development and monitoring, among others.
- Recognize the role of the Ministry of Urban Development (MoUD) and the Ministry of Drinking Water & Sanitation (MoDWS), GoI, as enablers; State Governments as policymakers & regulators; and local governments as service delivery entities in achieving safe and sustainable FSSM and making India open defecation free.
- Recognize that the time for FSSM is 'now' and that a strong political will, local leadership and community ownership demonstrated throughout the country as an outcome of SBM must be capitalized upon to achieve comprehensive FSSM nationwide.

We commit to a 'Swachh' India through accelerated provision, use and maintenance of safe toilets and mainstreaming FSSM by the year 2019. In order to accomplish this, we unanimously agree upon the following:

- Establish a National Level Taskforce on FSSM to be jointly led by the Mission Directors of SBM (Urban and Gramin) with representatives from select GoI ministries, states and cities, civil society, academia and the private sector. The NFSSM Working Group will function as the Secretariat of this Task force.
- By January 2017, declare FSSM goals for adoption at local government, state and national levels. Towards this, the Task force will develop a national FSSM policy and frame work, practical guidelines, support systems and an enabling environment for local governments to attain the FSSM goals and achieve a 'Swachh' status.

## मल गाद व सेप्टेज प्रबंधन पर राष्ट्रीय घोषणा

हम, मल गाद व सेप्टेज प्रबंधन पर नई दिल्ली में 09 सितंबर 2016 को आयोजित राष्ट्रीय कार्यशाला के प्रतिभागी सदस्यगण

- समर्थन देते हैं कि भारत को विकास के लिए एक प्रमुख चुनौती गरीब, वंचित समाज और समाज कोशंगों के लिए, मल सफाई दृष्टि से बेधम सुनिश्चित करना है जैसा कि सतत विकास लक्ष्य और सवाह योजना की प्रथा के निर्मूलन में उल्लेख किया गया है।
- स्वीकार करते हैं कि स्वच्छ भारत मिशन (एसबीएम) आरंभ होने के पश्चात सुरक्षित शौचालयों की व्यवस्था और स्वच्छ वातावरण निर्मित करने में उल्लेखनीय प्रगति हुई है।
- स्वीकार करते हैं कि एसबीएम को अंतिम उद्देश्य व समाप्ति कायदे केवल मल गाद व सेप्टेज प्रबंधन (फेकलस्लज/सेप्टेज) को पूरा कर के ही हासिल किए जा सकते हैं - यानि सफाई मल गाद, सेप्टेज और अन्य तरल कचरे का सुरक्षित निष्कासन, परिवहन, प्रयोग, पुनः-उपयोग और निपटारा।
- एक मल से सफाई कि इस चुनौती का समाधान ले सामना करने के लिए अन्य क्षेत्रों के साथ-साथ दृष्टि के समान पर ही शोधन के कल्याणशील समाधान, सलाहनों के समुचित आदान, सूचकों तथा प्रदर्शन के स्तर के संकेतक (केचमकेटिंग), सक्षम विनियमन व आधार भूत काया कोशल विकास और निगरानी अत्यावश्यक है।
- स्वीकार करते हैं कि शहरी विकास मंत्रालय (एमओयूडी) और पेय जल व स्वच्छता मंत्रालय (एमओडी/डब्ल्यूएस), भारत सरकार की मुक्तिका प्रमुख एजेंसियों के तौर पर, राज्य सरकारों की मुक्तिका नीति निर्माता व विद्यालयों के तौर पर, और स्थानीय सरकारों की मुक्तिका का सुरक्षित व स्वस्थी एफएलएसएम हासिल करने तथा भारत को दुनिया में शीघ्र से मुक्त बनाने के लिए सेवा प्रदान करने वाले निकायों के तौर पर है।
- स्वीकार करते हैं कि एफएलएसएम के लिए 'अब' सही समय है और एसबीएम के फलस्वरूप जो एक महत्वपूर्ण राजनीतिक इच्छाशक्ति, स्थानीय नेतृत्व और सामुदायिक स्वास्थि व पुष्टि में दिखाई दिया है, उक्तका पुष्टि तथा के स्तर पर समाज एफएलएसएम हासिल करने के लिए अधिकतम लाभ उठाया जाना चाहिए।

हम 'स्वच्छ' भारत के लिए सुरक्षित शौचालयों की स्थिति व्यवस्था, उपयोग व रख रखाव तथा वर्ष 2019 तक एफएलएसएम को मुख्यधारा में लाने के लिए बंधनबद्ध हैं। इले तुरत करने के लिए, हम एकमत से निम्नलिखित पर सहमत हैं।

- एफएलएसएम पर एक राष्ट्रीय स्तर की टास्क फोर्स गठित करना, जिसका नेतृत्व समुचित रूप से हस्तक्षेप के विचार डायरेक्टर (शहरी व ग्रामीण) के साथ भारत सरकार के मुखिया मंत्रालयों, राज्यों व शहरी, नगरपालिका समाज, शैक्षिक जगत् तथा निजी क्षेत्रों के प्रतिनिधियों द्वारा किया जाए। एफएलएसएम कार्यकारी समूह इस टास्क फोर्स के लिए एक सहायकत्व के तौर पर काम करेगा।
- जनवरी 2017 तक, स्थानीय सरकार, राज्य व राष्ट्रीय स्तरों पर अगुवानी के लिए एफएलएसएम लक्ष्य घोषित किए जाएं। इन दिशा में इस टास्क फोर्स द्वारा एक राष्ट्रीय एफएलएसएम नीति और प्रोत्साहन, व्यावहारिक दिशानिर्देश, सहायक व्यवस्था और एक सक्षमकारी वातावरण विकसित किया जाएगा ताकि स्थानीय सरकारें एफएलएसएम लक्ष्य पूरा कर सकें और 'स्वच्छ' स्थिति हासिल कर सकें।

Shri M. Venkaiah Naidu  
Minister of Urban Development

Shri Rao Inderjit Singh  
Minister of State for Urban Development

Shri Rajiv Gauba  
Secretary,  
Ministry of Urban Development

Dr. Sameer Sharma  
Additional Secretary (Smart Cities),  
Ministry of Urban Development

Shri Neeraj Mandloi  
Joint Secretary (UD&A) and  
National Mission Director,  
Ministry of Urban Development

Shri Praveen Prakash  
Joint Secretary & Mission Director  
(Swachh Bharat Mission),  
Ministry of Urban Development

Handwritten signatures and notes of participants, including names like M. Venkaiah Naidu, Rao Inderjit Singh, Rajiv Gauba, Sameer Sharma, Neeraj Mandloi, Praveen Prakash, and others, along with various initials and dates.

# Water – Wastewater Management Scenario



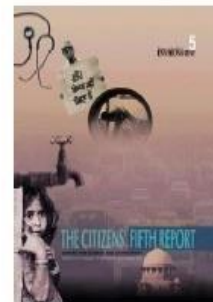
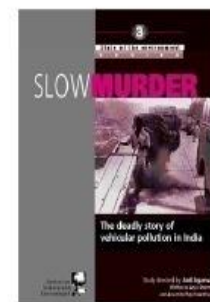
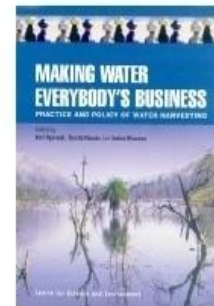
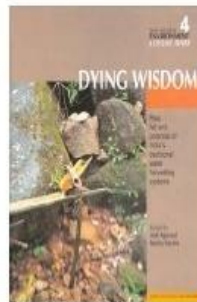
Year 2012



## CSE's Assessment

**Volume 1** - dwells on how urban India is soaking up water, polluting rivers and drowning in its own waste ( 296 pages).

**Volume 2** - contains a very detailed survey of 71 cities, and presents an assimilation of the survey's results (496 pages) building on various Previous publications:





# Water=waste

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

# Planning for hardware

## Cities plan for treatment not sewage

- Treatment plants are not simple answers
- Most cities do not have underground sewage  
But engineers sell pipe-dreams of **catching up with infrastructure**
- We lose rivers. Generations of **lost rivers**

- **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**

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

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**% 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 <sup>2</sup> , Hyderabad, Jaipur <sup>1</sup> , Kanpur, Kolkata, Nagpur, Gwalior, Mussoorie, Nainital, Rajkot, Vadodara, Yamunanagar
> 70	Chennai, Pune, Surat, Gurgaon <sup>2</sup>

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<sup>1</sup>Claims 80% coverage in CSE survey, 65% in City Development Plan for JNNURM; <sup>2</sup>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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<10

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

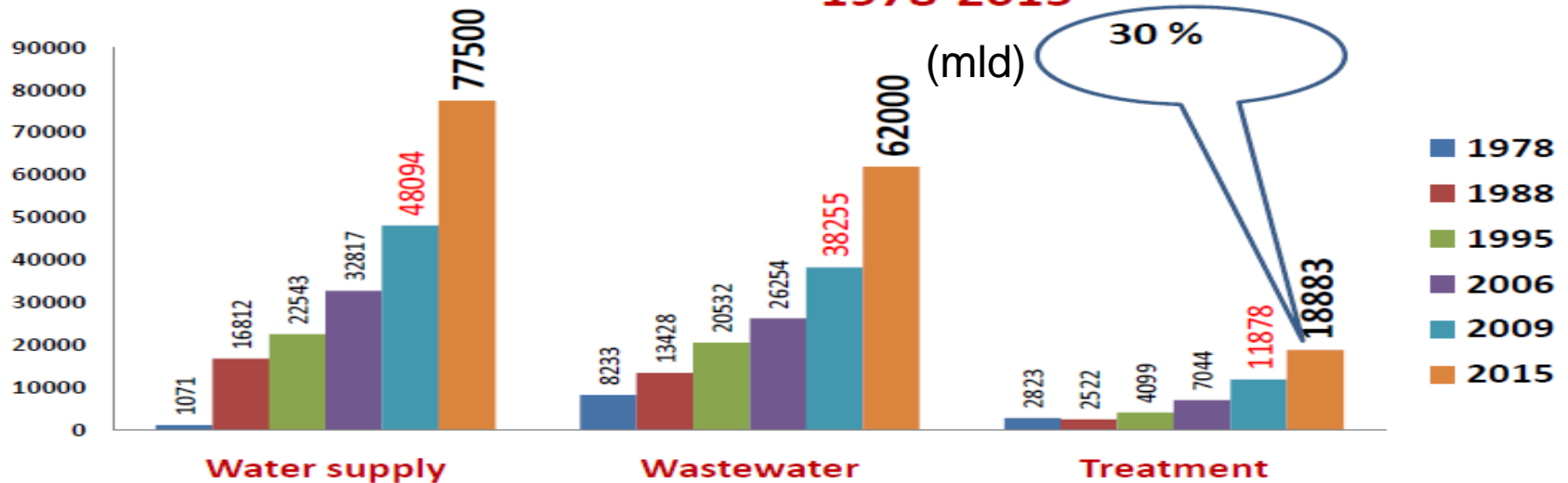
# The current paradigm – water supply

**More water supplied = More waste water generated = more costs for treatment = Unsustainable**

# Excreta : sums

## Water supply, wastewater generation, treatment in Class I & II cities (MLD)

1978-2015

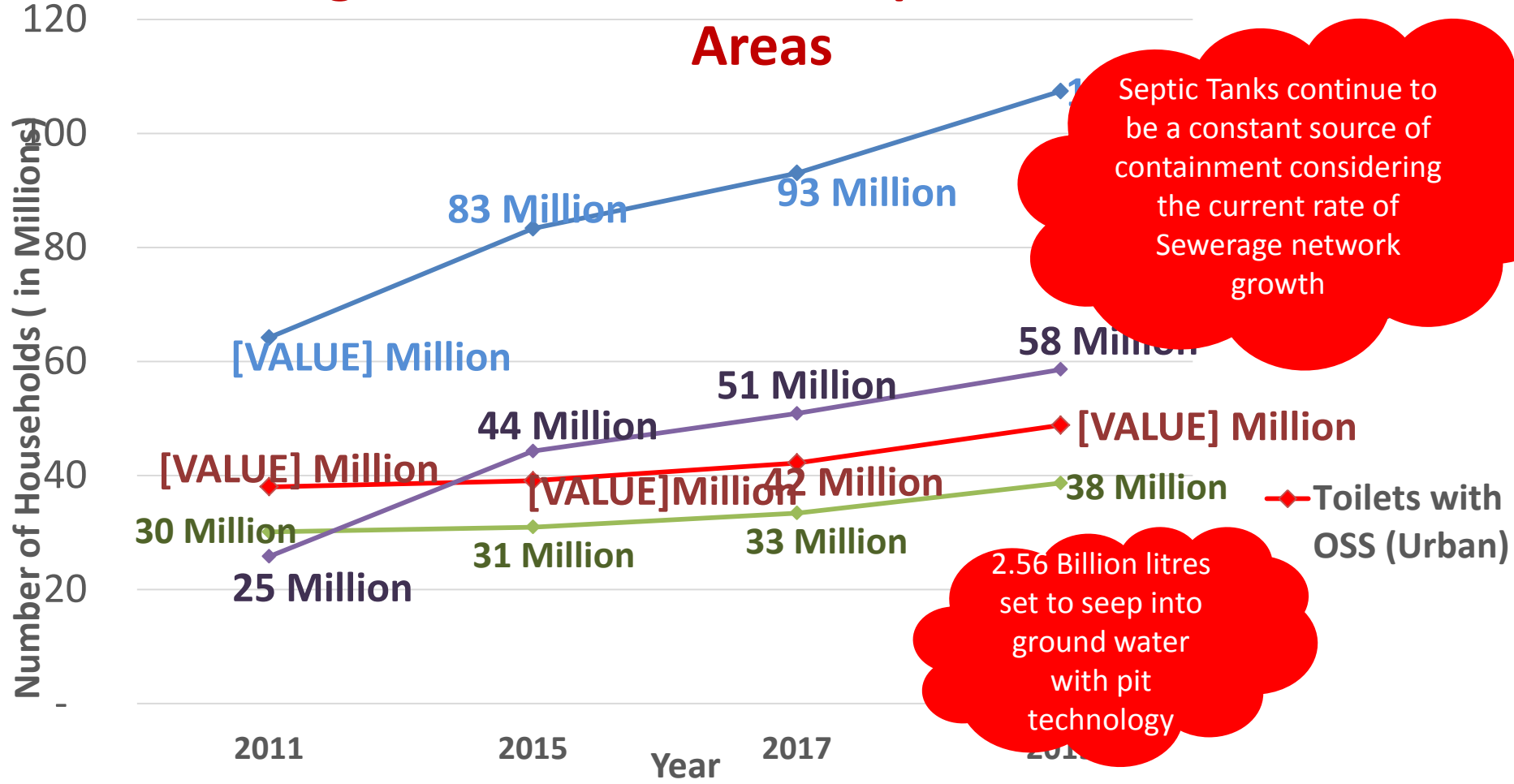


Two cities Delhi & Mumbai have 31% of total treatment capacity installed in India.

Source: CPCB Reports (1978,1988,1995,2006,2009,2015)

- 30% of total sewage can be treated and 31 % of treatment capacity in Delhi & Mumbai.
- Significant population still dependent on **Septic tanks** with inadequate mechanisms.
- **We flush and forget**

# Coverage of Toilets and its Dependence in Urban Areas



Septic Tanks continue to be a constant source of containment considering the current rate of Sewerage network growth

2.56 Billion litres set to seep into ground water with pit technology

# Excreta Matters II

Water-toilet-  
**septage-**  
sewage-  
treatment-  
reuse





**Thriving private business:  
but where does this go?**



# Disposal : Over land or Drains - River





**Disposal : in garbage dumps**

# On-site challenges

- **Toilet connected to underground 'box'**
- Design quality of septic tank is unknown – in many cases these are tanks, emptied regularly or simply linked to municipal drain
- In most cities Informal (mafia) collects waste for a price – growing and thriving business
- In all cities there is **no system for safe disposal of this waste**
- In all cities, waste from septic tanks is **'dumped' in open sewers; rivers; municipal sewers; fields...**

## On-site needs:

- **Recognition:** official acceptance that these are not part of the past but the future
- **Regulations:** construction; collection; treatment
- **Technologies:** disposal and reuse

# Toilet - STP+++

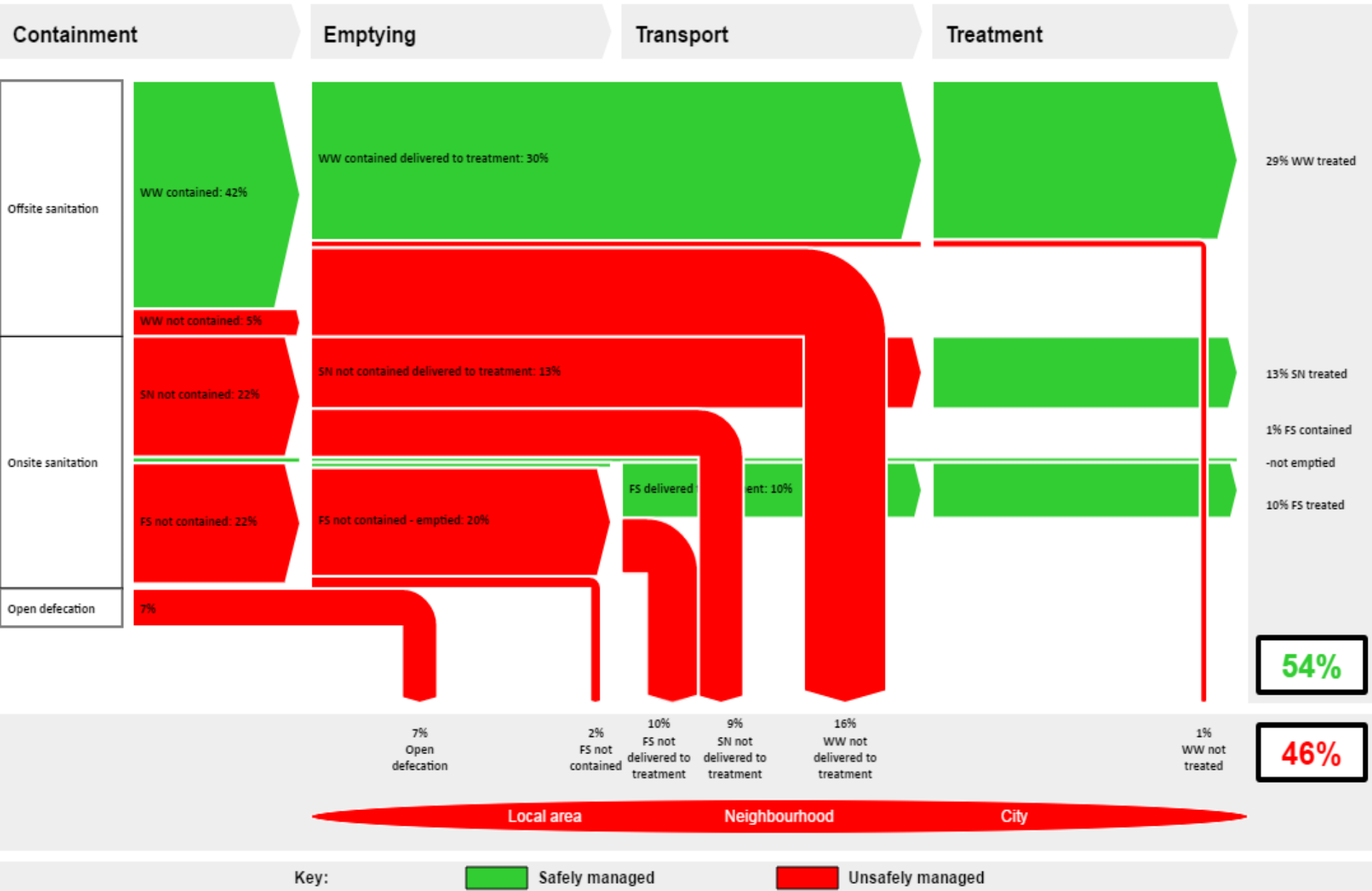
- Current sanitation focus is on **building toilets (important and necessary)**
- Current pollution-control focus is on **building sewage treatment plants (unnecessary without conveyance)**
- But people are building septic tanks – there is no official conveyance; **no official treatment**
- **End result is: pollution**

# Shit Flow Diagrams

.... for Septage Management and City Wide  
Planning

# SFD

Agra, India – 21 October 2015  
Desk Based



Cuttack – 28 July 2015  
Desk Based

Name of City and date  
of SFD production

Containment

Emptying

Transport

Treatment

Service chain

Offsite  
Sanitation

Offsite Sanitation

Onsite  
Sanitation

Percentage of  
population dependent  
on a sanitation system

Onsite Sanitation

Open  
defecation

Open Defecation

Local area

Neighbourhood

City

Key:

Variable nr : % of flow

Safely managed

Unsafely managed





**LOCATION OF TARGET CITIES**

**OPEN DEFECACTION**

**OFFSITE**

**ONSITE**



NOTE: The numbers above represents excreta in terms of contributing percentage of population

# Practical applications in:

- Planning at city level
- Financing sanitation infrastructure
- Gaining political support
- Stakeholder involvement
- Coordination of various actors
- Establishing baselines and monitoring progress





SFD- Shit Flow Diagram

# Using excreta flow diagrams (SFDs) as an integral part of city wide sanitation planning for Indian cities



Centre for Science and Environment

## NEED

Many cities of India don't have a City Sanitation Plan (CSP). The few CSPs that exist today are rarely implemented. One of the major reason for non-implementable CSP is the costly centralised sewerage systems proposed in the plans, despite high dependence of cities on onsite sanitation systems. Hence there is a need to examine the excreta management of the city before proposing any solution.



## BRIEF SUMMARY

- » To understand the excreta management of 27 selected cities, SFDs (Shit Flow Diagrams) are developed and introduced at different stages of development of CSPs
- » In all three scenarios, SFDs clearly show high dependence of cities on onsite sanitation systems and extent of untreated waste ending up into the environment
- » CSTF (City Sanitation Task Force) or decision makers get a better understanding of sanitation scenario, based on the SFD

# City Sanitation Plan :

*City's beyond ODF – S&FSM*

**Reaching an informed decision from various options**

**The final aim of strategy development is reaching an informed decision that can be explained to stakeholders, council and CSTF and that is implementable**

- ***Every context is different → There is no blue-print solution***
- *Use your data for analysis*
- ***Consider various options***
- *Discuss options within the CSTF and the technical teams of the ULB*
- ***Options need to be assessed not only technically, but financially, socially, environmentally and for human resources***

# *City's journey beyond ODF*

- Important opportunity. Top-level national attention
- Important to join the **excreta-dots** – toilets have to be linked to disposal and treatment systems
- **Swatch Bharat +++++**
- **AMRUT +++++**
- **Ganga Mission +++++**

# Thank You

