

India's journey of SFDs



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Mainstreaming SFD into practice in Africa
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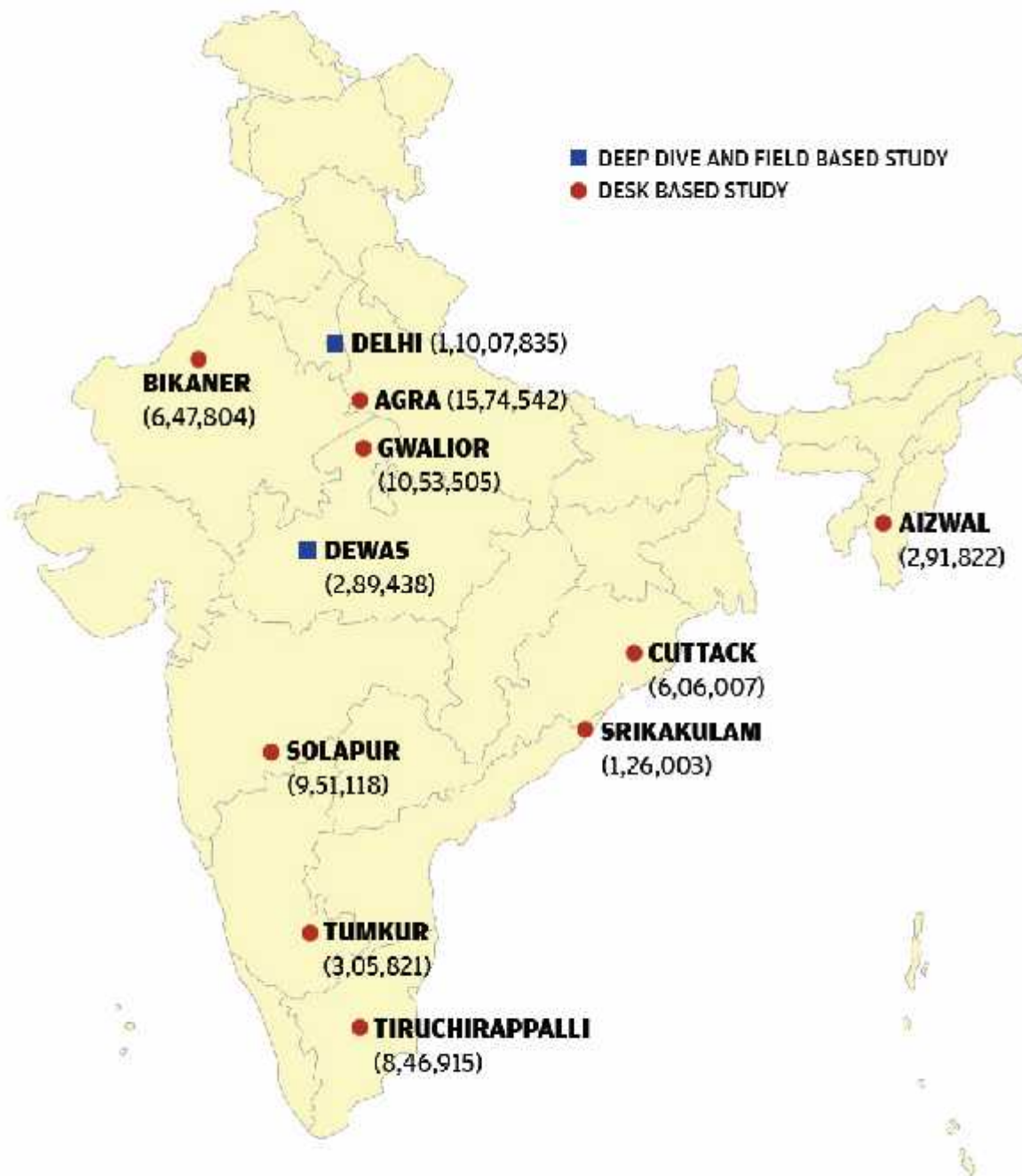
How it all began

In 2014 the centre partnered with a group of institutions active in the field of excreta management to promote excreta (septage and sewage) flow analysis to inform urban sanitation programming through the service delivery assessment tool - Shit Flow Diagrams (SFDs), developed by Water and Sanitation Programme - World Bank

SFD Promotion Initiative - Consortium Partners

SFD Promotion Initiative





SFD Phase I



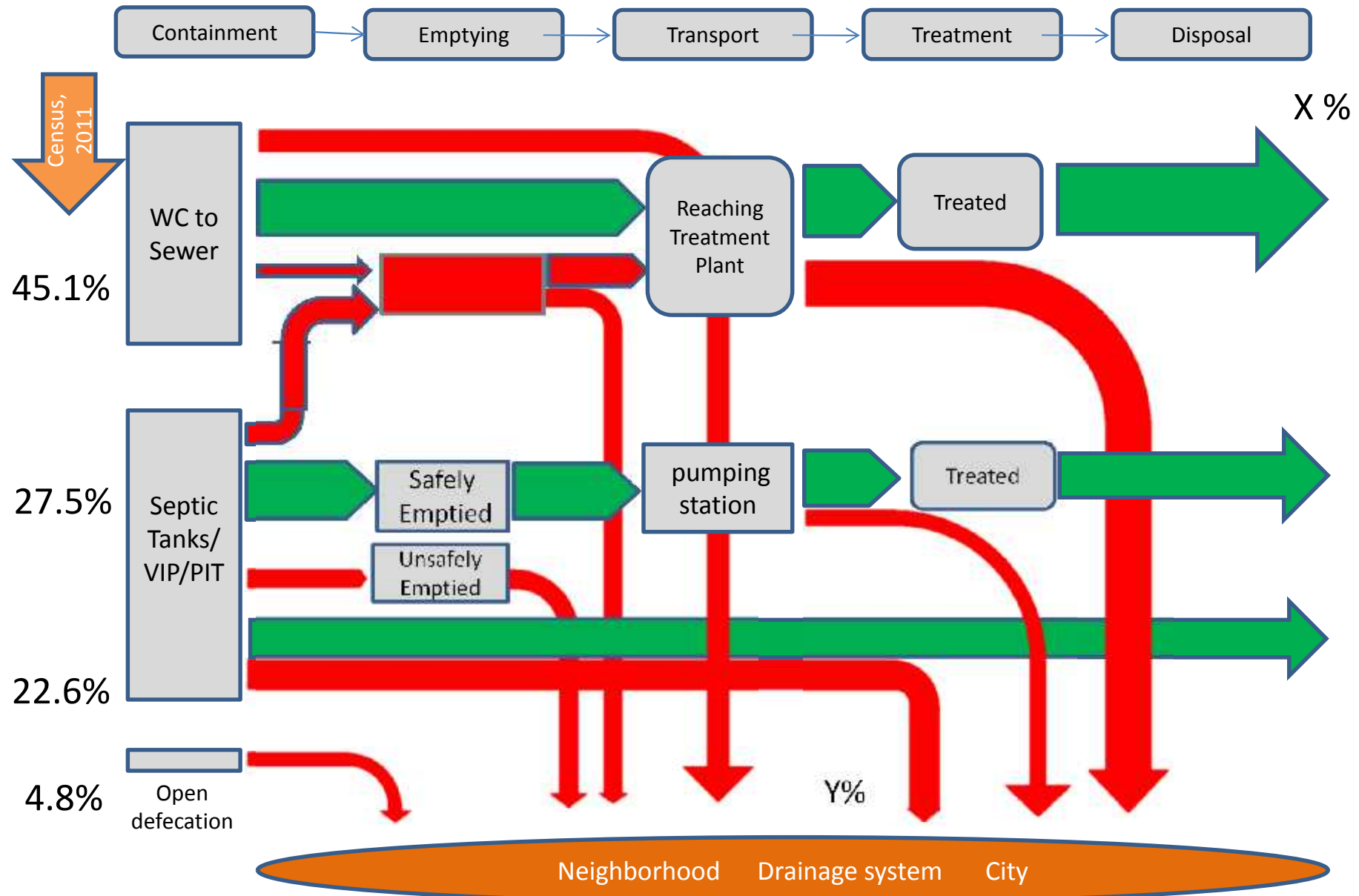
SFD phase 1 cities

- Deep Dive & Field Based– 2 cities
- Desk Based – 9 cities

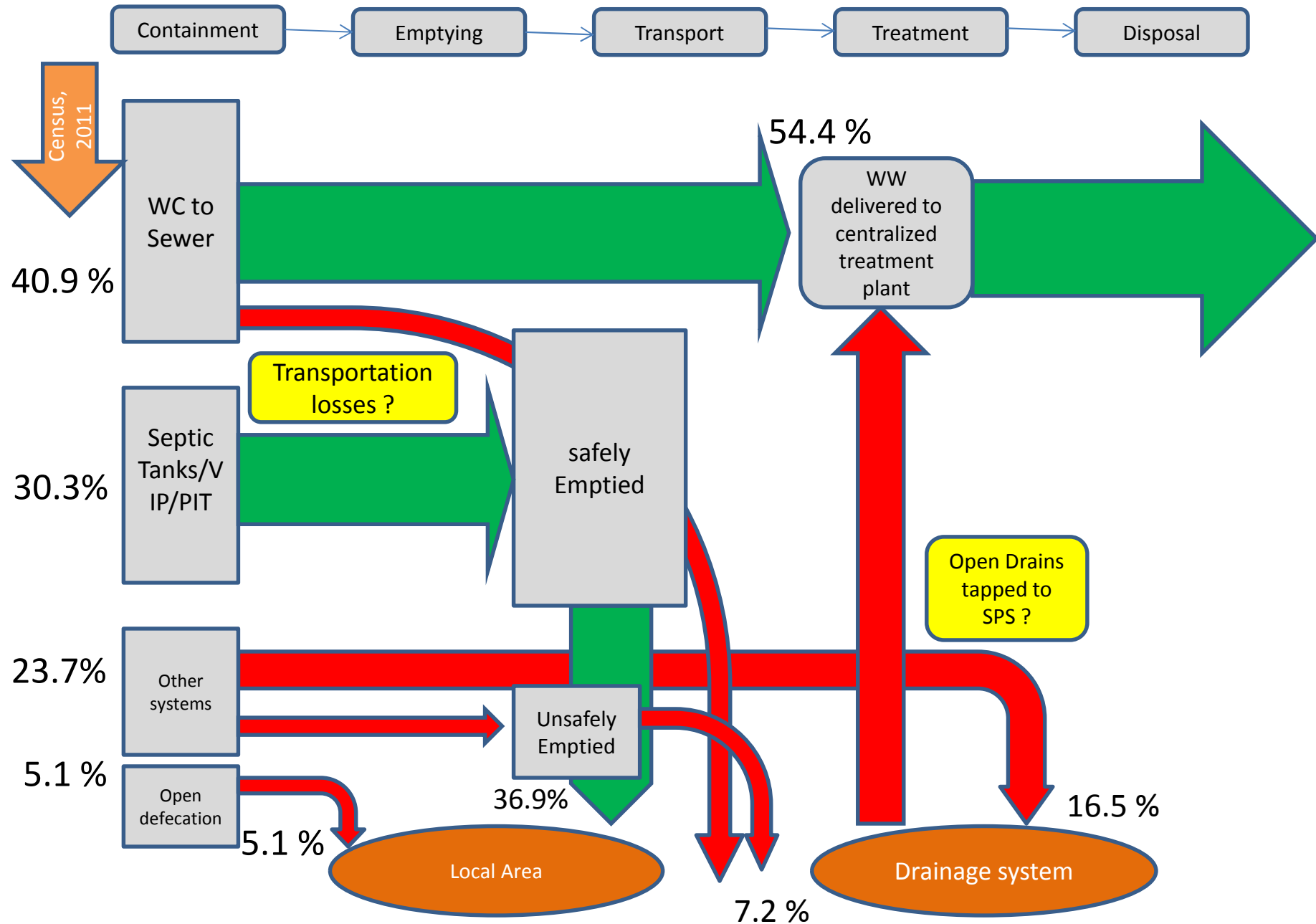


	City/Town	Excreta Matters	City Sanitation Plan
1	New Delhi	✓	✓
2	Dewas, Madhya Pradesh	✓	✓
3	Srikakulam, Andhra Pradesh	✓	✓
4	Tumkur, Karnataka	✓	✓
5	Gwalior, Madhya Pradesh	✓	✓
6	Cuttack, Odisha	✓	✓
7	Agra, Uttar Pradesh	✓	✓
8	Tiruchirappalli, Tamilnadu		
9	Bikaner, Rajasthan		
10	Aizwal, Mizoram	✓	
11	Solapur, Maharashtra	✓	

City Level SFD



SFD for Bikaner, Rajasthan (India)



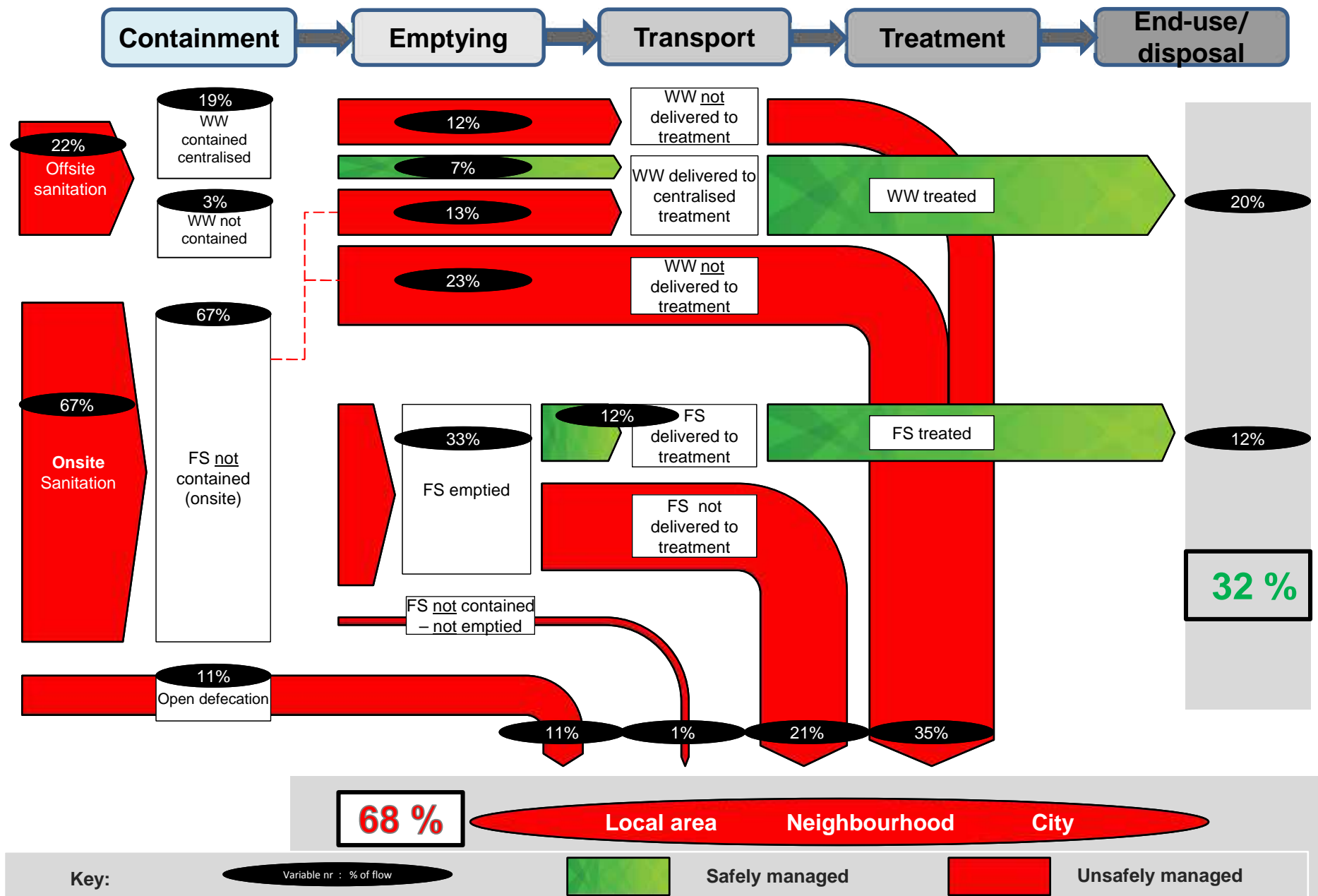
Learning from the field fed back to improving the tool

1. Data

- Data in sufficiency & non availability. No data available on how many septic tanks are followed by soak pits (for septic tank effluent treatment)
- Accuracy. Discrepancy observed between Census data and actual ground situation
- Currentness of the data (data available at different time lines)
- Limited data available on reuse (formal / informal)
- No data is available with ULBs on No. of households practicing open defecation, septic tanks and other latrines. Data is only available for no. of sewer connections

2. We have certain conditions where a city has a **sewer line without an STP** and **STP without a sewer line** (sewage conveyed to STP through open drain).
3. Effluent in case of on-site sanitation systems not considered.
4. Sludge generated from the wastewater treatment plant is not considered.
5. In some cities septage is desludged and disposed in to manhole or sewage pumping station, there is no provision to accommodate such situation in SFD.
6. In Indian context, faecal sludge and septage are interchangeably used
7. For septic tank based systems, no distinguishing between treatment of solids (septage) and liquids (septic tank effluent)

Cuttack – 28 July 2015
Desk Based





AIM

To roll out the use of SFDs as a decision support and advocacy tool

DURATION

Two Years

OVERVIEW

To provide support to cities and towns, which are keen to develop SFDs and to refine the existing tool.

Key Elements

Operational Support

In field support to ULBs

Training and capacity building of trainers and practitioners

Help desk support to promote 'Do it yourself SFDs'

Roll- out Support activities

Open access to SFD preparation contents

Discussion Forum in SFD web portal

Feedback documentation

Refinement of Tools and Methods

Ready to use tools for city authorities and their partners

Online tutorial on 'How to use tools and methods'

QA & QC of SFDs produced

Excel based SFD Calculation Tool

[illegible]

Regional Conclave at Kerala 2016



Capacity Building Workshop at Kumasi 2016



Regional Conclave at Delhi 2016



Upgraded easy to use tool- Graphic Generator


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Use the cursor to hover-over the selection grid and then click on the selected systems.

RISK OF GROUNDWATER POLLUTION



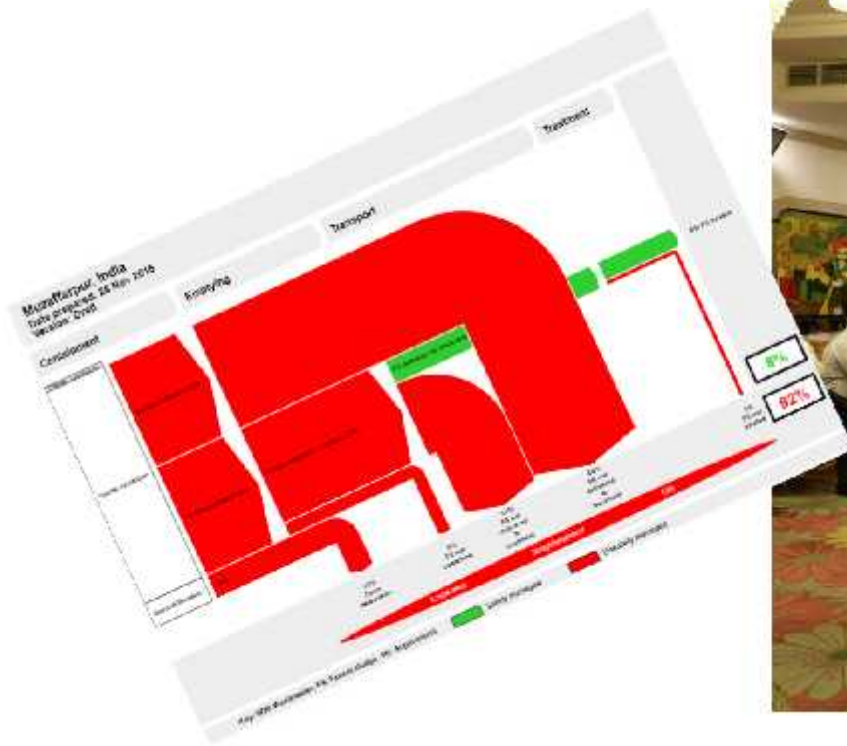
List A: Where does the toilet discharge to? (i.e. what type of containment technology, if any?)	List B: What is the containment technology connected to? (i.e. where does the outlet or overflow discharge to, if anything?)										
	to centralised combined sewer	to centralised foul/separate sewer	to decentralised combined sewer	to decentralised foul/separate sewer	to soakpit	to open drain or storm sewer	to water body	to open ground	to 'don't know where'	no outlet or overflow	
No onsite containment. Toilet discharges directly to destination given in List B					Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No					Not Applicable	
Septic tank					Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No						
fully lined tank (sealed)					Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No						
Lined tank with impermeable walls and open bottom	Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No	Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No	Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No	Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No	Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No						Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No
Lined pit with semi-permeable walls and open bottom	Not Applicable										Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No
Unlined pit											Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No
Pit (all types), never emptied but abandoned when full and covered with soil											Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No
Pit (all types), never emptied, abandoned when full but NOT adequately covered with soil											Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No
Toilet failed, damaged, collapsed or flooded											
Containment (septic tank or tank or pit latrine) failed, damaged, collapsed or flooded											
No toilet. Open defecation	Not Applicable									Not Applicable	

Indian SFD story so far

- Tested the methodology of data collection
- More than 500 SFDs (different versions) developed in India, by various agents
- CSE developed more than 100 SFDs
- Used as an advocacy tool to sensitize the decision makers
- Done baseline study for developing City Sanitation Plans in Ganga basin (represents almost 40% Indian population)
- Did analysis of sanitation in Urban Uttar Pradesh (most populous state in India) using SFDs of 66 major cities
- Done baseline study of Hindon river basin through SFDs to decide on the relevant projects
- Used SFDs to monitor the progress of cities

City Sanitation Plan in Ganga Basin Cities, CSE

CSE is doing capacity building of ULBs for developing CSPs of ten small and medium cities in Ganga Basin. CSE in collaboration with the ULBs developed SFDs at the very initial stage of development of CSPs. SFDs are also presented in the CSTF meetings.



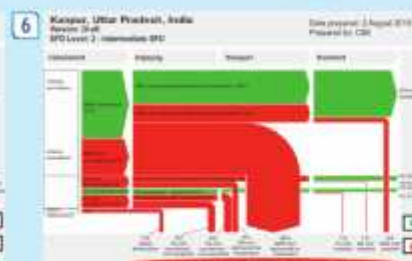
CLUSTER 1

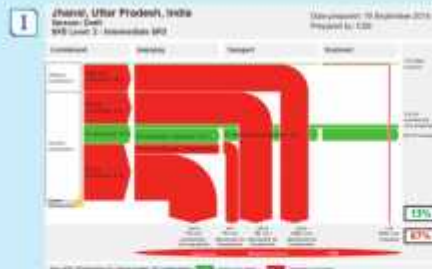
CITIES WITH POPULATION OF MORE THAN 10 LAKH IN UTTAR PRADESH



CHARACTERISTICS OF THE CLUSTER

- Roughly 80% of onsite sanitation system over flow in an open drain
- In absence of scheduled desludging, only 40-50% of FS generated gets emptied, rest remains in the tank and reduces the treatment efficiency of the septic tank
- 85% of the vacuum tankers are tractor mounted rest are truck mounted
- Due to inaccessible tanks, manual emptying is also observed
- There are 43 STPs, spread across all the cities in the cluster, with cumulative capacity of 1952 MLD, but receive 1532 MLD of sewage
- More than 64 private operators are registered with local bodies
- As a preliminary measure Agra, Allahabad, Ghaziabad and Lucknow have allowed the discharge of collected faecal sludge to its pumping stations and Kanpur allows it to be directly discharged into its STP.
- The faecal sludge collected by unregistered operators is disposed in drains/fields/ponds





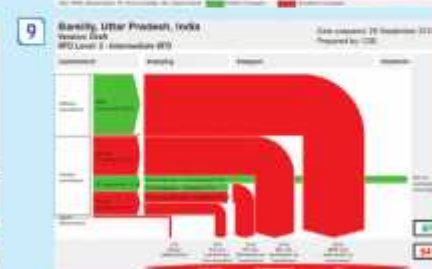
CLUSTER 2

CITIES WITH POPULATION BETWEEN 5 AND 10 LAKH IN UTTAR PRADESH



CHARACTERISTICS OF THE CLUSTER

- More than 60% population is dependent on tanks connected to open drain and less than half of them qualify to be called as septic tanks
- In absence of scheduled desludging, only 50% of FS generated gets emptied, rest remains in the tank and reduces the treatment efficiency of the septic tank
- 92% of the vacuum tankers are tractor mounted rest all are truck mounted
- Due to inaccessible tanks, manual emptying is rampant
- There are 11 STPs of cumulative capacity of 230 MLD which receive 168 MLD of sewage and 1 FSTP of 6 KLD, which receives around 3KLD as on date
- Only Jhansi has a designated disposal site, in rest of the cities the collected faecal sludge is disposed in drains/fields/ponds



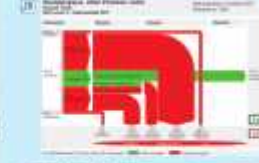
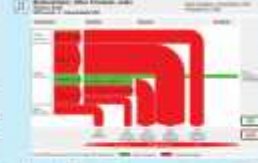
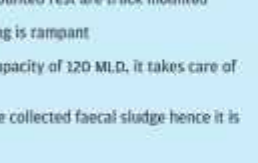
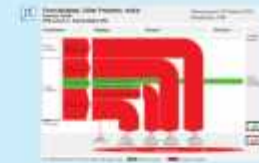
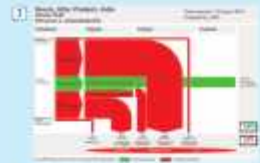
CLUSTER 3

CITIES WITH POPULATION BETWEEN 1.2 AND 5 LAKH IN UTTAR PRADESH



CHARACTERISTICS OF THE CLUSTER

- More than 75% of the population is dependent on tanks connected to open drain and 28% of them qualify to be called as septic tanks
- In absence of scheduled desludging, less than 50% of FS generated gets emptied, rest remains in the tank and reduces the treatment efficiency of the septic tank
- 90% of the vacuum tankers are tractor mounted rest are truck mounted
- Due to inaccessible tanks, manual emptying is rampant
- Though there are 10 STPs of cumulative capacity of 120 MLD, it takes care of only 2% population of the cluster
- There is no designated disposal site for the collected faecal sludge hence it is disposed in drains/fields/ponds



CLUSTER 4

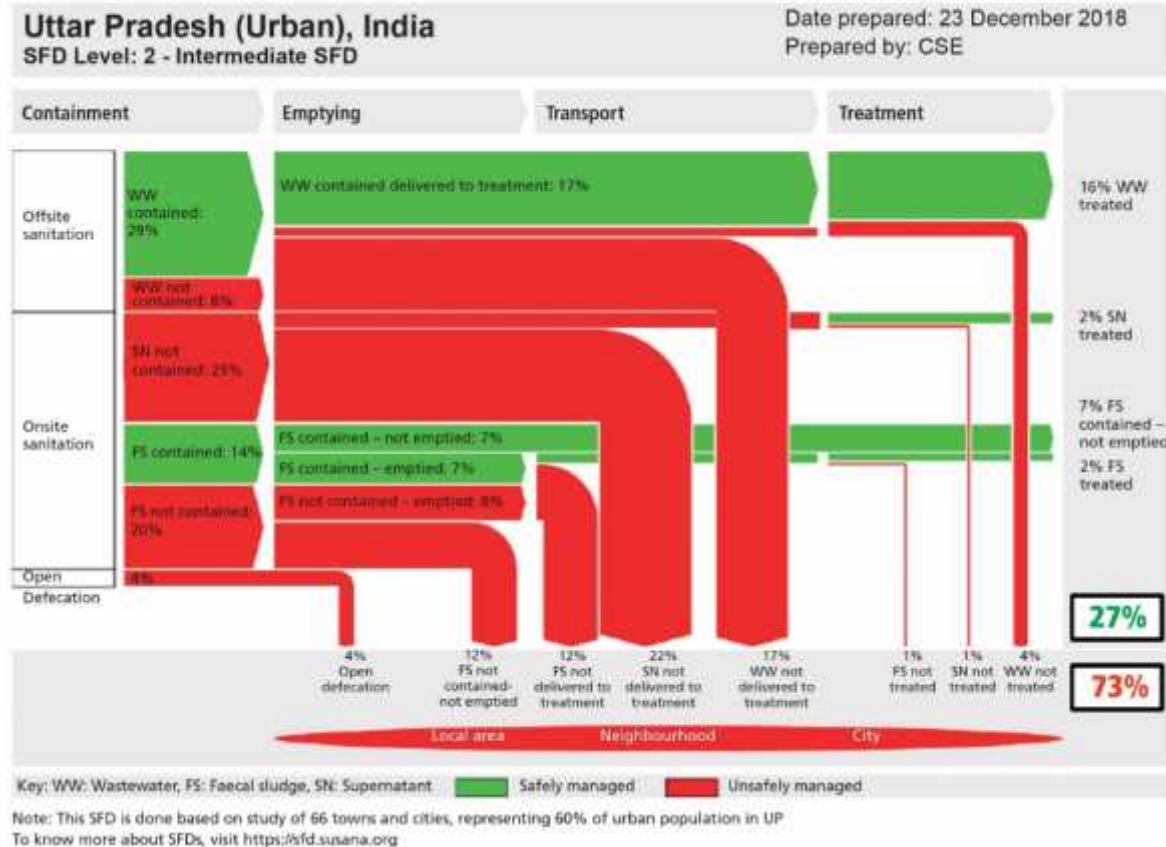
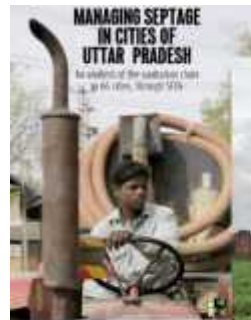
CITIES WITH POPULATION LESS THAN 1.2 LAKH IN UTTAR PRADESH



CHARACTERISTICS OF THE CLUSTER

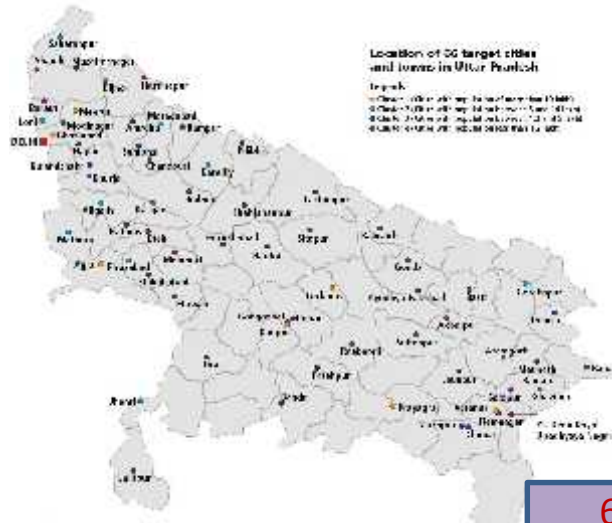
- More than 70% population is dependent on tanks connected to open drain and roughly half of them qualify to be called as septic tanks
- Quite a few households don't even have an open drain in their neighbourhood
- In absence of scheduled desludging, roughly 50% of FS generated gets emptied, rest remains in the tank and reduces the treatment efficiency of the septic tank
- 97% of the vacuum tankers are tractor mounted
- Due to inaccessible tanks, manual emptying is rampant
- Except Sultanpur (5 MLD), Mainpuri (23 MLD) and Bijnor (24 MLD), no other city has any functional sewage treatment plant
- There is no dedicated faecal sludge treatment plant in any of the cities in the cluster, the collected faecal sludge is disposed in drains/fields/ponds

UTTAR PRADESH - SFD



Note: CSE's analysis reports released by PS UD at State Workshop & by the Secretary MoHUA and DG NMCG at SFD Week in 2018-19

Assessment of Septage & Wastewater Management in Uttar Pradesh



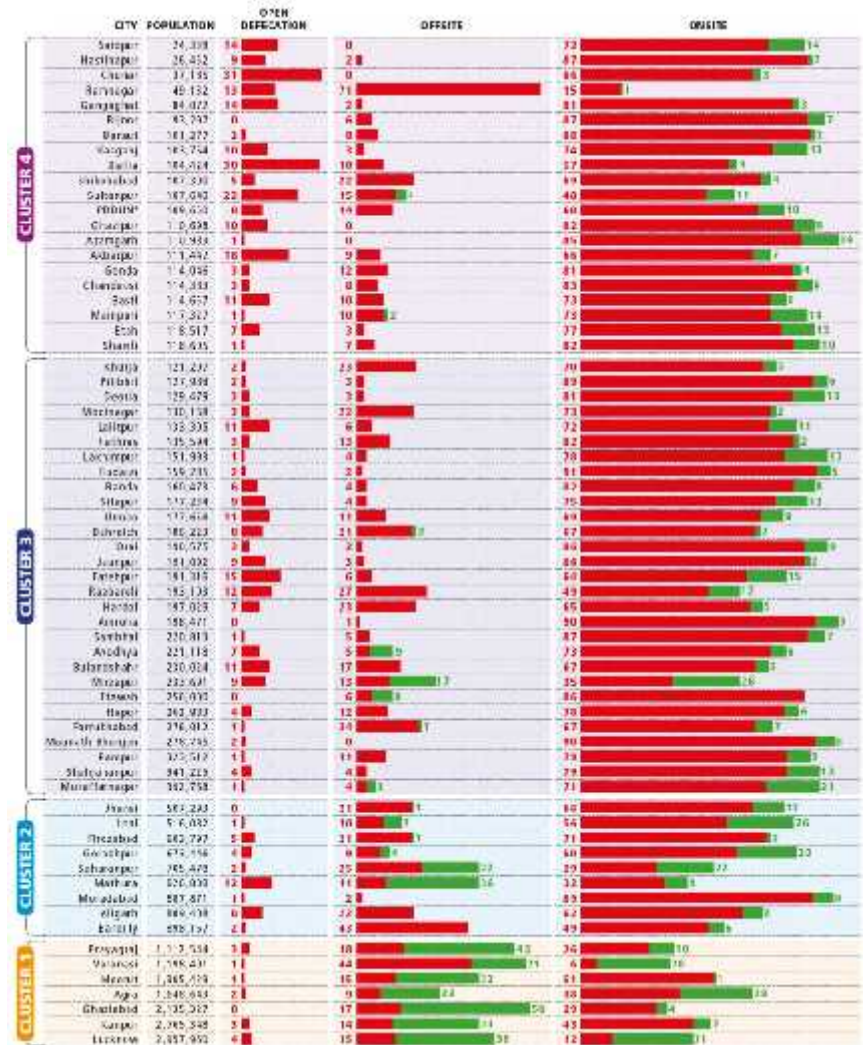
66 Cities – 4 Clusters

C1: Pop. > 1 million

C2: Pop. .5 to 1 million

C3: Pop. .12 to .5 million

C4: Pop. < .12 million



Thank You