Managing Septage in Ganga Cities

An analysis of excreta management in 21 priority towns/cities

through SFDs

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MANAGING
SEPTAGE
IN GANGA
CITIES
An analysis of excesse management in 21 priority towns through SIDs

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Understanding Excreta Management



THE THREE PATHWAYS Excreta generated in a city can follow three pathways:

- Offsite sanitation: Toilets connected to drainage networks like a sewerage system which conveys the excreta away from the site, preferably to a sewage treatment plant.
- Onsite sanitation: Toilets connected to a tank or a pit, which stores the excreta within the site. These systems generally produce partially treated effluent and faecal sludge/septage that needs periodic emptying.
- Open defecation: Users do not have access to a toilet and hence defecate in the open.

SEWAGE VS FAECAL SLUDGE

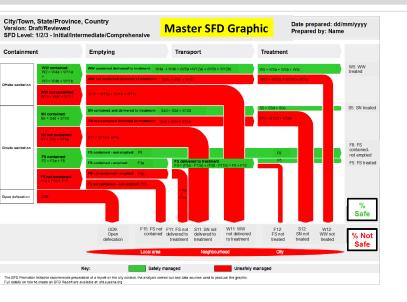
Sewage is untreated wastewater which contains faeces and urinethis wastewater gets conveyed through the sewerage system. Generally, grey water from the kitchen and bathroom also becomes part of sewage. The BOD of sewage ranges from 150-350 mo/l and all sewage treatment plants are designed for this load. Faecal sludge/septage is semisolid slurry, it is emptied out of septic tanks/pits and is much more concentrated than sewage. The BOD of faecal sludge ranges from 1,000-20,000 mg/l.

WHAT IS AN SFD? An excreta flow diagram (also often described as Shit Flow Diagram) is a tool to readily understand and communicate how excreta physically flows through a city or town. SFDs show how excreta is or is not managed as it moves from defecation to disposal or end-use. The SFD report presents the service delivery context of the city or town and the data sources used for the assessment.

What is a SFD?

(एस एफ डी क्या है ?)





A diagram that shows the pathways from defecation to final fate मलत्याग का अंतिम मार्ग तक का रेखा चित्र

सैनिटेशन चैन सर्विस डिलीवरी की संशिप्त रिपोर्ट A concise **narrative report** on the
service delivery
context

A complete **record** of all the data sources

| डाटा रिसोर्सेज का पूर्ण रिकॉर्ड



What is an SFD



- An effective communications and advocacy tool to engage city stakeholders like political leaders, sanitation experts and civil society organizations in a coordinated dialogue about excreta management. (एस एफ डी सभी हितधारको को संग्लन करने वाला एक प्रभावी संचार एवं पक्षपोषण साधन है)
- A tool for engineers, planners and decision-makers to inform urban sanitation programming.
- (एस एफ डी इंजीनियर्स, प्लंनेर्स और निर्णयकर्ताओं के लिए शहरी सैनिटेशन प्रोग्रामिंग बताने का साधन है)
- Based on contributing populations, it gives an indication of where their excreta goes
- (जनसंख्या संकेत देती है शहर का मल किधर जा रहा है)
- A representation of public health hazard
 (एस एफ डी सार्वजानिक स्वस्थ्य के जोखिम क प्रितिनिधित्व करता है)
- An avarvious from which to devalor canitation priorities

Practical applications: (एस एफ डी की उपयोगिता)





- Initiate planning at city level (शहरों की योजना बनाने में सूत्रपात)
- O Pitch for financing sanitation infrastructure (सैनिटेशन इन्फ्रास्ट्रक्चर के लिए वित्त वयवस्था रूप रेखा देता है)
- Gaining political support (राजनेतिक सहायता)
- Stakeholder involvement (हित्कार्ताओ की भागीदारी)
- Coordination of various actors (विभिन्न हित्कार्ताओं के बीच में समन्वय)
- Establishing baselines and monitoring progress?? (आधार रेखाओ स्तापित करना और प्रगति की निगरानी)
- Etc...

Advocacy at City, State and National level





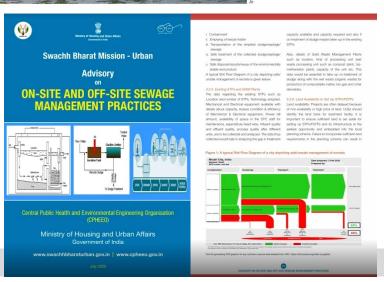




PROPOSED 10 KLD PILOT FAECAL SLUDGE AND SEPTAGE TREATMENT PLANT – CHUNAR

OVERVIEW

- » National Mission for clean Ganga (NMCG) aims to 'ensure effective abatement of pollution and rejuvenation of the river Ganga' by exploring and promoting 'economic and nature based treatment system' to manage feecal studge and septage in small and medium towns in Ganga basin.
- » Chunar, a small town on the bank of river Ganga, has been selected as the first small town in the basin to get a dedicated Faecal Sludge and Septage treatment Plant (FSTP) of 10 KLD capacity.
- » Centre for Science and Environment (CSE), as a partner organization of NMCG is providing technical support to the town of Chunar for improving sanitation in the city by mainstreaming Faecal Studge and Septage Management.
- » CSE has set-up a Technical Support Unit (TSU) in Chunar to support facilitate and handhold city-level agencies in planning, creating operating guidelines and enabling frameworks, as well as designing and executing Faecal Sludge and Septage Management (FSSM) practices in cities across the form of Chunard.
- » CSE is further building capacities of city officials, decision makers and other stakeholders involved in the implementation of city santiation programme. This would include conducting field exposure visits for officials to explore good management practices.

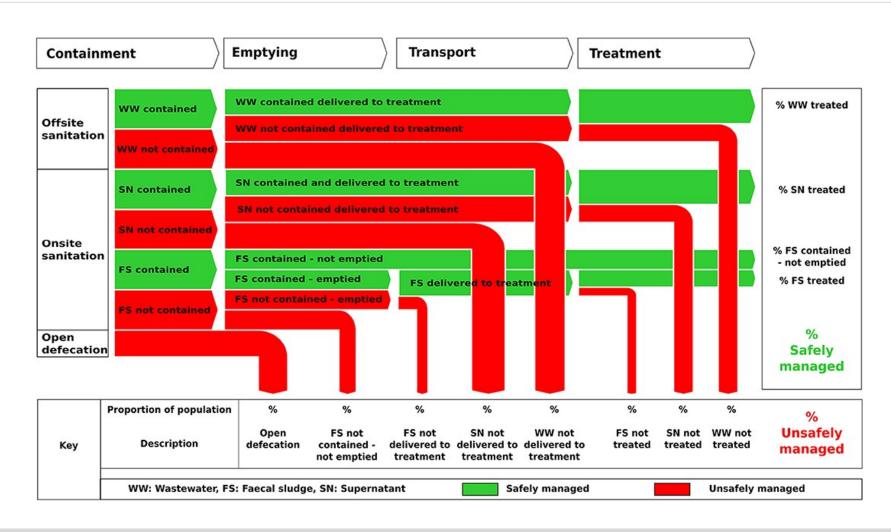




How to Read SFD..? (एस एफ डी कैसे पढें)

Master SFD





Cuttack, India-28 July 2015

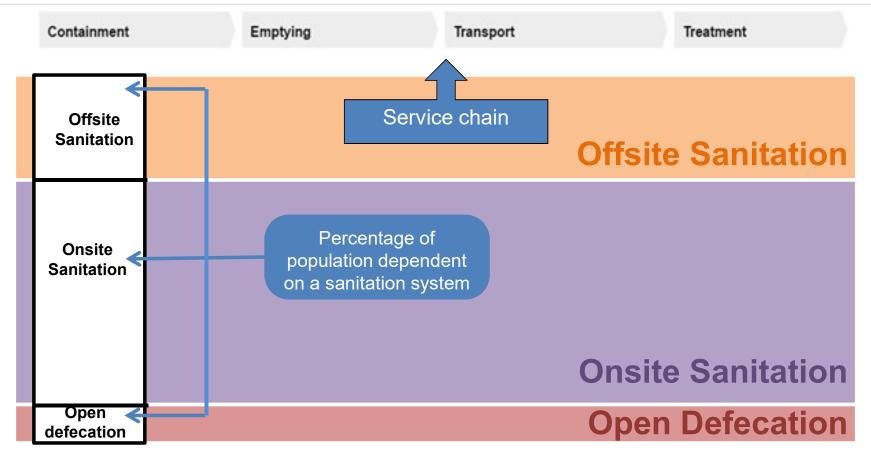
Version: Reviewed SFD Level: 2

Name of City, version and level of SFD

Date prepared: 28 July 2015

Prepared by: CSE





City Local area Neighbourhood **Unsafely managed**

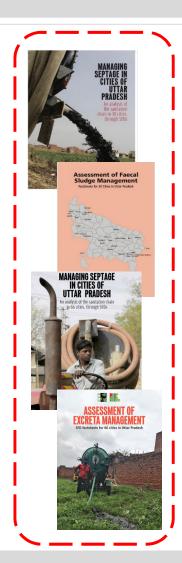
Indian SFD Story SO far... (इंडियन एसएफडी की अबतक की कहानी)

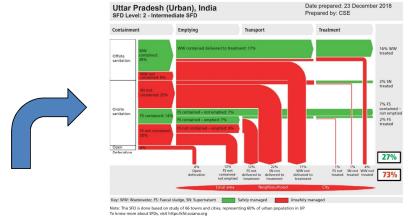


- Tested the methodology of data collection (डाटा कलेक्ट करने की कार्यप्रणाली का परीक्षण)
- More than 500 SFDs (different versions) developed in India, by various agents (भारत में 500 से अधिक एसएफडी विकसित किये गए विभिन एजेंट्स द्वारा)
- CSE developed more than 100 SFDs (सीएसई द्वारा 100 से अधिक एसएफडी विकसित किये गए)
- Used as an advocacy tool to sensitize the decision makers (निर्णयकर्ता के लिए पक्षपोषण करने वाला साधन)
- Done baseline study for developing City Sanitation Plans in Ganga basin (represents almost 40% Indian population) (गंगा बेसिन के शहरों की बेसलाइन स्टडी की गयी शहरव्यापी स्वच्छता योजना विकसित करने के लिए)
- Did analysis of sanitation in Urban Uttar Pradesh (most populous state in India)
 using SFDs of 66 major cities (शहरी उत्तर प्रदेश सैनिटेशन सैनिटेशन का विश्लेषण किया गया)
- Done baseline study of Hindon river basin through SFDs to decide on the relevant projects (हिंडन रिवर बेसिन की एसएफडी द्वारा बेसलाइन स्टडी की गयी)
- Used SFDs to monitor the progress of cities (एसएफडी द्वारा शहरों की प्रगति की निगरानी)

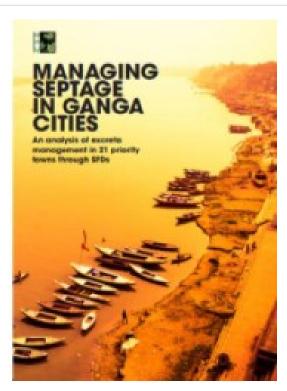
SFD of Urban Uttar Pradesh







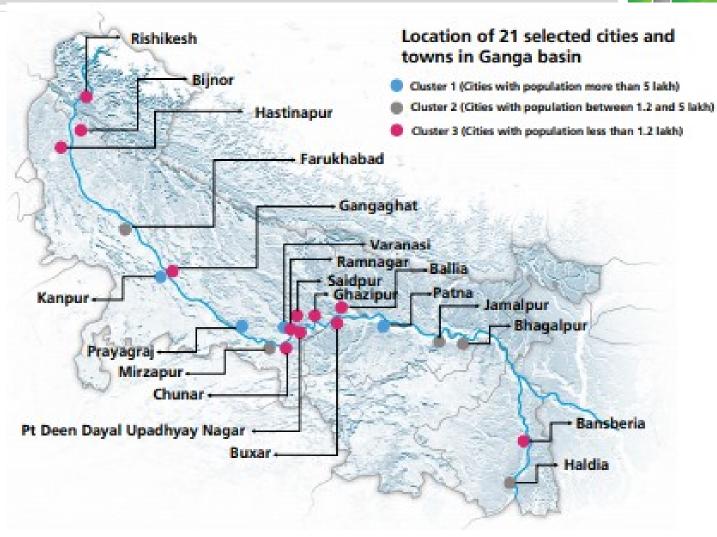




CSE Research Report submitted to NMCG Nov. 2020

Cities selected for Mapping Status of Septage Management





Status of Containment Systems in Ganga Basin Cities

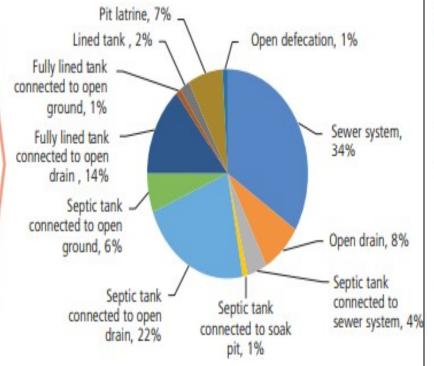


THESE CONTAINMENT SYSTEMS GENERAT TWO TYPES OF BY-PRODUCTS:

- (i) Faecal sludge, that should be emptied periodically but is only emptied when the tank gets full and there is a backflow to the toilet. Faecal sludge from septic tanks is also known as septage.
- (ii) Effluent (or supernatant), the semi-treated liquid component, which ideally should be infiltrated into the ground through a soak-pit (in case of low risk of ground water pollution) or undergo further treatment, but is discharged into open drains/open ground/water bodies.

Figure 5: Status of containment systems

Pit latrine, 7%











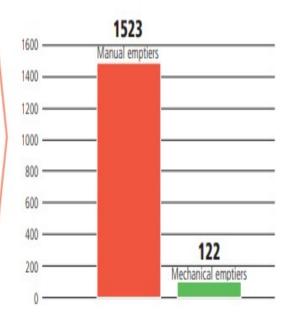
Status of Emptying in Ganga Basin Cities



THE PROHIBITION OF EMPLOYMENT AS MANUAL SCAVENGERS AND THEIR REHABILITATION ACT, 2013

This act prohibits employment of manual scavengers and insanitary latrines—laying strong emphasis on rehabilitation of manual scavengers. The broad objectives of the act are to eliminate insanitary latrines, prohibit the employment of manual scavengers and the hazardous manual cleaning of sewer and septic tanks, and to maintain a survey of manual scavengers and their rehabilitation.

Figure 6: Types of emptiers









Mechanical emptying of faecal sludge by overnment operated tractor mounted

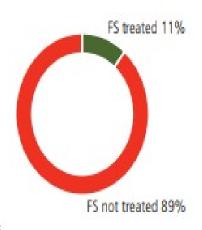


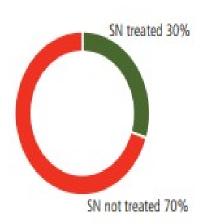
Tractor mounted vacuum tanker, Prayagraj

Status of Sewage & Septage Treatment in Ganga Basin Cities





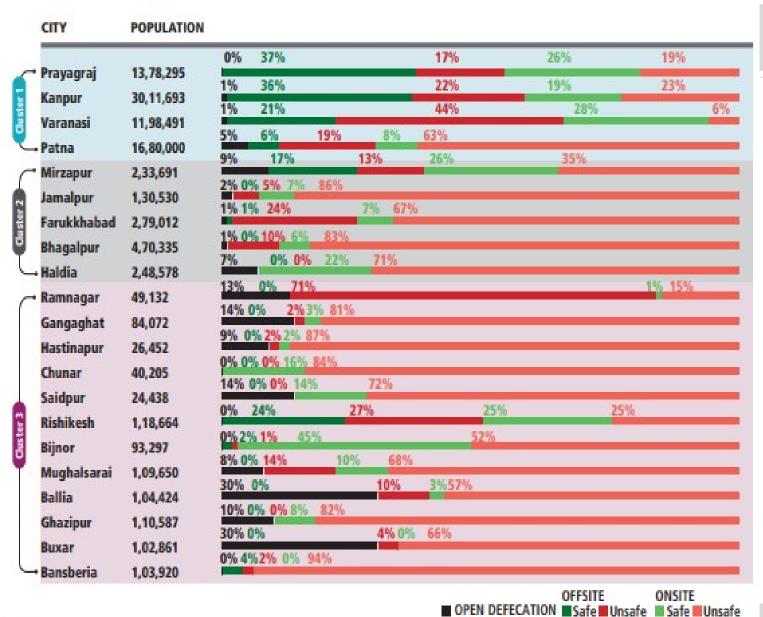






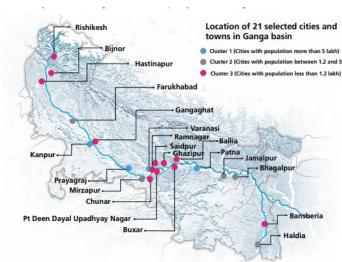


Faecal sludge discharged in low lying areas, Bijnor





Summary of Sewage & Septage Management



no I

SFD Ganga Basin 2020



KEY OBSERVATIONS

57%

of the total population is dependent on onsite sanitation systems like septic tank, fully lined tanks, and pit latrines. Out of which, the excreta of 18% of the population is treated.

Septic tank/fully lined tank effluent (overflow) of

40%

of the population is discharged in open drains, 50% of which is getting tapped and treated.

Out of 21 Ganga cities surveyed, around

90%

of the sewerage network is found in 3 cities.

Sanitation provision through sewer system increases with the increase in population of cities

Excreta of

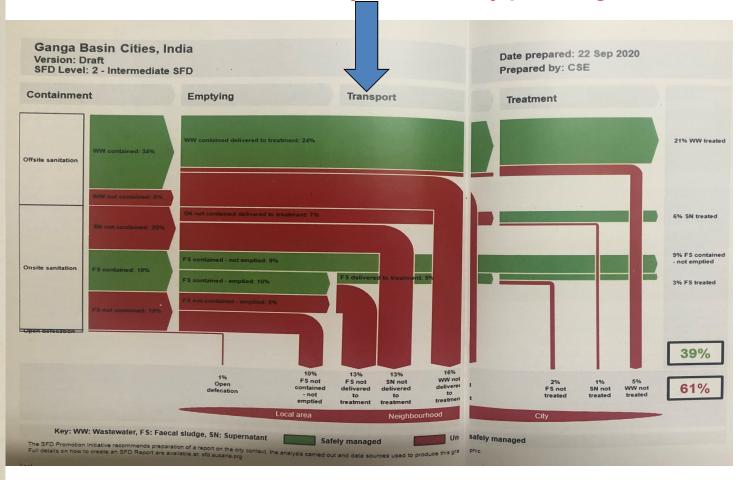
8% of the population is discharged directly in open drains. 34% of the population is connected to sewerage network. But excreta of only 21% of the population is treated at STPs.

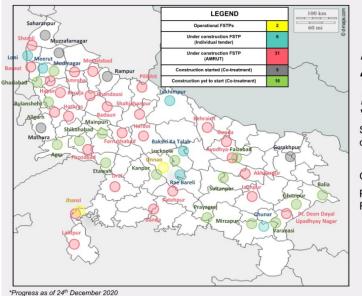
1 % of the population still defecates in the open.

No city is 100% sewered

39% of the total population is safely managed, 6% of which is safely stored in containment systems.

Excreta of 60% is still directly or indirectly polluting the river





Overall FSSM Progress

2 Operational FSTPs

59 FSSM projects
Sanctioned (38 FSTPs and 21 co-treatment)

Construction started in 3/ Projects (5 co-treatment and 32 FSTPs)











98 Million Litres of Faecal Sludge from 21000+ tanker trips Treated in Uttar Pradesh as of December 2020

Data from 4 Front Runner Faecal Sludge Treatment Facilities

Bijoli FSTP, Jhansi

FSTP Operational Since 2018

Total Trips: 2085
Total FS Treated: 3.2 ML



Hussain Nagar FSTP, Unnao

FSTP Operational Since 2019

Total Trips: 412 Total FS Treated: 1.3 ML



Gwari Sewage Pumping Station / Bharwara STP, Lucknow

Co-treatment Operational Since 2018

Total Trips: 4350 Total FS Treated: 21.8 ML



Bingawan STP, Kanpur

Co-treatment Operational Since 2015

Total Trips: 14300 Total FS Treated: 71.5 ML





















98 million litres of septage safely







Thank You

SFD Promotion Initiative

sustainable sanitation alliance



















