SFD Lite Report

Lakhimpur

India

This SFD Lite Report was prepared by

Centre for Science and Environment

Date of production/ last update: 11/09/2020

1 The SFD Graphic

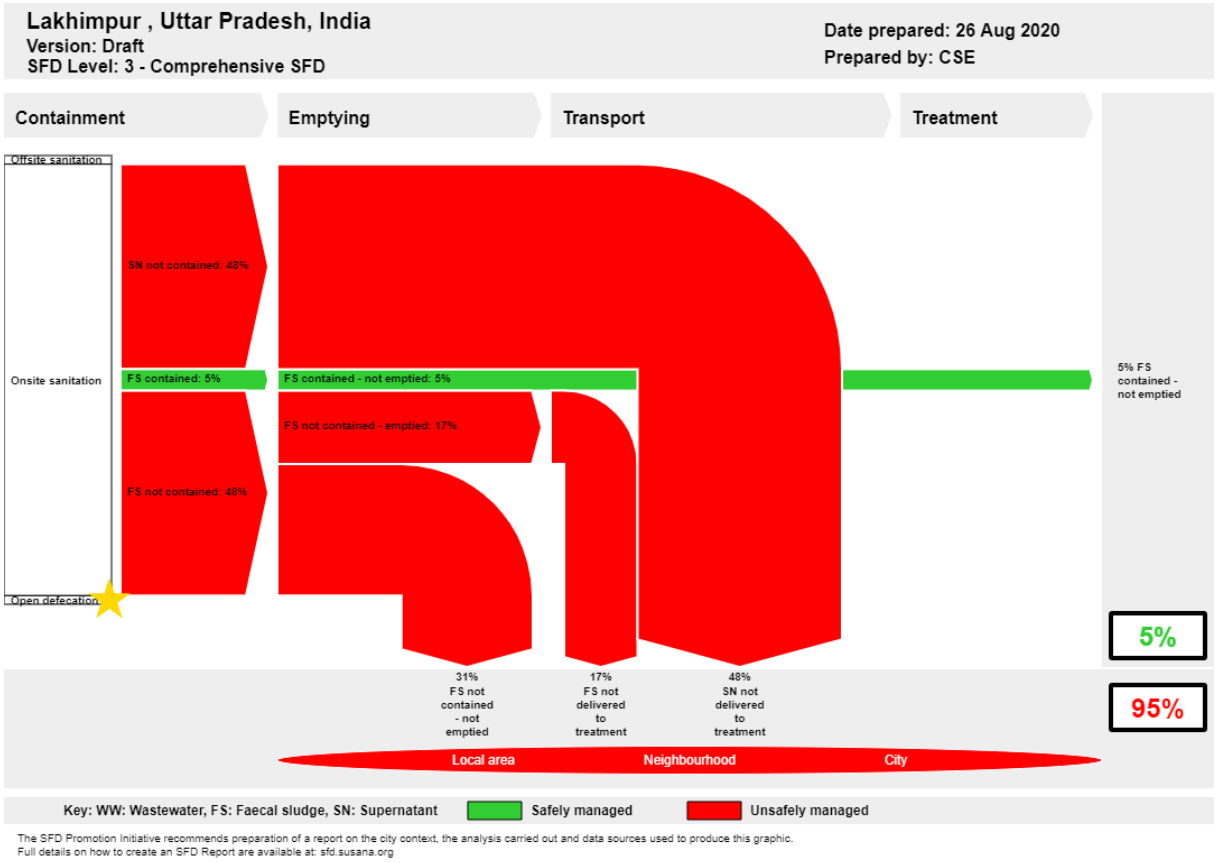

Figure 1: SFD Graphic (Abhishek/CSE, 2020)

2 SFD Lite information

Produced by:

- Centre for Science and Environment, New Delhi
- This report was compiled as part of the SFD Promotion Initiative project funded by Bill and Melinda Gates Foundation (BMGF). We would like to thank Mr R R Ambesh, Executive Officer; Mr Jitendra Singh, Sanitary and Food Inspector; Mr Vikrant Verma, District Program Manager; Miss Priya Mishra, Urban Infrastructure Specialist (AMRUT); Mr Anurag Tiwari, Computer Operator; Mr R B Shrivastava, Executive Engineer (Jal Nigam); Mr Yogendra Kumar Neeraj, Assistant Engineer (Jal Nigam) and other staff of both Jal Nigam and Nagar Palika Parishad for providing required information and cooperation.

Collaborating partners:

- Nagar Palika Parishad, Lakhimpur, Uttar Pradesh, India
- Jal Nigam, Lakhimpur, Uttar Pradesh, India

Date of production: 11/09/2020

3 General city information

Lakhimpur Kheri is the largest district in Uttar Pradesh, India, on the border with Nepal. Its administrative capital is the city of Lakhimpur. Lakhimpur Kheri district is a part of Lucknow division.

Lakhimpur Nagar Palika Parishad was established on 14th july 1968. As per census data year 2011 the population of Lakhimpur City is 151999 and total area is 10.10 Sq. KM. As the floating population is negligible hence not used for preparation of SFD.

Census Year	Population	Growth Rate (%)	Source
2001	121486	-	Census 2011
2011	151993	20.07	Census 2011
2019	167572	9.29	ULB Data
2025	175950	4.76	ULB Data

Table 1: Population Growth rate Lakhimpur City Source: (CSP, 2019), (Census)

The climate is hot throughout the year except the rainy seasons. During summer(March to June), the temperature can reach above 40 °C (104 °F) and in winters(October to February) it can drop to around 4 °C (39 °F). The nights are very cold during winter and fog is very common in this season.[1] The annual average rainfall in Lakhimpur Kheri is 1,085.3 millimetres (42.73 in), mostly in the monsoon months (July to September). Lakhimpur Kheri is bounded on the north by the river Mohan, separating it from Nepal; on the east by the Kauriala river, separating it from Bahraich; on the south by Sitapur and Hardoi; and on the west by Pilibhit and Shahjahanpur.

Lakhimpur , Uttar Pradesh, India, 26 Aug 2020. SFD Level: 3 - Comprehensive SFD
Population: 167572
Proportion of tanks: septic tanks: 50%, fully lined tanks: 50%, lined, open bottom tanks: 50%

System label	Pop	F3	F4	F5	S4e	S5e
System description	Proportion of population using this type of system	Proportion of this type of system from which faecal sludge is emptied	Proportion of faecal sludge emptied, which is delivered to treatment plants	Proportion of faecal sludge delivered to treatment plants, which is treated	Proportion of supernatant in open drain or storm sewer system, which is delivered to treatment plants	Proportion of supernatant in open drain or storm sewer system that is delivered to treatment plants, which is treated
T1A2C6 Septic tank connected to open drain or storm sewer	30.0	70.0	0.0	0.0	0.0	0.0
T1A3C6 Fully lined tank (sealed) connected to an open drain or storm sewer	65.0	20.0	0.0	0.0	0.0	0.0
T1A5C10 Lined pit with semi-permeable walls and open bottom, no outlet or overflow	3.0	0.0	0.0	0.0		
T1A6C10 Unlined pit, no outlet or overflow	2.0	0.0	0.0	0.0		

Table 2: SFD Matrix (CSE 2020)

Overview on technologies and methods used for different sanitation systems through the sanitation service chain is as follows:

3.1 Offsite Systems

As of now the Lakhimpur city has no sewer system for offsite containment (Field Observation; KII-1 and 4, 2020). City is planning to go for sewer system in upcoming years, as according to the officials Nagar Palika with the active support of Jal Nigam, is in direct communication with higher authorities. Land for Sewage Treatment Plant has been identified by the Nagar Palika but the procedure for further commands is still under process (KII-1).

3.2 On-site Sanitation Systems

The Lakhimpur city is totally dependent upon the onsite sanitation system which includes the individual toilet system along with Community and Public toilet provided by the Nagar Palika under Swatch Bharat Mission.

Containment: Based on sample household survey, KIIs and FGDs with relevant stakeholders it is estimated that entire population is dependent on the On-site Sanitation Systems (OSS) (Field Observation; KII-1, 2020; FGD-1). The containment systems prevalent in the city are Fully Lined Tank (FLT) connected to open drain or storm sewer (T1A3C6, 65%), Septic Tank (ST) connected to open drain or storm sewer (T1A2C6, 30%), Lined pit with semi-permeable walls and open bottom (T1A5C10, 3%) and Unlined pits (T1A6C10, 2%) (Field Observation and Previous SFD).

The general size of STs and FLTs varies from 6 ft * 2 ft * 6 ft to 12 ft * 6 ft * 10 ft, depending upon the household size, income level, community, institution etc (Field Observation). Based on the size, the construction cost varies from INR 10 K to INR 50 K (USD 136.10 to USD 680.44[1]) (Field Observation). The septic tanks are two or three chambered with proper partition walls including plastered bottom whereas the FLTs are single or multi chambered with impermeable walls with design not meeting the BIS code standards. On field it was observed that significant number of populations along with masons are not well equipped with the knowledge of standard definition and dimension of septic tank (Field Observation).

Figure 2: ST with 2 chambers found in Shiv Colony, half of which is inside the house and half is outside for emptying (Abhishek/CSE, 2020)

Figure 3: Square shape FLT found in Barkhedwa ward with 2 chambers

[1] Conversion based on September,12, 2020

Community Toilets/Public Toilets: There are 6 PTs and 3 CTs spread in entire city of Lakhimpur which have ST connected to open drain (Field Observation; KII-2,2020). One out three CT's tank was found connected directly to a water body (Field observation). The average size of septic tanks in community toilet is 12 x 6 x 10 ft which are desludged every 3-4 month (Field Observation; KII-1, 2020). The average size of septic tanks in public toilet is 12 x 6 x 10 ft which are desludged in 3-4 month(Field Observation; KII-10, 2020). The commercial buildings including Schools, Government Offices, Market Buildings, etc have ST in their premises as containment system (Field Observation; KII-7, 2020). One school was found with fully lined tanks whose outlet was directly connected to the open drain (Nullah), the strength of that was school was 1280 and has not performed emptying from last 12-15 years (Field Observation; KII-12, 2020).

Figure 4: CT's tank connected to open water body (Abhishek/CSE, 2020)

As per 2011 census, 10 % of the population was defecating in open. However, under the Swachh Bharat Mission, Public Toilets (PT) / Community Toilets (CT) and Individual Household Latrines have been constructed which has resulted in the city achieving ODF status. However, during the field visits instances of Open Defecation was observed near settlements belonging to citizens of low income. In the survey it was found that many CTs/PTs during the visit the entrance door for women toilets were closed (Field Observation). As well as one PT under SBM which was inside the District Magistrate Office was charging fee of INR 5 for using the toilet facility (Field Observation).

Emptying: The city has both Government and Private operated mechanised desludging service for emptying faecal sludge from onsite sanitation systems (Field Observation; FGD-2, 2020; KII-8, 9 and 11, 2020). The emptying frequency varies from 6 months to even 10 years (demand based) across the city depending upon the nature and the size of containment system (FGD-2, 2020). During field visits, it has been observed that a significant proportion of population has never emptied their containment systems from a decade and a half, indicating a need for better IEC intervention and city level scheduled desludging plan. For the purpose of SFD preparation, Septic Tanks with duration of desludging more than 5 years are being considered as not emptied, and Fully Lined Tank with emptying frequency more than 8 years are being considered as not emptied. There are total 2 government tractor based vacuum tankers and 2 private tractor based vacuum tankers plying in the city (FGD-2, 2020). Each of these vacuum tankers are equipped with motorised pumps and have a storage capacity of 5000 L and 1400 L respectively. In order to carry out the work in narrow and congested areas, these vehicles are equipped with ~120 ft long hose (KII-11, 2020).

Form are filled by the households at the time of emptying service for record keeping by Urban Local Body (ULB) (FGD-2, 2020). Emptying service is carried out by 3 workers and charges are different for both the operators; ULB is charging INR 800/ trip (USD 10.89) and Private operators are charging INR 1100/ trip (USD 14.97) (FGD-2, 2020). The desludging services for the public and community toilets is carried out periodically by the ULB's service providers and hence free of cost (KII-10, 2020). The desludging vehicles are maintained properly by ULB at the designated depot for all the municipal vehicles (Field Observation). The municipal workers are provided with Personal Protective Equipments (PPEs) which they partially use it while emptying (Field Observation, FGD-2, 2020).

Figure 5: Desludging by vacuum tanker in Santosh Nagar (Source: Abhishek/CSE, 2020)

Manual emptying was not found anywhere in the city, the entire emptying is fully mechanised with zero contact of human with the desludged material.

Transportation: The emptied septage is transported through the tractor mounted vacuum tankers. The average time taken to dispose emptied septage is around ~20 minutes (Field Observation; FGD-2, 2020). Around 2 to 3 trips per week are made by each vehicle (FGD-2, 2020). The faecal sludge (FS) emptied by vacuum tankers is discharged in the open field designated outside the city at Majra farm (Field Observation, FGD-2, 2020). While, during a visit of a desludging site it was found that emptied material was dumped inside the city unofficially near Rajapur crossing (Field Observation, FGD-3, 2020).

Figure 6: Dumping inside city (Source: Abhishek/CSE, 2020

Treatment/Disposal: The Lakhimpur has no operational Sewage Treatment Plant or Faecal Sludge Treatment Plant (FSTP) as of now (Field Observation). Currently, an FSTP is under construction which is located near Majra farm 15 km outside the city and near the Ull river (DPR, KII- 4 and 5, 2020). Construction of this FSTP started in the beginning of 2020 and has completed 25% of its construction (KII-5, 2020). Estimated date of its completion and operation is January, 2021 which might get affected due to ongoing pandemic (KII-6, 2020).

Figure 7: FSTP, under construction (Source: Abhishek/CSE, 2020)

4 Data and assumptions

Census 2011 was considered as the baseline and the data for all the stages of sanitation chain were updated based on the data collected from field through KII, FGDs, observations, secondary data collected from relevant stakeholders and data from previous SFD. Following assumptions were made for developing the SFD for Lakhimpur.

For preparation of SFD it is assumped that 50% of the contents of Septic tanks and Fully lined tank is faecal sludge.

5 Context Adapted SFD Graphic

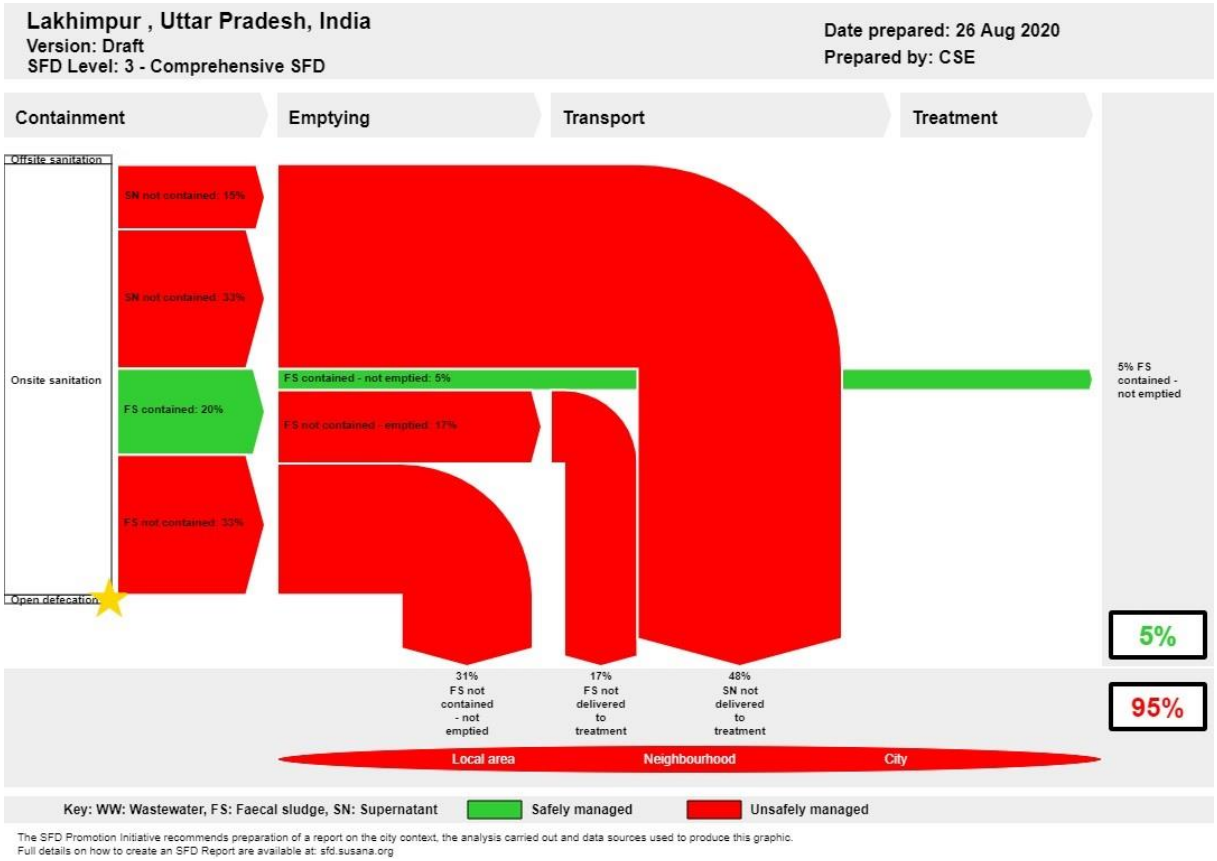

Figure 8: Context adapted SFD Graphic for Lakhimpur

The only difference suggested in the context adapted SFD Graphic is at containment stage for correctly designed septic tanks, though connected to open drains. With an earlier assumption of 50% of the proportion of the content of the septic tank which is solid FS, generated and collected inside the septic tanks. 50% of the content is supernatant which attributes to be 33% of the population flows through open drains hence, not contained. The solid FS collected in the septic tank is considered to be contained and hence 20% of FS is contained (represented green in colour at containment stage). Followed by this, 17% FS contained is emptied, remaining 5% is FS remains in the tank which is contained and never emptied. The supernatant generated from the septic tank connected to open drain is not contained and hence considered to be unsafely managed (represented red in colour). Overall, excreta of 95% population is not managed according to the context adapted SFD

6 List of data sources

Reports and literature

- District Census Handbook 2011 for Lakhimpur (Houses and household amenities and assets table HH-08: percentage of households by availability of the type of Latrine Facility http://censusindia.gov.in/DigitalLibrary/MFTableSeries.aspx
- District Census Handbook 2011 (Population Census Abstract Data Table (India & State/UTs-Town/Village/WardLevel) http://censusindia.gov.in/2011census/population_enumeration.html
- IHHL, SBM data, Lakhimpur, Uttar Pradesh (2019-2020)
- ULB Data (2019)
- Service Level Improvement Plan, AMRUT Mission, Lakhimpur Nagar Palika
- MoSJE. 2014. The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013 [18th September, 2013]. Ministry of Social Justice and Empowerment

- MoUD. 2017. National Policy on Faecal Sludge and Septage Management. Ministry of Urban Development
- MoUD. 2014. Guidelines for Swachh Bharat Mission.: Ministry of Urban Development. Government of India
- MoUD. 2013. Septage Management in Urban India. Ministry of Urban Development, Government of India
- Detailed Project Report of FSTP, Jal Nigam, Lakhimpur, Uttar Pradesh
- ODF and ODF+ Certificate (2019)
- Assessment of Excreta Management: SFD factsheets for 66 cities in Uttar Pradesh (2018)

Key Informant Interviews (KII)

- KII-1, 2020; Interview with Mr. Jitendra Singh, Sanitary and Food Inspector, Lakhimpur Nagar Palika Parishad
- KII-2, 2020; Interview with Mr. Vikrant Verma, District Program Manager, Lakhimpur Nagar Palika Parishad
- KII-3, 2020; Interview with Ms. Priya Mishra, Urban Infrastructure Specialist (AMRUT) , Lakhimpur Nagar Palika Parishad
- KII-4, 2020; Interview with Mr. R B Shrivastava, Executive Engineer, U P Jal Nigam
- KII-5, 2020; Interview with Mr. Yogendra Kumar Neeraj, Assistant Engineer, U P Jal Nigam
- KII-6, 2020; Interview with Mr. Raghav Arora, FSTP Contractor
- KII-7, 2020; Interview with Mr. Parikrama Prasad, Principal of Dr B R Ambedkar School
- KII-8, 2020; Interview with Mr. Afsar, Farzana Septic Tank (Private Desludging Operator)
- KII-9, 2020; Interview with Mr. Genral, Nazia Septic Tank (Private Desludging Operator)
- KII-10, 2020; Interview with Mr. Santosh Kumar (PT Care Taker)
- KII-11 2020; Interview with Mr. Akash Kumar Valmiki (ULB Desludging Operator)
- KII-12, 2020; Interview with Mrs. Shipra Bajpai, Principal of Saraswati Vidhya Mandir

Focus Group Discussions (FGD)

- FGD-1, 2020; Focus Group Discussion with masons
- FGD-2, 2020; Focus Group Discussion with Emptying Service Providers
- FGD-3, 2020; Focus Group Discussion with Ward Sanitation Heads

Field Observations

- Survey of Public toilet (6 nos) and community toilets (3 nos)
- Visit to 1 under construction FSTP
- Visit to approximate 35 households covering Lower Income Groups (LIG), Middle Income Groups (MIG) and Higher Income Groups (HIG) spread throughout the city.
- Visit to Nagar Palika Parishad and Jal Nigam of Lakhimpur
- Visit to 3 Educational Institutions, 3 Government Institution and 1 Market place

Lakhimpur, India, 2020

Produced by:

CSE, Abhishek Bharti

Editing:

CSE, Dr Suresh Kumar Rohilla

CSE, Rahul Mankotia

This SFD lite report is available from:

www.sfd.susana.org

SFD Promotion Initiative