

Draft SFD Lite Report

Lakhimpur India

This SFD Lite Report was prepared by
Centre for Science and Environment

Date of production/ last update: 16/09/2020

1 The SFD Graphic

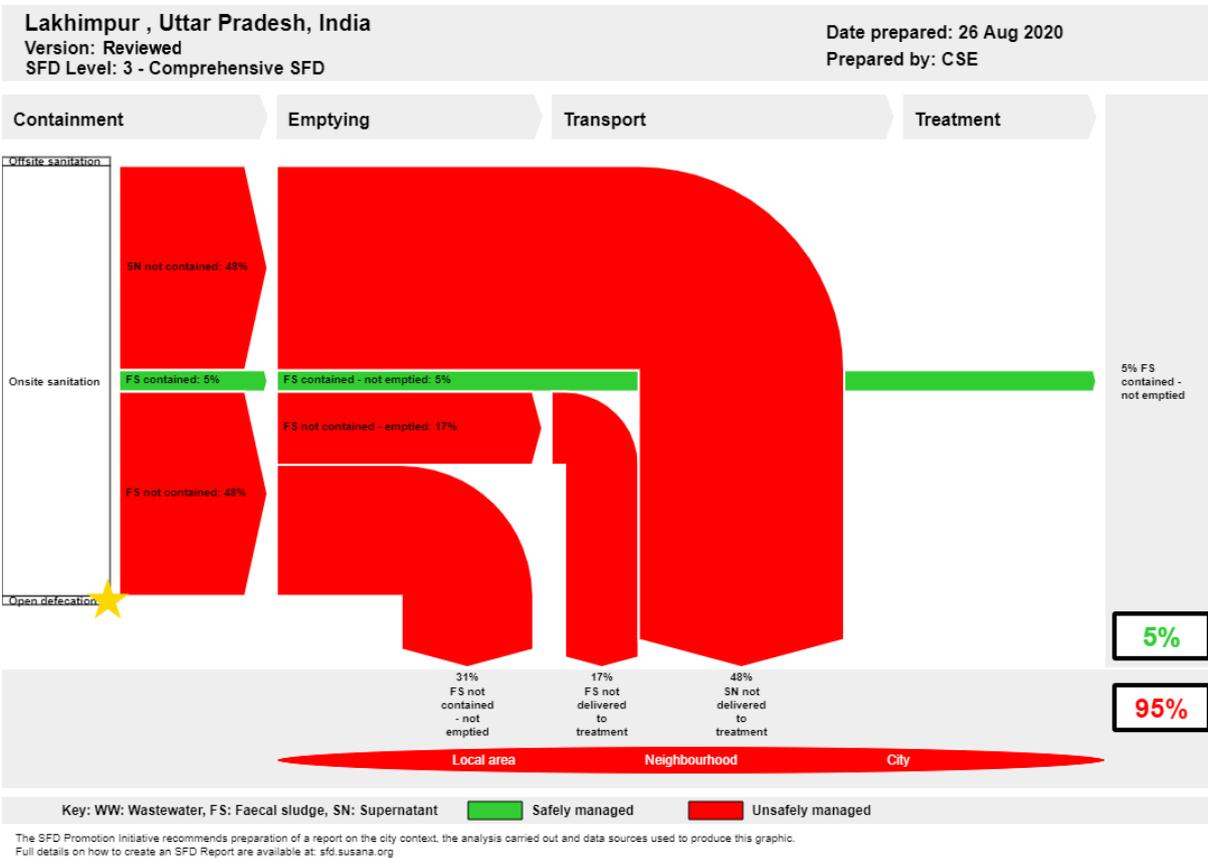


Figure 1: SFD Graphic (Abhishek/CSE, 2020)

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, with a total area of 7,680 square kilometres (2,970 sq. mi) out of which 10.10 square kilometre is the Lakhimpur Nagar Palika. The national government designated Lakhimpur Kheri as a Minority Concentrated District on the basis of 2001 census data, which identifies it as requiring urgent aid to improve living standards and amenities. A 2010 survey published by the Ministry of Urban Development placed Lakhimpur as the second lowest ranking city in India in terms of sanitation. Lakhimpur was formerly known as Luxmipur. Another theory suggests that the name derives from the khair trees that once covered large tracts in the area.

Nagar Palika Parishad Lakhimpur was established on 14th July 1968. Nagar Palika has updated in 2nd Class Board by the letter no. 1348V/5997 dated 16th May 1958. 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	City Sanitation Plan*
2025	175950	4.76	City Sanitation Plan*

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.

4 Service outcomes

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		
T1B11 C7 TO C9 Open defecation	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:

4.1 Offsite Systems

As of now the Lakhimpur city has no sewer system for offsite containment (Field Observation; KII-1 and 5, 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).

4.2 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, 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, Previous SFD and KII-11,2020).

The general size of STs and FLTs varies from 6 – 12 ft * 2 – 6 ft * 6 – 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 680.44¹) (Field Observation). The septic tanks are two or three chambered with proper partition walls including plastered bottom whereas the FLT's are single chambered with impermeable walls & sealed vaults. 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

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 m 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 m which are desludged in 3-4 month(Field Observation; KII-12, 2020). The commercial buildings including Schools, Government Offices, Market Buildings, etc have ST in their premises as containment system (Field Observation; KII-8, 2020). One school was found with the sealed tanks whose outlet was directly connected to the open drain (Nala), the strength of that was school was 1280 and has not performed emptying from last 12-15 years (Field Observation; KII-14, 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 but the constructed PT/ CTs by the Nagar Palika Authorities under Swatch Bharat Mission across the city especially for the areas of Below Poverty Line (BPL), densely populated areas around the city centre and near OD hotspots; as a result, the city has achieved ODF as well as ODF+ status in 2019 based on National Policy on FSSM (KII-3 and 4, 2020). In the survey it was found that in almost all the 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 is dependent on Government operated mechanised desludging service as well as private one for emptying faecal sludge from STs/FLT's (Field Observation; FGD-2, 2020; KII-9, 10 and 13, 2020). The emptying frequency varies from 6 months to even 10 years (demand based) across the

¹ Conversion based on September,12, 2020

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 STs and FLT's from a decade and a half, indicating a need for better IEC intervention and city level scheduled desludging plan. As of desludging criteria, if it was found that duration of desludging was above 4-5 years, then the containment system was considered as FLT. 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-13, 2020).



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

Form are filled by the households at the time of emptying service for record keeping by NP (FGD-2, 2020). Emptying service is carried out by 3 workers and charges are different for both the operators; NP 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 NP's service providers and hence free of cost (KII-12, 2020). The desludging vehicles are maintained properly by NP 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).

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). Since, 70% of FS getting emptied (F3) from ST and 20% from FLT is dumped in open ground which is found to be around 68,36,880 L in volume.



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

Treatment/Disposal: The Lakhimpur has no Sewage Treatment Plant as well as Faecal Sludge Treatment Plant as of now (Field Observation). Currently, a FSTP is under construction which is located near Majra farm 15 km outside the city and near the Ull river (DPR, KII- 5 and 6, 2020). Construction of this FSTP started in the beginning of 2020 and has completed 25% of its construction. Model and technology of FSTP is a hybrid of many essential stages which are taken from various other models which are currently functional in various other cities (KII-6, 2020).



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

Estimated date of its completion and operation is January, 2021 which might get affected due to ongoing pandemic (KII-7, 2020).

5 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.

- 50% of the contents of Septic tanks and Fully lined tank is Faecal sludge
- Unlined pit which is 2% and Lined pit with semi-permeable wall (no outlet) is 3%, based on the data of Census, previous SFD and interviews with masons
- Floating population is not of considerable number
- 40% of ST from household survey does not meet standard guidelines and hence converted to FLT
- CTs/PTs cover almost the entire area of the city but few cases of OD were reported during the field observation hence we can assume it is because of behavior of some portion of the population which still practice OD

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)
- City Sanitation Plan, Lakhimpur Nagar Palika (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)
- SFD Report, Lakhimpur, Uttar Pradesh (2015)

Key Informant Interviews (KII)

- KII-1, 2020; Interview with Mr. Jitendra Singh, Sanitary and Food Inspector
- KII-2, 2020; Interview with Mr. Vikrant Verma, District Program Manager
- KII-3, 2020; Interview with Miss Priya Mishra, Urban Infrastructure Specialist (AMRUT)
- KII-4, 2020; Interview with Mr. Anurag Tiwari, Computer Operator
- KII-5, 2020; Interview with Mr. R B Shrivastava, Executive Engineer (Jal Nigam)
- KII-6, 2020; Interview with Mr. Yogendra Kumar Neeraj, Assistant Engineer (Jal Nigam)
- KII-7, 2020; Interview with Mr. Raghav Arora (FSTP Contractor)
- KII-8, 2020; Interview with Mr. Parikrama Prasad (Principal)
- KII-9, 2020; Interview with Mr. Afsar (Farzana Septic Tank)
- KII-10, 2020; Interview with Mr. Genral (Nazia Septic Tank)
- KII-11, 2020; Interview with Mr. Dhirendra Kumar Valmiki (Field Assistant)
- KII-12, 2020; Interview with Mr. Santosh Kumar (PT Care Taker)
- KII-13, 2020; Interview with Mr. Akash Kumar Valmiki (Driver)
- KII-14, 2020; Interview with Mrs. Shipra Bajpai (Principal)

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

SFD Promotion Initiative



Lakhimpur, India, 2020

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