SFD Lite Report

Sidhauli

India

This SFD Lite Report was prepared by
Centre for Science and Environment (CSE).

Date of production/ last update: 01/12/2020

1 The SFD Graphic

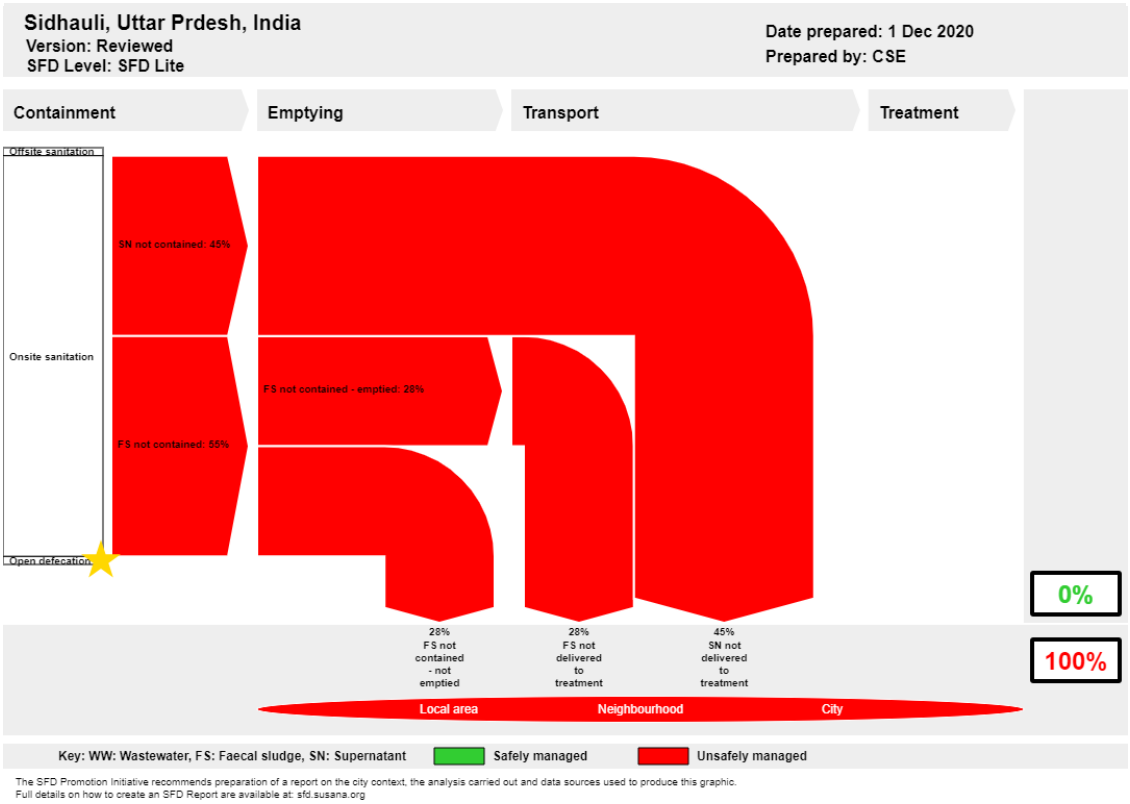

Figure 1: SFD Graphic for Sidhauli.

2 SFD Lite information

Produced by:

- Centre for Science and Environment (CSE), 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 Ms.Sarvesh Shukla, Executive Officer, Mr.Susheel Kumar Sharma, Junior Engineer, Mr.Prasant Kumar, Mr.Binoo Bhaskar, Sidhauli Nagar Panchayat (SNP) for providing all the required secondary data and cooperating for Key Informant Interviews (KIIs) and Focussed Group Discussions (FGDs).

Collaborating partners:

- Nagar Panchayat, Sidhauli, Uttar Pradesh.

Date of production: 01/12/2020

3 General city information

Sidhauli is a town and a *Nagar Panchayat* in Sitapur District in the state of Uttar Pradesh. It is a crowded town situated near Lucknow. The Sidhauli city is divided into 14 wards. The Gomti River flows through the town.

As per Census 2011, Sidhiauli has a population of 24,976 residing in 4,153 households. The population of the city, as per *Swachh Survekshan* (country wide annual ranking mechanism for cities with respect to sanitation) conducted in 2019 and the Service Level Benchmark, 2019 for 14th Finance Commission, is 30,976[1]. This population is used for the preparation of the SFD graphic. The urban local body governing the town is Sidhauli Nagar Panchayat (SNP). SNP has an administrative area of 12 sq.km which is divided into 14 wards. The density of the city is 4,594 people per sq.km which is high in comparison to state density of 2,081 people per sq.km.[2]

The geographical coordinates of Sidhauli are 27.6° and 28.6° north latitude and 80.34° and 81.30° east longitudes. The topography of Sidhauli is plain and Terai lowlands at the base of the Himalayas, with rivers and lush green vegetation.The average rainfall is 952 mm. Temperature rises to 40°C and drops to 19°C. The soil type is alluvial (Khadar + Bangar) with occasional gravel and boulder. Table 1 shows the population growth in Sidhauli in the past two decades.

Table 1: Population Growth rate Barwar (Source: SNP, 2020, Census, 2011).

Census Year	Population	Growth Rate (%)	Source
2001	20,000	-	Census 2001
2011	24,976	1.24	Census 2011
2019	30,976	1	SNP

4 Service outcomes

Sidhauli, Uttar Prdesh, India, 1 Dec 2020. SFD Level: not set
Population: 30976
Proportion of tanks: septic tanks: 50%, fully lined tanks: 50%, lined, open bottom tanks: 100%

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	50.0	0.0	0.0	0.0	0.0
T1A3C6 Fully lined tank (sealed) connected to an open drain or storm sewer	60.0	50.0	0.0	0.0	0.0	0.0
T1A4C6 Lined tank with impermeable walls and open bottom, connected to an open drain or storm sewer	10.0	50.0	0.0	0.0	0.0	0.0

Table 2: SFD matrix for Sidhauli.

The SFD graphic shows that 100% of the excreta generated are unsafely managed (Figure 1).

[1] KII with Executive Officer, Sidhauli.
[2] District Census Handbook 2011 Sitapur for Sidhauli (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.

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

4.1 Offsite Systems

There is no sewerage network in the city within the administrative boundary of Sidhauli.

4.2 On-site Sanitation Systems

Containment: Based on sample household survey, KIIs and FGDs with relevant stakeholders, it is observed that 100% of the population is dependent on the On-site Sanitation Systems (OSS).[3,4,5] The most prevalent OSS in Sidhauli are fully lined tanks (FLT) connected to open drains (T1A3C6, 60%) and septic tanks connected to open drains (T1A2C6, 30%) and lined tanks with impermeable walls and open bottom with no outlet and no overflow (T1A4C6, 10%). Figure 2 and Figure 3 show examples of septic tanks. According to the Executive Officer and Junior Engineer, SNP Individual Household Latrines (IHHL) have been provided to 896 households having no toilets or access to community toilets in the vicinity or to households with insanitary toilets as of October 2020, under Swachh Bharat Mission (SBM-Urban).

Figure 2: Two chambered circular septic tank (Source: Naveen/CSE/2020).

Figure 3: Septic tank under construction (Source: Naveen/CSE/2020).

Community Toilets/Public Toilets: There are 7 community toilets and 2 public toilets in Sidhauli which have Septic Tanks connected to Open Drain (STOD)[6] as their containment system. The average size of FLT in community toilets is 12 x 6 x 8 m (Figure 4). The average size of FLT (septic tanks) in public toilets is 6 x 3 x 6 m. The majority of the CT/PTs have been recently constructed under SBM and hence have not yet reached at stage where emptying is required, which would be further stretched due to low number of people actually using these facilities and every household in the city having its own functional toilet.

Figure 4: Community toilet constructed under SBM (U) (Source: Naveen/CSE/2020).

[3] Field Obsevations.
[4] KIIs with Executive Officer and household surveys.
[5] FGDs with sanitation workers.
[6] Field observations from visits to different Community and Public Toilets, 2020.

Emptying: The city does not have any private desludger operating and, as a result, it is dependent on government owned desludging service provider for emptying Faecal Sludge (FS). SNP owns one vacuum tanker which is operational[7]. City has narrow and congested roads, however, manual scavenging was not observed during field observation and KIIs with households. Hence, its effect is not considered while generating the SFD graphic due to insufficient data. The vacuum tanker is equipped with a motorised pump, storage tank of 3,000 litres capacity and a 250 ft (76.2 m) long hose pipe to access containment systems in narrow roads and congested areas (Figure 5).

Desludging is usually carried out by three people (one driver + two helpers) and a fee of INR 2,500 (3USD) per trip is charged. The variation in fees depends upon the size of the containment system and the extent of solidification of sludge at the bottom. The government operator who provides desludging services in Sidhauli operates from SNP Office. Emptying of containments in Sidhauli is done on demand basis and, on an average, the operator completes 3-4 trips in one month.

The frequency of emptying varies from 15 to 20 years or more as the majority of the containment systems in the city are LTs with impermeable walls connected to open drain. It was observed that households that are taking too long to get their containments emptied are rather using their systems without emptying and hence, it was assumed that the population using their systems with emptying (variable F3) is taken as 50% for all sanitation systems.

Figure 5: ULB owned vacuum tanker (Source: Naveen/CSE/2020).

Transportation: The emptied faecal sludge is transported using tractor-mounted vacuum tankers. These vehicles cover a distance of 3-5 km per trip on an average[8] after desludging from the households and they decant the emptied FS in the nearby agricultural fields. In the KII with the government emptier, it was revealed that time taken for emptying and discharge of FS is 1-2 hours on an average. In SNP Sidhauli, there are no FS treatment facilities. However, the supernatant from the septic tanks and fully lined tanks flows in the open drains. Thus, variables F4, S4e and S5e were set to 0% for all sanitation systems.

Treatment/Disposal: SNPP has no designated site for the disposal of FS[9]. Therefore, in the absence of such provision, the government emptiers discharge the faecal sludge in nearby agricultural fields[10]. Usually. Local farmers allow them to discharge the FS on their farm lands, which is later used by farmers as a soil fertiliser. Sometime.s farmers tip them on discharging FS regularly in times of need since there is no proper treatment of emptied FS. Thus, variable F5 was set to 0% for all sanitation systems.

[7] KII with Executive Officer and Computer Operator, Sidhauli Nagar Panchayat.
[8] KII with SNP emptying operators, Sidhauli.
[9] KII with Executive Officer, BNP,Sidhauli.
[10] Field observation, 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 KIIs, FGDs, observations and secondary data collected from relevant stakeholders at Barwar. Following assumptions were made for developing the SFD graphic for Sidhauli:

- 80% of water supplied is wastewater generated.
- 50% of the contents of septic tanks and fully lined tanks is faecal sludge (step two of the Graphic Generator).
- 100% of the wastewater flows in the open drain/water bodies.

6 Context-adapted SFD Graphic

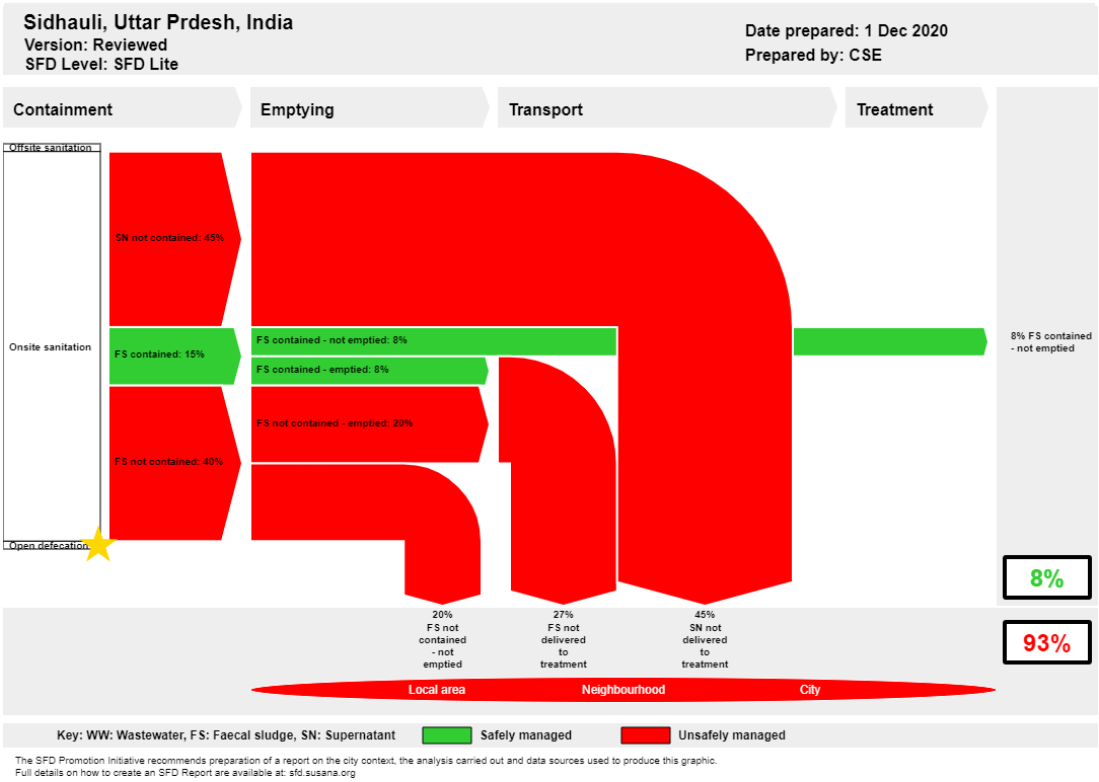

Figure 6: Context-adapted SFD Graphic for Sidhauli.

The only difference suggested in the context-adapted SFD is at containment stage. The faecal sludge portion of correctly designed septic tanks is considered as safely managed, even though connected to open drains. Therefore, 8% of the faecal sludge is considered as safely managed since it is faecal sludge contained and not emptied. All the supernatant is considered as unsafely managed as well.

7 List of data sources

Reports and literature

- Sitapur District Census Handbook 2011 for Sidhauli (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
- Ground Water Brochure District ,Sitapur,for Sidhauli , U.P. (2014).
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Key Informant Interviews (KII)

- Executive Officer, Sidhauli ,SNP.
- Junior Engineer, Sidhauli, SNP.
- Clerk ,Sidhauli, SNP.

Focus Group Discussions (FGDs)

- Masons.
- Ward members.
- Residents.

Field Visits

- Public and Community toilets.
- Water Bodies.
- Disposal of faecal sludge.
- Random household survey.

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