SFD Lite Report

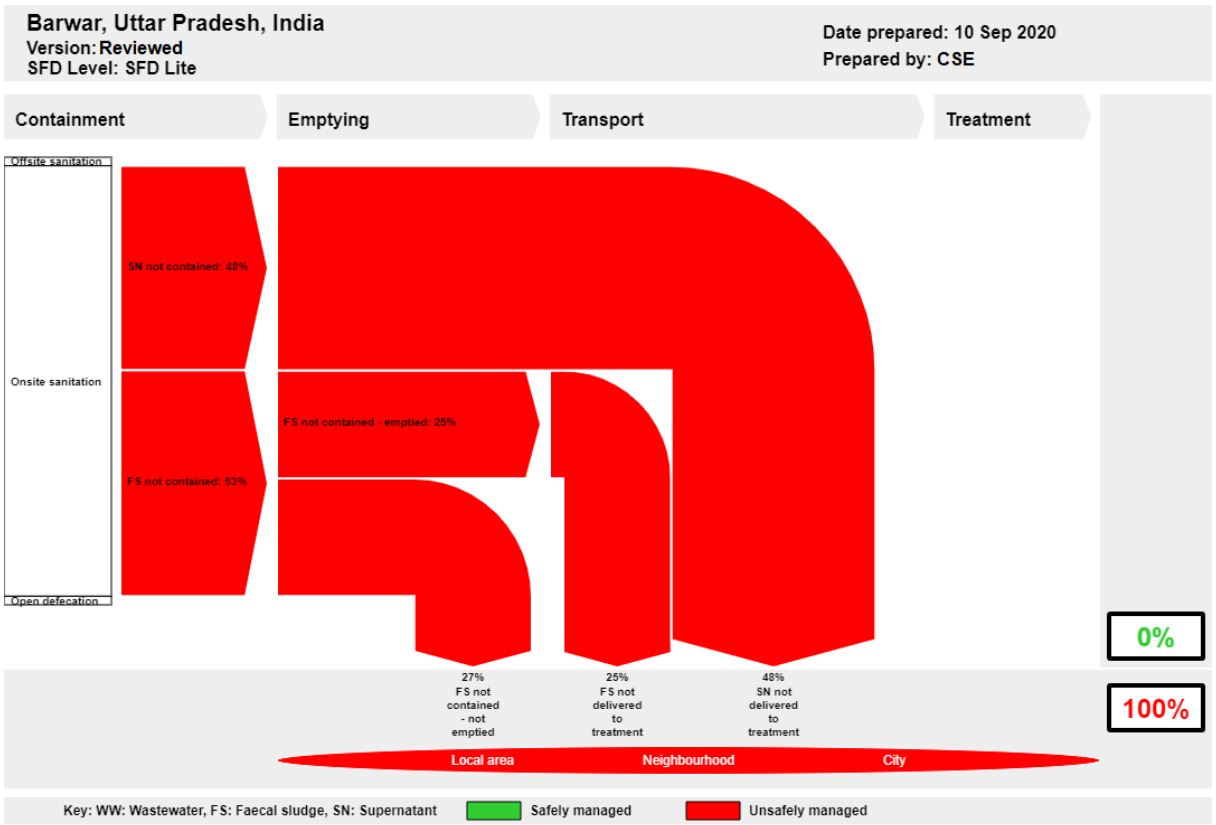
Barwar

India

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

Date of production/ last update: 17/09/2020

1 The SFD Graphic



The SFD Promotion Initiative recommends preparation of a report on the city context, the analysis carried out and data sources used to produce this graphic.
Full details on how to create an SFD Report are available at: sfd.susana.org

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 Ms.Sapna Bhardwaj , Executive Officer, Mr Kanhaiya Lal,Senior Clerk-cum- Sanitation Incharge , Mr Shanawaz, Computer Operator, Mr.Sobit Gupta,Computer Operator ,Mr.Narendra Kumar Singh JE,,Nagar Panchayat Barwar for supporting this SFD preparation.

Collaborating partners:

- Nagar Panchayat, Bawar, Uttar Pradesh

Date of production: 18/09/2020

3 General city information

Barwar is a town and a Nagar Panchayat in Lakhimpur Kheri District in the state of Uttar Pradesh It is a crowded town situated near Shahjanhanpur .The Gomti river flows through the town. The town is divided into 11 wards.

As per Census 2011, Barwar has a population of 14,196 residing in 1,229 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 Service Level Benchmark ,2019 for 14th finanace Commission are 16,510 corresponding to 1,368 households. This population is used for preparation of SFD. The urban local body governing the town is Barwar Nagar Panchayat (BNP). BNP has an administrative area of 4.54 sq.km which is divided into 11 wards. The density of the city is 4,594 people per sq.km which is high in comparison to state density of 828 people per sq.km.

The geographical coordinates of Barwar are 27.6° and 28.6° north latitude and 80.34° and 81.30° east longitudes. The topography of Barwar is plain and **Terai lowlands** at the base of the Himalayas, with one rivers and lush green vegetation.The average rainfall is 842 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 Barwar in past two decades.

Census Year	Population	Growth Rate (%)	Source
2001	11,808	-	Census 2001
2011	14,196	1.2	Census 2011
2019	16,510	1.6	BNP

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

4 Service outcomes

Barwar, Uttar Pradesh, India, 10 Sep 2020. SFD Level: SFD Lite
Population: 16510
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	5.0	80.0	0.0	0.0	0.0	0.0
T1A3C6 Fully lined tank (sealed) connected to an open drain or storm sewer	90.0	50.0	0.0	0.0	0.0	0.0
T2A5C10 Lined pit with semi-permeable walls and open bottom, no outlet or overflow, where there is a 'significant risk' of groundwater pollution	5.0	25.0	0.0	0.0		

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 Barwar.

4.2 On-site Sanitation Systems

Containment: Based on sample household survey, KIIs and FGDs with relevant stakeholders it is estimated that 100% population is dependent on the On-site Sanitation Systems (OSS). The most prevalent OSS in Barwar is fully lined tank connected to open drain outlet (T1A3C6, 90%). Other two prevalent systems in the city include septic tank connected to open drain (T1A2C6, 5%) and lined tank with semi-permeable walls and open bottom with no outlet and no overflow (T2A5C10, 5%).

Figure 1 : Fully lined tank connected to open drain

Figure 2 : Septic tank connected to open drain

Figure 3 : under construction single chamber fully lined tank

Figure 4 : under construction tank with semi permeable wall and open bottom

According to the Barwar BNP, Executive Officer and Senior Clerk-cum- Sanitation Incharge (KII-1,2), 1256 Individual Household Latrines (IHHL) have been provided to households having no toilets or access to community toilets in the vicinity or to households with insanitary toilets as of August 2020, under Swachh Bharat Mission (SBM). Fully Lined Tanks in Barwar are either square or rectangular in shape whereas septic tanks are mostly 2 chambered tanks. The size of these Fully Lined Tanks are much larger than conventional Septic Tanks. Most of the containment systems constructed under SBM are fully lined tanks connected to open drain. This is due to lack of technical know-how of local masons on designing a proper septic tank. Households only empty their containment systems when either they start overflowing or toilets get choked. Average emptying frequency is 10 years.

Community Toilets/Public Toilets: There are 5 community toilets and 7 public toilets in Barwar (KII-3) which have STOD as their containment system. The average size of FLT in community toilet is 12 x 6 x 8 ft. The average size of FLTseptic tanks in public toilet is 6 x 3 x 6 ft. As 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 5: Community toilet constucted underSBM(U)

Emptying: The city is dependent on Barwar Nagar Panchayat (BNP) owned vacuum tanker for services for emptying of faecal sludge (FS). BNP has one vacuum tanker which is operational. City has narrow and congested roads. The vacuum tanker are equipped with a motorised pump, storage tank of 5000 litres capacity and a 250 ft long hose pipe to access containment systems in narrow roads and congested areas (KII-4). During FGD with households and sanitation worker it was found that some cases of manual scavenging are still prevalent.

Desludging is usually carried out by 2 people (1 Driver + 1 Helpers) and a fee of INR 2000 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 Barwar operates from BNP Office. Emptying of containments in Barwar is done on demand basis and on an average he completes 3-4 trip in 1 months.

The frequency of emptying varies from 10 to 15 years or more as the majority of the containment systems in the city is fully lined tank lined connected to open drain. Hence, it was observed that households that are taking too long to get their containments emptied are rather using their systems without emptying. Hence, the percentage of containment emptied for fully lines tanks is assumed to be 50%. Properly designed septic tanks are emptied more frequently. Tanks with semi-permeable walls and open bottom are hardly ever emptied. (FGD-2)

Figure 6 : ULB owned vacuum tanker operators

Figure 7 : Water Bodies in city contaminated by domestic wastewater

Transportation: The emptied faecal sludge is transported using a tractor mounted vacuum tanker. These vehicles cover a distance of 5 to 8 km per trip on an average after desludging from the households and they decant the emptied FS in the nearby agricultural fields. In the KII with the government emptier (KII-4) it was revealed that time taken for emptying and discharge of FS is 1-2 hours on an average.Barwar NP does not have any FS treatment facility. However they have allotted the land under SBM(U) for constructing a Faecal Sludge Treatment Plant (FSTP).
The supernatant from the septic tanks and fully lined tanks flows in the open drains and ends up in various water bodies located in the city. (FGD-3)

Treatment/Disposal: BNPP has no designated site for the disposal of FS. Therefore in the absence of such provision the government emptiers discharge the faecal sludge in nearby agricultural fields. Usually local farmers allow them to discharge the FS on their farm lands, which is later used by farmers as a soil fertiliser.

Figure 8: Faecal Sludge disposed at agriculture field /Drain

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 stakeholdersat Barwar . Following assumptions were made for developing the SFD for Bithoor.

- 50% of the contents of FLT tanks and Septic Tank is Faecal sludge

6 Context adapted SFD Graphic

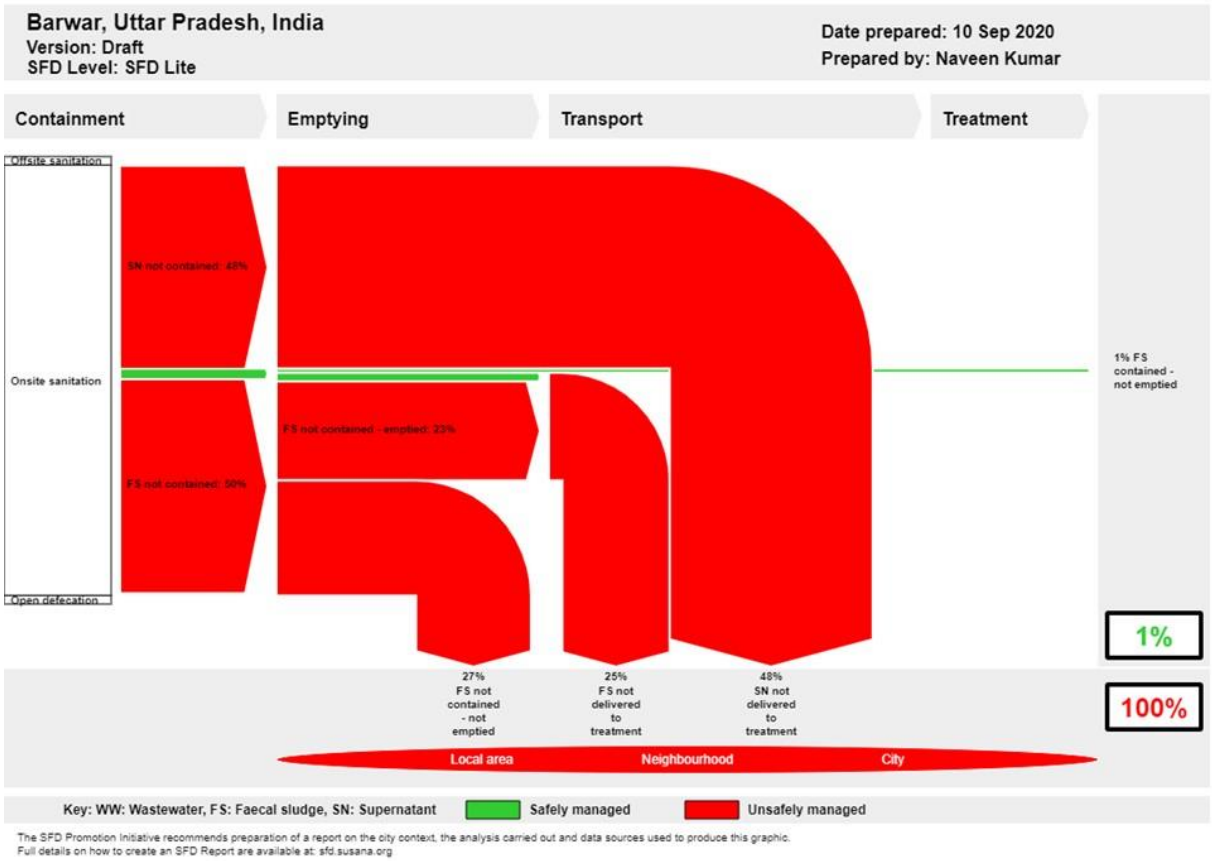


Figure 9: Context adapted SFD for Bithoor

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. The supernatant is such case considered as unsafely managed.

7 List of data sources

Reports and literature

- Lakhimpur Kheri District Census Handbook 2011 for Barwar (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 ,Lakhimpur Kheri ,for Barwar , U.P. (2014).
- IHHL, SBL,SBM data, Barwar, U.P (2018-2019).
- 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.

Key Informant Interviews (KII)

- KII-1: Executive Officer,Barwar , BNP
- KII-2: Senior Clerk –cum- Sanitation Incharge , Barwar,BNP
- KII-3: Computer Operator, Barwar,BNP
- KII-4 ; Vacuum Tanker Operator

Focus Group Discussions (FGD)

- FGD-1: Masons
- FGD-2: Ward members
- FGD-3: Residents from low income settlements
- FGD-4: Sanitation Workers

Field Visits

- Public and Community toilets
- Water Bodies
- Site for disposal of faecaL sludge
- Random household survey

Bithoor, India, 2020

Produced by:

CSE, Naveen Kumar

Editing:

CSE, Dr Suresh Kumar Rohilla

CSE, Rahul Mankotia

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