SFD Lite Report

JJ Resettlement Colony, Savda Delhi India

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

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1 The SFD Graphic

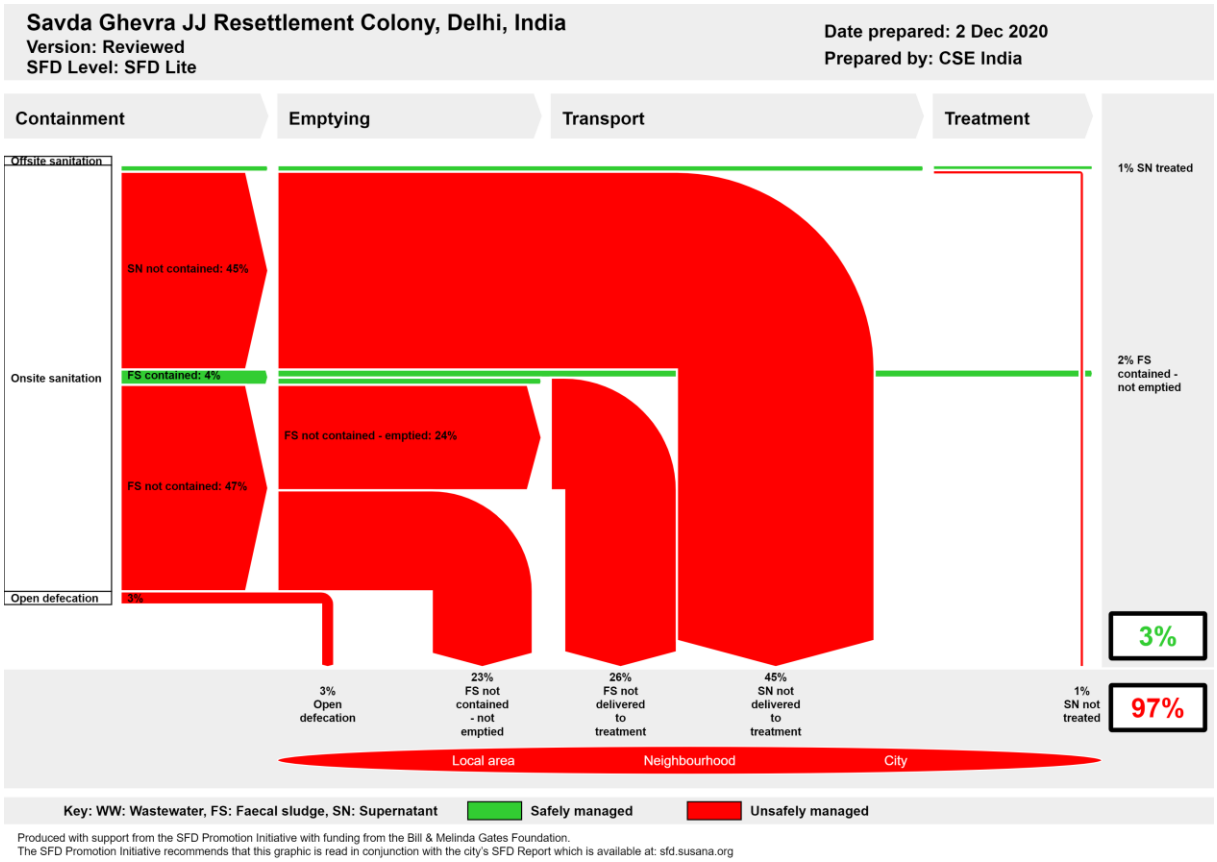

Figure 1: SFD Graphic for JJ Resettlement Colony, Savda, Delhi.

SFD Lite information

Produced by:

- Centre for Science and Environment, New Delhi.
- This report is compiled as part of SFD Promotion Initiative project funded by Bill and Melinda Gates Foundation (BMGF). We would like to thank Mr Pranav, Mr Mishra and Ms Rinku from CURE, Mr Jeet Kumar, Junior Engineer from DUSIB for supporting and providing the data required and other locals for cooperating for Key Informant Interviews (KIIs) and Focussed Group Discussions (FGDs).
- This report would not have been possible without constant support of local residents and CURE team who supported us with the ground level information about the study site.

Collaborating partners:

- North Delhi Municipal Corporation, DUSIB.

Date of production: 22/12/2020

2 General city information

The Savda Ghevra JJ Resettlement Colony was established in 2006. Spread across 250 acres, it was built on agricultural land owned by the neighbouring villages- Savda and Ghevra. It is located 30-40 km away from Delhi's city centre near the Delhi- Haryana border in Tikri (Figure 2). There are no official estimates of the population but the colony is estimated to have a population over 46,000 (as of 2014). As per the discussions with the local public, NGOs and the MLA office, the current population of the colony is estimated to be around 55,000.

The residents of the colony moved in two phases in 2006-07 and 2009-10 from 17 JJ clusters within Delhi, in the run up to the 2010 Commonwealth Games. The colony is divided into 19 blocks, of which 13 are allotted/occupied. There are 8,686 plots (Sheikh, Banda and Mendelkern 2014) that were allocated on the basis of proof of duration of residence in the JJ resettlement Colony from which the residents were relocated. Those with proof of residency prior to 1990 were allocated 18 square metre plots; those with proof of residency prior to 1998 were allocated 12.5 metre plots to construct houses themselves. Currently, 6,500 HouseHolds (HHs) are estimated to be living in the colony[1].Its gridded blocks of mostly *pukkah* homes, built up to three stories, consist of the original allottees, buyers from the original allottees and the tenants.[2]

Figure 1: Map showing the location of JJ Resettlement Colony Savda.

The colony was built in two phases including a total of 8,686 plots spreading from block A to K in phase 1 while block L to O in phase 2. In phase 3, 7,620 five storied flats were constructed for Economically Weaker Section (EWS) Housing for Slum Dwellers at Savda Ghevra. Till 2019, the main source of water was tankers supplied by the Delhi Jal Board (DJB) twice a week,groundwater accessed via privately installed motors and Sarvajal Water ATMs which started as a Corporate Social Responsibilty (CSR) activity but in 2020, DJB started its piped water supply which is accessible to all of the households (HHs).

[1]https://www.ircwash.org/sites/default/files/rapid_assessment_for_sanitation_services_in_savda_ghevra_-_15052018.pdf

[2] The right to water and sanitation for the urban poor in Delhi https://medialibrary.uantwerpen.be/oldcontent/container2621/files/The%20right%20to%20water%20and%20sanitation%20for%20the%20urban%20poor%20in%20New%20Delhi.pdf

The entire resettlement site of Savda Ghevra has 19 blocks (labelled from A to S). Each block has only one community toilet, irrespective of its size. Residents have to pay two rupee per person for using the toilet.

The sewerage system on the site is not connected to the city's sewerage network. As a result, sewage disposal is very inadequate in Savda Ghevra. Almost all families have constructed septic tanks under their houses. This has led to structural inefficiencies resulting from a lack of know-how and skill regarding construction techniques and methods. The open drains that have been built are very wide, and people complained of the risk of infants and young children falling into them[3].

North Delhi Municipal Corporation (NDMC) is responsible for providing civil services in Savda Ghevra. Delhi Uraban Shelter Improvement Board (DUSIB) is responsible for providing civic amenities as well as resettlement. Delhi Jal board is responsible for providing potable water for drinking purposes and laying down the sewerage network for wastewater and treating of the same.

[3]Forced to the fringes.

4 Service outcomes

JJ Resettlement Colony, Savda, Delhi, Delhi, India, 2 Dec 2020. SFD Level: SFD Lite
Population: 55000
Proportion of tanks: septic tanks: 50%, fully lined tanks: 50%, lined, open bottom tanks: 100%

Containment								
System type	Population	Emptying	Transport	Treatment	Transport	Treatment	Transport	Treatment
	Pop	F3	F4	F5	S4d	S5d	S4e	S5e
System label and 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 sewer system, which is delivered to treatment plants	Proportion of supernatant in sewer system that is 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
T1A2C3 Septic tank connected to a decentralised combined sewer	3.0	50.0	0.0	0.0	100.0	75.0		
T1A2C5 Septic tank connected to soak pit	2.0	90.0	0.0	0.0				
T1A2C6 Septic tank connected to open drain or storm sewer	3.0	90.0	0.0	0.0			0.0	0.0
T1A2C9 Septic tank connected to 'don't know where'	2.0	90.0	0.0	0.0				
T1A3C6 Fully lined tank (sealed) connected to an open drain or storm sewer	87.0	50.0	0.0	0.0			0.0	0.0
T1B11 C7 TO C9 Open defecation	3.0							

Table 1: SFD Matrix for JJ Colony, Savda, New Delhi.

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

4.1 Offsite systems

As per the DUSIB officials[4], the colony never had any sewer network for phase 1 and phase 2 blocks. The phase 3 EWS flats are connected with sewer and designated the place of sewage treatment plant but there is no inhabitants yet so not functional. Till the time it gets functional, they have made a provision of soak pit. The colony is completely dependent on on-site sanitation systems which may or may not be connected to open drains outside out of which about 139 households (of 322 plots) in block A of the colony are connected to a communal septic tank. The open drain in the colony ends up in a canal flowing nearby (Figure 3).

Figure 2: Canal being used as faecal sludge discharge site (Jyoti Parsad/CSE/2020).

4.2 On-site Sanitation systems (OSS)

[4]KII with DUSIB official.

Containment: Based on the sample household survey (Figure 4), KIIs and FGDs [5], with relevant stakeholders, the colony is 97% dependent on OSS (shared or personal). Over 80% of the households have toilet facilities. The most prevalent OSS in the colony is a Fully Lined Tank (FLT) connected to open drain (T1A3C6, 87%) in households (Figure 5). FLT type of containment systems are present universally all over the colony as observed during field survey. FLTs are either square or rectangular in shape depending upon the area available whereas septic tanks are 2-3 chambered tanks (Figure 5). The size of the tanks is generally decided by the factors like space availability and economic status of the household. The average size of the containment system, as observed on ground and discussed in FGDs, varies from 2 cubic metre to 8 cubic metres.[6,7,]

Figure 4: Household Survey (Sumita/CSE/2020).

As per the data received from DUSIB (Figure 7)[8], there are 19 Community Toilets (CT) in the colony which are maintained by NDMC[9]and out of these, 13 are functional. As most of the houses in the colony have toilets, CTs are not being used much. The containment size of CTs were around 80 cubic metre in size and 3 metre in depth.[10] There are two types of septic tanks present in these CTs, septic tanks where the outlet or overflow discharge is not confirmed where it goes (T1A2C9, 2%) and septic tanks connected to open drains (T1A2C6, 3%) while in institutions like schools (Figure 8), septic tanks are connected to a soak pit (T1A2C5, 2%). The minimum and maximum depth of the tanks is ranging from 5 to 7 feet (0.3 to 2.1 metres)[11].

Figure 5: A fully lined tank connected to open drain (Jyoti Parsad/CSE/2020).

Figure 6: A septic tank under construction (Jyoti Parsad/CSE/2020).

Approximately 3% of the population inhabitating in *jhuggis* (a slum dwelling typically made of mud and corrugated iron) practise open defecation.

[5]KII with desludgers.
[6] Field observations during sample households survey.
[7] FGDs with mechanical emptiers.
[8] FGD with DUSIB.
[9] IRC Rapid assessment.
[10]FGDs with CTC care taker.
[11] FGDs with mason.

As a part of the Centre for Urban and Regional Excellence CURE initiative, 139 HHs in A block of the colony are connected to a Communal Septic Tank (CST). The CST has four components: home toilets, built by people themselves; a shared septic tank; a network of simple sewer lines with manhole links to home toilets; and a Decentralized Waste Water Treatment System (DEWATS).

Figure 7: Interaction with DUSIB officials (Sumita/CSE/2020).

Figure 8: KII with school health and safety in charge (Sumita/CSE/2020).

Emptying: The colony is dependent on private emptying operators for emptying of Faecal Sludge (FS). There are two private desludging operators in the city which provide emptying services through mechanical means (Figure 9)[12].

Figure 9: Interview of CTC caretaker (Sumita/CSE/2020).

The mechanical desludging is usually carried out by two people (one driver + one helper) and a fee of INR 500 – 600 (USD7-8) per trip is charged. The variation in fees depends upon the size of the containment system. One of the private emptier operates from Savda Village while the other is a resident of the colony itself. Emptying in JJ colony is done on demand and on an average, 3-4 trips are done per day in the colony (Figure 10). Advertisements of emptiers could be seen on electric poles, wall paintings, etc.

Most of the people get their tanks emptied, but not in a scheduled manner, the frequency of emptying varies from 3 months to several years. Hence, it was assumed that households that are taking too long to get their tanks emptied are directly discharging the effluent in the open drains. Subsequently, the population using their systems with emptying (variable F3) is estimated to be 50% for FLTs and 90% for STs[13]. The communal septic tank (CST) is designed to empty solid sludge every two years but that is also not done on regular basis, hence F3 for this system (T1A2C3) is estimated to be 50%. The emptying of the septic tanks of community toilets is also done as per request. There was no use of personal protective

Figure 10: Desludging vehicle (Jyoti Parsad/CSE/2020).

[12] FGD with private operators
[13] KII with emptiers, CTC caretaker and household surveys.

equipment during emptying and process of emptying involves some spillage at the time of removing and cleaning the suction pipes.

Transport: There are two private desludging operators in the city who have 2 vacuum tanks which are mounted over a tractor to transport emptied faecal sludge. The vacuum tankers are equipped with a motorised pump, an storage tank of 4,000 L capacity and a 100 ft (30.4 m) long hose pipe to access containment systems in narrow roads and congested areas. For CSTs, a shared septic tank is connected through a network of simple sewer lines with manhole links to home toilets and a Decentralized Waste Water Treatment System (DEWATS), hence variable S4d of the system T1A2C3 depicting the proportion of the supernatant in sewer system which is delivered to treatment plant has been set as 100%.

Treatment/ Disposal: JJ Colony has no designated site for discharge of FS. The mechanical emptiers usually illegally discharge FS in a canal running nearby named as *Bawana nahar* which ultimately meets in Najafgarh drain (Figure 11). Thus, variables F4 and F5 for systems T1A2C5 and T1A2C9were both set to 0%. The supernatant from systems T1A2C6 and T1A3C6 flows in open drains which finally also ends in an open canal which also ends in the same canal (variables S4e and S5e both set to 0%). The supernatant from the communal septic tank is conveyed through simple sewer lines to the Decentralized Waste Water Treatment System (DEWATS) which after treatment is discharged to the canal flowing nearby[14]. The treatment efficiency of the DEWATS could not be judged due to absence of testing reports of treated water. However, the poor operation and maintenance of the system reflects the poor treatment. Thus, the treatment of the supernatant received from CSTs was estimated by setting variable S5d for systemT1A2C3 to 75%. The HHs pay Rs 50 (USD 0.66) per month for the connection, operation and maintenance of the communal septic tank and hence, they are spared of giving charges to private emptiers.

Figure 11: Disposal of septage in a canal (Sumita/CSE/2020).

5 Data and assumptions

The secondary data from the published documents 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. Following assumptions were made for developing the SFD graphic for JJ Colony, Savda.

- There is no official record of the population in the colony. Current population is based on the discussions with local NGOs, MLA office and residents.
- 80% of water supplied is wastewater generated.
- The proportion of FS in septic tanks, fully lined tanks and lined tanks with open bottom/all types of pits (step two of the Graphic Generator) was set to 50%, 50% and 100%, respectively, as per the guidance given in the Frequently Asked Questions (FAQs) in the Sustainable Sanitation Alliance (SuSanA) website.
- Proportion of OSS emptied is considered as 50% assuming 3 months of emptying required, based on the size of the tank and the number of people dependent on that system. So,

[14] FGD with CURE team.

households getting their systems emptied in less than 3 months are considered to be using their system with emptying and those who are taking more than 3 months are considered as discharging the supernatant into the open drain.

- The treatment efficiency of DEWAT is assumed as 75% keeping in view the lack of operation and maintenance and testing reports.

6 Context-adapted SFD Graphic

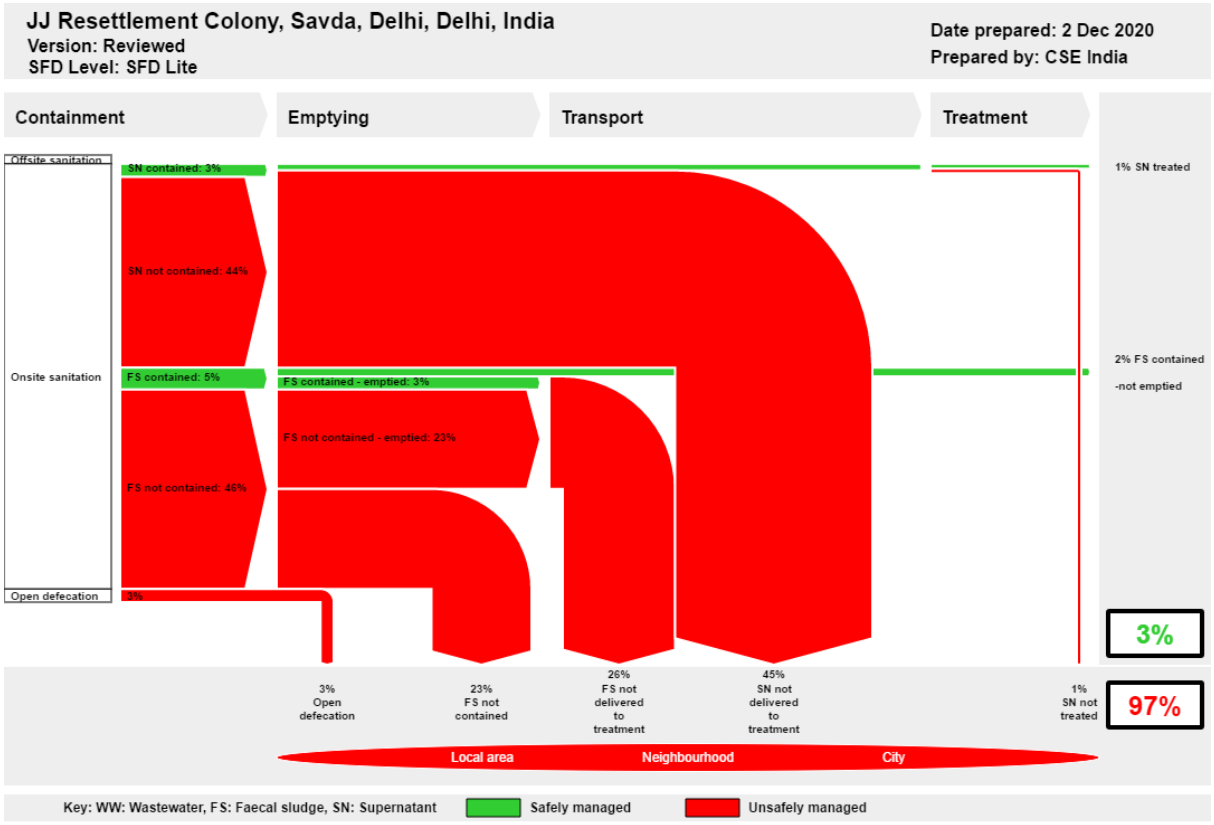

Figure 12: Context-adapted SFD Graphic for JJ Resettlement Colony, Savda.

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 it is connected to open drains. The supernatant is considered as unsafely managed as well.

7 List of data sources

Reports and literature

- Rapid assessment for sanitation services in Savda Ghevra https://www.ircwash.org/sites/default/files/rapid_assessment_for_sanitation_services_in_savda_ghevra_-_15052018.pdf
- https://www.thehindu.com/news/cities/Delhi/djb-taps-savda-ghevra-model/article7709334.ece
- http://waterdata.iwmi.org/Applications/savadha/#
- The Right to Water and Sanitationfor the Urban Poor in Delhi. https://medialibrary.uantwerpen.be/oldcontent/container2621/files/The%20right%20to%20water%20and%20sanitation%20for%20the%20urban%20poor%20in%20New%20Delhi.pdf
- A platform for resettlement: CURE's adaptive approach inSavda Ghevra

  https://cureindia.org/assets/files/SG-Midterm-Evaluation-R3-lowres.pdf
- Forced to the fringes:Disasters of 'Resettlement' in India

  http://www.hic-sarp.org/documents/Forced_to_the_Fringes_Complete.pdf

Key Informant Interviews (KIIs)

- Junior Engineer, DUSIB.
- School Health and Safety Incharge.
- Community Toilet caretaker.

Focus Group Discussions (FGDs)

- Masons.
- Private desludging operators.
- CURE team.
- Local residents.

Field Visits

- Public and community toilets.
- Open drains ending points.
- Random household survey.
- Visit to Decentralized Wastewater Treatment Plant (DEWATS).
- Faecal sludge discharge site.
- Open defecation site.
- School.

JJ Resettlement Colony, Delhi, India, 2021

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