

SFD Lite Report

Cumilla Bangladesh

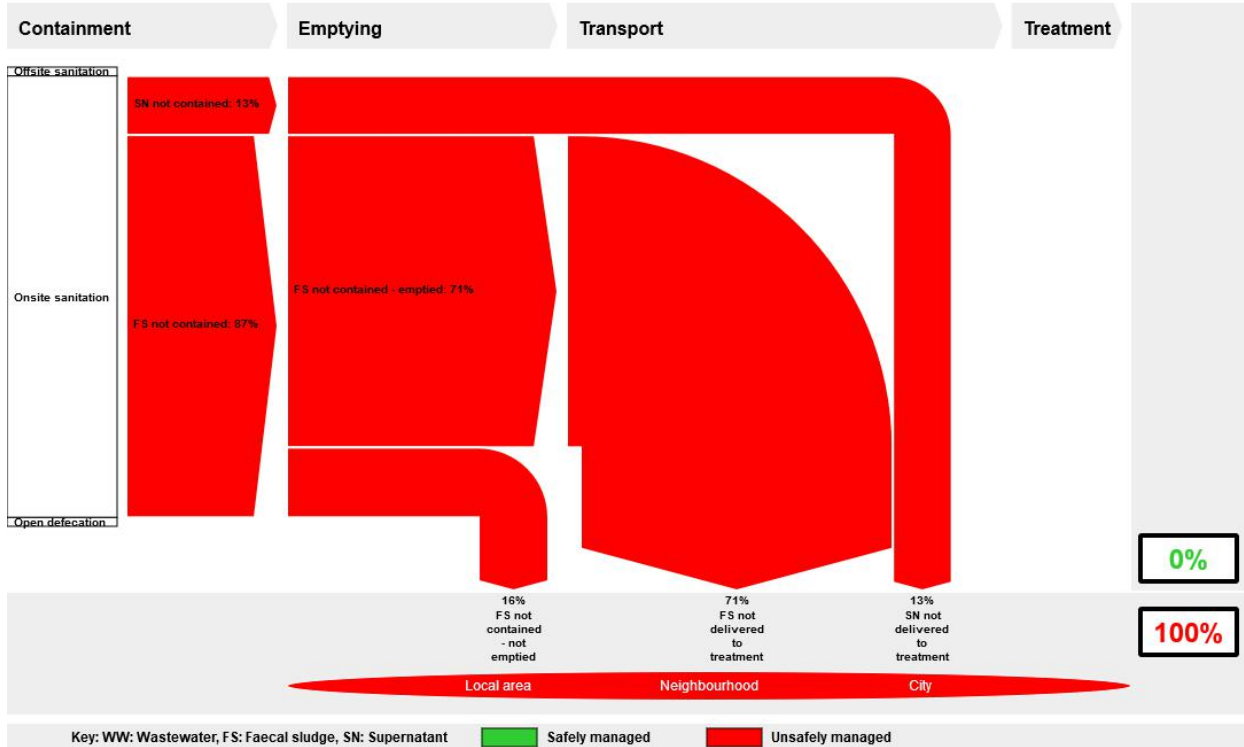
This SFD Lite Report was prepared by
WaterAid Bangladesh

Date of production/ last update: 10/10/2018

1 The SFD Graphic

Cumilla, Chattogram Division, Bangladesh
Version: Reviewed
SFD Level: not set

Date prepared: 10 Oct 2018
Prepared by: WaterAid Bangladesh



2 SFD Lite information

Produced by:

The Flow Diagram (SFD) for Cumilla was created through desk-based research by the WaterAid country programme in Bangladesh using the SFD Graphic Generator on the SuSanA website.

Collaborating partners:

Cumilla City Corporation and WaterAid Bangladesh

Date of production: 10/10/2018

3 General city information

Cumilla city corporation stands on the bank of the river Gumti in Cumilla district. The district is bounded in the north by Brahmanbaria district, in the east by Tripura State of India, in the south by Feni district and Noakhali district and in the west by Narayanganj district, Munshiganj district and Chandpur district. It consists of 16 sub-districts, 181 unions, 2473 mauzas, 3532 villages, 10 paurashavas, 99 wards and 296 mahallas.



Figure 1: Map of Cumilla (Source: Prime Minister's Office Library, Dhaka.

Retrieved from: <http://lib.pmo.gov.bd/maps/images/comilla/Comilla-district.gif>

Cumilla City Corporation (CoCC) consists of 27 wards with current population 0.5 million and an area of 53.04 sq.km. The average literacy rate is 66.05% (68.54% male and 63.02% female). CoCC has a mixed topography. The elevation ranges from 9.29 metres to 16.58 metres. The southwest zone includes hilly track areas with brown, light brown and dark brown granular sandy silts or clayey silts. There is a high to medium risk of flash floods and erosion. Besides the hilly tracks, most of Cumilla is a flat plain area known as alluvium land with both hard and granular sandy or clayey silts. The main source of water is the Gumti river. For drinking water purpose, 82.45% of households use a tube-well and rest of the households use ponds, taps etc. according to Social Assessment and Social Management Framework Report, July 2014 (SASMFR, 2014).

4 Service outcomes

Cumilla, Chattogram Division, Bangladesh, 10 Oct 2018. SFD Level: not set

Population: 500000

Proportion of tanks: septic tanks: 68%, fully lined tanks: 81%, 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	40.0	90.0	0.0	0.0	0.0	0.0
T1A2C9 Septic tank connected to 'don't know where'	12.0	90.0	0.0	0.0		
T1A3C6 Fully lined tank (sealed) connected to an open drain or storm sewer	3.0	90.0	0.0	0.0	0.0	0.0
T1A3C9 Fully lined tank (sealed) connected to 'don't know where'	5.0	90.0	0.0	0.0		
T1A4C8 Lined tank with impermeable walls and open bottom, connected to open ground	7.0	90.0	0.0	0.0		
T2A2C5 Septic tank connected to soak pit, where there is a 'significant risk' of groundwater pollution	10.0	90.0	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	23.0	90.0	0.0	0.0		

Table 1: SFD Matrix

The percentages presented in Table 1 and discussed in this section are based on data collected through key informant interviews (KII) and focus group discussions (FGD). The entire population of Cumilla city corporation uses a toilet of some sort. These toilets are connected to a range of containment systems, including: septic tank connected to a soak pit (T1A2C5), septic tank connected to open drain or storm water drain (T1A2C6), septic tank connected to 'don't know where' (T1A2C9), fully lined tank connected to open drain or storm water drain (T1A2C6), fully lined tank (sealed) connected to 'don't know where' (T1A3C9), lined tank with impermeable walls and open bottom connected to open ground (T1A4C8) and lined pit with semi-permeable walls and open bottom with no outlet or overflow (T1A5C10).

Most of the population uses septic tanks (70%), and around 30% population uses toilet with pits. Of the 70% population in the City Corporation (CC) that is connected to septic tanks, around 43% is connected to open drains. About 17% of the population do not know where the sludge goes. Only 10% of the population use septic tanks, which are connected to soak pits, even though the specifications of the Bangladesh National Building Code (BNBC) state that it is not allowed to discharge the effluent of septic tanks into open water courses and a soak pit shall be installed, including the performance of soil percolation tests to determine the soil and site suitability (Ahsan et al., 2014).

The frequency with which emptying occurs varies depending upon the number of people using the facility, but the minimum is every 2 years. There is rarely any practice of emptying on a regular basis. A major proportion of people become aware of emptying their tanks or pits when they are already full or overflowed. We have considered the tank or pit as emptied if it has been emptied at least once in last 10 years. Therefore, this study assumed that 90 percent of all the containment systems are emptied at least once.

Currently, Cumilla City Corporation has no sewerage system or treatment plant. Faecal sludge is discharged without treatment either locally into the open drains or transported and discharged at the dumpsite. End-use of faecal sludge was not observed during the study. The dumpsite receives all waste from the city (organic, inorganic, solid and faecal sludge) coming from industries, households, public and private institutions. It is simply an open field, with no protection or appropriate design details for the handling of waste. The CC is aware of the problem of the improper final disposal of the faecal sludge and they are willing to increase communication and coordination in order to improve the sanitation situation.

The SFD assessment has shown that, 100% of the excreta generated are considered to be “unsafely managed”. All 13% of population’s supernatant (SN) is not contained and discharged directly to the environment and the rest 87% of the population’s excreta are also not contained in the technology. This can be attributed to septic tanks connected to soak pits in places where there is significant risk of groundwater pollution; septic tanks connected to open drains, storm sewers or water bodies; lined tanks with impermeable walls and open bottoms and lined pits with semi-permeable walls and open bottom where there is a significant risk of groundwater pollution. Of this 87%, 16% eventually find their way into the environment without being emptied and any form of treatment. 71% of the population among 87% (FS not contained) has emptied their tanks and pits at least once in last 10 years. This 71% of the population’s excreta are also discharged untreated into the environment. As there are no treatment facilities, these excreta are eventually discharged into drain, water body and open ground.

People in Cumilla City Corporation get their water either from the municipal supply or from their own source. But most of the population do not have the municipal water supply, so most people rely on their own sources. They are mostly dependent on groundwater which is typically extracted from a depth of 30-40 feet (9-12 metres). The most common water production technology is protected wells. Lateral separation between sanitation facilities and water source varies from one area to another but generally the percentage of sanitation facilities that are located less than 10m from ground water sources is greater than 25%. A large amount of water is produced from groundwater sources and it is estimated that there is significant risk of groundwater pollution in the city.

5 Data and assumptions

A variety of data sources were used to determine the most reasonable estimates of percentages of excreta flow for the SFD matrix. The main data sources include published national level WaSH policy and implementation documents. In addition, other data collection approaches such as transect walks, observations, key informant interviews and focus group

discussions were used for data collection and validation because of the limited availability of data from secondary sources.

Local government institutions, such as CoCC was directly engaged during data collection. In total, two FGDs were conducted with sweepers and private household toilet users and community toilet users. Data for the SFD matrix were collected through three KIIs. KIIs were conducted with representatives from Municipality including, the executive engineer, conservancy inspector, and public relation officer. Thus, data were collected from several groups and then some assumptions were made to convert that data into a usable format for input into the SFD Graphic Generator. For example, most people do not understand the concept of percentage. So, we had to ask them that if we walk past ten houses, how many houses we will get with septic tanks and then we would convert the data to percentage by multiplying it by 10.

The proportion of FS in tanks was selected based on the relative proportion of the people using those systems according to the guidance given in the FAQ section of the SuSanA Webpage. That means that the FS content in septic tanks and fully lined tanks (sealed) was set to 68% and 81%, respectively. For lined tanks with impermeable walls and open bottom with no outlet or overflow and all types of pits, the recommended value of 100 percent is used as the proportion of the content that is faecal sludge. Also, proportion of the containment systems from which faecal sludge is emptied is assumed to be 90% as most of the people empty their tanks and pits at least once in ten years.

6 List of data sources

- BBS, 2011. Census of Bangladesh Bureau of Statistics.
- SASMFR, 2014. Social Assessment and Social Management Framework Report, July 2014, National Housing Authority, Ministry of Housing and Public Works.
- IRF, 2017. Institutional and Regulatory Framework for FSM: Section on municipalities
- KII1, 2018. Interview with Mr. Sk. Md. Noorullah, Executive Engineer, CoCC.
- KII2, 2018. Interview with Md. Abu Sayem Bhuiyan, Assistant Engineer, CoCC.
- KII3, 2018. Interview with Md. Alamgir Hossain, Waste Management Officer, CoCC.
- FGD, 2018a. Focus group discussion with sweepers. (manual empty)
- FGD, 2018b. Focus group discussion with toilet users. (household)