

# **SFD Lite Report**

## **Gazipur Bangladesh**

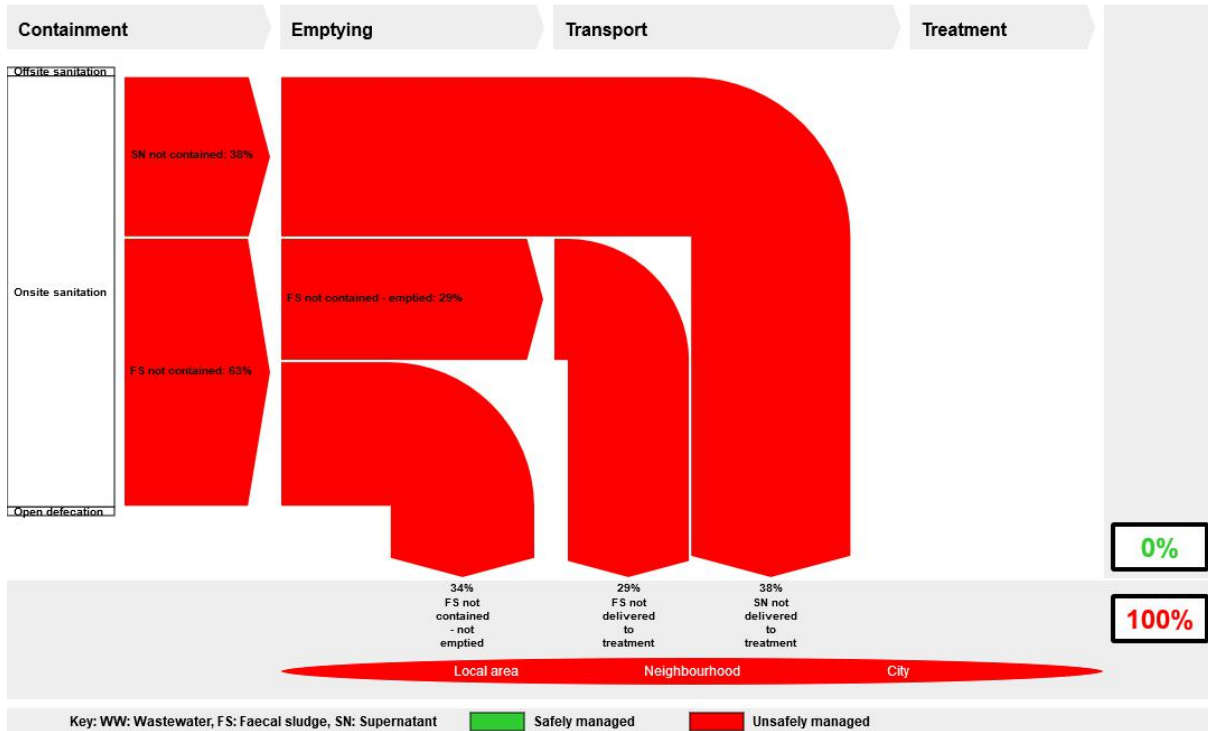
This SFD Lite Report was prepared by  
WaterAid Bangladesh

Date of production/ last update: 22/11/2018

# 1 The SFD Graphic

Gazipur, Dhaka, Bangladesh  
Version: Reviewed  
SFD Level: not set

Date prepared: 22 Nov 2018  
Prepared by: WaterAid Bangladesh



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](http://sfd.susana.org)

## 2 SFD Lite information

### Produced by:

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

### Collaborating partners:

Gazipur City Corporation and WaterAid Bangladesh

**Date of production:** 22/11/2018

### 3 General city information

Gazipur is one of the districts of Dhaka division, and is bounded in the north by Mymensingh and Kishoreganj Districts, in the east by Narsingdi District, in the south by Narayanganj and Dhaka Districts and in the west by the Tangail District. Gazipur City Corporation, the largest city corporation of Bangladesh, was established on 16 January 2013. It comprises of 57 wards and its total area is 329.53 sq. km. The total population of Gazipur City Corporation is about 2.5 million with a population density of 1,884/Sq Km. It is in an area of relatively high rainfall with an average annual rainfall 2,376 mm. People in Gazipur City Corporation get their water either from the municipal supply or from their own source. Gazipur City Corporation covers around 98 square kilometres area through pipeline water supply. As most of the people do not have the municipal water supply, they rely on their own sources, mostly groundwater.

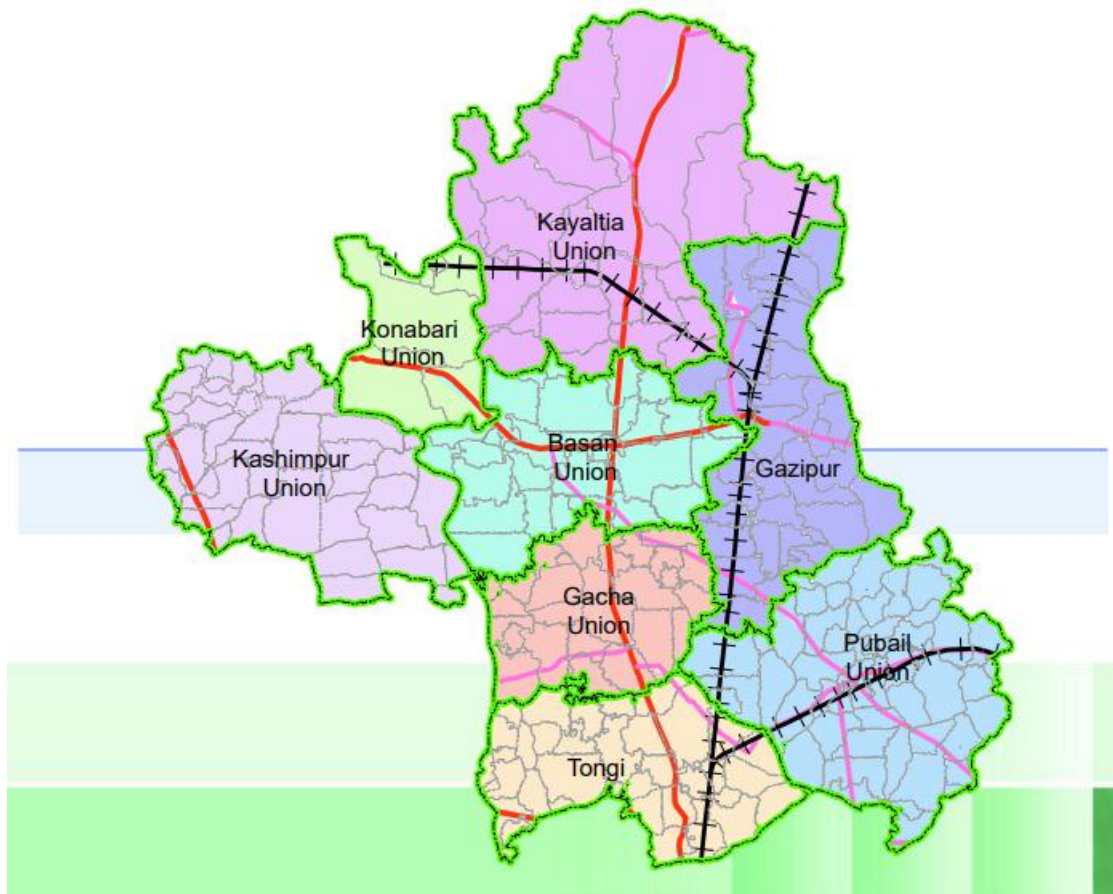


Figure 1: Map of Gazipur City Corporation (GCC)(Source: Cities development initiative for Asia. Retrieved from: [http://cdia.asia/wp-content/uploads/2016/03/EUIP2016\\_CityPresentation\\_Gazipur\\_BAN.pdf](http://cdia.asia/wp-content/uploads/2016/03/EUIP2016_CityPresentation_Gazipur_BAN.pdf))

## 4 Service outcomes

Gazipur, Dhaka, Bangladesh, 22 Nov 2018. SFD Level: not set

Population: 2500000

Proportion of tanks: septic tanks: 60%, fully lined tanks: 50%, lined, open bottom tanks: 100%

System label	Pop	F3	F4	F5	S4e	S5e
<b>System description</b>	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
<b>T1A2C6</b> Septic tank connected to open drain or storm sewer	50.0	50.0	0.0	0.0	0.0	0.0
<b>T1A2C9</b> Septic tank connected to 'don't know where'	5.0	50.0	0.0	0.0		
<b>T1A3C6</b> Fully lined tank (sealed) connected to an open drain or storm sewer	35.0	50.0	0.0	0.0	0.0	0.0
<b>T1A4C8</b> Lined tank with impermeable walls and open bottom, connected to open ground	1.0	50.0	0.0	0.0		
<b>T2A2C5</b> Septic tank connected to soak pit, where there is a 'significant risk' of groundwater pollution	8.0	50.0	0.0	0.0		
<b>T2A5C10</b> Lined pit with semi-permeable walls and open bottom, no outlet or overflow, where there is a 'significant risk' of groundwater pollution	1.0	50.0	0.0	0.0		

Table 1: SFD Matrix for Gazipur

The most used containment system in Gazipur city is a septic tank connected to an open drain (T1A2C6, 50%) followed by fully lined tanks also connected to open drains (T1A3C6, 35%).

The majority of the population use septic tanks (98%), and around 2% use toilet with pits. There is no open defecation found in the municipality. However, a small portion of population living on streets and railway station practice open defecation which is less than 0.1%, not shown in the SFD graphic since it represents less than 1% of the total population.

In total, 98% of the population in Gazipur is connected to septic tanks and fully lined tanks, of which the vast majority of 85% is connected to open drains. About 5% of the population use septic tanks connected to 'don't know where' (T1A2C9). Only 8% of the population use septic tanks which are connected to soak pits (T1A2C5), 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). Pit latrines are utilized by 2% of the total population of Gazipur. While many different types of pit latrines are constructed within the city, two common types of containment structure could be identified within the city. The majority of these are lined pits with semi

permeable walls and open bottom with no outlet or overflow (T2A5C10, 1%) and lined tanks with impermeable walls and open bottom (T1A4C8, 1%).

The frequency of emptying varies depending on the number of people using the facility, but the minimum time is every 10 months (5%) up to more than 5 years (40%) according to the data obtained from Focus Group Discussion with sweepers (FGD, 2018a). As there were variable data regarding the proportion and time of emptying, it was assumed that the proportion of each system from which faecal sludge is emptied is 50%.

The SFD assessment has shown that, 100% of the excreta generated is considered to be “unsafely managed”. 38% of the total excreta produced is supernatant not contained which discharges directly to the environment and the rest (63%) is faecal sludge which is not contained in the technologies (numbers do not match up to 100% in the SFD graphic due to rounding). 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 63%, 34% is eventually discharged into the environment without being emptied or having any kind of treatment and 29% is FS from tanks and pits emptied at least once in last 10 years. This 29% of the population’s excreta are discharged untreated into the environment. Faecal sludge emptying is done by private sweepers through manual process and usually discharged into open drains and canals.

Gazipur has no sewer system or sewerage treatment plant. Faecal sludge is either discharged into the open drain and surrounding ditches or it is transported and discharged into the Kodda dumpsite after manual emptying. The dumpsite (0.02 sq. km) 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 wastes. None of these excreta is therefore treated. The municipality is aware of the problem of the improper final disposal of the faecal sludge. They report that they are willing to increase communication and coordination in order to improve the sanitation situation.

People are mostly dependent on groundwater which are typically extracted from a depth which is greater than 10m in Gazipur City Corporation area. The most common water production technology is protected wells. Lateral separation between sanitation facilities and water source varies from one place 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 portion 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 Gazipur City Corporation were directly engaged during data collection. In total, two FGDs were conducted with manual emptying service providers, private household toilet users and community toilet users. Data for the SFD matrix was also collected through four KIIs. Some of the interviews were conducted jointly with a group of stakeholders. This allowed for an open discussion and cross-checking of data. KIIs were conducted with representatives from Municipality including CEO, conservancy inspector and sweepers. After collecting all necessary data, the SFD was produced using the SFD Graphic Generator.

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 83% and 50%, 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.

## 6 List of data sources

- BBS, 2011. Census of Bangladesh Bureau of Statistics.
- IRF, 2017. Institutional and Regulatory Framework for FSM: Section on municipalities
- Sector Development Plan (SDP) for Water Supply and Sanitation Sector in Bangladesh (FY 2011-25)
- KII1, 2018. Interview with K. M Rahatul Islam, Chief Executive Officer, GCC.
- KII2, 2018. Interview with Madan, Conservancy Inspector, GCC.
- KII3, 2018. Interview with Md. Monir, Conservancy Supervisor, GCC.
- KII4, 2018. Interview with Chatuya Lal, Sweeper.
- FGD, 2018a. Focus group discussion with sweepers. (manual empty)
- FGD, 2018b. Focus group discussion with toilet users. (household)