SFD Lite Report

Godawari Municipality
Nepal

This SFD Lite Report was prepared by City-wide Inclusive Sanitation Technical Assistance Hub, South Asia (CWIS TA Hub, South Asia)/Environment and Public Health Organization (ENPHO) and Kathmandu Valley Water Supply Management Board (KVWSMB).

Date of production/ last update: 7/11/2019

1 The SFD Graphic

2 SFD Lite information

Produced by:

- The Shit Flow Diagram for Godawari Municipality was created by City-Wide Inclusive Sanitation Technical Assistance Hub, South Asia (CWIS TA Hub, South Asia)/Environment and Public Health Organizations (ENPHO) and Kathmandu Valley Water Supply Management Board (KVWSMB) using the SFD graphic generator available on the SuSanA website.

Collaborating partners:

- EcoConcern Pvt.Ltd.
- DevCon.

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3 General city information

Godawari Municipality is located in Lalitpur District in Province No. 3 of Nepal that was established on 2017 (2073 B.S in Nepali calender) by merging the former village development committees Godamchaur, Bisankhunarayan, Godawari, Badikhel, Lele, Devichaur, Dukuchhap, Chhampi, Chapagaun, Thecho, Bharuwabarasi and Thaiba. The municipality is bounded by Bagmati rural municipality in the south, Lalitpur metropolitan city in the west, Konjyosom Municipality in the east and Mahalaxmi Municipality in the north. The municipality consist of 14 wards with the total population of 116,045 residing in 18,232 households and covering an area of 96.11km^2 (Municipality Profile, 2019).

The municipality lies on an altitude ranging from 457 metres to 2,831 metres above mean sea level (Municipality Profile, 2019). The main sources of drinking water in Godawari Municipality are public taps, household bores and wells. Majority of the population are dependent on their public taps and own sources such as tap water (bore water) and wells (KII1, 2019).

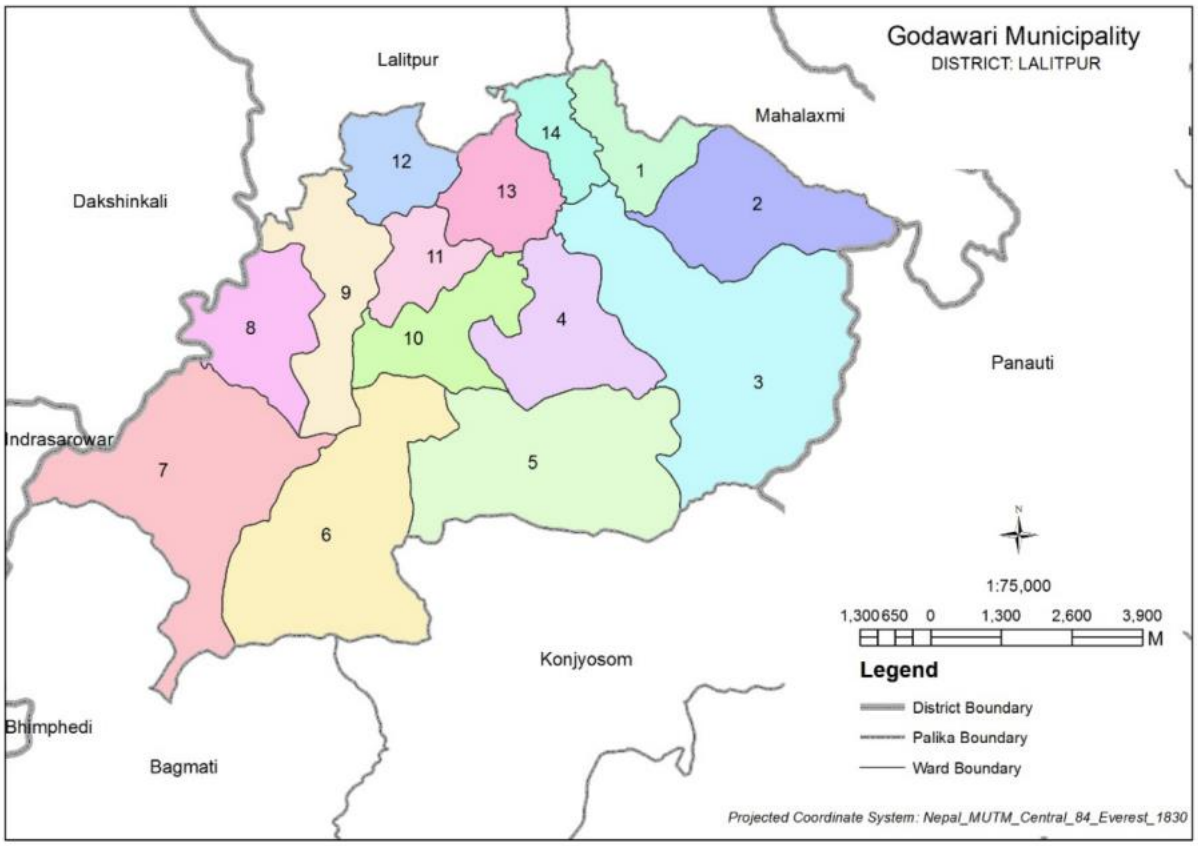

Figure 1: Map of Godawari Municipality (Source: Ministry of Federal Affairs and General Administration).

4 Service outcomes

Table 1: SFD Matrix for Godawari Municipality.

Godawari Municipality, Province No.3, Nepal, 20 Nov 2019. SFD Level: SFD Lite
Population: 116045
Proportion of tanks: septic tanks: 100%, fully lined tanks: 100%, lined, open bottom tanks: 1

System label	Pop	F3	F4	F5
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
T1A3C10 Fully lined tank (sealed), no outlet or overflow	4.0	29.0	0.0	0.0
T1A4C8 Lined tank with impermeable walls and open bottom, connected to open ground	2.0	16.0	0.0	0.0
T1A4C9 Lined tank with impermeable walls and open bottom, connected to 'don't know where'	7.0	21.0	0.0	0.0
T2A3C5 Fully lined tank (sealed) connected to a soak pit, where there is a 'significant risk' of groundwater pollution	8.0	25.0	0.0	0.0
T2A4C10 Lined tank with impermeable walls and open bottom, no outlet or overflow, where there is a 'significant risk' of groundwater pollution	41.0	29.0	0.0	0.0
T2A4C5 Lined tank with impermeable walls and open bottom, connected to a soak pit, where there is a 'significant risk' of groundwater pollution	32.0	25.0	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	3.0	40.0	0.0	0.0
T2A6C10 Unlined pit, no outlet or overflow, where there is a 'significant risk' of groundwater pollution	1.0	50.0	0.0	0.0
T2B7C10 Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow, where there is a 'significant risk' of groundwater pollution	2.0			

4.1 Containment

As presented in Table 1, the majority of the population use lined tanks with impermeable walls and open bottom (T2A4C5, 32%; T1A4C8, 2%; T1A4C9, 7% and T2A4C10, 41%) followed by fully lined tanks (T2A3C5, 8% and T1A3C10, 4%), lined pits with semi-permeable walls and open bottom (T2A5C10, 3%), pits (all types) never emptied but abandoned when full and covered with soil (T2B7C10, 2%) and unlined pits (T2A6C10, 1%). As per the household survey (2019), the average size of the containment is 8.5 m^3.

Figure 2: Containment system (HHs Survey, 2019).

4.2 Emptying and transportation

Even though it is mandatory to have a septic tank to get building permission, the municipality lacks standard design guidelines for the construction of containment. So, the size of containment is not uniform (KII1, 2019). Hence, the emptying frequency for different types of containment connected to different technologies is estimated on the basis of the household survey and key Informant Interviews. Emptying of the onsite sanitation facilities is either mechanical (65%) provided by a private desludging service provider or manual (35%) in Godawari Municipality (HHs Survey, 2019). The transport of the mechanically emptied faecal sludge is done by private desludging vehicle which consists of a tank equipped with movable centrifugal pump on a truck (KII1, 2019). Whereas, the manual emptying is done by a household member or labour.

4.3 Treatment

There are no treatment facilities for treating faecal sludge in Godawari Municipality (KII1, 2019).

4.4 Reuse and Disposal

The manually emptied faecal sludge is buried and used to fertilize crops. whereas mechanically emptied faecal sludge is disposed in the environment without treatment by the private mechanical service providers (KII1, 2019).

4.5 SFD Graphic

The SFD graphic has shown that 97% of the faecal sludge is unsafely managed and 3% of the faecal sludge is safely managed. Out of the 97% of faecal sludge unsafely managed, 27% corresponds to faecal sludge contained (2%) and not contained (25%) which is emptied but discharged into the environment untreated and 71% corresponds to faecal sludge not contained - not emptied, ending in the environment untreated. The 3% of safely managed faecal sludge accounts for the faecal sludge not emptied from fully lined tanks (sealed) which have no outlet or overflow.

The containment systems in Godawari Municipality are not properly sited, designed, constructed or maintained, leading to the high risk of groundwater faecal contamination. So, the population using groundwater for drinking purposes might not be suitable for human consumption.

4.6 Groundwater Contamination

There are no published data available regarding groundwater table and soil profile of Godawari Municipality. So, the information was collected from KII1 (2019). Majority of population rely on underground sources of water which are from protected boreholes extracted from a depth of greater than 10 metres consisting of sandstones/limestone fractured rock in unsaturated zone. The lateral separation between sanitation facilities and groundwater sources with less than 10 metres is considered greater than 25% and the percentage of sanitation facilities that are located uphill of groundwater sources was estimated greater than 25% (KII1, 2019). So, it has been estimated that there is high risk of ground water pollution in Godawari Municipality.

5 Data and assumptions

The data for the SFD matrix were estimated using the data collected from the household survey carried out by CWIS TA Hub, South Asia in 2019. The collected data were further discussed and finalized with key informants of Godawari Municipality.

The proportion of faecal sludge in septic tanks, fully lined tanks and lined tanks with impermeable walls and open bottom were set to 100% according to the relative proportions of the systems in the municipality as per the guidance given in the Frequently Asked Questions (FAQs) in the Sustainable Sanitation Alliance (SuSanA) website.

The proportion of emptied faecal sludge for different types of containment connected to different technologies (variable F3) was estimated on the basis of the data collected from the household survey and Key informant Interviews.

6 List of data sources

- *Godawari Municipality Profile, 2019.*
- *HHs Survey data 2019, City-wide Technical Assistance Hub, South Asia.*
- *MoFALD, 2019, Ministry of Federal Affairs and General Administration.*
- *KII 1, November 2019, Interview with Municipal Engineer, Planning section, Godawari Municipality.*
- *KII 2, September 2019, Interview with Private mechanical desludging service provider, Lalitpur Metropolitan city.*

SFD Godawari Municipality, Nepal, 2019

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SFD Promotion Initiative