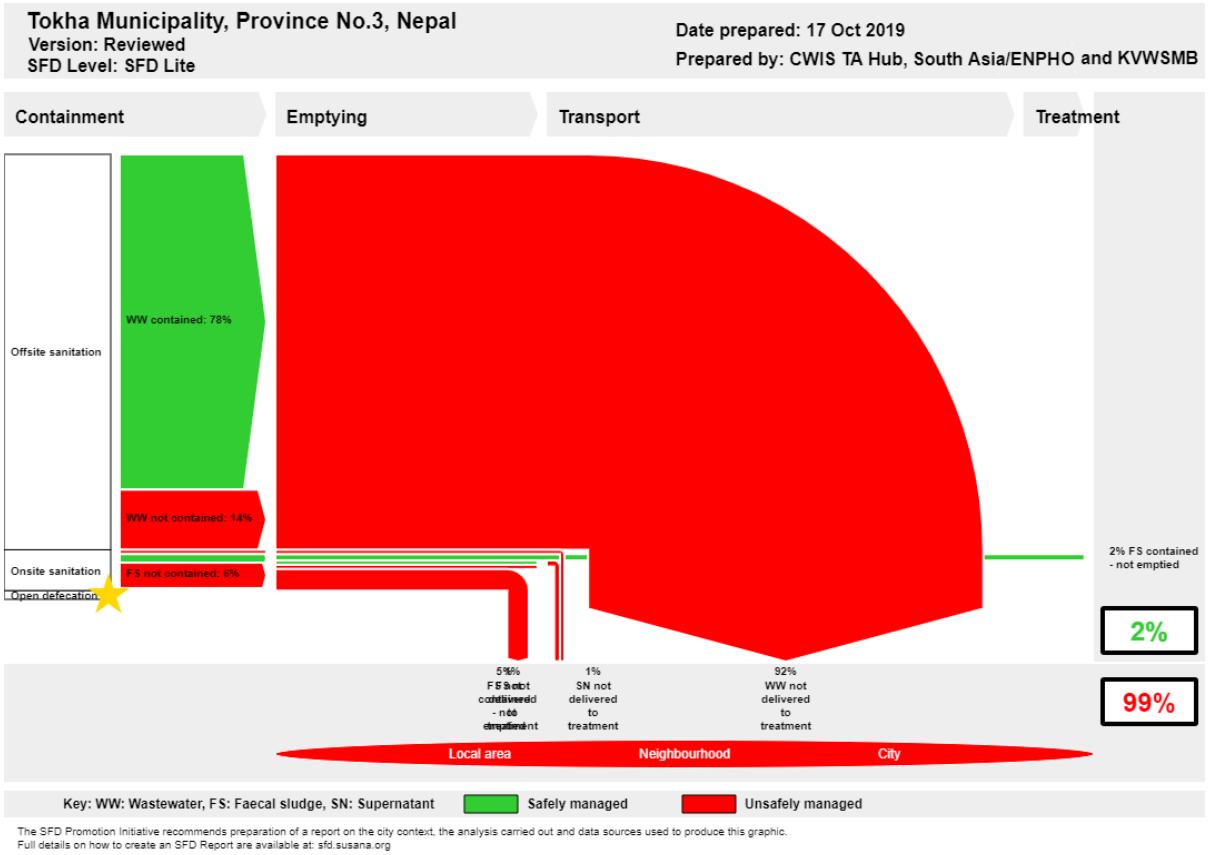
SFD Lite Report

Tokha 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: 17/10/2019

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:

- The Shit Flow Diagram 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:

- Eco Concern Pvt.Ltd.
- DevCon.

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3 General city information

Tokha Municipality is an ancient city of Kathmandu district in Province No. 3 of Nepal. The municipality was formed in 2014 (2073 in Nepali calendar) by merging former five Village Development Committees (Dhapasi, Jhor Mahankal, Gongabu, Tokha Chandeshwori and Tokha Saraswati) consisting of eleven wards with an area of 16.19 km2 (Figure 1). The municipality is bounded by Budhanilkantha Municipality in east, Tarakeshwor Municipality in west, Nuwakot district in North and Kathmandu Metropolitan City in south. Furthermore, this municipality is situated at the base of Shivapuri National wild life reserve conservation area (Tokha Municipality Profile, 2019).

The total population of Tokha Municipality is 99,032 residing in 25,561 households. Majority of people of Tokha Municipality are dependent on municipal water supply (Policy, Budget and Programme, 2019). People who do not have access to municipal water supply system get water from their own sources, mostly groundwater such as well and tap water (KII 1, 2019).

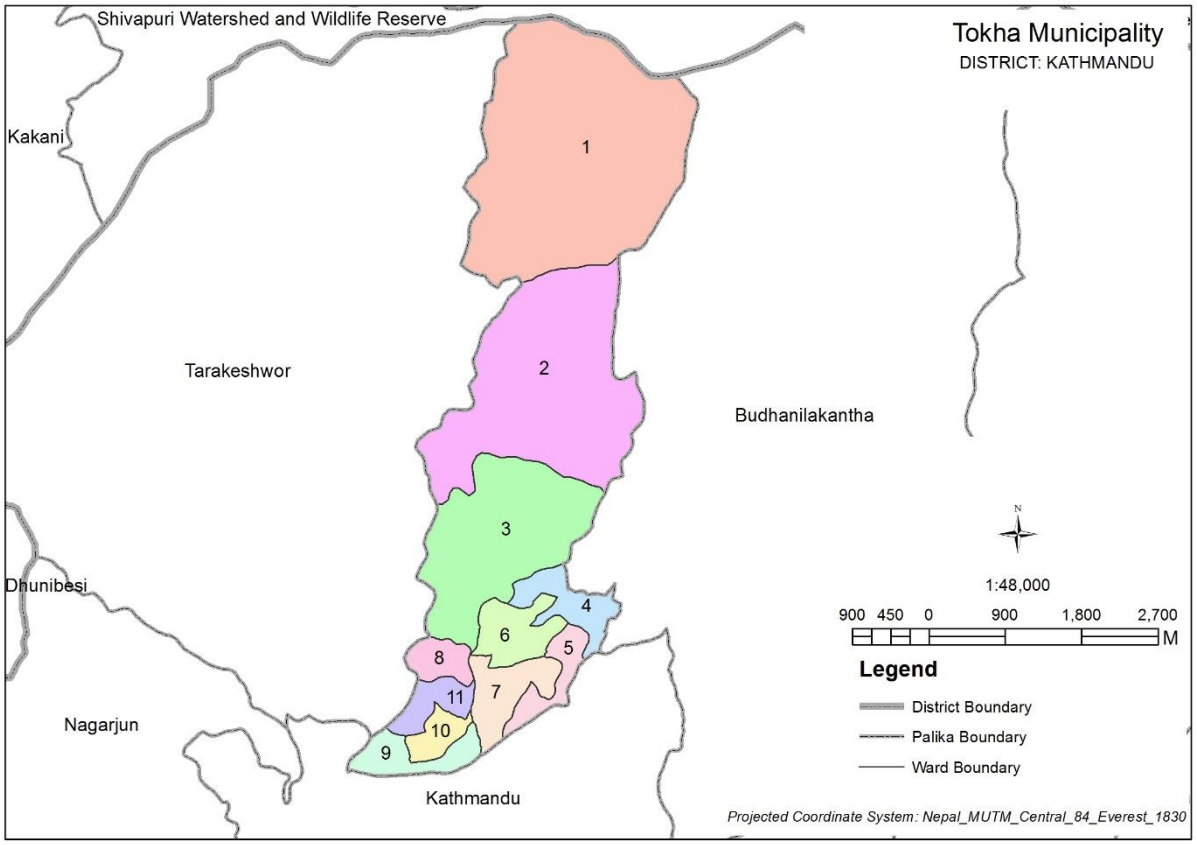

Figure 1: Map of Tokha Municipality (Source: Ministry of Federal Affairs and General Administration).

4 Service outcomes

Table 1: SFD Matrix for Tokha Municipality.

Tokha Municipality, Province No.3, Nepal, 17 Oct 2019. SFD Level: SFD Lite
Population: 99032
Proportion of tanks: septic tanks: 100%, fully lined tanks: 100%, lined, open bottom tanks: 92%

System label	Pop	W4a	W5a	W4c	W5c	F3	F4	F5	S4e	S5e
System description	Proportion of population using this type of system	Proportion of wastewater in sewer system, which is delivered to centralised treatment plants	Proportion of wastewater delivered to centralised treatment plants, which is treated	Proportion of wastewater in open sewer or storm drain system, which is delivered to treatment plants	Proportion of wastewater delivered to treatment plants, which is treated	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
T1A1C1 Toilet discharges directly to a centralised combined sewer	78.0	0.0	0.0							
T1A1C6 Toilet discharges directly to open drain or storm sewer	14.0			0.0	0.0					
T1A3C10 Fully lined tank (sealed), no outlet or overflow	2.0					25.0	0.0	0.0		
T1A4C8 Lined tank with impermeable walls and open bottom, connected to open ground	2.0					11.0	0.0	0.0		
T2A4C1 Lined tank with impermeable walls and open bottom, connected to a centralised combined sewer, where there is a 'significant risk' of groundwater pollution	1.0					0.0	0.0	0.0	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	3.0					25.0	0.0	0.0		

4.1 Containment

Combined sewers are predominantly found in Tokha Municipality (T1A1C1, 78%), followed by user interface directly connected to open drains (T1A1C6, 14%). A small portion of population are dependent on onsite sanitation systems (lined tanks, 8%). About 2% of the population use fully lined tanks with no outlet or overflow (T1A3C10) and 6% of population use lined tanks with impermeable walls and open bottom among which: 1% use lined tanks with impermeable walls connected to a centralized combined sewer (T2A4C1), 2% use lined tanks with impermeable walls and open bottom connected to open ground (T1A4C8) and 3% use lined tanks with impermeable walls with no outlet and overflow (T2A4C10). There is no standard design for the construction of containments in Tokha Municipality (KII1, 2019). As per the survey carried out, the average volume of the containments in Tokha Municipality is 3.5 m3 (HHs Survey, 2019).

4.2 Emptying and transportation

Both manual (20%) and mechanical (80%) emptying were found to be practised in Tokha Municipality, where the mechanical service is provided by a private desludging service provider (HHs Survey, 2019). There are no municipal services in the municipality, depending on the neighbouring municipality (KII1, 2019). Mechanically emptied Faecal Sludge (FS) is transported to the disposal area with the help of a desludging vehicle, a tank equipped with a movable centrifugal pump on a truck. The wastewater and supernatant are transported through the sewer system (KII1, 2019). Although the emptying frequency differs according to the type of containment and number of users, the average time is 4 to 6 years (KII1, 2019).

4.3 Treatment

Despite having a huge coverage of sewer system, the municipality lacks treatment facilities for treating wastewater and faecal sludge.

4.4 Reuse and Disposal

As represented in Figure 2, all the wastewater, supernatant and emptied faecal sludge are finally discharged in Bishnumati River, Sangle River and other rivers of Kathmandu Valley (KII3, 2019).

Figure 2: Wastewater and supernatant discharged into Bishnumati River untreated.

4.5 SFD Graphic

It is estimated that 99% of the faecal sludge and wastewater generated is not safely managed in Tokha Municipality and the remaining 2% is safely managed (numbers do not match up to 100% due to rounding). 78% of the wastewater contained is not treated and discharged directly to the rivers, 14% of the wastewater not contained in the technology is discharged into open drains and discharged untreated in the environment and 6% of the faecal sludge is not contained in the technology, corresponding to lined tanks with impermeable walls and open bottom located in areas with significant risk of groundwater pollution. 2% of the faecal sludge is contained in the technology (fully lined tanks) and has not been emptied.

4.6 Groundwater Contamination

There is no published data available regarding groundwater table and soil profile of Tokha 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 greater than 10 meters consisting of fine sand, silt and clay in unsaturated zone. The lateral separation between sanitation facilities and groundwater sources with less than 10 meters is considered greater than 25% and the percentage of sanitation facilities that are located uphill of groundwater sources was estimated as greater than 25% (KII1, 2019). Therefore, it has been estimated that there is high risk of groundwater pollution in Tokha 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 Tokha Municipality.

The proportions of FS in septic tanks and fully lined tanks were set to 100% and the proportion of FS in lined tanks with impermeable walls and open bottom was set to 92% 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 data collected from the household survey and Key Informant Interviews.

6 List of data sources

- *Tokha Municipality Profile, 2019.*
- *Tokha municipality, 2019, Policy, Budget and Programme.*
- *HHs survey data, 2019, City-Wide Inclusive Sanitation Technical Assistance, South Asia.*
- *MoFALD, 2019, Ministry of Federal Affairs and General Administration.*
- *KII 1, October 2019, Interview with Municipal Engineer, Planning Section, Tokha Municipality.*
- *KII 2, October 2019, Interview with Municipal Engineer, Planning Section, Tokha Municipality.*
- *KII 3, September 2019, Interview with Private desludging service Provider.*

SFD Tokha Municipality, Nepal, 2019

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This Executive Summary and the SFD Report are available from:

www.sfd.susana.org

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