

SFD Lite Report

Dakshinkali Municipality

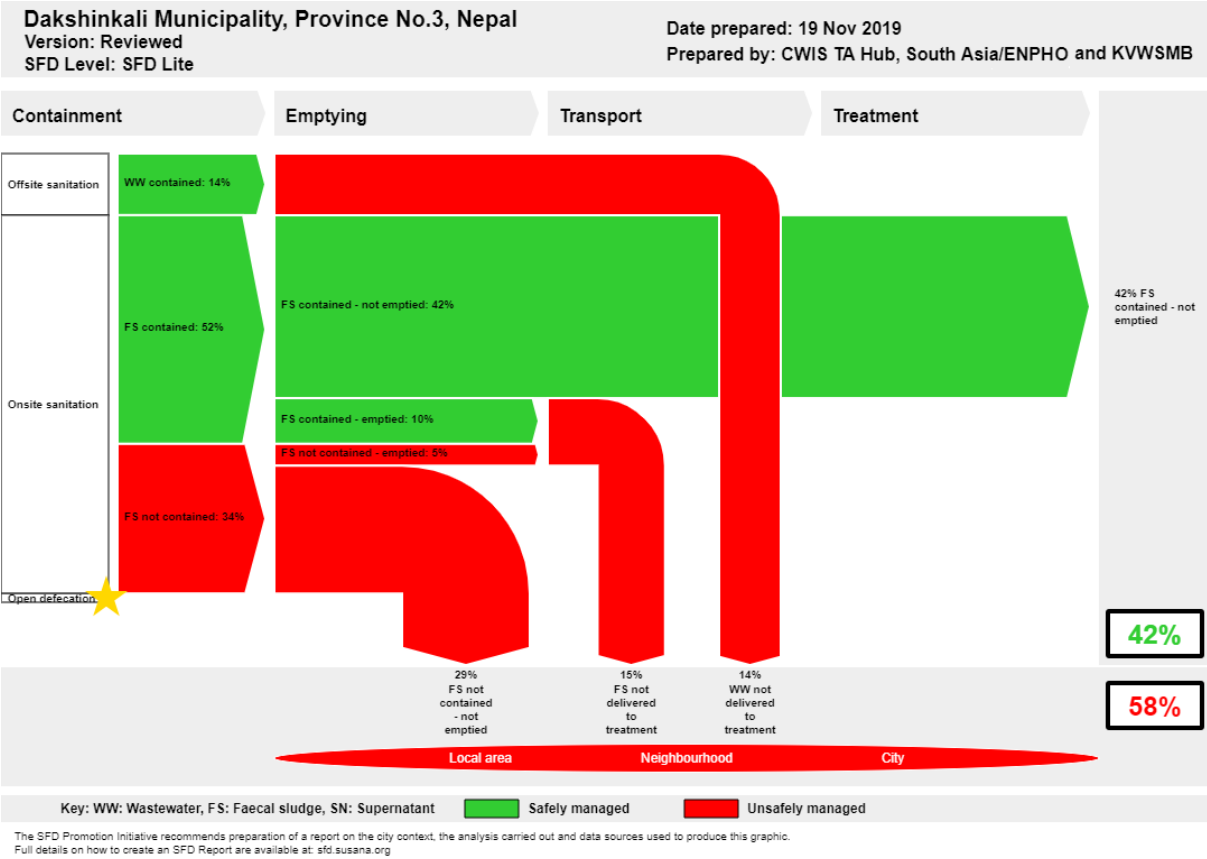
Nepal

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).

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1 The SFD Graphic



2 SFD Lite information

Produced by:

- The Shit Flow Diagram for Dakshinkali Municipality was created 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) with the SFD graphic generator tool available on the SuSanA Website.

Collaborating partners:

- Eco- Concern Pvt. Ltd.
- DevCon.

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3 General city information

Dakshinkali Municipality is located in Kathmandu District in Province No. 3 of Nepal that was established on 2014 (2071 B.S in Nepali calendar) by merging the former Village development committees Chalnakhel, Satidevi, Sheshnarayan, Dakshinkali, Talku Duduchour and Chhaimal. The municipality is bounded by Indrasarowar Municipality in the west and south, Lalitpur Municipality in the east and Kritipur and Chandragiri Municipality in the north (Figure 1). The municipality consist of 9 wards with the total population of 24,297 people residing in 6,925 households covering an area of 42.38 km² (Municipality Profile, 2019).

The municipality lies on an altitude of 1,532 metres above mean sea level (Annual Municipal Development Plan, 2019). Majority of the population (80%) are dependent on public taps and the remaining 20% of population are dependent on spring water (KII1, 2019).

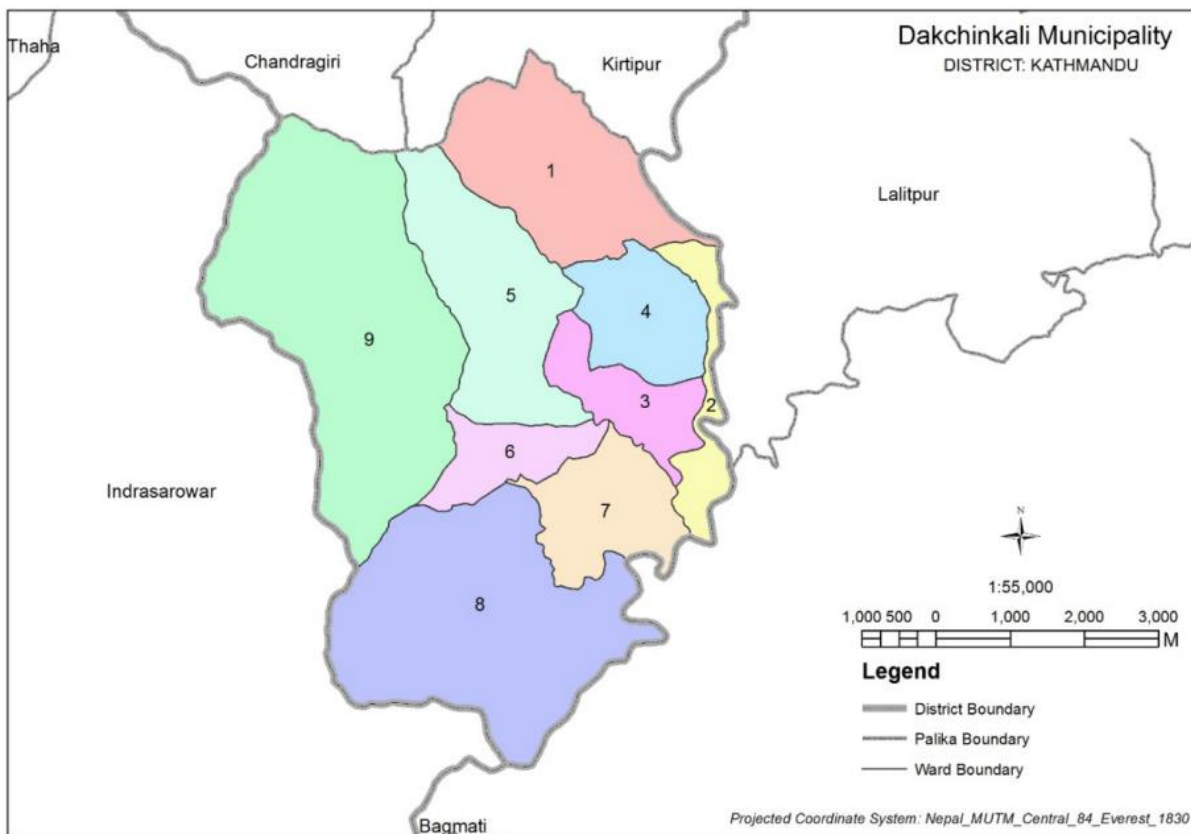


Figure 1: Map of Dakshinkali Municipality (Source: Ministry of Federal Affairs and General Administration).

4 Service outcomes

Table 1: SFD Matrix for Dakshinkali Municipality.

Dakshinkali Municipality, Province No.3, Nepal, 19 Nov 2019. SFD Level: SFD Lite

Population: 24297

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

System label	Pop	W4a	W5a	F3	F4	F5
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 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
T1A1C1 Toilet discharges directly to a centralised combined sewer	14.0	0.0	0.0			
T1A3C10 Fully lined tank (sealed), no outlet or overflow	12.0			12.0	0.0	0.0
T1A3C5 Fully lined tank (sealed) connected to a soak pit	5.0			17.0	0.0	0.0
T1A3C7 Fully lined tank (sealed) connected to a water body	3.0			10.0	0.0	0.0
T1A4C10 Lined tank with impermeable walls and open bottom, no outlet or overflow	15.0			38.0	0.0	0.0
T1A4C5 Lined tank with impermeable walls and open bottom, connected to a soak pit	5.0			17.0	0.0	0.0
T1A4C7 Lined tank with impermeable walls and open bottom, connected to a water body	10.0			10.0	0.0	0.0
T1A4C8 Lined tank with impermeable walls and open bottom, connected to open ground	5.0			22.0	0.0	0.0
T1A4C9 Lined tank with impermeable walls and open bottom, connected to 'don't know where'	16.0			16.0	0.0	0.0
T1A5C10 Lined pit with semi-permeable walls and open bottom, no outlet or overflow	13.0			12.0	0.0	0.0
T1A6C10 Unlined pit, no outlet or overflow	1.0			0.0	0.0	0.0
T1B7C10 Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow	1.0					

4.1 Containment

As presented in Table 1, 14% of the population depend on an offsite sanitation system (T1A1C1) but most of the population in Dakshinkali Municipality are dependent on onsite sanitation systems: lined tanks with impermeable walls and open bottom (T1A4C9, 16%; T1A4C10, 15%; T1A4C7, 10%; T1A4C5, 5% and T1A4C8, 5%), fully lined tanks (T1A3C10, 12%; T1A3C5, 5% and T1A3C7, 3%), lined pits with semi-permeable walls and open bottom with no outlet and overflow (T1A5C10, 13%), unlined pits (T1A6C10, 1%) and pits (all types) never emptied abandoned when full and covered with soil, no outlet or overflow (T1B7C10, 1%). As per the household survey (2019), the average size of the containment is 6.5 m³.



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 containments (KII1, 2019). Hence, the emptying frequency widely varies for even the same type of containment. Emptying of the onsite sanitation facilities is either mechanical (63%) provided by a private desludging service provider or manual (37%) (HHs Survey, 2019). The transport of the mechanically emptied faecal sludge is done by a 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. In case of the offsite sanitation system, the wastewater is transported through the sewer system.

4.3 Treatment

There is no treatment facility for treating wastewater or the faecal sludge in Dakshinkali Municipality.

4.4 Reuse and Disposal

Manually emptied faecal sludge is disposed by the household member or labour themselves in their household premises or in field. All the waste water and emptied faecal sludge gets finally discharged in streams and rivers of Kathmandu valley (KII1, 2019).

4.5 SFD Graphic

As shown in the SFD graphic, 42% of the total excreta generated are safely managed and 58% are not safely managed. All the wastewater generated (14% of the total excreta generated) is contained in the technology but gets discharged into the open environment untreated. Out of the 34% of faecal sludge which is not contained in the technology, 5% is emptied and discharged in the environment untreated and 29% is not emptied but also considered as unsafely managed. 52% of the faecal sludge is contained, out of which, 10% corresponds to faecal sludge emptied and discharged in an open environment without any treatment and 42% corresponds to faecal sludge not emptied from onsite sanitation systems located in areas of low risk of groundwater contamination. However, in the medium- to long- term, for example as the population and population density increases, this practise may not be sustainable and improved sanitation management services may be required since those tanks and pits, eventually, will require emptying services.

4.6 Groundwater Contamination

There are no published data available regarding groundwater table and soil profile of Dakshinkali Municipality. So, the information was collected from KII1 (2019). Almost all population rely on surface water such as protected springs. The average estimated depth of groundwater table is more than 10 metres and consisting of limestone fractured rock in unsaturated zone. The lateral separation between sanitation facilities and groundwater sources with less than 10 metres is considered less than 25% and the percentage of sanitation facilities that are located uphill of groundwater sources was estimated less than 25% (KII1, 2019). So, it has been estimated that there is low risk of groundwater pollution in Dakshinkali Municipality.

5 Data and assumptions

The data for the SFD Matrix was estimated using the data collected from the Households survey carried out by CWIS TA Hub, South Asia in 2019. The collected data were further discussed and finalized with Key informants of Dakshinkail 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

- *Dakshinkali Municipality, 2019/2020, Annual Municipal Development Plan, 2019.*
- *Dakshinkali Municipality Profile, 2019.*
- *Household Survey, 2019, City-Wide Inclusive Sanitation Technical Assistance Hub, South Asia.*
- *MoFALD, 2019, Ministry of Federal Affairs and General Administration.*
- *KII1, November 2019, Interview with Municipal Engineer Dakshinkali Municipality.*
- *KII2, September 2019, Interview with Private desludging service provider, Lalitpur Metropolitan city.*

SFD Dakshinkali Municipality, Nepal, 2019

Produced by:

City-Wide Inclusive Technical Assistance Hub,
South Asia (CWIS TA Hub, South Asia), Amrita
Angdembe

Environment and Public Health Organization
(ENPHO)

Kathmandu Valley Water Supply Management
Board (KVWSMB)

Editing:

Eco Concern Pvt.Ltd., Krishna Ram Yendyo

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