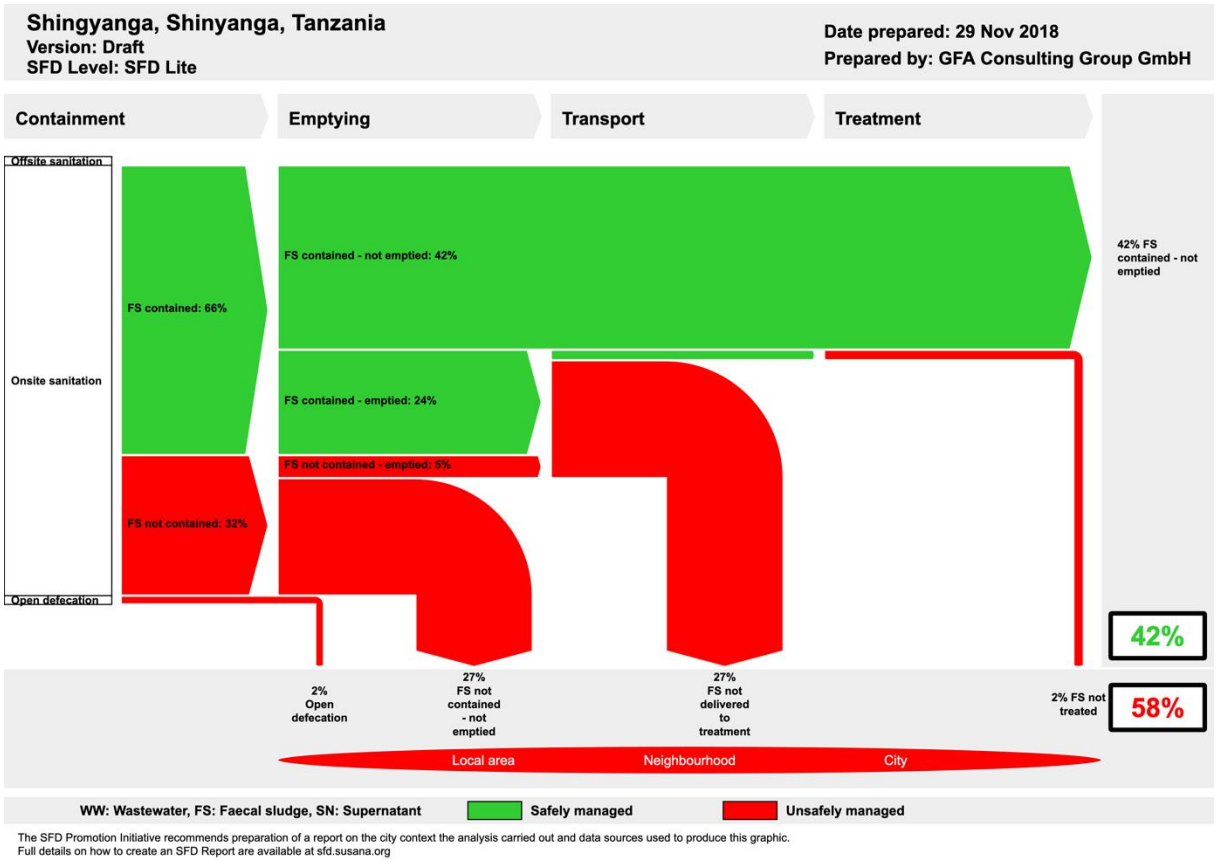
SFD Lite Report

Shinyanga Municipality Tanzania

This SFD Lite Report was prepared by GFA Consulting Group GmbH

Date of production/ last update: 01/02/2019

1 The SFD Graphic



2 SFD Lite information

Produced by:

The present SFD Lite Report was produced by GFA Consulting Group represented by Lena Westhof with inputs from Elias Leonard and Alejandra Burchard within the GIZ-funded project "Improvement of urban water supply and sanitation services in under-served areas in Tanzania".

Collaborating partners:

- Shinyanga Municipality
- Shinyanga Urban Water Supply and Sanitation Authority (SHUWASA)
- Community

Date of production: 29/11/2018

3 General city information

Shinyanga Municipality is the headquarters of Shinyanga Region and is in the northern area of Tanzania. It lies between latitudes 30 30' and 30 45' South and longitudes 330 20’ and 330 35’ East, about 1,000 kilometres from Dar es Salaam and 165 kilometres from Mwanza City.

According to Tanzania’s National Bureau of Statistics (NBS, 2018), the projected population of Shinyanga Municipality for 2017 is 178,890 with a growth rate of 2.1% for a period from 2012 to 2017. The total population for 2018 is estimated as 182,646 people.

Shinyanga Municipality is divided into 19 wards, as shown in the graphic below.

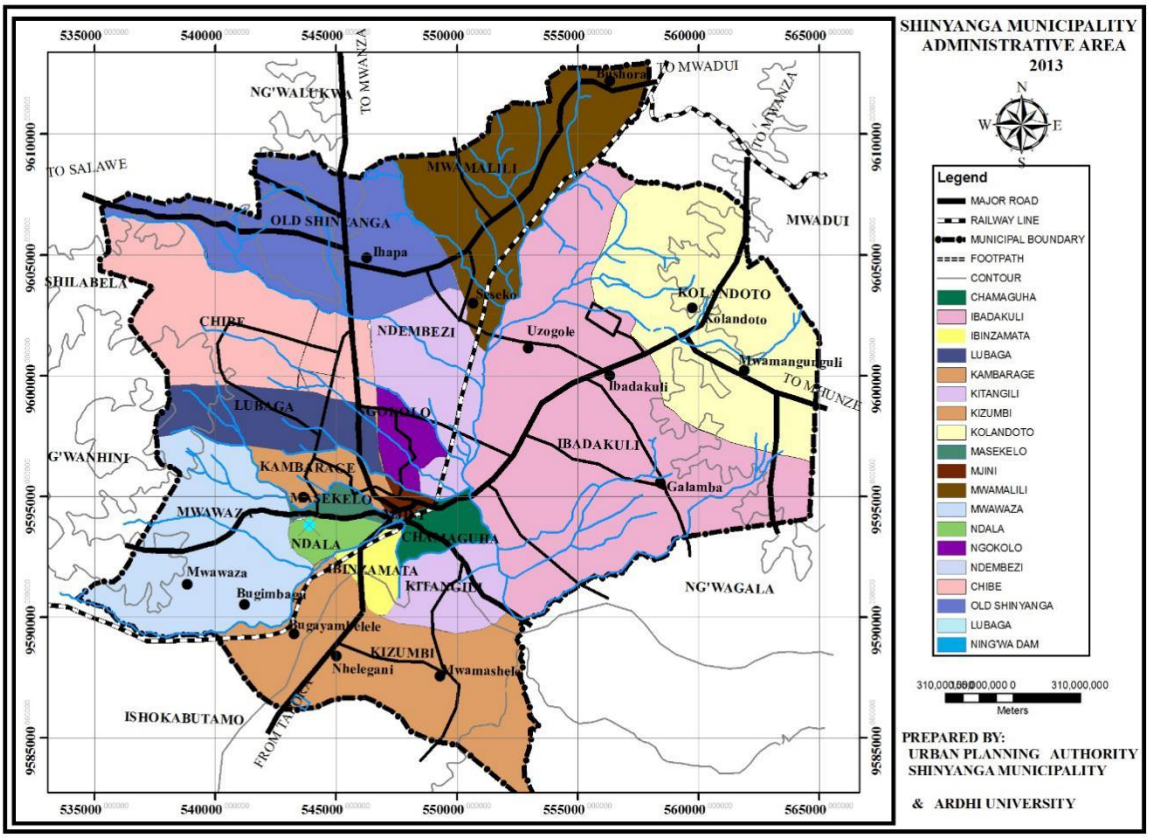


Figure 1: Administrative Area of Shinyanga Municipality

Shinyanga Municipal economic base depends on services provided by both Central and Local Governments. Other economic activities are public services, small scale trading and agriculture. Small – scale agriculture and animal husbandry are the major economic activities especially in the peri-urban areas. Main crops are maize, paddy, beans and vegetables. There are few big industries compared to other lake zone regions, hence the purchasing power of Shinyanga residents is mainly determined by the salary income for employed people, trading activities and agricultural products income.

The climatic condition in Shinyanga town is tropical semi-arid with two rainy seasons per year. Short rains fall between mid-October and December, the main rain season is between March and May. The area receives between 800 mm and 900 mm rainfall annually. The dry spell extends from June to early October. The temperatures range from a minimum of 16°C between June and mid-October, to a

maximum of 35°C between January and mid-March. The annual potential evaporation for Shinyanga town area is 2004 mm while the relative humidity during the day ranges between 61% and 74%. (GFA Consulting Group GmbH, 2018) (Climate-data.org, 2018).

Water supply and Sanitation services in Shinyanga Municipality are provided by Shinyanga Urban Water Supply and Sanitation Authority (SHUWASA), an autonomous board established by the Water Supply and Sanitation Act, 2009.

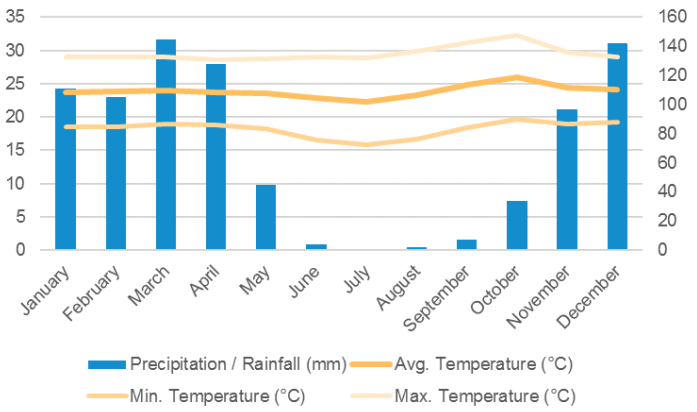


Figure 2: Climate data for Shinyanga

Shinyanga Municipality gets water from two water sources namely, Ningh'wa reservoir, and Lake Victoria (bulk water purchase from KASHWASA). During the year 2016/17, total water produced/supplied was 4,051,614m³ from Ning'hwa Reservoir and bulk water purchase distributed in the ratio of 14% and 86% respectively.

Figure 3: Main drinking water tank, source: Lake Victoria

The Authority purchases treated water from Lake Victoria through Kahama Shinyanga Water Supply and Sanitation Authority (KASHWASA). Water from Lake Victoria Water project is designed to deliver to Shinyanga 28,000 m³/day in 2024. SHUWASA receives its bulk water through Old Shinyanga Tank shown in Figure 3 and is distributed to four elevated towers each with a capacity of 250m³.

SHUWASA has 24 boreholes with a maximum total yield of 5,200m³ /day but they are not in operation mainly due to higher salinity compared to Water from Lake Victoria (bulk purchase). 12 boreholes are located within Mwawaza Ward while others are located at Mazingira centre, Town centre, SHIRECU and Kizumbi ward.

4 Service outcomes

4.1 Containment

The Public Health Department of the Municipality, who oversees sanitation, monitors the number of Households using different types of toilets. The following information was made available during a Key-Informant Interview with the Public Health Officer of Shinyanga (KII-1, 2018):

- Type A: traditional pit latrine without slab (17,284 households)
- Type B: improved pit latrine (8,363 households)
- Type C: VIP latrine (5,412 households)
- Type D: Flush / Pour Flush Toilet (9,145 households)
- Type X: no toilet /open defecation (800 households)

According to the Baseline Survey for Sanitation (GFA Consulting Group GmbH, 2018), most of the traditional pit latrines are in a poor condition, have no roof, no privacy doors and have weak slabs that imply inadequate safety to the user. Superstructures are often not stable, 48 % of them are made of mud bricks, pits have no lining and are therefore susceptible to collapse during rainy season. To classify

these cases, 48 % of the traditional pit latrines (Type A) were therefore defined as failed, damaged, collapsed or flooded containment system (T1B10C10 according to the SFD classification).

The remaining traditional pit latrines (Type A) were defined as pit latrines, which are never emptied and abandoned when full. It was assumed that half of them are not adequately covered (T1B8C10), the remaining are considered as pit latrine, which are never emptied and abandoned when full and adequately covered (T1B7C10).

Improved pit latrines are considered as lined pit with semi-permeable walls and open bottom (T1B5C10). VIP latrines (Type C) have a vent pipe, fly screen and a proper superstructure. The pit is generally constructed with bricks and a strong slab as a cover. The VIP latrines are therefore considered as lined pit with semi-permeable walls and open bottom (T1B5C10).

Type D describes Flush / Pour Flush latrines, where some of them are connected to septic tanks (T1A2C5) and some are discharging directly to a soak pit (T1A1C5). Not all septic tanks, which are locally called like that are performing as septic tanks (KII-3, 2018), instead they are acting as sealed vaults connected to a soak pit (T1A3C5).

The following Table 1 describes the translation of the local containment classification into SFD classifications according to the definition given in the SFD Manual.

Table 1 Type of Toilets/Containment and the corresponding SFD system label (GFA Consulting Group GmbH 2018)

Local containment classification	Surveyed (%)	SFD Classification	SFD (%)
Type A: Traditional Pit Latrine without slab/open pit	42	Pit abandoned when full and NOT adequately covered (T1B8C10)	11
		Pit abandoned when full and adequately covered (T1B7C10)	10
		Containment collapse (T1B10C10)	21
Type B: Improved pit latrine	21	Lined pit (semi-perm. walls and open bottom) (T1A5C10)	34
Type C: VIP Latrine (vent pipe, fly screen and superstructure)	13	Lined pit (semi-perm. walls and open bottom) (T1A5C10)	
Type D: Pour Flush	22	Septic tank to soak-pit (T1A2C5)	6
		Fully lined tank to soak-pit (T1A3C5)	8
		No onsite container to soak-pit (T1A1C5)	8
No Toilet Facility	2	No toilet. Open defecation (T1B11 C7 TO C9)	2

4.2 Ground water pollution risk

For some of the systems, the ground water pollution risk must be considered. The risk of groundwater pollution was estimated from data on drinking water from groundwater sources, hydrogeology and the distance between groundwater sources and sanitation facilities, according to the tool provided in the SFD Graphic Generator.

In the case of Shinyanga, the overall risk for ground water pollution was estimated as low. A clayey soil, a ground water table level of 5-10m and the fact that less than 5 % of the population depends on water supply from ground water (KII-2, 2018) results in the estimation of an overall low risk of groundwater pollution.

4.3 Emptying and transport

Figure 4: Emptying truck

Both, public and private service providers offer emptying services with vacuum tanks in Shinyanga. According to an interview with private pit emptiers, solid waste dumped into the toilets cause problems and can block the pumps during the emptying process. Therefore, often, the vacuum truck do not empty the containment tanks completely and mainly suck the liquid part from the tanks, the solid part of the sludge remains (KII-4, 2018). Some Households empty the containments manually and dispose the content into a newly dug hole nearby. The proportion of emptiable systems from which faecal sludge is emptied was therefore assumed as 50%. Emptying of collapsed containment system is considered as more complicated (KII-4, 2018), therefore, for failed, damaged, collapsed or flooded systems (T1B10C10) the percentage of emptied systems is set to 25% instead of 50%. More investigation is needed to fully understand the emptying scenarios. As in many cases, the content remains in the neighbourhood and is only dumped into a nearby hole, the proportion of faecal sludge that is transported is considered as low (10 %).

4.4 Disposal

The wastewater emptied with vacuum trucks is transported to the official disposal place *Nhelegani* in the Kisumbi Ward. A treatment plant for wastewater or faecal sludge does not exist in Shinyanga.

The service providers mention the long distance to the disposal place and high costs for fuel as a serious challenge. Some of the trucks do get special permission of dump the wastewater at other places, such as the football pitch in the stadium to water and fertilise the grass. An informal disposal in other places cannot be precluded.

Figure 5: Wastewater dumpsite

The disposal place *Nhelegani* is a small pond in the peri-urban area of Shinyanga. There are no houses nearby and the area is not fenced. Infiltration into the ground is slow and, especially in rainy season, the pond overflows (KII-4, 2018).

5 SFD Graphic

The above-described sanitation chain of Shinyanga is summarised in the following SFD Matrix (Table 2) and SFD Graphic (Figure 6).

The safely managed excreta (42%) originate from FS contained but not emptied from onsite systems located in areas of low groundwater pollution risk. All the safely managed FS is from the practise of covering and digging new pits when the old one gets full, and FS contained in pits and tanks that have not yet been emptied. In the medium- to long- term, these practises are not sustainable and FSM improvements to emptying, transport and treatment services will be required in the future.

The balance (58%) of excreta are unsafely managed. Most of which is from FS not contained and not emptied from unsafe pits (27%), and FS emptied but not delivered to treatment (27%).

Table 2: SFD Matrix for Shinyanga Municipality

Shinyanga Municipality, Shinyanga, Tanzania, 29 Nov 2018. SFD Level: 1 - Ir
Population: 182646
Proportion of tanks: septic tanks: 100%, fully lined tanks: 100%, lined, open

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
T1A1C5 User interface discharges directly to soak pit	8.0			
T1A2C5 Septic tank connected to soak pit	6.0	50.0	10.0	0.0
T1A3C5 Fully lined tank (sealed) connected to a soak pit	8.0	50.0	10.0	0.0
T1A5C10 Lined pit with semi-permeable walls and open bottom, no outlet or overflow	34.0	50.0	10.0	0.0
T1B7C10 Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow	10.0			
T1B8C10 Pit (all types), never emptied, abandoned when full but NOT adequately covered with soil, no outlet or overflow	11.0			
T1B10C10 Containment (unlined tanks, partially lined tanks and pits, and unlined pits) failed, damaged, collapsed or flooded -	21.0	25.0	0.0	0.0
T1B11 C7 TO C9 Open defecation	2.0			

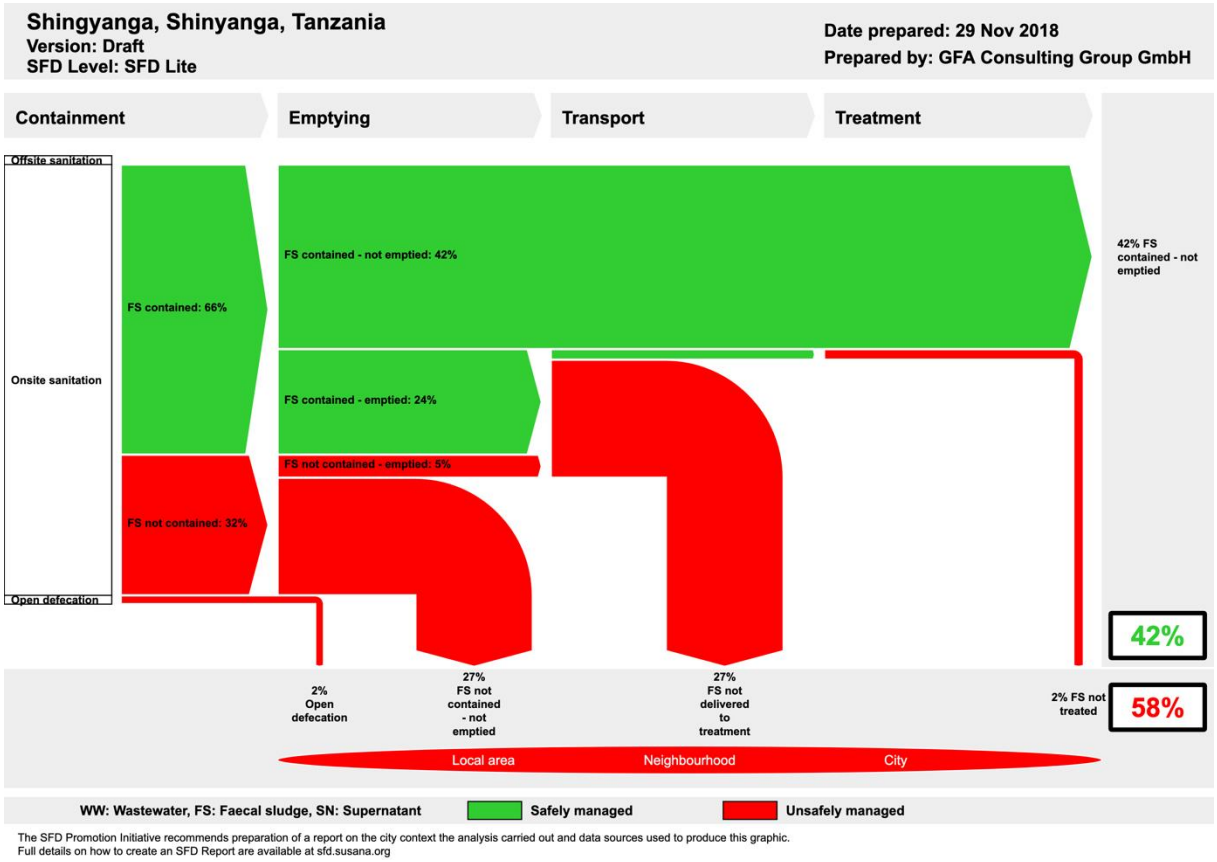


Figure 6: SFD Graphic for Shinyanga

6 Data and assumptions

Due to on-going project activities in Shinyanga, a lot of information was easily available through project reports such as a feasibility study and a sanitation baseline report (see list of data sources). However, this information was partly only referring to the project area and not covering the whole Municipality of Shinyanga.

The Health Office of Shinyanga Municipality has access to data about the percentages of the population using different types of toilets. This information has been very valuable, but it is worth stressing that the data only include information about the user's interface and does not include information about where it is connected to. No recorded data are available about the rest of the sanitation chain. Assumptions had to be taken. To produce this SFD, an 10-day expert mission on site was carried out to understand the sanitation chain of Shinyanga mainly through Key-Informant-Interviews and site visits. Results are summarised and visualised in this present SFD report.

7 List of data sources

Climate-data.org, 2018. *Climate Shinyanga.* [Online]
Available at: https://en.climate-data.org/africa/tanzania/shinyanga/shinyanga-3112/#climate-graph
[Zugriff am November 2018].

GFA Consulting Group GmbH, 2018. *Baseline Survey Sanitation,* s.l.: GIZ-funded project "Improvement of urban water supply and sanitation services in under-served areas in Tanzania".

GFA Consulting Group GmbH, 2018. *Feasibility Study Report Shinyanga - Masekelo & Ndala,* s.l.: GIZ-funded project "Improvement of urban water supply and sanitation services in under-served areas in Tanzania".

KII-1, 2018. *Municipal Public Health Officer, Mr. Kuchibanda* [Interview] (27 November 2018).

KII-2, 2018. *Water Department of the Municipality of Shinyanga - Ms. Mariam* [Interview] (27 November 2018).

KII-3, 2018. *Local Masons for toilet construction from Ndala Ward* [Interview] (28 November 2018).

KII-4, 2018. *Local pit emptiers - private service providers* [Interview] (27 November 2018).

NBS, 2018. *National Bureau of Statistics - Tanzania Total Population by District.* [Online]
Available at: http://www.nbs.go.tz/
[Zugriff am November 2018].