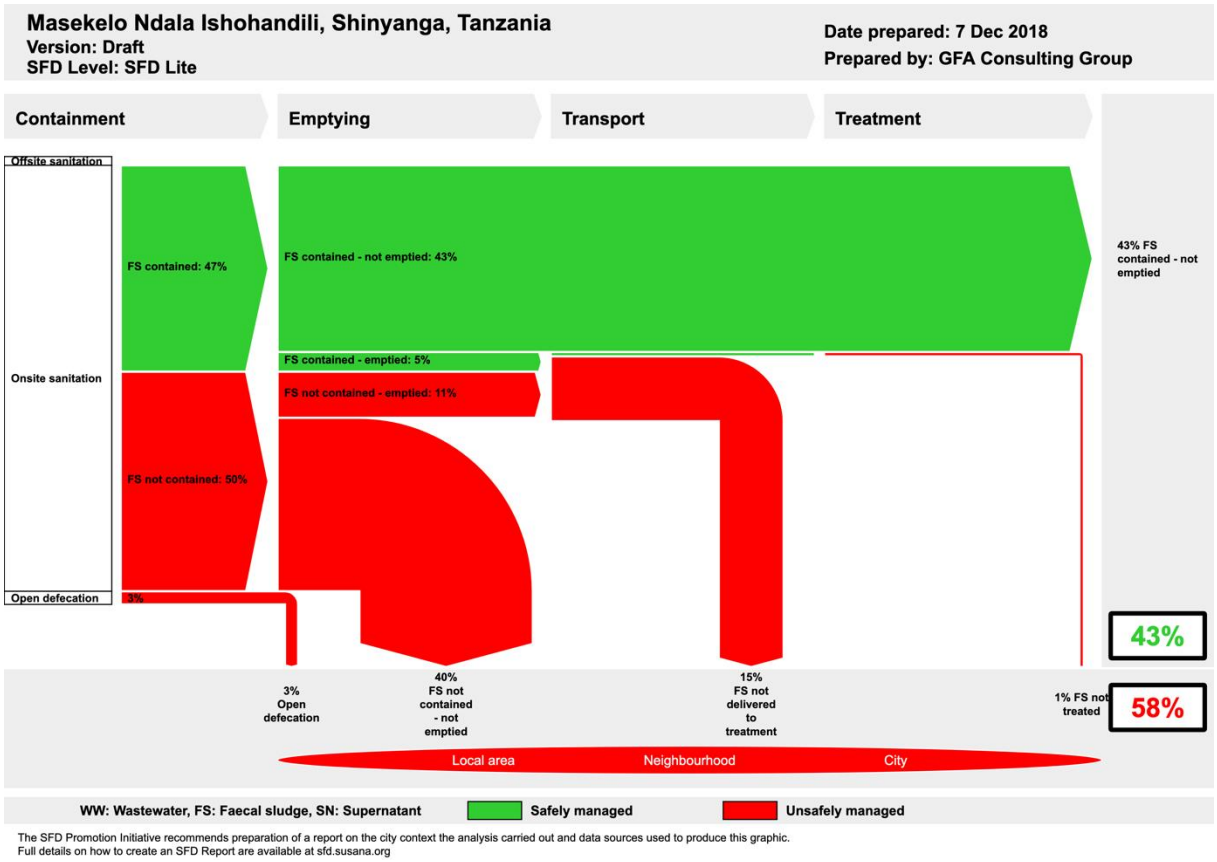
SFD Lite Report

Masekelo and Ndala Tanzania

This SFD Lite Report was prepared by GFA Consulting Group GmbH

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

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 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: 07/12/2018

3 General city information

Masekelo ward and Ndala ward are the selected project areas in Shinyanga for the GIZ "*Scaling up of access to water supply and sanitation services in under-privileged urban areas*". It is currently implementing a scaling up project to connect the wards for the first time to piped water from surface water source through the Shinyanga Urban Water Supply and Sanitation Authority (SHUWASA) water supply network. The scaling up of sanitation services is also part of the expected results for this project. Hence, this SFD report mostly bases itself and follows a first Baseline Study carried out in June 2018.

Masekelo Mtaa and Ndala Mtaa were selected for implementation of demonstration measures in Shinyanga Municipality. Further investigation of the project area revealed that, the project area which was originally considered as Masekelo Mtaa includes a part of Ishoshandili sub-mtaa which is part of Nyegezi Mtaa. Therefore, the project area includes Ishoshandili Mtaa in addition to Masekelo Mtaa and Ndala Mtaa.

The current population in the project area could not easily be projected from the census figures of 2012 because the project boundaries do not coincide with census boundaries. The actual total current population (2017) was obtained by head count which was conducted by the Mitaa governments of Ndala, Masekelo and Ishoshandili during the preparation of the Feasibility Study (GFA Consulting Group GmbH 2018). The results are given in Table 1.

Table 1: Population in the project area

Area	2017 Count
Ndala	2,800
Masekelo	3,991
Ishoshandili	875
Total	7,666

The location of the project area is shown in the graphic below.

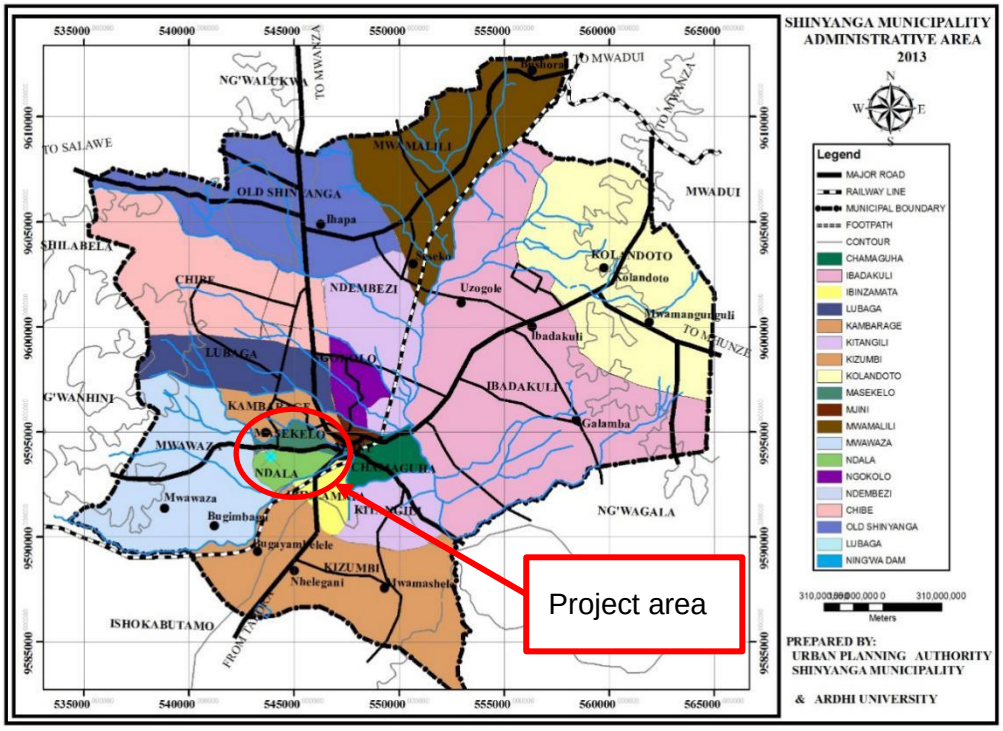


Figure 1: Administrative Area of Shinyanga Municipality

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 2,004 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.

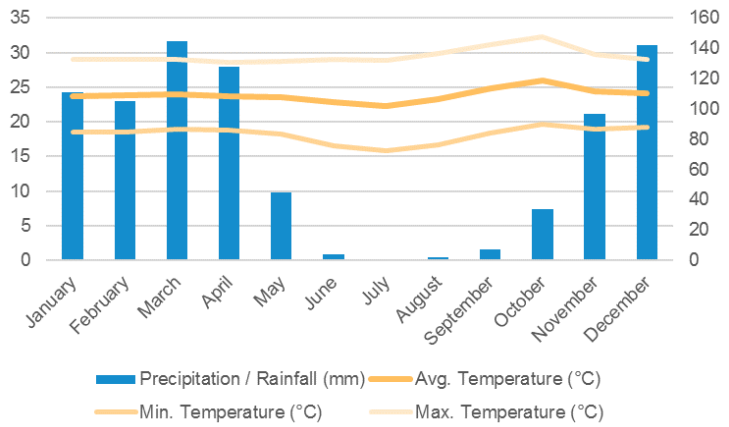


Figure 2: Climate data for Shinyanga

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

Masekelo, Ndala and Ishoshandili are within the southern zone which gets water from the southern water tower located at Kizumbi ward. Some parts of Masekelo and Ndala are served by public water kiosks and private individual connections. Existing house connections are connected over a long distance (up to 1km), trespass private lands and are of small diameter (32mm) which results into low pressure. Some of the communities organized themselves in groups of 10 to 15 members to share the total cost of the small diameter pipe for water connection.

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.

4 Service outcomes

4.1 Containment

Based on the GIZ Baseline Survey on Sanitation Report (GFA Consulting Group GmbH 2018), containment was classified in three general categories such as Improved Latrines, Unimproved Latrines and "No Toilet Facility". Compared to Traditional Latrines, Improved Latrines were defined as "*having an impervious and washable floor e.g. Sanplat, a superstructure with roof and lockable door, stability of both substructure and superstructure, hand washing facilities, fly proofing, lined pit hole*". In addition, improved sanitation/latrine include Pour-flush/flush latrine, Improved Pit Latrine, Ventilated Improved Pit latrine. Below are the types of containment that were further classified during the Baseline Study.

Table 2 Type of Toilets/Containment in Masekelo, Ndala and Ishoshandili (GFA Consulting Group GmbH 2018)

Local containment classification		**Population access Masekelo (%)**	**Population access Ndala (%)**	**Population access Ishoshandili (%)**	**Population access project area total (%)**
Improved Latrines/Sanitation	Pour Flush linked to septic system	1.1	0	0	**0.6**
	Pour Flush linked to pit	3.3	3.3	5.3	**3.5**
	VIP Latrine (vent pipe, fly screen and superstructure)	6.5	10	5.3	**7.6**
Unimproved Latrines	Traditional Pit Latrine with slab	69.6	70	63.2	**69**
	Traditional Pit Latrine without slab/open pit	17.4	15	10.5	**15.7**
No Toilet Facility		2.2	1.7	15.8	**3**

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 unimproved latrines were therefore defined as failed, damaged, collapsed or flooded containment system (T1B10C10 according to the SFD classification).

The remaining traditional pit latrines without slab were defined as pit latrines, which are never emptied and abandoned when full but not adequately covered (T1B8C10). The traditional pit latrines with concrete slab are considered as pit latrine, which are never emptied and abandoned when full and adequately covered (T1B7C10).

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 (T1A5C10).

Table 3 Type of Toilets/Containment and the corresponding SFD system label (GFA Consulting Group GmbH 2018)

Local containment classification	Surveyed (%)	SFD Classification	SFD (%)
Pour Flush linked to septic system	0.6	Fully lined tank to soak-pit (T1A3C5)	1
Pour Flush linked to pit	3.5	No onsite container to soak-pit (T1A1C5)	3
VIP Latrine (vent pipe, fly screen and superstructure)	7.6	Lined pit (semi-permeable walls and open bottom) (T1A5C10)	8
Traditional Pit Latrine with slab	69	Pit abandoned and covered (T1B7C10)	35
		Containment collapsed (T1B10C10)	42
Traditional Pit Latrine without slab/open pit	15.7		
		Pit not adequately covered (T1B8C10)	8
No Toilet Facility	3	No toilet. Open defecation (T1B11 C7 TO C9)	3

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 the project area in Shinyanga, the overall risk for ground water pollution was estimated as low. A clayey soil and especially the fact that less than 5 % of the population depends of water supply from ground water (KII-2 2018) results in the estimation of a low risk of groundwater pollution.

4.3 Emptying and transport

Both, public and private service providers offer emptying services with vacuum tanks. According to an interview with private pit emptiers, most clients of the vacuum truck emptiers are in the town centre and not in the project area (KII-4 2018).

Figure 4: Emptying truck

In the project area, most of the containment technologies are traditional pit latrines, which are not emptied when they are full and are therefore considered as abandoned. The common practice is to dig a new pit and cover the full pit with soil.

Another common practice is to empty the content manually, dig a new hole nearby and bury it. The proportion of emptiable systems from which faecal sludge is emptied was therefore assumed as 50%. Emptying of collapsed containment systems 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.

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.

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).

Looking at the emptied faecal sludge from the project area, most of it remains in the neighbourhood as the common practice is to only dig a new hole to bury it nearby. The proportion of transported faecal sludge is therefore considered as very low (5%).

5 SFD Graphic

The above-described sanitation chain of Masekelo, Ndala and Ishoshandili is summarised in the following SFD Matrix (Table 4) and SFD Graphic (Figure 6).

The safely managed excreta (43%) originate from FS contained but not emptied from onsite systems located in areas of low groundwater pollution risk. Most of that safely managed FS (35%) is from the practise of covering and digging new pits when the old one gets full. In the medium- to long- term, this practise may not be 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 (40%), and FS emptied but not delivered to treatment (15%).

Table 4: SFD Matrix for Masekelo and Ndala wards

Masekelo_Ndala_Ishoshandili, Shinyanga, Tanzania, 3 Dec 2018. SFD Level:
Population: 7666
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	3.0			
T1A3C5 Fully lined tank (sealed) connected to a soak pit	1.0	50.0	5.0	0.0
T1A5C10 Lined pit with semi-permeable walls and open bottom, no outlet or overflow	8.0	50.0	5.0	0.0
T1B7C10 Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow	35.0			
T1B8C10 Pit (all types), never emptied, abandoned when full but NOT adequately covered with soil, no outlet or overflow	8.0			
T1B10C10 Containment (unlined tanks, partially lined tanks and pits, and unlined pits) failed, damaged, collapsed or flooded -	42.0	25.0	0.0	0.0
T1B11 C7 TO C9 Open defecation	3.0			

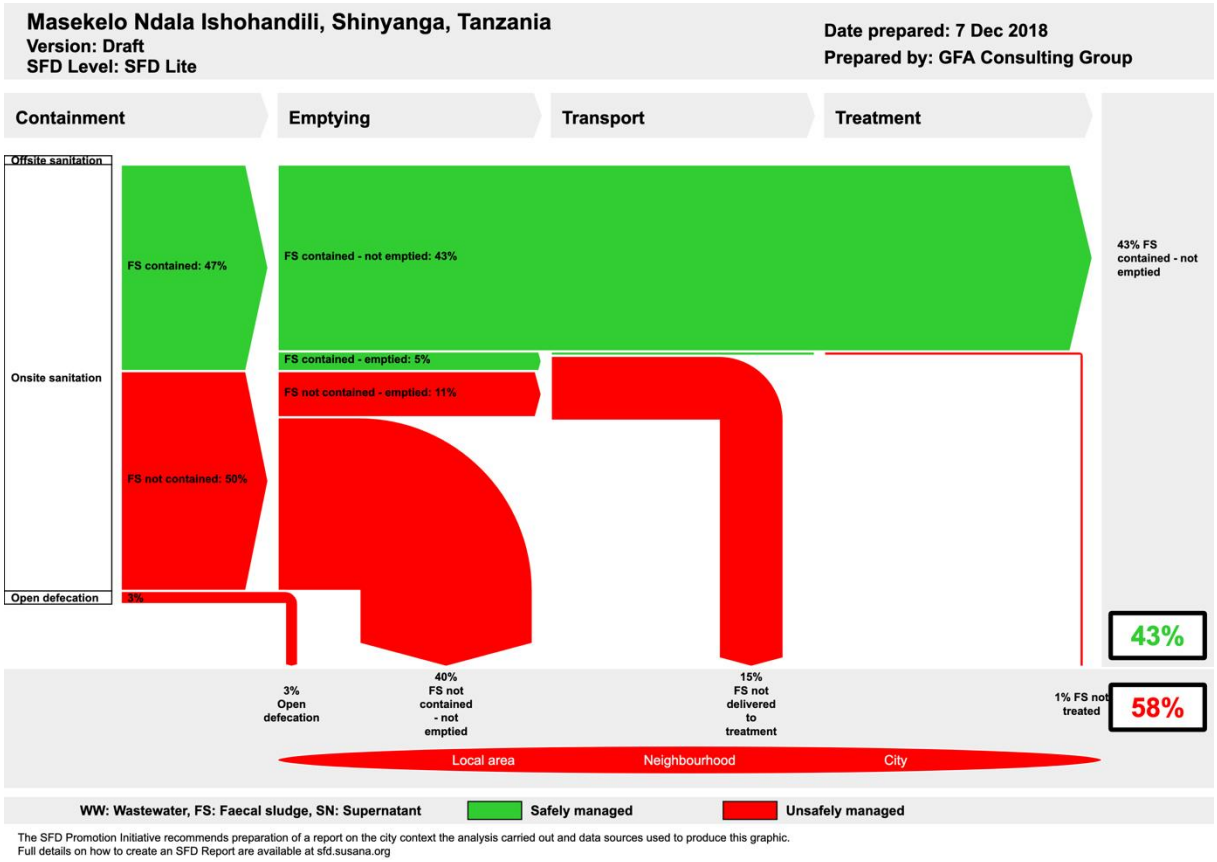


Figure 6: SFD Graphic for Masekelo and Ndala wards

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). Especially, the sanitation baseline report includes valuable data of the proportion of the population using different types of toilets and containment technologies. This information has been very valuable, but it is worth stressing that the data only include information about the containment. No recorded data are available about the rest of the sanitation chain. Assumptions had to be taken. To produce this SFD, a 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. *Climate Shinyanga.* 2018. https://en.climate-data.org/africa/tanzania/shinyanga/shinyanga-3112/#climate-graph (Zugriff am November 2018).

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

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

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

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

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

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

NBS. *National Bureau of Statistics - Tanzania Total Population by District.* 2018. http://www.nbs.go.tz/ (Zugriff am November 2018).