

# SFD Report

## Terego District Uganda

### Revised Report

This Intermediate SFD Report - was prepared by GFA  
Consulting Group GmbH

On behalf of *Water Supply and Sanitation for Refugee  
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SFD Report Terego District, Uganda, 2021

Produced by: GFA Consulting Group GmbH

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THE REPUBLIC OF UGANDA  
Ministry of Water and Environment

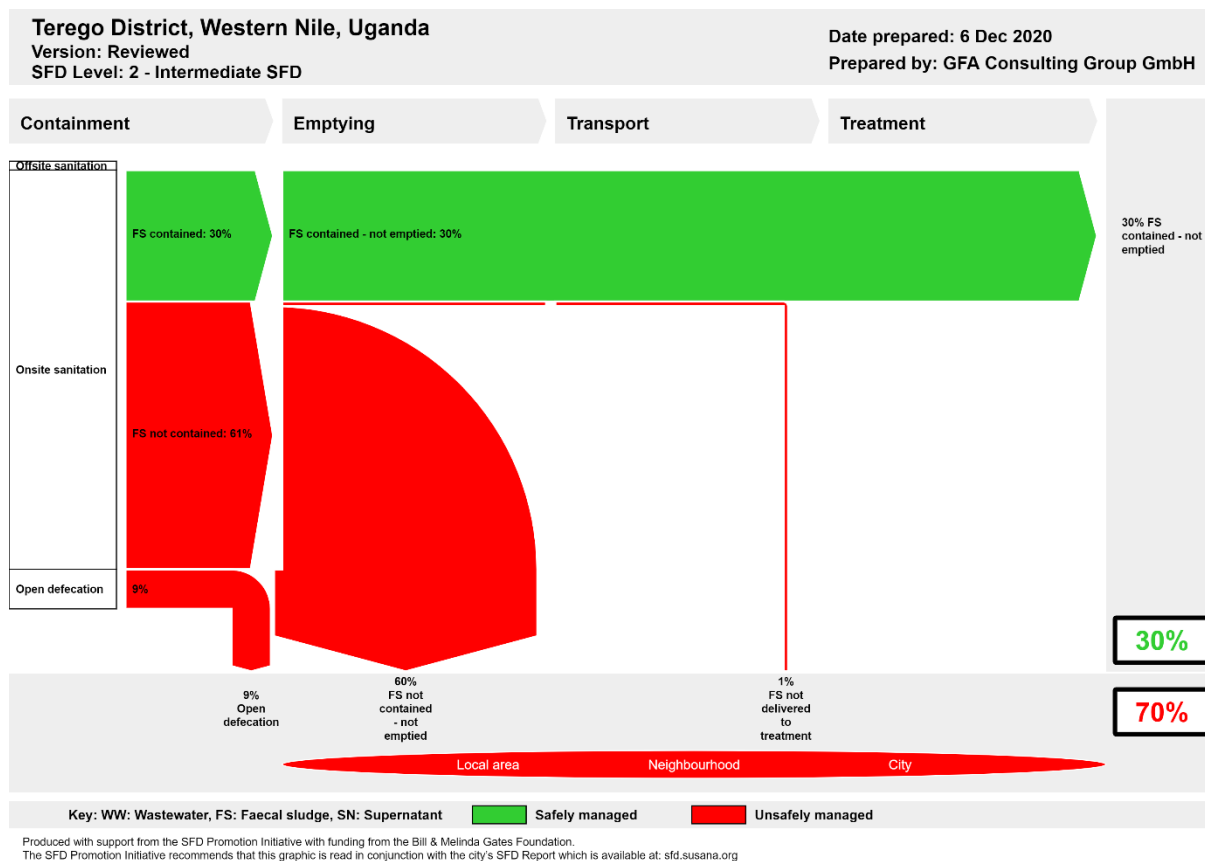


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## 1. The SFD Graphic



## 2. Diagram information

### SFD Level:

This is an Intermediate level SFD.

### Produced by:

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GIZ Water Supply and Sanitation for Refugees Settlements and Host Communities in Northern Uganda – GIZ WatSSUP Programme.

### Status:

This is a final SFD report.

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## 3. General city information

Terego District is a newly established district in the West Nile part of the Northern Region of Uganda. The district comprises of six sub-counties: Aii-Vu, Bileafe, Katrini, Odupi,

Omugo, Uriama and 39 parishes. The administrative headquarters of Terego District is Leju trading centre in Aii-Vu sub-county (The Independent, 2020).

Terego district hosts significant refugee populations in Imvepi Refugee settlement (Odupi sub-county) and Rhino Refugee Settlement, which stretches over parts of Odupi, Omugo, and Uriama sub-counties and extends into Madi-Okollo District.

According to population projections of the Uganda Bureau of Statistics (UBOS), the non-refugee population of Terego District for 2020 was estimated at 233,300 people (UBOS, 2019).

The scope of this report includes the non-refugee host communities of Terego district and the refugee populations of Imvepi and Rhino refugee settlements. For Rhino refugee settlement, the population figure was reduced by the refugee communities living in settlement pocket located in Rigbo sub-county (Madi-Okollo District). As a result, the total population covered by this report is 394,319.

The district can be characterised as rural. The main economic activity among both the host

and refugee communities is some form of agriculture, mainly crop cultivation at subsistence scale (ILO, 2020).

The climate in the Terego district is characterised by a unimodal rainfall pattern with between April and November an a dry season between December and March.

#### 4. Service outcomes

**Containment:** The refugee and host communities in Terego district are rural communities. The entire population in the district relies on onsite sanitation facilities, mainly traditional unlined pit latrines which are abandoned when full. NGOs such as Water Mission provide households in the refugee settlements and adjacent host communities with latrine slabs but are not actively involved in latrine construction (Water Mission, 2020). Some institutions such as healthcare facilities, district offices and schools in the host community as well as in the refugee settlement have built more permanent latrines (semi-lined or lined) and there are very few flush toilets (BIBCO Investments Ltd, 2019; Arua District Office, 2020).

Seasonal flooding and the collapse of pits due to sandy soils and raised groundwater tables during the rainy season is a challenge (Arua District Office, 2020).

**Emptying and transport:** The emptying of household toilets is not common in the reporting area. Some institutional toilets get emptied by private cesspool emptying businesses.

**Treatment/Disposal/End-use:** There is currently no treatment facility for faecal sludge in Terego District. The private emptying businesses are therefore left to come into agreement with private landowners in the host communities to dump the sludge in pits excavated on private land. A Faecal Sludge Treatment Plant (FSTP) for Imvepi refugee settlement and the surrounding host communities is currently under construction. Another FSTP is planned to be constructed in Rhino Refugee Camp (BIBCO Investments Ltd, 2019; OXFAM, 2020).

#### 5. Service delivery context

At the national level, the Ministry of Water and Environment (MWE) is responsible for overall coordination, policy formulation, the setting of standards, inspection, monitoring, and technical back-up and initiating legislation.

The mandate of the MWE regarding sanitation and hygiene is limited to development of public sanitary facilities and promotion of good

practices of hygiene and sanitation in small towns and rural growth centres.

The Urban Water and Sewerage Department (UWSD) within MWE takes care not only of gazetted urban areas but also of piped water systems supplying rural growth centres. It has set up two sets of regional deconcentrated units:

- Water and Sanitation Development Facilities (WSDFs) for the implementation of new water supply and sanitation schemes and major rehabilitations.
- Umbrella Authorities for operation and maintenance.

The National Environment Management Authority (NEMA) is responsible for licensing all private businesses that are dealing with waste. NEMA also registers private entrepreneurs in the waste sector.

The Ministry of Health (MoH) is responsible for the promotion of public health and sanitation at the household level. This ministry operates under the National Health Policy (1999), and the Local Governments Act (1997). The Environmental Health Policy (2005) defines environmental health priorities of the Government as well as providing a framework for the development of services together with programs at national and local government levels. It reinforces the Public Health Act (2000) with the overall policy objective to achieve 100% hygienic sanitation facilities in urban areas. The policy implies that management, responsibility and ownership by users of sanitation facilities result in more hygienic facilities.

#### 6. Overview of stakeholders

The main stakeholders in the current institutional and organisational set-up in Terego district are summarised in Table 1.

**Table 1: Key stakeholders in Terego district**

Key Stakeholders	Institutions / Organizations /
Public Institutions	Office of the Prime Minister (OPM); Terego District Office (not established yet), Arua District Office, Water and Sanitation Development Facility -North (WSDF-N) Northern Umbrella of Water and Sanitation.
Non-governmental Organisations	Water Mission, World Vision Uganda, Uganda Red Cross Society, OXFAM, Malteser and Ceford

Private Sector	Muammar Holdings Ltd (private cesspool emptying business/contractors of Water Mission )
Development Partners, Donors	UNHCR, GIZ WatSSUP

### 7. Process of SFD development

Prior to the field mission, the authors prepared a draft version of the SFD matrix, graphic and selection grid as well as a draft write-up of the justification of all major assumptions used to create the SFD graphic. This first draft was based on extensive literature and document review and discussions with WatSSUP and NaSa staff. During the field mission, the assumptions and estimates were discussed with the key informants who reviewed and validated the assumptions and estimates.

In total, ten key informant interviews were carried out during the field visits in Terego District in December 2020. Site visits and observations were beneficial for the data collection process as they gave the authors a clearer understanding of the framework conditions in the host communities and the refugee settlement.

### 8. Credibility of data

This report is based on desk-based literature review as well as primary data collected during a dedicated field mission to Terego District in December 2020. In total, ten key informant interviews were carried out along with field visits and observations. A draft of the service outcomes section including SFD matrix, selection grid and the graphic was validated and reviewed with key stakeholders during the field mission.

There is no detailed sanitation mapping data for the area. Major uncertainties exist around the percentage of the population practising open defecation and the percentage of the population sharing toilets with neighbours.

Terego district is a rural setting in which most toilets are unlined pits that get abandoned once full. In such a scenario, the risk of groundwater contamination is the main factor determining whether the sludge is considered safely managed or not. In the absence of detailed sanitation maps, we had to estimate the groundwater pollution risk based on consultancy reports and the expert opinion of key informants. It needs to be noted that our estimate of the proportion of the population living in an area with a high risk of groundwater pollution should not be confused with this population accessing contaminated water.

### 9. List of data sources

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## Abbreviations

CORESI	Community Engagement on Rural Sustainability Initiative
DEA	Department of Environmental Affairs
DWD	Directorate of Water Development
DWRM	Directorate of Water Resources Management
DWSCG	District Water and Sanitation Conditional Grant
EAC	East African Community
FSM	Faecal Sludge Management
FSTP	Faecal Sludge Treatment Plant
GIZ	German Development Cooperation
ILO	International Labour Organisation
IWRM	Integrated Water Resources Management
JPF	Joint Partnership Fund
JWESSP	Joint Water and Environment Sector Support Program
KAP	Knowledge, Attitudes and Practices
LVBC	Lake Victoria Basin Commission
MoES	Ministry of Education and Sports
MoFPED	Ministry of Finance, Planning and Economic Development
MoH	Ministry of Health
MoLHUD	Ministry of Lands, Housing and Urban Development
MWE	Ministry of Water and Environment
NaSa	GIZ Sector Programme Sustainable Sanitation
NBI	Nile Basin Initiative
NEMA	National Environment Management Authority
NSGE	National Strategy for Girls' Education
NWSC	National Water and Sewerage Corporation (NWSC)
OPM	Office of the Prime Minister
RGCs	Rural Growth Centers
RWUs	Regional Water Utilities
SDGs	Sustainable Development Goals
SFD	Shit-flow Diagram
TSU	Technical Support Unit
UBOS	Uganda Bureau of Statistics
UNDP	United Nations Development Programme

UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
URCS	Uganda Red Cross Society
UWSA	Umbrella of Water and Sanitation Authority
UWSA-N	Umbrella of Water and Sanitation Authority - North
UWSD	Urban Water and Sanitation Department
WASH	Water, Sanitation and Hygiene
WatSSUP	Water Supply and Sanitation for Refugees Settlements and Host Communities in Northern Uganda (GIZ Programme)
WMZs	Water Management Zones
WPC	Water Policy Committee
WSDF-N	Water and Sanitation Development Facility - North
WSDFs	Water and Sanitation Development Facilities
WSSAs	Water Supply and/or Sewerage Authorities

## 1 Area context

Terego District is a newly established district in the West Nile part of the Northern Region of Uganda. Terego District has been carved out of Arua District taking effect on 1st July 2020. The district comprises of Terego East County and Terego West County. It further comprises of six sub-counties: Aii-Vu, Bileafe, Katrini, Odupi, Omugo, Uriama and 39 parishes. The administrative headquarters of Terego District is Leju trading centre in Aii-Vu sub-county (The Independent, 2020).

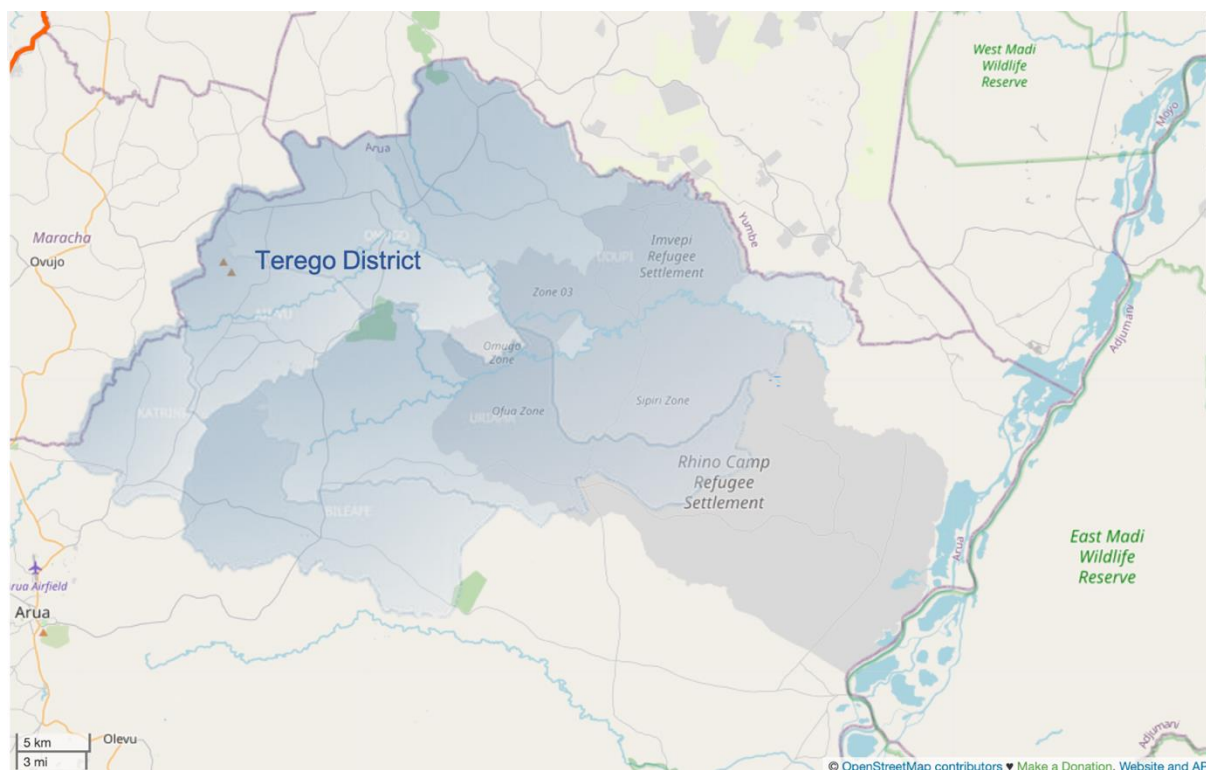


Figure 1: Map of Terego District showing Rhino and Imvepi Refugee Settlements

\*Source: adapted from Open Street Maps 2020

By the end of 2020, Terego District was not fully administratively operational yet. Arua District still controlled the district budget and investment planning, and key positions (e.g., in the District Water and Health Office) were not filled yet. Consequently, most documents reviewed for this report refer to Arua District.

Terego district hosts significant refugee populations in Imvepi Refugee settlement (Odupi sub-county) and Rhino Refugee Settlement, which stretches over parts of Odupi, Omugo, and Uriama sub-counties and extends into Madi-Okollo District.

According to population projections of the Uganda Bureau of Statistics (UBOS), the non-refugee population of Terego District for 2020 was estimated at 233,300 people (UBOS, 2019).

The scope of this report includes the non-refugee host communities of Terego district and the refugee populations of Imvepi and Rhino refugee settlements. For Rhino settlement the population figure was reduced by the refugee communities living in settlements pocket located in Rigbo sub-county (Madi-Okollo District). This results in the following population estimates (Table 2) used for the scope of this report.

**Table 2: Population estimates Terego district**

Population category	Population (2020)
Terego host-community*	233,300
Imvepi refugee settlement**	67,439
Rhino refugee settlement**	121,533
Rhino refugee communities in Rigbo sub-county***	- 27,953
<b>Total</b>	<b>394,319</b>

\*UBOS (2019); \*\*UNHCR (2020c), \*\*\*estimate based on UNHCR (2020d)

The district can be characterised as rural. The main economic activity among both the host and refugee communities is some form of agriculture, mainly crops (ILO, 2020).

The climate in the Terego district is characterised by a unimodal rainfall pattern (Nsubuga et al., 2014) with one rainy season from April to November and one dry season from December to March. The months of April to July, and the month of October receive light rains. The wettest months are usually August and September with rainfalls of around 120mm/month. The average annual rainfall is 1250mm, and the dry season is between December and March (Arua District Local Government, 2009).



**Figure 2: Family homestead in host community Omugo sub-county, Terego District**

\*source: Moses Nyakana

Parts of the district are prone to flooding and waterlogging during the rainy season (UNHCR, 2020b).

## 2 Service Outcomes

### 2.1 Overview

This section presents the range of infrastructure/technologies, methods and services designed to support the management of faecal sludge through the sanitation service chain in Terego District including the two refugee settlements (Figure 3). For details on quantitative estimations, refer to section 2.2.

List A: Where does the toilet discharge to? (i.e. what type of containment technology, if any?)	List B: What is the containment technology connected to? (i.e. where does the outlet or overflow discharge to, if anything?)									
	to centralised combined sewer	to centralised foul/separate sewer	to decentralised combined sewer	to decentralised foul/separate sewer	to soakpit	to open drain or storm sewer	to water body	to open ground	'don't know where'	no outlet or overflow
No onsite container. Toilet discharges directly to destination given in List B					Significant risk of GW pollution Low risk of GW pollution					Not Applicable
Septic tank					Significant risk of GW pollution Low risk of GW pollution					Not Applicable
Fully lined tank (sealed)					Significant risk of GW pollution Low risk of GW pollution			T1A3C9		
Lined tank with impermeable walls and open bottom	Significant risk of GW pollution Low risk of GW pollution	Significant risk of GW pollution Low risk of GW pollution	Significant risk of GW pollution Low risk of GW pollution	Significant risk of GW pollution Low risk of GW pollution	Significant risk of GW pollution Low risk of GW pollution					Significant risk of GW pollution Low risk of GW pollution
Lined pit with semi-permeable walls and open bottom	Not Applicable									Significant risk of GW pollution Low risk of GW pollution
Unlined pit										Significant risk of GW pollution Low risk of GW pollution
Pit (all types), never emptied but abandoned when full and covered with soil										T2B7C10 T1B7C10
Pit (all types), never emptied, abandoned when full but NOT adequately covered with soil										
Toilet failed, damaged, collapsed or flooded										
Containment (septic tank or tank or pit latrine) failed, damaged, collapsed or flooded										T1B10C10
No toilet. Open defecation	Not Applicable							T1B11 C7 TO C9		Not Applicable

Figure 3: SFD Selection Grid for Terego District, Uganda

#### 2.1.1 Containment

The refugee settlements and host communities in Terego district are rural communities, and the vast majority of households use traditional unlined pit latrines, which are abandoned when full. There is conflicting information about the sharing of latrines. According to Busquet (2015), sharing of latrines is common in Arua district, but WASH implementing partners in the refugee settlements estimated that sharing of household toilets is rare as households would try to prevent latrines from filling up quickly (Water Mission, 2020). There are no major urban centres in Terego district, and the entire population relies on onsite sanitation facilities.

NGOs such as Water Mission provide households in the refugee settlements and adjacent host communities with latrine slabs but are not actively involved in latrine construction (Water Mission, 2020). Some institutions such as healthcare facilities, district offices and schools in the host community as well as in the refugee settlements have more permanent latrines (semi-



lined or lined,) and there are very few flush toilets (BIBCO Investments Ltd, 2019; Arua District Office, 2020).

The District Health Office carries out hygiene promotion and open defecation awareness campaigns (Arua District Office, 2020; MoH, 2019).

Seasonal flooding is common, and stormwater fills up latrines in low-lying areas during the rainy season. The collapse of pits due to sandy soils and raised groundwater tables during the rainy season is a challenge (Arua District Office, 2020). During the site visit, it was observed that toilets get abandoned due to termite infestation.

### 2.1.2 Emptying and transport

As mentioned above, the emptying of household toilets is not common in the reporting area. Some institutional toilets are emptied by private cesspool emptying businesses, one of which is also contracted by Water Mission to empty the institutional toilets within the refugee settlements. Since there is no Faecal Sludge Treatment Plant or official disposal site in the District, the sludge is buried on private plots (Water Mission, 2020).

### 2.1.3 Treatment/Disposal/End-use

There is currently no treatment facility for faecal sludge in Terego District. The nearest functioning faecal sludge treatment plant is located in Arua City. Another faecal sludge treatment plant, which will be located nearer, in Imvepi refugee settlement is still under construction by the Uganda Red Cross Society. At the present, the private emptiers have to come into agreement with private landowners in the host communities where pits of about 3\*3\*3m are excavated, sludge dumped, and hypochlorite added. These pits are fenced off while in use, and are later backfilled with soil as a means of decommissioning. Due to lack of demand, there is no reuse of sludge (Muammar Holdings Ltd, 2020). There are reports of illegal dumping of waste onto public land (BIBCO Investments Ltd, 2019). OXFAM has procured an 8m<sup>3</sup> exhauster truck that has been handed over to OPM and used for the desludging of latrines within the refugee settlements (OXFAM, 2020).



Figure 4: New FSTP for Imvepi under construction

\*source: Moses Nyakana

A Faecal Sludge Treatment Plant (FSTP) for Imvepi refugee settlement and the surrounding host communities is currently under construction (Figure 4). The FSTP is funded by the

Uganda Red Cross Society (Uganda Red Cross Society, 2020). The FSTP currently being constructed in Imvepi refugee settlement and is near completion. It is designed to treat 10 m<sup>3</sup>/day of FS. The FSTP in Imvepi comprises of: 1) Preliminary treatment, which basically consists of a receiving area and two sets of bar screens of 10 and 5 mm spacings; 2) Dewatering using uncovered sludge drying beds; 3) Secondary anaerobic treatment using an anaerobic baffled reactor; 4) Secondary aerobic/facultative treatment using a horizontal gravel filter; and finally, 5) Post treatment using aerobic polishing/maturation pond. Another FSTP is planned to be constructed in Rhino Refugee Camp and will be funded by OXFAM (BIBCO Investments Ltd, 2019; OXFAM, 2020). There are plans to construct a FSTP in Rhino settlement funded by OXFAM (BIBCO Investments Ltd, 2019). The construction of the FSTP in Rhino settlement comprising of eight (8) constructed wetlands, twelve (12) sludge drying beds and four (4) horizontal rock filters is expected to start soon. The effluent is expected to meet national regulatory standards for release to the natural environment.

## 2.2 SFD Matrix

Terego District, Western Nile, Uganda, 6 Dec 2020. SFD Level: 2 - Intermediate SFD				
Population: 394319				
Proportion of tanks: septic tanks: 100%, fully lined tanks: 100%, lined, open bottom tanks: 100%				
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
<b>T1A3C9</b> Fully lined tank (sealed) connected to 'don't know where'	1.0	100.0	0.0	0.0
<b>T1B10C10</b> Containment (fully lined tanks, partially lined tanks and pits, and unlined pits) failed, damaged, collapsed or flooded - with no outlet or overflow	16.0	0.0	0.0	0.0
<b>T1B11 C7 TO C9</b> Open defecation	9.0			
<b>T1B7C10</b> Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow	30.0			
<b>T2B7C10</b> 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	44.0			

Figure 5: SFD Matrix Terego District

### 2.2.1 Risk of groundwater contamination

According to Milnes (2017) and (Kasozi, 2017) the hydrogeological conditions in Terego district are determined by a fractured aquifer in the western part of the district and a porous aquifer in the eastern part of the district covering most of the areas where the two refugee settlements



are located. Most of the groundwater in the porous aquifer zone is found at a depth of more than 20m. The top soil is mostly alluvium and clay (Kasozi, 2017). The risk of groundwater contamination was assessed based on the groundwater pollution risk estimation tool provided on the SFD website. Table 3 summarises the input data in the tool and the respective groundwater risk result.

**Table 3: Assumptions for groundwater pollution risk assessment**

Indicator according to SFD Groundwater Risk Estimation Tool	Input / Assumption
Rock type in the unsaturated zone	Fine sand, silt, clay / sandstone limestone fractured rock
Depth of groundwater table	> 10m
% of sanitation facilities that are located < 10m from groundwater sources	Less than 25%
% of sanitation facilities, if any, that are located uphill of groundwater source	Greater than 25%
Water production technology used	Protected boreholes, protected dug wells or protected springs where adequate sanitary measures are in place
Overall Risk of groundwater pollution (as per SFD GW Risk estimation tool)	Significant risk (Low)

The topography of Terego district is hilly. Most of the population relies on groundwater for their drinking water supply. According to information provided by key informants, the majority of boreholes and water sources are located in low lying areas downhill from settlement pockets (Arua District Office, 2020; Terego District Office, 2020). The result of the groundwater risk assessment changing from low risk to significant risk depends on whether the percentage of sanitation facilities that are located uphill of groundwater sources is estimated as less than 25% or greater than 25%. In the absence of detailed sanitation mapping data, we assumed that 60% of the population resides in an area with a significant risk of groundwater pollution and 40% of the population resides in an area with low risk of groundwater pollution. This distribution is a rough estimate based on the available maps and hydrogeological assessments, which were discussed and agreed upon with the relevant stakeholders during the field mission. Assessing the groundwater pollution risk has been a major limitation of the SFD assessment (Section 2.2.4).

### 2.2.2 SFD Matrix Explanation – Containment

It is important to note that there is no integrated data on sanitation coverage and technologies used for the refugee settlements and the host community. In addition, due to the recent establishment of Terego District, there is no dedicated district data on sanitation. The only data for sanitation coverage on sub-county level is provided in the 2014 census. However, the census data only gives the proportion of households that have any sanitation facility. For the sub-counties that form Terego district, the census data gives an average of 16% of households with any type of toilet (UBOS, 2014). Considering that the census data is out dated and might have limited accuracy, the authors decided to estimate the sanitation coverage for the host communities based on the Arua District Rural Sanitation Report (MoH, 2019). The sanitation data for Rhino settlement were taken from a recent socio-economic household survey that was carried out in Rhino settlements as part of the feasibility study for the planned FSTP (BIBCO Investments Ltd, 2019). Since there is no detailed sanitation data for Imvepi settlement, the

sanitation coverage was adapted combining the data available for Rhino refugee settlement and data given by UNHCR (UNHCR, 2020a) and estimates of other key informants. This data is presented in Table 4.

**Table 4: Distribution of sanitation technologies in refugee settlements and host communities**

Sanitation technology used	Non-refugee population (host community)		Rhino refugee settlement	Imvepi refugee settlement
	(MoH, 2019)	Adapted estimate after key informant interviews	(BIBCO Investments Ltd, 2019)	Based on BIBCO Investments Ltd (2019) and UNHCR (2020a) adapted after key informant interviews
Private pit latrine	74%	-	75%	87%
Shared pit latrine (neighbours)	MD	-	15%	3%
Shared pit latrine (public)	MD	N/A	2%	2%
Pit latrine (private or shared)	MD	90%	92%	92%
A household with flush pour-flush toilets	3%	<1%	MD	MD
Open defecation	MD	10%	8%	8%

MD = missing data

As mentioned above, there is conflicting information about the practice of sharing of toilets in the area (Busquet, 2015; Water Mission, 2020). Unfortunately, the Arua District Rural Sanitation Data does not give any information about the proportion of households without own latrine and who are using the toilet of their neighbours or public latrines against the proportion of households that practise open defecation. It can further be assumed that most of the households with a flush or pour-flush toilet are located in urban areas with household water connections. For the rural communities in the host community, this proportion is likely to be lower. In This data is presented in Table 4.

Table 4, we have adapted the figures from the Arua District Rural Sanitation Report and validated the assumptions with key stakeholders during the field mission.

Subsequently, the authors estimated the proportions for the SFD matrix based on calculating the weighted average from separated data as illustrated by the Table 5.

**Table 5: Distribution of population in refugee settlements and host communities**

Location	Population	% of total population
Terego district (host communities)	233,300	59%
Rhino refugee settlement (only Terego)	93,580	24%
Imvepi refugee settlement	67,439	17%
<b>Total</b>	<b>394,319</b>	<b>100%</b>

It was assumed that households with water-based toilets and the public sanitation facilities in the refugee settlements have toilets with fully lined pits or holding tanks. The estimates given

by the above-mentioned sources were validated through observations and key informant interviews with stakeholders during the field visits. Limitations to the data used are presented in Section 2.2.4.

Subsequently, the general technologies were transferred to the system descriptions used in the SFD Manual. Based on the results of the groundwater contamination risk assessment using the SFD groundwater risk evaluation tool (Section 2.2.1), it was assumed that 60% of the population resides in an area with a significant risk of groundwater pollution and 40% of the population resides in an area with low risk of groundwater pollution. It was furthermore assumed that at least 15% of the unlined pit latrines in the refugee settlements and 20% of the unlined pit latrine in the host communities could be categorised as *T1B10C10 Containment (fully lined tanks, partially lined tanks and pits, and unlined pit latrines) failed, damaged, collapsed or flooded – with no outlet or overflow*. This assumption was based on the authors' observations as well as on the climatic conditions with regular flooding of facilities and the high poverty prevalence in both the refugee settlements and the town, which impedes the users' capacity for preventive maintenance and repairs and confirmed by the Terego District Health Officer. Despite the fact that it can be assumed that there are some badly constructed septic tanks (e.g. no proper soak pit, not fully sealed) this category was not further subdivided since the low total share of this technology would have made any further dissection meaningless. Table 6 summarises the resulting percentages used for creating the SFD Matrix.

**Table 6: Distribution of containment types used for SFD matrix**

ID (Reference )	Description	Non-refugee population	Rhino refugee settlement	Imvepi refugee settlement	Total rounded
T1A3C9	Fully lined tank (sealed)	0%	1%	2%	<b>1%</b>
T2B7C10	Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow where there is "significant risk" of groundwater pollution	43%	46%	46%	<b>44%</b>
T1B7C10	Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow	29%	31%	31%	<b>30%</b>
T1B10C10	Containment (fully lined tanks, partially lined tanks and pits, and unlined pit latrines) failed, damaged, collapsed or flooded – with no outlet or overflow.	18%	14%	14%	<b>16%</b>
T1B11C7TOC9	Open defecation	10%	8%	8%	<b>9%</b>

### 2.2.3 SFD Matrix Explanation – Emptying, Transport, Treatment

As explained in Section 2.1.3 only a very small proportion of the toilets (those with lined tanks) in the area is emptied, and no sludge is currently treated.

### 2.2.4 Discussion of data uncertainties / challenges

There is no detailed sanitation mapping data for the area. Major uncertainties exist around the percentage of the population practising open defecation and the percentage of the population sharing toilets with neighbours. However, whether people use individual latrines or share toilets with their neighbours does not influence the outcome of the SFD.

Stakeholders reported that there are high rates of ‘sporadic’ open defecation practised by farmers during working on their fields during the day. Fields are often located far away from the dwellings and household toilets, and thus people do not have any option than using ‘bush facilities’ during the day. We have included this sporadic open defecation into our estimates by rounding up, but there remains uncertainty around the magnitude of this practice.

There is no detailed sanitation baseline data about the type of toilets used for Imvepi settlement or the host community. Based on observations and key informant interviews, the authors assumed that the situation is comparable to Rhino refugee settlement but this could be reassessed once more detailed data is available.

Terego district is a rural setting. Most toilets are unlined pits that get abandoned once full. In such a scenario, the risk of groundwater contamination is the main factor determining whether the sludge is considered safely managed or not. In the absence of detailed sanitation maps, we had to estimate the groundwater pollution risk based on consultancy reports and the expert opinion of key informants.

### 2.3 The SFD Graphic

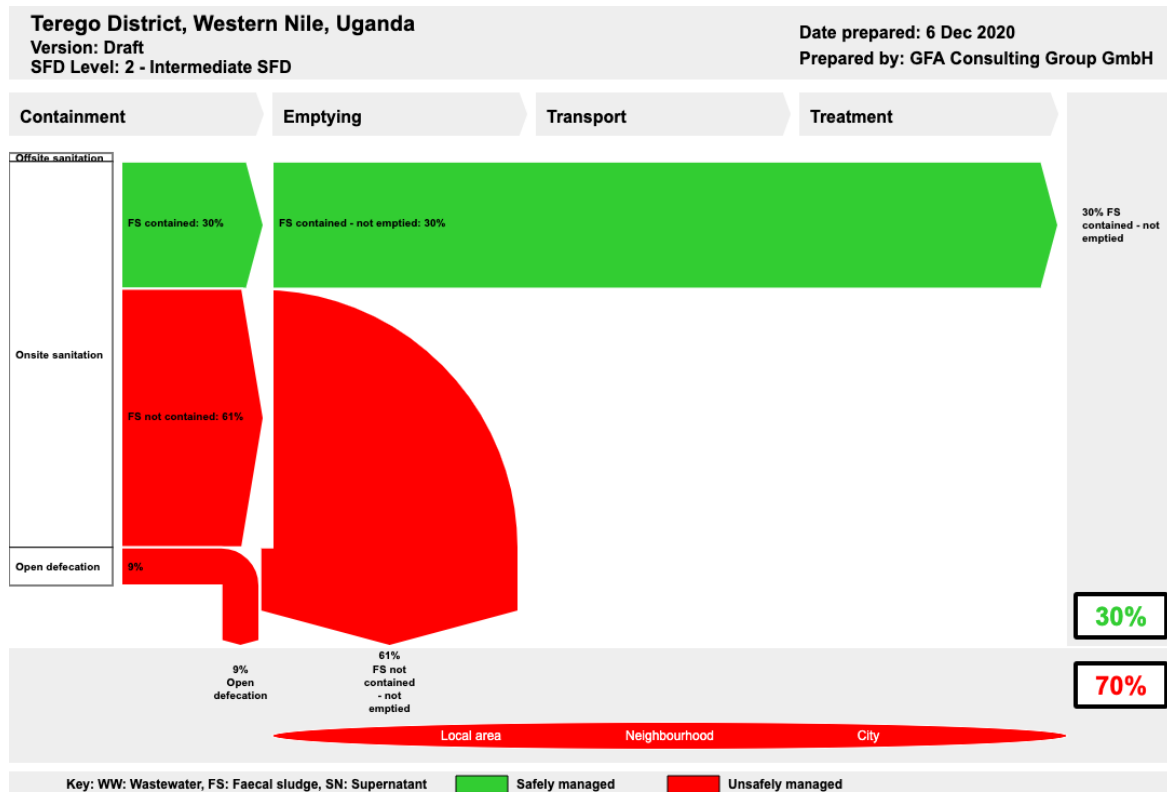


Figure 6: SFD Graphic Terego District

### 3 Service delivery context

#### 3.1 Policy, legislation and regulation

The Uganda national policies, laws (Acts) and regulations govern the implementation of water, sanitation and hygiene (WASH) activities in Uganda with no exception to Refugees and other humanitarian operations. The relevant institutions are described in relation to existing policies, laws and regulations (Section 0) and the institutional links between them. An overview given in this section is largely based on Schoebitz et al. (2016) and Eberhard (2018).

Function	Responsible institutions	Comment
Policy	MWE	Policy, targets, reporting on sector progress against targets, investment allocation (see financing)
Regulation	MWE	Ministry regulates through performance contracts with Water Supply Authorities determined by the Minister
Financing	MWE	Funds from national government & development partners through WSDFs and NWSC
Investment Planning	WSDFs (small towns)	Water and Sanitation Development Facilities (WSDFs) plan and the implement investments in small towns with DP support.
Investment implementation	NWSC (218 towns)	NWSC takes over systems developed by WSDFs (small towns) and also does own planning and investments (existing towns).
Operations and maintenance	RWUs/umbrellas, Private operators, Water supply and/or sewerage authorities	Responsibility given to Water Supply and/or Sewerage Authorities (WSSAs) by Minister. Operations and maintenance of small towns is moving away from POs (contracted to Local Government) to either RWUs or NWSC.

Notes: MWE = Ministry of Water and Environment; WSDF = Water and Sanitation Development Facilities (part of MWE); NWSC = National Water and Sewerage Corporation; RWUs = Regional Water Utilities; WSSAs = Water Supply and/or Sewerage Authorities.

Figure 7: Institutional Roles in the Water Sector (status 2017)

\*Source: Eberhard, 2018

##### 3.1.1 Policy

The Constitution of Uganda (1995) as amended (2005) and (2018) provides the basis for the legal framework in Uganda. It provides national objectives, overall principles of state policy and the framework for major policies relevant to WASH. The legal and policy framework for the management and development of the water and environment sector in Uganda is anchored in Table 7:

Table 7: Main legal and policy documents for the sanitation sector

Policy / Act	Key points
<b>National Environment Act, No. 5 of 2019</b>	The principle law governing environmental management and conservation in Uganda and stipulates the establishment of District Environment and Natural Resources Committees to act as local regulatory, monitoring and feedback mechanisms. This provides the roadmap and enabling framework for environmental policies and subsequent management of environmental services in Uganda. Section 73 provides for licensing of persons dealing in hazardous chemicals or products by NEMA; and faecal sludge falls in the category of hazardous materials.
<b>Water Act, Cap. 152 (1997)</b>	Establishes ground for use, protection and management of water resources and supply; provides for the constitution of water and sewerage authorities; and facilitates the devolution of water supply and sewerage services.
<b>National Water and Sewerage Corporation Act (1995)</b>	Mandates NWSC to provide water and sewerage services in gazetted urban centres and provides clear responsibility of sewer network operation, maintenance and expansion, and wastewater treatment to NWSC.
<b>National Forestry and Tree Planting Act (2003)</b>	Supports tree planting by communities and private sector and encourages collaborative forest management as well as an intensification of watershed management and soil conservation.
<b>National Water Policy (1999)</b>	Sets the framework for water resources management and development, and the policy documents also include aspects of domestic water supply and references to sanitation. The need to plan for sanitation facilities and drainage of excess water in connection with the provision of water supply is recognised. Furthermore, community participation is considered essential when choosing sanitation technologies. The emphasis lies on acceptability (culturally and financially) by user communities with a preference on low-cost onsite sanitation technologies.
<b>National Water Policy (2012)</b>	The main objective is to manage and develop water resources in an integrated and sustainable manner. It further provides for the management of wastewater and sanitation.
<b>National Climate Change Policy (2014)</b>	Provides the overarching objectives to ensure that all stakeholders harmoniously address climate change impacts and their causes through appropriate adaptation and mitigation measures, while promoting sustainable development and a path to a green economy.
<b>Uganda National Forestry Policy (2004)</b>	Seeks to achieve sustainable increase in economic, social and environmental benefits from forests and trees by all, especially the poor and vulnerable.
<b>National Policy for the Conservation and Management of Wetland Resources (1995)</b>	Establishes the principles by which wetland resources can be optimally used now and in the future.
<b>The Local Governments Act (1997)</b>	Includes a decentralisation policy, is an important document that empowers service provision at the local government level. Local governments constitute districts, town councils, and sub-counties, with the mandate and responsibility for planning and implementing water and sanitation sector activities for their communities. A district is an administrative unit comprising of clearly delineated counties, a municipality or/ and town councils with clear administrative structures consisting of elected and government-appointed. Counties are made up of sub-counties and, these comprise a number of parishes, which furthermore are made up of villages.



### 3.1.2 Institutional roles

The roles and responsibilities of each institution presented in this section are summarised in Table 8.

**Table 8: Summary of institutional responsibilities**

Function	MoH	MoES	MWE	NEMA	NWSC	Local Gov.	OPM	NGOs
Sewer network construction, O&M					✓			
Wastewater and Fecal sludge treatment					✓			
Household onsite sanitation						✓		
Public Latrines	✓					✓		
School Latrines	✓	✓				✓		
Faecal and sludge emptying and collection				✓		✓		✓
Health/ Hygiene Promotion	✓	✓	✓			✓		✓
Physical planning						✓		
Waste discharge permits				✓		✓		
FSTP construction			✓		✓			
Planning control			✓			✓	✓	
Disaster Response and Refugee Coordination			✓			✓	✓	

**Ministry of Water and Environment:** At the national level, the Ministry of Water and Environment (MWE) is responsible for overall coordination, policy formulation, the setting of standards, inspection, monitoring, and technical back-up and initiating legislation.

MWE has three directorates: Directorate of Water Resources Management (DWRM), Directorate of Water Development (DWD) and the Directorate of Environmental Affairs (DEA). In response to the increasing number of districts and the need to provide support to local government, the MWE has established a number of deconcentrated entities which are outlined below.

The mandate of the MWE regarding sanitation and hygiene activities is stipulated in the Memorandum of Understanding that was signed by MoH, MoES, and MWE. However, this MoU was established in 2001 to be operational for 10 years. It expired in 2011 and has not been renewed. The role of MWE is limited to development of public sanitary facilities and promotion of good practices of hygiene and sanitation in small towns and rural growth centres.

**The Directorate of Water Resources Management:** The Directorate of Water Resources Management (DWRM) is responsible for developing and maintaining national water laws, policies and regulations; managing, monitoring and regulation of water resources through issuing water use, abstraction and wastewater discharge permits; Integrated Water Resources



Management (IWRM) activities; coordinating Uganda's participation in joint management of trans-boundary waters resources and peaceful cooperation with Nile Basin riparian countries.

While the traditional institutional arrangements for water resources management have been centralised, de-concentration of these functions to regional and local levels has been initiated. Thus, institutional arrangements for the management of water resources in Uganda now exist at three levels, namely the national level (DWRM mentioned above and the Water Policy Committee (WPC)), the regional and trans-boundary level, and the local level.

- The WPC is a statutory body provided for in the Water Act which advises the Minister of Water and Environment regarding the integrated and sustainable management and development of water resources of Uganda. The WPC is supported and facilitated to effectively perform its functions, and it meets twice a year.
- Trans-boundary Level Institutions such as Lake Victoria Basin Commission (LVBC) and Nile Basin Initiative (NBI): LVBC is a legal entity, linked to the East African Community (EAC), responsible for the sustainable management of the water resources of Lake Victoria basin. Similarly, the NBI is a transitional institutional arrangement responsible for sustainable management and development of the Nile basin water resources. Some 98% of Uganda lies within the Nile basin, and the active participation of Uganda in the Nile Basin Initiative activities is, therefore, key to the sustainable management and development of Uganda's water resources.
- Water Management Zone offices are operational in the 4 WMZs (Victoria, Albert, Kyoga and Upper Nile). The main purpose of the WMZs is to deconcentrate WRM closer to where action is needed in order to mobilise local community efforts and other stakeholders to achieve catchment-based IWRM and to ensure effective coordination with other water resources related activities being implemented at district levels such as environment, forestry and water supply.

**Directorate of Water Development:** Directorate of Water Development (DWD) is responsible for providing overall technical oversight for planning, implementation and supervision of the delivery of urban and rural water and sanitation services across the country, including water for production. DWD is responsible for the regulation of provision of water supply and sanitation and the provision of capacity development and other support services to Local Governments, Private Operators and other service providers. DWD comprises three Departments; Rural Water Supply and Sanitation; Urban Water Supply and Sewerage and Water for Production. The Regulation Department of MWE ensures adherence to set standards of service established by the sector for water supply, currently restricted to piped water supplies in the country. The type of regulation being exercised by the department is "Regulation by Contract". This is realised through Performance and Management Contracts with Water Authorities in regulating urban water supply services.

Technical Support Units (TSUs) are established under the Rural Water and Sanitation Department in 10 locations to build capacity at the districts following decentralisation of rural water supply and sanitation and the channelling of government grants to the sub-sector via the District Water and Sanitation Conditional Grants (DWSCG). The TSUs were intended to be temporary and to gradually withdraw from well-performing districts. The TSU functions were originally contracted out to private sector companies and/or NGOs, but more recently the staff have been hired on individual contracts by the MWE and paid through the Joint Partnership Fund (JPF). Over time, TSU's roles have also expanded to provide support to Rural Growth Centers (RGCs) and also water resources and water for production.

The MWE, through its Urban Water and Sewerage Department, is responsible for overall coordination, policy formulation, setting standards, inspection, monitoring, technical back-up and initiating legislation. It also directly oversees and supports water supply and sanitation service delivery in all water supply areas that are not gazetted for management by the National Water and Sewerage Corporation.

Traditionally, the Urban Water and Sewerage Department (UWSD) takes care not only of gazetted urban areas but also of piped water systems supplying rural growth centres. For effective infrastructure development, operation and maintenance it has set up two sets of regional deconcentrated units:

- Water and Sanitation Development Facilities (WSDFs) for the implementation of new water supply and sanitation schemes and major rehabilitations.
- Umbrella Authorities for operation and maintenance. The Water and Sanitation Umbrella Authorities (WSUA) are operating in the areas considered to be rural. In the case of Terego, the Water and Sanitation Umbrella Authority - North (WSUA-N) is in charge of managing piped water supplies in the refugee settlements and surrounding host communities.

The four WSDF Branches plan, finance and implement new water and sanitation projects in Northern, Eastern, Central and South Western Uganda, from their headquarters located in Lira, Mbale, Wakiso and Mbarara, respectively. WSDFs have delegated procurement and accounting authorities and operate following a common Operations Manual. Mobilisation and design activities are partly contracted out and partly done by in-house staff, as appropriate, whereas construction works are always contracted out to private contractors.

**National Environment Management Authority (NEMA):** The National Environmental Management Authority (NEMA) besides being a semi-autonomous body is directly linked to the MWE and responsible for licensing all private businesses that are dealing with waste. This includes domestic, industrial, chemical and construction waste. NEMA also registers private entrepreneurs in the waste sector.

**Ministry of Health (MoH):** MoH is responsible for promotion of public health and sanitation at the household level. This ministry operates under the National Health Policy (1999), prepared within the context of the Constitution of Uganda (1995) and the Local Governments Act (1997). One of the ten guiding principles of the National Health Policy is the collaboration and partnership between public and private sectors, including NGOs, private and traditional practitioners. The policy was revised and updated in 2012. The Environmental Health Policy (2005) defines environmental health priorities of the Government as well as providing a framework for the development of services together with programs at national and local government levels. It reinforces the Public Health Act (2000) with the overall policy objective to achieve 100% hygienic sanitation facilities in urban areas. The policy implies that management responsibility and ownership by users of sanitation facilities result in more hygienic facilities. Inadequate access to sanitation and solid waste management, together with poor drainage, are recognised as major contributors to the spread of disease. The goal of the Environmental Health Policy is 'the attainment of a clean and healthy living environment for all citizens', which is in line with the Health Sector Strategic Plan and the Poverty Alleviation Program. The policy identifies local governments that are responsible for the provision of infrastructure and services essential for public health (e.g. water, public latrines, waste collection and disposal, drainage, sewerage and vector control) while the national government

is responsible for establishing policy, legal and institutional frameworks for strategies and services (KSP, 2008). Furthermore, the MoH provided guidance for the implementation of the National Water Policy (1999), established by the MWE. Guidance is provided by the National Sanitation Guidelines issued by the Ministry of Health in 1992 and revised in 2000 (KSP, 2008). The guidelines were produced in a series of publications developed to support sanitation and hygiene promotion in Uganda. Other publications in this series include:

- Concept Paper: Promotion of Sanitation in Uganda (Ministry of Health, 1997)
- National Sanitation Forum Report (Ministry of Health, 1997)
- National Sanitation Policy (Ministry of Health, 1997)
- Guidelines for School Sanitation (Ministry of Health, 1999)

The MoH is guided by the National Health Sector Reform Program and the National Poverty Alleviation Program (2004) in which water supply and sanitation are recognised as key issues.

**The Ministry of Education and Sports (MoES):** The MoES is responsible for school latrine construction and public health (hygiene) education in primary schools. It is mandated to provide for, support, guide, coordinate, regulate and promote quality of education and sports to all persons in Uganda (MoES, 2013). The MoES prepared a National Strategy for Girls' Education (NSGE), which is related to the National Gender Policy (1997) emphasising the government's commitment to gender-responsive development as part of the Constitution of Uganda (1995). The NSGE includes the formulation of gender-responsive policies including the construction of separate sanitation facilities for boys and girls and highlighting the aspect that these facilities are critical for girls with disabilities (MoES, 2013).

In 2001, a Memorandum of Understanding (MoU) was signed between the MWE, the Ministry of Health (MoH) and the Ministry of and the Ministry of Education and Sports (MoES), which stipulates mandates for sanitation. As mentioned above, this MoU expired and has not yet been renewed.

**National Water and Sewerage Corporation (NWSC):** The NWSC is a government-owned utility company that operates and provides water and sewerage services in more than 200 towns across the country. NWSC's activities are aimed at expanding service coverage within the water supply area while improving the quality and efficiency of service delivery. Key among its objectives is to invest back generated revenue surplus for existing infrastructure improvements and develop new facilities.

NWSC operates under the NWSC Act (1995), which states that the National Water and Sewerage Corporation (NWSC) shall operate and provide water and sewerage services in areas entrusted under the Water Statute (1995). This Act mandates NWSC to provide Water and sewerage services in gazetted urban centres. This document provides clear responsibility of sewer network operation, maintenance and expansion, and wastewater treatment to NWSC.

**Office of the Prime Minister:** The Office of The Prime Minister in Uganda has the mandate to coordinate development of capacities for prevention, preparedness, and response to natural and human-induced disasters and Refugees; and coordinate and monitor the implementation of special government policies and programmes for Northern Uganda, Luwero-Rwenzori, Karamoja, Bunyoro and Teso affairs. Through its directorates of Disaster Preparedness, Management and Refugees, the office has a role in ensuring water and Sanitation standards are adhered to in Refugee settlements.

**District level:** Terego District Office has not been fully established yet, and some functions are still assumed by Arua District. The main department involved in sanitation is the District Health Office. The Terego District Health Office actively supervises sanitation in the refugee settlement during the reception/settlement phase. The district office also builds the capacity of hygiene promoters, water user committees and coordination of WASH cluster meetings with other partners and plays a leading role in the organisation of sanitation event days like Sanitation Week, World Hand Washing Day, World Toilet Day, Water Week commemorations. Community mobilisation is carried out through Village Health Teams and Local Council officers that are supervised by Health Assistants under the same office. The District Health Office is responsible for compiling sanitation and hand-washing monitoring data for the Ugandan Bureau of Statistics and the national Ministry of Health (Section 3.4.2).

**Refugee settlements:** The United Nation High Commissioner for Refugees (UNHCR) is responsible for the management of the provision of basic services. The UNHCR WASH office coordinates the activities of all WASH partners within the refugee settlements. This is done mainly through planning and convening of hygiene and sanitation technical working group meetings, joint monitoring of refugee sanitation activities, review of WASH implementing partner's annual sanitation budgets and work plans and provision of sanitation data to new potential partners. The UNHCR WASH Office also ensures that relevant national and/or global sanitation standards are adhered to during implementation. The UNHCR office ensures that at least one Knowledge Attitudes and Practices (KAP) survey is undertaken on an annual basis. The UNHCR WASH Office is also responsible for capacity building of partners based on identified capacity needs.

UNHCR has delegated the implementation of WASH-related activities within Rhino and Imvepi settlement to the international NGO Water Mission. Water Mission has a designated role of WASH cluster coordination, a member of the Technical Working Group on sanitation, provides institutional pit latrine emptying services and supplies pit latrine slabs for household sanitation systems.

### 3.1.3 Service provision

**Host communities:** Since August 2017, MWE introduced a new management model that is tailored for piped water schemes supplying small towns and rural areas. The model builds on the structures and experience of the six regional “Umbrellas of Water and Sanitation” that were created between 2002 and 2014 to provide O&M back-up support services for small water supply schemes. Under the new model, the Umbrellas – now referred to as Umbrella Authorities – are appointed as Water Authorities. Instead of playing a supporting role as in the past, they assume direct management responsibilities for the “gazetted” schemes. Umbrella Authorities continue to provide backstopping support to all piped water schemes outside NWSC regardless of their management arrangement and size. Terego District falls under the responsibility of the Northern Water and Sanitation Umbrella. The Water and Sanitation Umbrella has a role of operating and maintaining sanitation facilities usually constructed by their WSDF-N. The Northern Water and Sanitation Umbrella has currently no engagement in sanitation in the refugee settlements in Terego District.

**Refugee settlements:** In the settlement phase of refugees and during reception, the OPM WASH department, coordinates WASH partners in pit latrine desludging and disposal in safe

gazetted places to negate adverse impact to the environment and public health of refugees. This role also avoids sanitation related conflicts between hosts and refugees.

Early this year, UNHCR, in consultations with the MWE, UNICEF and other WASH partners, established a National WASH Humanitarian Coordination Platform - anchored under the MWE's department of Rural Water Supply and Sanitation, with co-lead arrangements with UNHCR, who are responsible for coordinating WASH interventions in refugee contexts in Uganda; and UNICEF supporting WASH coordination in non-refugee contexts. At District and settlement-level, the local/ district authorities either lead or co-lead the WASH Coordination platform.

Apart from Water Mission, OXFAM and the Uganda Red Cross Society (URCS) are two of the main NGO stakeholders in WASH in the refugee settlements in Terego district.

OXFAM is involved in Faecal Sludge Management (FSM) through the construction of institutional pit latrines and their desludging. Designs have been completed to build a FSTP in Rhino refugee settlement comprising of eight constructed wetlands, 12 sludge drying beds and four rock filters. Construction of the plant that is supposed to serve Imvepi settlement and host communities as well is expected to commence soon. OXFAM has also organised refugee women associations in Imvepi and Rhino camp to engage in the valorisation of FS into briquettes as an energy source for cooking. The groups' capacity to handle the project has been developed through training and provided with the required equipment. Oxfam has procured an 8m<sup>3</sup> cesspool exhauster which will be desludging institutional pit latrines in Rhino and Imvepi. This service awaits the completion of the Red Cross FSTP (see below). The exhauster will be handed over to OPM, WSDF-N and the Northern Umbrella of Water and Sanitation is expected to be responsible for the O&M of the equipment (OXFAM, 2020).

The Uganda Red Cross Society is currently constructing a 10 m<sup>3</sup> capacity FSTP in Imvepi refugee camp. The FSTP in Imvepi comprises of: 1) Preliminary treatment, which basically consists of a receiving area and two sets of bar screens of 10 and 5 mm spacings; 2) Dewatering using uncovered sludge drying beds; 3) Secondary anaerobic treatment using an anaerobic baffled reactor; 4) Secondary aerobic/facultative treatment using a horizontal gravel filter; and finally, 5) Post treatment using aerobic polishing/maturation pond. The Uganda Red Cross is also involved in the construction of institutional and household pit latrines, emptying them using exhausters and gulpers. To enhance their role in sanitation operation and maintenance, they provide capacity building for refugee livelihood groups engaged in treated faecal sludge valorisation. Red Cross has developed the Faecal Sludge Quantification Matrix tool to enable monitoring of sludge emptying in institutional sanitation facilities. Furthermore, they engage in hygiene promotion activities and demand creation for reuse of treated faecal sludge (Uganda Red Cross Society, 2020).

Water Mission provides latrine slabs for refugee latrines in settlements and host communities in Terego District. They are not involved in household latrine construction, which is the responsibility of the households (Water Mission, 2020).

Private cesspool emptiers operate in the host communities and refugee settlements (see Section 2.1.2) but services are costly and only suitable for lined latrines that are used by institutions (Water Mission, 2020).

### 3.1.4 Service standards



Internationally, the human right to water and sanitation, and the Sustainable Development Goals (SDGs) guide the setting of service standards for water and sanitation.

In 2010, the UN General Assembly and the Human Rights Council explicitly recognised the human rights to water and sanitation. These rights are derived from the right to an adequate standard of living as stipulated in Article 11 of the International Covenant on Economic, Social and Cultural Rights and other international human rights treaties. This right is recognised in the Kenyan Constitution of 2010. For refugees, the United Nations High Commissioner for Refugees is committed to ensure that all refugees in all settings are guaranteed (UNHCR, 2018).

Within the global development agenda a framework for sanitation service standards is given by SDG 6 *Ensure access to water and sanitation for all – Target 6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations*. The proposed indicator for SDG target 6.2 refers to the proportion of people using safely managed sanitation services. This acknowledges a shift in the focus on the containment element of the sanitation chain and recognises the necessary focus on system-based approaches along the entire sanitation chain (UNDESA, 2020).

The Ugandan water and sanitation sector is guided by the following standards and regulations (Table 9):

**Table 9: Summary of main regulations and standards in the Ugandan water and sanitation sector**

Date	Regulation/Standard
1998	Water Resources Regulations
1998	Waste Discharge Regulations <i>Regulates the effluent or discharge of wastes onto land or into water. All dischargers of domestic or industrial waste should comply to these standards and should obtain a permit from NEMA to own and operate such facilities.</i>
1999	Water Supply Regulations
1999	Sewerage Regulations
1998	Environmental Impact Assessment Regulations <i>Requiring an environmental impact assessment before the implementation of all projects that may have a significant impact on the environment.</i>
2020	National Environment (Waste Management) Regulations
2020	National Environment (Standards for Discharge of Effluent into Water or Land) Regulations

**Sanitation service standards in the refugee settlements:** The 1951 Convention relating to the Status of Refugees is the foundation of international refugee law. It establishes the principle that refugees should not be forcibly returned to a territory where their lives or freedom would be threatened and sets out the duties of refugees and States' responsibilities toward them (UNHCR, 2017). The UNHCR WASH Guidebook (2018) as well as in the internationally recognised Sphere Standards set the main service standards with regard to sanitation in the refugee camp. A summary of the most relevant sanitation standards specified in these documents is given in Table 10.

**Table 10: Summary of most relevant Sphere excreta management standards**

Indicator	Key points
<b>Safe excreta disposal</b>	Safe excreta disposal aims to keep the environment free from uncontrolled and scattered human faeces.
<b>Distance of defecation systems from water sources</b>	The distance of soak pits, trench latrines and/or toilets from water sources should be at least 30 metres and the bottom of the pits should be at least 1.5 metres above the groundwater table.
<b>Sharing of toilets</b>	A maximum of 20 people use each toilet
<b>Distance from dwellings</b>	Toilets are no more than 50 metres from dwellings
<b>Shared use of toilets</b>	Use of toilets is arranged by household(s) and/or segregated by sex

\*Source: Sphere Association (2018)

UNHCR recognises four main phases of assistance to refugees in which different WASH standards and priorities apply. An overview on these principles is shown in Appendix 5: UNHCR WASH Priorities by phase.

## 3.2 Planning

### 3.2.1 Service targets

UNHCR’s strategic direction for sanitation is to improve household latrine coverage in refugee settlements to the post emergency indicator threshold of 85% coverage. UNHCR is also focusing on incorporation of behavior change communication mechanisms to augment the traditional sanitation improvement campaigns. The promoting sustainable FSM along the entire service chain is also one of UNHCR’s key priorities (UNHCR, 2020b).

### 3.2.2 Investments

In 2012, the Joint Water and Environment Sector Support Program (JWESSP, 2013 – 2018) was formulated by the MWE, together with the Water and Environment Sector Development Partners. Two out of eight program components are directly related to sanitation, including the Rural Water Supply and Sanitation Program and the Urban Water Supply and Sanitation Program. Even though not supported by the JWESSP, semi-autonomous agencies such as NWSC, but also NEMA and the National Forestry Authority (NFA) will be involved in sector dialogues, strategy formulation and institutional reforms (MWE, 2012).

There are plans for the construction of an FSTP in Rhino settlement funded by OXFAM (BIBCO Investments Ltd, 2019). The construction of the FSTP comprising of eight (8) constructed wetlands, twelve (12) sludge drying beds and four (4) horizontal rock filters is expected to start soon. The effluent is expected to meet national regulatory standards for release to the natural environment. In addition, OXFAM has procured an 8m<sup>3</sup> exhauster truck that will be handed over to OPM and used for the desludging of latrines within the refugee settlements (OXFAM, 2020).

Currently, the Uganda Red Cross is implementing the Living Conditions in Imvepi Fostered Together (LIFT) project to create sustainable Fecal Sludge and Solid Waste management to benefit 2,300 people by building 4 institutional lined pit latrines and construction of a FSTP and Solid Waste Management (SWM) facility (see Section 2.1.3). At the time of writing this report,



institutional toilets were completed and commissioned, while the FSTP and SWM facility construction was at 95% completion. The authors could not confirm the tentative date of start of operation.

### 3.3 Equity

#### 3.3.1 *Current choice of services for the urban poor*

The sanitation containment technology majorly used in the refugee settlements and host communities are unlined pit latrines built with available local materials like poles and mud superstructures. Once full, they are abandoned without covering and later the superstructures collapse. These have been reported to be a major reservoir of vermin like rats and snakes. According to the District Office, taboos and myths around sanitation (and not lack of opportunity to build toilets) are the main reason for persisting practice of open defecation. Taboos around the handling of human faeces have also hindered the adoption of composting toilets, which were considered by the District Health Office as a more permanent technology in areas with rocky soils (Arua District Office, 2020). According to UNHCR, there are occasional tensions around sanitation between the refugee and host communities in Terego districts. These tensions mainly stem from the sourcing of local materials for household latrine construction. Due to limited land for settlement of refugees, refugee communities are forced to venture into the host communities to look for locally available materials for latrine construction which in many cases has resulted into conflicts. Also, during the first six months of emergency, refugees are provided with subsidies to enable them construct household latrines. This in some cases has resulted into the host communities complaining that they are not giving the same level of assistance despite availing land for refugees (UNHCR, 2020b).

### 3.4 Outputs

#### 3.4.1 *Capacity to meet service needs, demands and targets*

The provision of sustainable sanitation services in Terego district is challenged by the increasingly scarcity of construction materials for toilets as well as the lack of sustainable FSM services.

The influx of high numbers of refugees into the originally sparsely populated areas of Terego district has led to significant deforestation and environmental degradation caused by a high demand for construction materials and firewood. As a result, construction materials for latrines are getting increasingly scarce (see Section 3.3.1) (Arua District Office, 2020; UNHCR, 2020b).

There is currently no FSTP in Terego district. NGOs such as the Red Cross and Water Mission fund emptying of institutional toilets. However, where the private cesspool emptiers dispose the FS is beyond their control and illegal dumping in the environment has been reported (Water Mission, 2020; Uganda Red Cross Society, 2020).

#### 3.4.2 *Monitoring and reporting access to services*

Within the refugee settlements, UNHCR collects data on household sanitation coverage. Sanitation coverage data is published on the UNHCR WASH Dashboard online (UNHCR,

2020e). The UNHCR WASH office ensures that at least one KAP<sup>1</sup> survey is undertaken on annual basis (UNHCR, 2020b).

For the host communities, the District Health Officer annually reports on the sanitation coverage in the district in the District Rural Sanitation Report (MoH, 2019). The report not only gives coverage data but also some information about the type of latrines used as well as hygiene and health campaigns (e.g. village open defecation campaigns) carried out. In the last reporting period, data for Terego district was still included in the Arua District Sanitation Report.

### 3.5 Expansion

#### 3.5.1 *Stimulating demand for services*

Various players promote the introduction of emptying and treatment of faecal sludge in Terego district.

Oxfam is about to start a pilot project with tiger worms and specially designed pit latrines in Imvepi settlement. If the pilot passes its tests, it is expected to extend latrines lifespan by 15 years and significantly reduce costs of rebuilding filled unlined pit latrines and their environmental/public health hazards (OXFAM, 2020).

Through the LIFT project (Section 3.3.1), a Fecal Sludge Quantification Matrix has been developed for 13 primary schools pit latrines and two (2) Early Childhood Development Centers pit latrines as well as three (3) health center pit latrines. The aim is to establish a closed loop system of a FSTP with resource recovery and thus ensuring sustainable FSM management in Imvepi and surrounding areas (Uganda Red Cross Society, 2020).

#### 3.5.2 *Strengthening service provider roles*

To curtail illegal faecal sludge dumping, the URCS has carried out a comprehensive training approach for volunteers in emptying, transportation and disposal of faecal sludge using gulpers, barrels and tricycle bikes. The volunteers have further formed a registered community-based organization named CORESI (Community Engagement on Rural Sustainability Initiative). CORESI will undertake the emptying of latrines and operate the new FSTP including a component of resource recovery from faecal sludge as a livelihoods project (Uganda Red Cross Society, 2020).

As mentioned in Section 3.1.3, OXFAM has engaged two (2) refugee women associations to be involved in the valorisation of faecal sludge into briquettes as an energy source for cooking. The groups' capacity to handle the project has been developed through training and the provision of the required equipment (OXFAM, 2020).

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<sup>1</sup> A Knowledge, Attitude and Practices (KAP) survey is a quantitative method that provides access to quantitative and qualitative information.

## 4 Stakeholder Engagement

### 4.1 Key informant interviews

In total ten key informant interviews were carried out during the field visits in Terego District in December 2020 (Appendix 2). Some of the interviews had to be carried out via telephone or email. Key informant interviews included various staff of the Arua, Terego and Madi-Okollo District administration as well as representatives of UNHCR, Water Mission, OXFAM, the Ugandan Red Cross Society and private cesspool emptiers. In addition, there were various knowledge exchanges and discussions with WatSSUP staff.

### 4.2 Observations

One of the authors carried out a seven-day field mission to Terego and Madi-Okollo District in December 2020. The mission was dedicated to gathering information for this and two other related reports. The observations during those visits included general observations about the urbanisation of the District, the settlement structure as well as the topographic and climatic conditions that influence the service provision.

The observations were beneficial for the data collection process as they gave the author a clearer understanding of the framework conditions in the host communities and the refugee settlement.

### 4.3 Validation of results

Prior to the field mission, the authors prepared a draft version of the SFD matrix, graphic and selection grid as well as a draft write-up of the justification of all major assumptions used to create the SFD graphic. This first draft was based on extensive literature and document review as well as on discussions with WatSSUP and NaSa staff. During the field mission, the assumptions and estimates were discussed with the key informants who reviewed and validated the assumptions and estimates.

## 5 Acknowledgements

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This Executive Summary and the SFD Report are available from: [www.sfd.susana.org](http://www.sfd.susana.org)

## 7 Appendix

### 7.1 Appendix 1: Stakeholder identification

**Table 11: Stakeholder identification**

N°	Stakeholder group	Contact
	City council	n/a
1	Municipal authority	Terego/Madi-Okollo/Arua District Offices
	Utility	Northern Umbrella of Water and Sanitation
2	Ministry in charge of urban sanitation and sewerage	MWE
3	Ministry in charge of urban solid waste	Ministry of Lands, Housing and Urban Development (MoLHUD)
4	Ministry of Finance, Planning and Economic Development (MoFPED)	MoFPED
5	Regulation of urban water and sanitation	MWE
6	Service provider for construction on onsite sanitation technologies	Red Cross Society Uganda (construction of FSTP)
7	Service provider for emptying and transport of faecal sludge	Private cesspool emptiers (Muammar Holdings Ltd)
8	Service provider for operation and maintenance of treatment infrastructure	n/a
9	Market participants practising end-use of FS end products	n/a
10	Market participants practising collection of solid waste	n/a

## 7.2 Appendix 2: Tracking of Engagement

**Table 12: Stakeholder engagement tracking**

N°	Stakeholder	Date(s) of engagement	Purpose of engagement
1	GIZ WatSSUP / GIZ NaSa	Various November 2020 – March 2021	Cooperation on sanitation assessment for Terego district / Informal knowledge exchange / Facilitation of site visits
2	Acting District Health Officer for Environmental Health - Arua District	07 December 2020	KII
3	Team Leader Imvepi, Rhino and Kiryandongo Refugee Settlements	08 December 2020	KII
4	Manager of Muammar Holdings Ltd (Private cesspool emptiers and contractors of Water Mission)	08 December 2020	KII
5	Assistant District Health Officer for Environmental Health - Terego District	09 December 2020	KII
6	Acting District Water Officer - Terego District	09 December 2020	KII
7	Acting District Water Officer and Assistant District Health Officer for Environmental Health - Madi-Okollo District	09 December 2020	KII
8	Assistant Settlement Commander and Focal Person for WASH-Imvepi Refugee Settlement - OPM	10 December 2020	KII
9	Manager Northern Umbrella of Water and Sanitation	11 December 2020	KII
10	UNHCR WASH focal person	12 December 2020	KII



7.3 Appendix 3: SFD matrix

**Terego District, Western Nile, Uganda, 6 Dec 2020. SFD Level: 2 - Intermediate SFD**

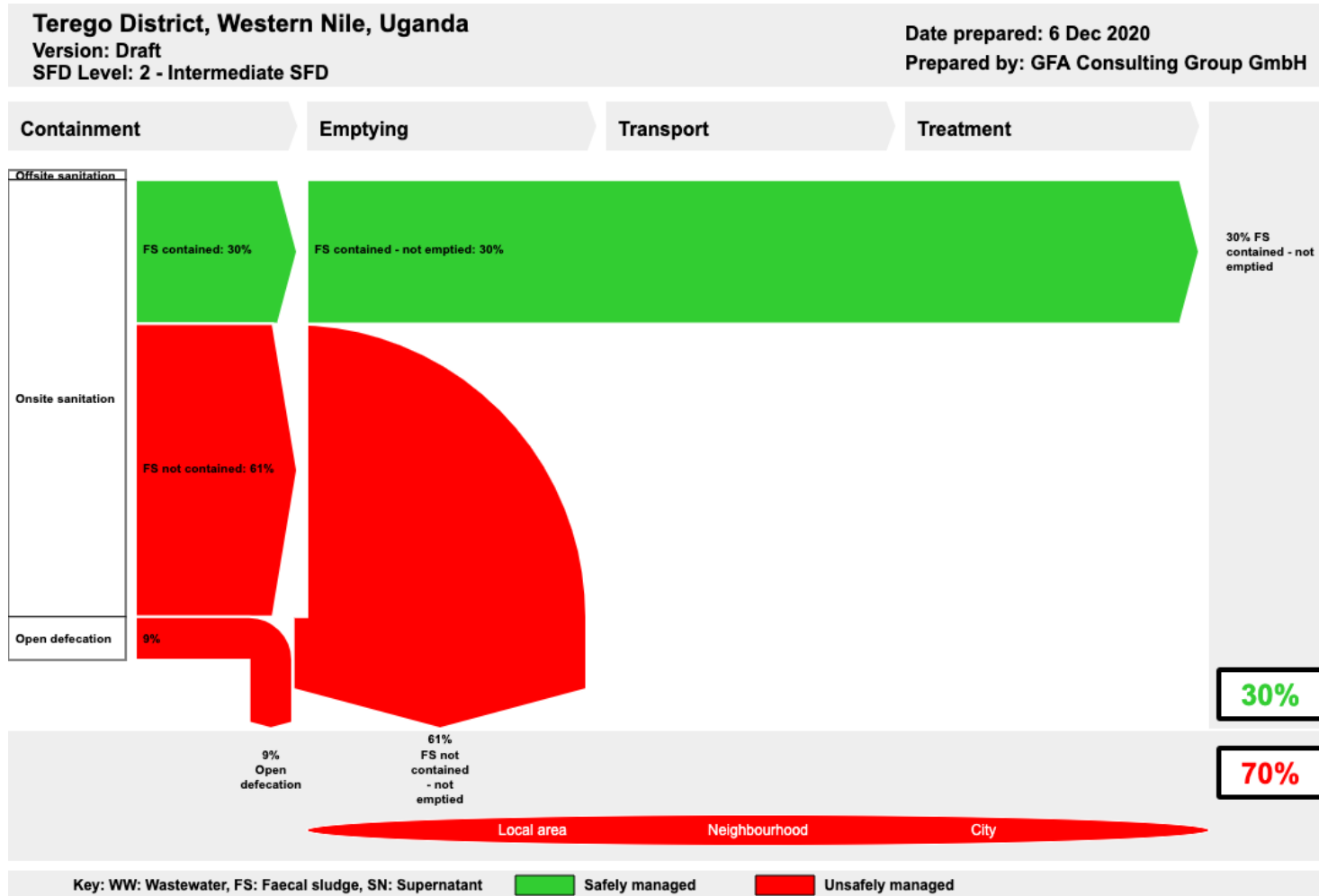
**Population: 394319**

**Proportion of tanks: septic tanks: 100%, fully lined tanks: 100%, lined, open bottom tanks: 1**

<b>System label</b>	<b>Pop</b>	<b>F3</b>	<b>F4</b>	<b>F5</b>
<b>System description</b>	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
<b>T1A3C9</b> Fully lined tank (sealed) connected to 'don't know where'	1.0	100.0	0.0	0.0
<b>T1B10C10</b> Containment (fully lined tanks, partially lined tanks and pits, and unlined pits) failed, damaged, collapsed or flooded - with no outlet or overflow	16.0	0.0	0.0	0.0
<b>T1B11 C7 TO C9</b> Open defecation	9.0			
<b>T1B7C10</b> Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow	30.0			
<b>T2B7C10</b> 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	44.0			

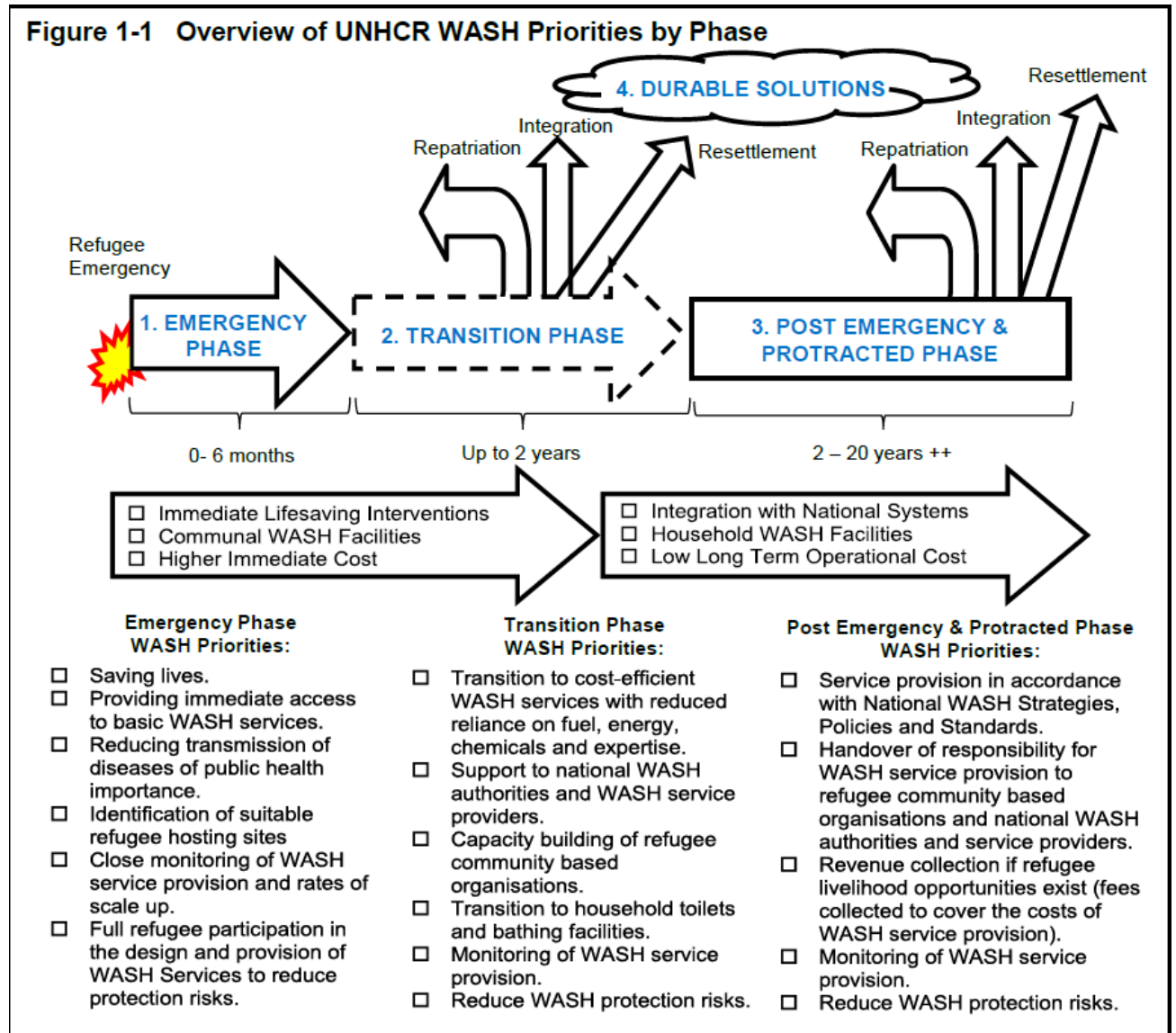


7.4 Appendix 4: SFD Graphic



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](http://sfd.susana.org)

7.5 Appendix 5: UNHCR WASH Priorities by phase



\*Source: UNHCR (2018)