

# SFD Promotion Initiative

## Holleta Ethiopia

### Final Report

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SFD Report Holleta, Ethiopia, 2015

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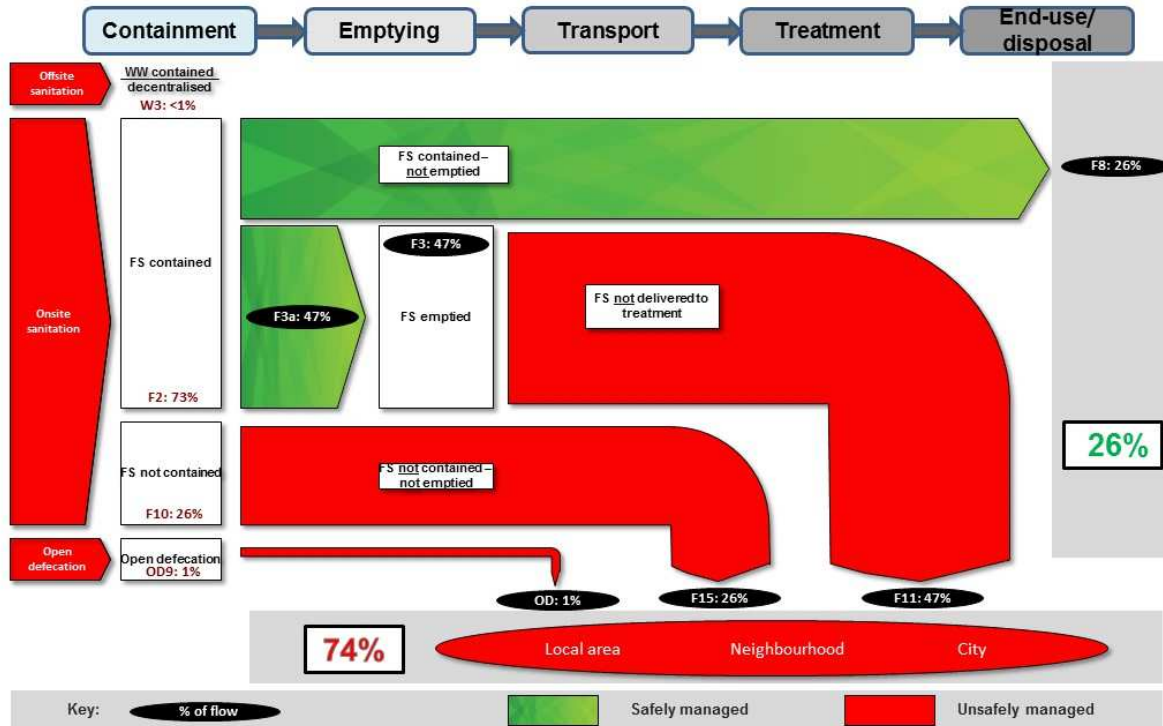
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### 1. The Diagram

Holleta, Ethiopia, 11 May 2016  
Field-based based assessment



### 2. Diagram information

**Desk or field-based:**

The SFD was generated from field-based work.

**Produced by:**

University of Leeds (UoL) with support from Mr. Haile Dinku, WaSH capacity building consultant from WaterAid Ethiopia.

**Collaborating partners:**

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### 3. General city information

Holleta is an Ethiopian city located in the Oromia region at a distance of 35 Km from Addis Ababa, lying between elevations of 2,320 and 2,460 meters above sea level. The average rainfall in Holleta is 1,367 mm and the mean temperature varies from 12.3 to 15.9°C. Population in 2015 was 57,828 with an average of 6.7 members per household (HLT, 2016a).

The main economic activity is agriculture with several crops cultivated in the area. Farming of livestock is rising and contributes to the development of the economy of the area as well.

The town obtains grain products, livestock supply, natural resources and labour from surrounding areas and manufacturing and commercial products from Addis Ababa (HLT, 2015).

About 90% of households collect part of their daily water requirement from the town's water supply system, from either a private connection or public taps. Solid waste is collected by several micro-enterprises while vacuum trucks are used to collect faecal sludge; all wastes are discharged to an open-field dumpsite without treatment (HLT, 2015).

#### 4. Service delivery context

The Federal Democratic Republic of Ethiopia included the protection of public health in the 1995 National Constitution. The Article 90.1 states that “to the extent the country’s resources permit, policies shall aim to provide all Ethiopians access to public health and education, clean water, housing, food and social security”.

At national level, a seven-year program (2013-2020) under the name of One WASH National Program (OWNP) was launched in September 2013 by the Government of Ethiopia with additional support of UNICEF with a total budget of more than USD \$2 billion (Goyol and Girma, 2015).

In order to meet national and global commitments, the GoE developed in 2013 the Sanitation and Hygiene Strategy, Sanitation Protocol, Strategic Sanitation Action Plan. This plan was created to facilitate changes in the sanitation and hygiene situation in Ethiopia and promote improved sanitation (MoH, 2013).

In Holleta, there are no by-laws regarding solid or liquid waste management. There are also no plans, strategies or guidelines that could serve a basis for the regulation and disposal of these wastes. There is also a lack of coordination among the institutions responsible for the management of wastes in Holleta (HLT, 2016a; HLT, 2016b).

However, the Health Extension Program (HEP) is an essential service providing advice to families and improving sanitation and waste management practices at household level (HLT, 2016f; HLT, 2016g HLT; 2016h).

The Holleta Town Water Supply and Sewerage Service Enterprise (HTWSSSE) is responsible for managing just the water supply in the city. The municipality is in charge of managing the faecal sludge. However, it has no capacity to do so, instead, through a written agreement with the municipality, Addis Ababa-based private companies provide emptying services to customers for a fee. However, monitoring of these services is lacking (HLT, 2016a; HLT, 2016b).

Two of the most critical challenges faced by the HTWSSSE are: (i) lack of capacity (technical/skill, materials) in managing

available resources and (ii) lack of coordination among different WaSH sectors, especially among sanitation service providers in the town. As a result of this, the water utility has experienced several problems in the areas of operation and maintenance, asset management, network management, organizational management, leakage management, bill collection, customer compliance management, human resource management, proper planning and data management (HLT, 2015).

The lack of law enforcement when illegal dumping occurs is also a problem in Holleta (HLT, 2016a). Only the HEWs play an important role to increase the awareness of people related to good WaSH practices at household level.

#### 5. Service outcomes

In Holleta, pit latrines are the main sanitation technology option and used by the majority of the population. Only around 1% of the population use pour flush toilets (locally known as water closets), mainly found in high-income households and hotels. Around 1% of the population practice open defecation (HLT, 2016a).

Emptying of latrines and septic tanks is carried out by vacuum trucks of several private companies that come when needed from the capital, Addis Ababa (HLT, 2016a; HLT, 2016b).

The sludge disposal site is just a hole, approximately 4 metres deep and 5 meters in diameter (Figure 1).



**Figure 1 Faecal sludge disposed of in an open field (Photo credit: Oscar Veses)**

Vacuum trucks discharge faecal sludge directly into this hole with no treatment (HLT, 2016a). The faecal sludge is also mixed with some solid wastes, mainly plastics. There is no fence surrounding the disposal site and cows are seen feeding around the site (Figure 1).

Holleta’s water supply is from groundwater. There are five functional wells with a total production of 28l/s and a total reservoir capacity of 425m<sup>3</sup>, which serves approximately 70% of the population (HLT, 2015). All wells are protected by a fence. However, agricultural and livestock practices are common in the proximities of the wells leading to a potential risk of cross-contamination (HLT, 2016d; HLT, 2016e).

All this is reflected in the SFD where 74% of the faecal sludge is considered to be not safely treated. Although there was no data available regarding the percentage of pit latrines that are covered when they get full, it is estimated 26% of the total faecal sludge could potentially be considered to be safely disposed, as shown on the SFD.

There is a business plan to improve the WaSH sector in Holleta by improving the drinking water supply, increasing the water coverage and introducing the liquid waste service by the HTWSSSE (HLT, 2015). However, key barriers related to the lack of financial resources, insufficient human resources, improved technical understanding and appropriate planning need to be addressed first (HLT, 2015; HLT, 2016a; HLT, 2016d).

### 6. Overview of stakeholders

Main stakeholders are outlined in Table 1. The municipality of Holleta is currently in charge of the management of the faecal sludge produced in the city. The HTWSSSE is only in charge of the water supply in the city despite its name suggest that they should also be in charge of managing the faecal sludge and even has 1 operative vacuum truck with no use at all.

HEWs are the main actors in advising people at household level to carry out good WaSH practices. Several private companies from Addis Ababa are responsible for providing emptying service in the city with a signed agreement between them and the municipality. Besides, several international institutions and

the government at regional level provide funding to the WaSH sector in Holleta.

Key Stakeholders	Institutions / Organizations /
Public Institutions	Municipality of Holleta Water Utility (HTWSSSE) Health Office
Private Sector	companies from Addis Ababa
Development Partners, Donors	Several international institutions

Table 1 Key stakeholders

### 7. Credibility of data

The main data sources included published reports regarding the policy and implementation of WaSH in Ethiopia at national level. Most of the data at city level were not available online and were collected during the field visit. The city had very few documents available on the internet. The visit was essential to collect data and to have access to unpublished reports. The visit was also essential to gain knowledge about the current situation of sanitation in Holleta as well as for having access to the future plans for the WaSH sector in the city.

The main uncertainty of the data is the census on the percentage of people using the on-site technologies and the percentage of latrines that are covered and safely abandoned when they get full.

### 8. Process of SFD development

All data were collected by unstructured key informant interviews. The unstructured interviews were useful to have access to unpublished reports or even the business plan from the HTWSSSE to increase the WaSH sector in Holleta. Some of these interviews were conducted jointly with different stakeholders. This allowed for an open discussion on the situation of the WaSH sector in Holleta, to have first-hand data on the tariffs charged to people for the emptying services, the type of work the HEWs carry out and how the latrines at household level are maintained.

KII were conducted to the main people in charge of the municipality, the health office and the HTWSSSE. In addition to that, 5 more KII were conducted to people from several institutions at national level such as the MoWIE and the Ethiopian Institute of architecture, among others to provide with a general view on the WaSH situation at a country level.

After collecting all necessary data, the SFD was produced using the Excel calculation tool and shared with the stakeholders that collaborated in the data collection (WaterAid Ethiopia).

### 9. List of data sources

Goyol, K., Girma, A. 2015. One WaSH national program (OWNP) Ethiopia: A SWAp with a comprehensive management structure. 38th WEDC International Conference, Loughborough, England.

HLT 2015. Business Plan for Holleta Town water supply and sewerage service enterprise. Consultancy service for capacity building of 20 towns supported by WaterAid.

HLT, 2016a. Interview with Demissie Lemma, manager of the municipality of Holleta.

HLT, 2016b. Interview with Zelalem Tolera, process owner of the municipality of Holleta.

HLT, 2016d. Interview with Diriba Beyene, head of the water utility of Holleta.

HLT, 2016f. Interview with Tisist Hailu, Urban Health Extension Worker of Holleta.

HLT, 2016g. Interview with Mesenesh Gobe Urban Health Extension Worker of Holleta.

JMP, WHO/UNICEF, 2013. WaSH targets and indicators post-2015: outcomes of an expert consultation.

### SFD Holleta, Ethiopia, 2016

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## Abbreviations

CSA	Central Statistical Agency
CSO	Civil Society Organization
EEPA	Ethiopian Environmental Protection Authority
ETB	Ethiopian Birr
EWRMP	Ethiopian Water Resource Management Policy
FMHCAC	Food, Medicine and Health Care Administration and Control
GTP	General Growth and Transformation Plan
GTP II	General Growth and Transformation Plan II
GoE	Government of Ethiopia
HEP	Health Extension Program
HEWs	Health Extension Workers
HTWSSSE	Hollela Town Water Supply and Sewerage Service Enterprise
KII	Key Informant Interview
JMP	Joint Monitoring Program
MDG	Millennium Development Goal
MWA	Millennium Water Alliance
MoE	Ministry of Education
MoFED	Ministry of Finance and Economic Development
MoH	Ministry of Health
MoWIE	Ministry of Water, Irrigation and Energy
SNV	Netherlands Development Organization
NPHOSS	National Protocol for Hygiene and “On-Site” Sanitation
NWI	National WaSH Inventory
OWNP	One WaSH National Program
UAP	Universal Access Plan
UNICEF	United Nations Children's Fund
WASH	Water Sanitation and Hygiene
WC	Water Closet
WIF	WaSH Implementation Framework
WRDF	Water Resources Development Fund
WASH	Water Sanitation and Hygiene
WHO	World Health Organization

## 1 City context

Holleta is an Ethiopian city located in the Oromia region at a distance of 35 Km from Addis Ababa (Figure 1). The total area of the town is estimated to be 5,550ha, lying between elevations of 2,320 and 2,460 meters above sea level. Most houses (around 90%) have wood and mud walls as well as roof constructed from corrugated iron sheet. The average rainfall is 1,367 mm and the mean temperature varies from 12.3 to 15.9 °C. Population in 2015 was 57,828 people of which 49% and 51% are males and females, respectively. There is an average of 6.7 members per household (HLT, 2016a).

The city possesses some basic infrastructures such as roads, electricity supply, water supply, telephone communications, banking services, hotels and restaurants, health centres and schools (HLT, 2015).



**Figure 1: Location of Holleta. Adapted from (Lindfors, 2011) and (OPS, 2016).**

The main economic activity is agriculture with several crops cultivated in the area. Fruit crops such as strawberry plantations are also found in the area. Livestock management is rising and contributes to the development of the economy of the area. Socio-economic activities such as the construction of multi-story buildings by the private sector and condominiums by the government are increasing in the city. Holleta also has economic linkages with the surrounding areas and Addis Ababa. The town gets grain products, livestock supply, natural resources and labour from surrounding areas and manufacturing and commercial products from Addis Ababa (HLT, 2015).

About 90% of households collect part of their total water needs from the town's water supply system fed directly through private connection or public taps. Solid waste is collected by several micro enterprises and faecal sludge is collected by vacuum trucks, disposing of all wastes in an open field acting as a dump (HLT, 2015).

## 2 Service delivery context analysis

### 2.1 Policy, legislation and regulation

#### 2.1.1 Policy

The basis for the Environmental Policy of Ethiopia are articles 92.1 and 92.2 of the 1995 Constitution of the Federal Democratic Republic of Ethiopia, where the protection of public health is included:

1. Article 92.1: "Government shall endeavour to ensure that all Ethiopians live in a clean and healthy environment".
2. Article 92.2: "Government and citizens shall have the duty to protect the environment.

Besides, the Article 90.1 states that "to the extent the country's resources permit, policies shall aim to provide all Ethiopians access to public health and education, clean water, housing, food and social security".

Since that time, several documents have been redacted to guide the implementation of national policies regarding water and sanitation (WaSH) developed by the government. The main ones are listed as follows:

- Ethiopian Water Resource Management Policy (1999).
- Universal Access Plan for Water and Sanitation (2005).
- Universal Access Plan for Water and Sanitation (2005).
- National Sanitation and Hygiene Strategy (2005).
- National Protocol for Hygiene and "On-Site" Sanitation (NPHOSS) (2006).
- Needs Assessment to Achieve Universal Access to Improved Hygiene and Sanitation by 2012 (2007).
- National Sanitation and Hygiene Implementation Guideline (2011).
- Urban Sanitation Universal Access Plan (2011).
- One WaSH National Program (OWNP) (2013).
- National Sanitation Marketing Guidelines (2014).

The Ethiopian Water Resource Management Policy (EWRMP) developed in 1999 by the Ministry of Water Resources, currently the Ministry of Water, Irrigation and Energy (MoWIE), aimed to promote the development of adequate management of water resources in Ethiopia to contribute to the accelerated economic growth of the country.

In 2002, decentralization of powers and functional responsibilities from federal to local government was a major step toward the development of WaSH infrastructures (WaterAid, 2013). In 2006, The National Protocol for Hygiene and "On-Site" Sanitation (NPHOSS) was produced by the Ministry of Health (MoH) to "follow the national strategy for hygiene and sanitation improvement with its focus on universal access (100% hygienic and sanitized households) in primarily rural or peri-urban environments" (MoH, 2006).

In 2010, the General Growth and Transformation Plan (GTP), developed by the Ministry of Finance and Economic Development (MoFED), is the first phase to attain the goals and targets set in the Millennium Development Goals (MDGs) at a minimum, including those related to WaSH. Although water and sanitation are seen as priority areas, the only goal set is to have “better and closer access to safe water and sanitation facilities”, with no other specification whatsoever (MoFED, 2010).

A seven year program (2013-2020) under the name of One WASH National Program (OWNP) and the related WaSH Implementation Framework (WIF), was launched in September 2013 by the Government of Ethiopia (GoE) with additional support of UNICEF with a total budget of more than USD \$2 billion, the largest ever developed in the WaSH sector in Ethiopia (Goyol and Girma, 2015). The Program will be carried out in seven years and accomplished in two phases; Phase I from July 2013 to June 2015 and Phase II from July 2015 to June 2020. This program is the main tool of the GoE to achieve the targets for sanitation and hygiene proposed in the Universal Access Plan (UAP), outlined in section 2.2.1.

Liquid and solid waste management are regulated by Proclamation. No. 300/2002: Environmental Pollution Control Proclamation and Proclamation. No. 513/2007: Solid Waste Management Proclamation, both developed by the Federal Government of Ethiopia. Apart from these proclamations at national level, there are no by-laws regarding solid or liquid waste management in Holleta. There are no plans, strategies or guidelines that could serve a basis for the regulation and disposal of these wastes. There is also a lack of coordination among the institutions of charge the management of wastes in Holleta (HLT, 2016a; HLT, 2016b).

However, the Urban Health Extension Program (UHEP) is an essential service providing advice to families and improving sanitation and waste management practices at household level (HLT, 2016f; HLT, 2016g; HLT, 2016h). Thus, there needs to be more coordination among the institutions and a clear strategy to address urban sanitation in Holleta.

### 2.1.2 Institutional roles

The institution in charge of monitoring sanitation and hygiene interventions in Ethiopia is the Ministry of Health (MoH) with more than 38,000 Health Extension Workers (HEWs). They work at community and household levels to promote the use of improved sanitation facilities and eradicate open defecation (Jones, 2005).

The Ministry of Water, Irrigation and Energy (MoWIE) is responsible for water policy, coordination and monitoring whereas the Ministry of Education (MoE) tries to build an education and training system which assures quality and equity education. The Ministry of Finance and Economic Development (MoFED) is responsible for budgeting and managing economic resources in both federal and regional governments.

In recent years, profound dialogue and collaboration between the MoWIE, MoE and MoFED have been carried out to monitor and report the status of WaSH in the country including the launch of the OWNP, among others (Jones, 2005).

There are five divisions in terms of governance and administration of the WaSH sector in Ethiopia (Girma and Suominen, 2013):

1. Federal government, with its capital in Addis Ababa.
2. Nine Regions and two city administrations (each with a Water Bureau).
3. Over 70 Zones (Some of the Zones are important for ethnic reasons, and have autonomous status. These are called “Special Zones”.)
4. 805 Woredas (Districts). Each Woreda has a Water Office.
5. Around 16,000 administrative Kebeles (comprising several villages or “peasant associations”).

The organizational arrangements of the OWNP are depicted in Figure 2.

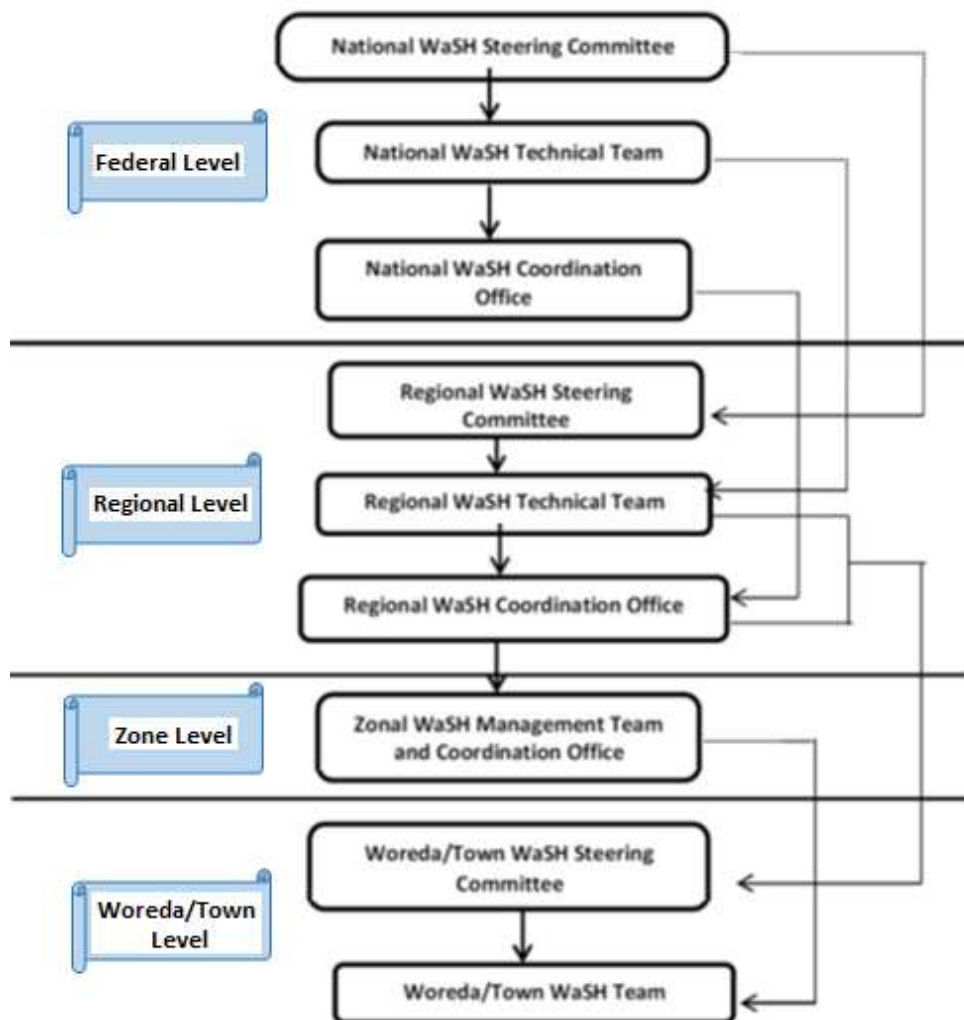


Figure 2: Organizational arrangement for OWNP implementation (source: Adapted from GoE, 2013a).

A summary of the institutional roles of each WaSH structure is presented in Table 1.

**Table 1 Summary of the duties and responsibilities of WASH structures. Adapted from (GoE, 2013b).**

<b>Institution</b>	<b>Duties and Responsibilities</b>
<b>National WASH Steering Committee</b>	-Reviews and endorses the National WASH Strategic Plan and Annual WASH Plans -Oversees the proper functioning of the WASH Program
<b>National WASH Technical Team</b>	-Regularly monitors program implementation -Designs programs for experience-sharing within and outside the country
<b>National WASH Coordination Office</b>	-Preparation of manuals, guidelines and generic training materials -Maintains national WASH management systems and records -Promotes and facilitates national networks among WASH actors
<b>Regional WASH Steering Committee</b>	-Ensures the establishment and functioning of WASH structures in the region
<b>Regional WASH Technical Team</b>	-Facilitates inter-sectoral communication and cooperation -Regularly monitors program implementation and provides guidance
<b>Regional WASH Coordination Office</b>	-Ensures Woredas have consolidated WASH plans -Maintains regional WASH management systems and records
<b>Woreda WASH Team</b>	-Prepares consolidated Woreda WASH plans (strategic and annual) -Review and monitor WASH program implementation at woreda level -Support training and engagement of artisans in the private sector

In addition to those institutions, about 100 Civil Society Organizations (CSOs) work in water and sanitation service delivering, hygiene promotion, piloting new approaches and reaching remote areas and groups. CSOs have also created the Water and Sanitation Forum to coordinate planning and implementation of WaSH activities even in conjunction with the Millennium Water Alliance (MWA) (GoE, 2013a).

Finally, The Urban Health Extension Program (UHEP) targets the well-being of urban populations through selected high-impact interventions, which include improving sanitation and waste management services and practices (HLT, 2016f; HLT, 2016g; HLT, 2016e). In Holleta, there are 18 HEWs directly addressing the community on sanitation and hygiene education and promotion based on the 16 health packages (HLT, 2016d; WaterAid, 2013).

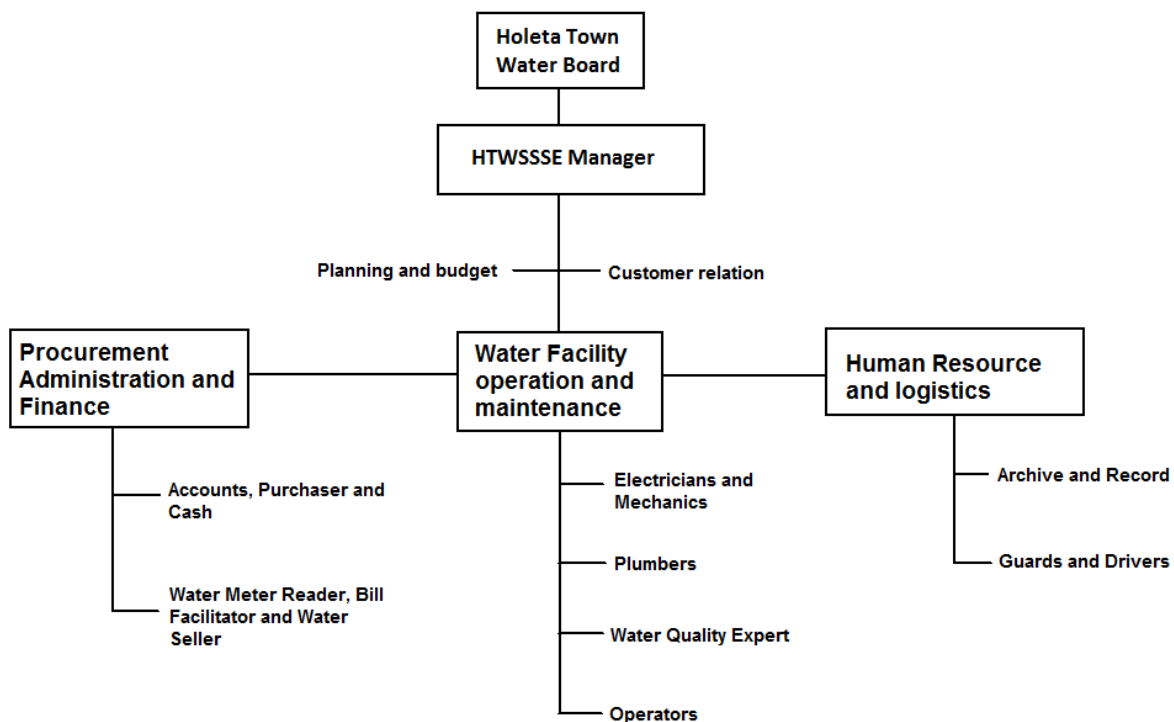
### 2.1.3 Service provision

Except for Addis Ababa, which is equipped with a sewerage system to serve part of the city and an ongoing project to expand it (ETP, 2016a; ETP, 2016c), the rest of the cities in Ethiopia have onsite sanitation systems. Service provision is maintained by the following institutions (Stolz et al. 2013; ETP, 2016e):

- Sewerage utilities. Septage collection, treatment and disposal are mainly conducted by the utilities. They are also responsible for technical interventions, operation and maintenance, customer services and financial and administrative aspects.
- Sanitation and beautification agencies. They administer public latrines.
- Municipality. In some cities, municipalities provide septage collection, treatment and disposal.



The Holleta Town Water Supply and Sewerage Service Enterprise (HTWSSSE) is mandated to provide sewerage and faecal sludge management services and has one vacuum truck with a capacity of 10m<sup>3</sup>. However, to date it has not been used as the municipality is currently managing the faecal sludge in the city through a signed agreement with the private sector (HLT, 2015; HLT, 2016a; HLT, 2016d). The organizational structure of the HTWSSSE is depicted in Figure 3.



**Figure 3: Organizational structure of the HTWSSSE. Adapted from (HLT, 2015).**

Two critical challenges faced by the HTWSSSE are: (i) lack of capacity (technical/skill, materials) in managing available resources and (ii) lack of coordination between different WaSH sectors, especially among sanitation service providers in the town. As a result of this, the water utility has experienced several problems in the areas of operation and maintenance, asset management, network management, organizational management, leakage management, bill collection, customer compliance management, human resource management, proper planning and data management (HLT, 2015).

#### 2.1.4 Service standards

Following the Ethiopian Constitution, The Food, Medicine and Health Care Administration and Control (FMHCAC) issued the *Proclamation No. 661/2009* to address waste handling and disposal and the availability of toilet facilities in articles 30 and 31, respectively (Table 2).

Although there are national quality standards regarding the maximum concentration of several chemicals that can be discharged into the receiving waters for several industries such as tanneries or processing of steel, among others (EEPA, 2011), there are no quality standards set for wastewater or sludge disposal.

However, in the “Guidelines for Social, Environmental and Ecological Impact Assessment and Environmental Hygiene Impact Assessment and Environmental Hygiene in Settlement Areas”, a draft from the Ethiopian Environmental Protection Authority (EEPA) from 2004, it is stated that “latrines should be connected to digesters to produce both biogas and slurry as organic fertilizer. As a minimum, they should be connected to a compost pit and the human waste should be used to produce compost”.

**Table 2 Articles related to WASH in Proclamation No. 661/2009.**

<b>Waste handling and disposal (art. 30)</b>	<b>Availability of toilet facilities (art. 31)</b>
<p style="text-align: center;"><b><u>30/1.</u></b></p> <p>“No person shall collect or dispose solid, liquid or other wastes in a manner contaminating the environment and harmful to health”</p>	<p style="text-align: center;"><b><u>31/1.</u></b></p> <p>“Any institution providing public service shall have the obligation to organize clean and adequate toilet facilities and keep it open to its customers”</p>
<p style="text-align: center;"><b><u>30/2.</u></b></p> <p>“Any wastes generated from health or research institutions shall be handled with special care and their disposal procedures shall meet the standards set by the executive organ”</p>	<p style="text-align: center;"><b><u>31/2.</u></b></p> <p>“Any city or rural administration shall be responsible to provide public toilet and ensure its cleanliness”</p>
<p style="text-align: center;"><b><u>30/3.</u></b></p> <p>“It is prohibited to discharge untreated waste generated from septic tanks, seepage pits, and industries into the environment, water bodies or water convergences”</p>	----

Reports related to socio-economic aspects of the city as well as the business plan for improving the WaSH sector in the city are not published online and were only accessible locally. However, both the municipality and the HTWSSSE provided any document, study or report if it was requested, always collaborating in the process of data collection.

At the local level, there is a lack of data availability and reliability regarding the percentage of people using onsite sanitation technologies. However, at national level, the CSA conducted a survey in 2007 (CSA, 2007) where this information could be extracted. More recently, a study conducted by WaterAid in 2013 showed the percentage of people using pit latrines but not any other sanitation technology (WaterAid, 2013).

These census studies indicate that the percentage of people practicing open defecation has decreased and the number of people using VIP latrines has increased, resulting in an improvement of the sanitation situation in Holleta.

Through an agreement with the municipality, Addis Ababa-based private sector companies provide faecal sludge management services. However, poor service standards and a lack of law enforcement result in widespread illegal dumping (HLT, 2016a; HLT, 2016b).

## 2.2 Planning

### 2.2.1 Service targets

Ethiopia’s water and sanitation coverage was reported as 19% and 5% respectively in 1990 (Defere, 2015). Since that time, important progress has been achieved. The Millennium Development Goal (MDG) target was to achieve a 56% of people with sanitation coverage. According to the National WaSH Inventory (NWI), in 2011 national access to water supply and sanitation was 52.1% and 63%, respectively (GoE, 2013b), suggesting almost a complete accomplishment of the MDG target.

Despite that improvement, those numbers indicate that the practice of open defecation (37%, over 35 million people from 2011 data) result in a risk of disease infection and/or transmission. However, there are differences between people living in rural areas practicing open defecation (43%) and people leaving in urban areas (8%) (Jones, 2015).

The GoE developed the Universal Access Plan (UAP), a document setting the following targets for sanitation and hygiene within the government’s policy (Girma and Suominen, 2013):

- 98.5% access to water supply, and reduction of the proportion of non-functioning facilities to 10%.
- All Ethiopians will have access to basic sanitation by 2015.
- 77% of the population will practice hand washing at critical times.
- Safe water handling and water treatment at home.
- 80% of communities in the country will achieve open defecation free status.

Targets after 2015 and the following years, proposed by the World Health Organization (WHO), the Joint Monitoring Program (JMP) and UNICEF have also been set and are outlined in Table 3 (JMP, WHO/UNICEF, 2013).

**Table 3 Proposed targets for WASH within the years 2025-2040.**

	<b>Water</b>	<b>Sanitation</b>	<b>Hygiene</b>
<b>2025</b>		*Open defecation free status.	
<b>2030</b>	*Universal basic drinking water in schools and health centres. *Universal basic drinking water at home.	*Universal adequate sanitation in schools and health centres.	*Universal adequate handwashing and MHM in schools and health centres. *Universal adequate handwashing at home.
<b>2040</b>	*Progress towards intermediate drinking water at home.	*Universal adequate sanitation at home. *Progress towards safe management of excreta.	

Motorised emptying is the main option used to empty the pit latrines or the septic tanks in Holleta. This is carried out by several private companies that come directly from the near capital, Addis Ababa (HLT, 2016a), but it was not possible to know the name of these

companies. The procedure when somebody at any level requires their services is as follows: When somebody needs emptying of any latrine or septic tank, the person contacts the municipality and when there is a minimum of 9 people requiring this emptying service, the municipality calls these private companies and they come and provide the required service (HLT, 2016a). These companies are provided with trucks with a capacity of 10 m<sup>3</sup> (HLT, 2016a). The frequency of emptying the latrines and septic tanks varies depending on the number of people using the latrine but the minimum time is in average 9 months (HLT, 2016f; HLT, 2016g; HLT, 2016h). All the faecal sludge is dumped into the dumpsite and these companies charge 900 ETB per emptying service.

According to the municipality (HLT, 2016a), the percentage of people practicing open defecation is very low and practicable negligible (1%). There is no plan to build a sewage network followed to a wastewater treatment plant for the city due to a budget limitation (HLT, 2016a).

In addition to that, proper access to drinking water needs to be improved to meet the proposed targets for WASH within the years 2025-2040 since the water supply coverage is 67% of the population, as it is showed in section 3.7.

### 2.2.2 Investments

The OWNP objective is “to contribute to improving the health and well-being in rural and urban areas by increasing water supply and sanitation access and the adoption of good hygiene practices in an equitable and sustainable manner” (GoE, 2013b). The total budget is distributed in four main components: Rural and Pastoral WaSH, Urban WaSH, Institutional WaSH and Program Management and Capacity Building. The costs of these components are shown in Table 4.

**Table 4 Distribution of the budget designated for WASH in the OWNP.**

Component	Destination	Water supply <sup>1</sup>	Sanitation and hygiene <sup>1</sup>
1	Rural and Pastoral WASH	USD 1.03 billion	0.4 billion
2	Urban WASH	USD 786 million	USD 95.7 million
3	Institutional WASH	USD 545.7 million	
4	Program Management and Capacity Building	USD 178.8 million	

<sup>1</sup>Dollars in 2013

Urban WaSH budget designated to sanitation and hygiene is mainly assigned to desludging equipment and facilities and management of wastewater and public toilets in selected locations. Institutional WaSH budget is designated to improve water supply, sanitation facilities and hygiene practices at health institutions and schools (GoE, 2013b).

USD78.6 million (out of USD178.8 from the component 4) are designated for urban WaSH program management and capacity building, including training, post-construction management support, equipment, tools, and support to monitoring and reporting. Finally,

there is also an amount of money from the project designated to train WaSH professionals (GoE, 2013b).

Apart from the OWNP, the GoE created in 2002 the Water Resources Development Fund (WRDF) to promote the development of viable and sustainable urban water supply and sanitation services throughout the country (GoE, 2013b). International aid funding plays an essential role in funding WaSH activities since 61% of water budget and 70% of sanitation budget is financed by external agencies such as donors and NGOs (Girma and Suominen, 2011). Donors involved in the WaSH sector include the Department for International Development, the European Development Bank, the World Bank and the Government of Italy. International NGOs such as WaterAid, Netherlands Development Organization (SNV), Plan International and about 70-100 local NGOs are active in the sector (Stolz et al. 2013).

There is no budget assigned for the construction of new facilities such as pit latrines since the national policy states that the household itself has the obligation to build its own pit latrine (or any other sanitation system) to contain the faecal sludge (HLT, 2016a).

Finally, the promotion of activities related to the WaSH sector at household level mainly lies on the Health Extension Workers (HEWs).

### *2.2.3 Policy and Program Initiatives*

A further revision of the GTP, currently under development (GTP II), includes a target to increase the proportion of households using latrines to 93% in all Ethiopia by 2017 (Jones, 2015).

## 2.3 Reducing inequity

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

There is no sewerage system in Holleta and thus, no off-site sanitation options available. All people use on-site sanitation facilities.

Although there is an obligation for each new household to have a pit latrine, there are many without a facility that rely on communal or public latrines. Neither the government nor the municipality provides any funding for private latrine construction (HLT, 2016f; HLT, 2016g; HLT, 2016h).

According to the municipality (HLT, 2016a), the percentage of people practicing open defecation is very low (1%).

### *2.3.2 Plans and measures to reduce inequity*

The OWNP states that it is necessary to identify and target areas with low access to safe water or improved sanitation and once they are identified, propose priority action plans to reduce inequity in the areas identified. In concordance with this, reducing regional and social disparities in access to safe drinking water and improved sanitation must be accomplished. Gender disaggregated indicators are to be used to track gender equity in roles and benefits (GoE, 2013b).

The budget for the OWNP clearly prioritizes the water supply over sanitation and hygiene both at rural and urban levels (Table 4). This is in concordance with previous reports where

different policies in developing countries have been assigning higher budget and thus, more importance, on water supply over sanitation and hygiene over the last years (Sandec/Eawag, 2015).

One of the major problems, not only in Holleta but also in all Ethiopia, is the lack of awareness of people (and also the local authorities) regarding WaSH (HLT, 2016a; HLT, 2016d; HLT, 2016f; ETP, 2016a; ETP, 2016d). For that reason, the Health Extension Program (HEP) “targets the well-being of urban populations through selected high-impact interventions, which include improving sanitation and waste management services and practices (ACIPH, 2015)”.

All HEWs in Holleta are females, previously trained as nurses, becoming HEWs after training according to the policy developed by the Federal Ministry of Health. In Holleta, each HEW is responsible for the training of households on education, awareness creation and monitoring of the WaSH practices (WaterAid, 2013; HLT, 2016f; HLT, 2016g; HLT, 2016h). HEWs provide advice and capacity building on how to make a latrine, how to manage properly solid and liquid wastes at household level, good hygiene practices, etc.

There is no plan from the municipality to transform the faecal sludge into compost or to use it for biogas production due to a lack of budget and skilled people (HLT, 2016a).

## 2.4 Outputs

### 2.4.1 Capacity to meet service needs, demands and targets

The HTWSSSE is constrained by challenges of different nature such as inadequate institutional and technical capacity, operational inefficiencies and poor financial performance (HLT, 2015). There is also a lack of coordination between the municipality and the HTWSSSE (HLT, 2016a; HLT, 2016d), while the number of HEWs is not sufficient to provide an adequate service for the whole population (2016f; HLT, 2016g; HLT, 2016h).

### 2.4.2 Monitoring and reporting access to services

Before 2004, all WaSH interventions in the country were project-based and therefore, there was no integration between water supply, sanitation and hygiene. However, GoE’s policy on the WaSH sector is now being addressed jointly by MoH, MoWIE, MoE and MoFED who share the responsibility for achieving WaSH targets set by the GoE’s policy (GoE, 2013b).

The OWNP entitled the MoH to operate a monitoring system to develop one plan, one budget and one report for the WaSH sector (Jones, 2015). Table 5 shows a summary of the monitoring responsibilities from organizations at different levels currently being taken by the WIF under the frame of the OWNP.

Between 2010 and 2011, a National WaSH Inventory in all regions (Somali region was later added in 2014) was carried out by the MoWIE with financial support from the World Bank and UNICEF (ETP, 2016b). This has provided the country with a first baseline of the WaSH sector at a national level. Furthermore, a successful initiative between UNICEF and Akvo (a not-for-profit foundation) used mobile phone software (Akvo FLOW) to collect WaSH inventory data in the Somali region in 2014 has the potential to open new possibilities for future data gathering and analysis (Jones, 2015). It can be said that both the development of

OWNP and NWI has strengthened the monitoring and reporting activities of the WaSH sector in the country but needs further follow-up (Jones, 2015).

**Table 5 Summary of monitoring Responsibilities at different levels. Adapted from (Jones, 2015).**

Institution	Responsibilities
<i>Kebele WASH Teams</i>	<ul style="list-style-type: none"> <li>- Study data and complete analysis of Kebele WASH situation</li> <li>- Prepare monthly, quarterly and annual WASH progress reports and send the Woreda</li> <li>- Conduct quarterly WASH progress review meeting with WASH stakeholders</li> </ul>
<i>Woreda WASH Team</i>	<ul style="list-style-type: none"> <li>- Conduct technical assessment every 3 years</li> <li>- Prepare monthly, quarterly and annual WASH progress reports and send the Zone/Regions</li> <li>- Conduct quarterly WASH progress review meeting with WASH stakeholders</li> </ul>
<i>Region/ Zone Coordination Office</i>	<ul style="list-style-type: none"> <li>- Prepare Regional Annual WASH Plan</li> <li>- Prepare monthly, quarterly and annual WASH progress reports and send the National WASH Coordination Office</li> <li>- Conduct quarterly WASH progress review meeting with WASH stakeholders</li> </ul>
<i>National WASH Coordination Office</i>	<ul style="list-style-type: none"> <li>- Prepare and propose investment plan, loan/grant applications and national annual WASH plan</li> <li>- Prepare monthly, quarterly and annual WASH progress reports</li> </ul>

Census data reports are carried out by governmental institutions and at local level. Reports on the city background and the business plan to improve the WaSH sector were accessible upon arrival in Holleta and delivered by hand by the corresponding authorities since neither of them was published on the internet.

Although there is an agreement between the municipality and the private sector for providing service on the faecal sludge management, there is a problem in terms of lack of monitoring of service standards. Both the municipality and the HTWSSSE are aware of the poor situation of the solid and liquid waste disposal site but there is no capacity – financial resources or human resources - to address the problem (HLT, 2016a; HLT, 2016d).

## 2.5 Expansion

### 2.5.1 Stimulating demand for services

Although there is little experience in sanitation marketing in Ethiopia, part of the national budget for OWNP is assigned to urban WaSH program management and capacity building as mentioned in section 2.2.2. The responsibility of promoting household sanitation and good hygiene practices lies in the town health office under the town/city administration. The idea of using trained HEWs for sanitation and hygiene promotion at household level was launched by the GoE and increased the WaSH promotion in the country (Stolz et al. 2013).

The GoE developed a National Sanitation Marketing Guideline to foster sanitation marketing and promote, with the participation of the private sector, the use of different technologies to assess sanitation issues. The guideline also includes approaches including micro and small enterprise development agencies, microfinance institutions and technical and vocational education and training in the woredas to identify and develop appropriate environments for the private sectors (MoH, 2013).

In order to meet national and global commitments, the GoE developed in 2013 the Sanitation and Hygiene Strategy, Sanitation Protocol, Strategic Sanitation Action Plan. This plan was created to facilitate changes in the sanitation and hygiene situation in Ethiopia and promote improved sanitation (MoH, 2013).

As previously stated, the HEWs are the main actors in order to advise people on the importance of having an adequate WaSH practices at household level.

### 2.5.2 *Strengthening service provider roles*

The OWNP includes a section to promote and strengthen private sector capacity by generating information, training and business opportunities in the WaSH sector (GoE, 2013b). According to Stolz et al. (2013), there are several individual consultants and consultancy companies doing capacity building activities in the WaSH sector. However, there is no policy framework for private-sector engagement on faecal sludge management or any particular government institution responsible for promoting private-sector engagement in urban waste management (ACIPH, 2015).

The National Hygiene & Sanitation Strategic Action Plan for Rural, Peri-Urban & Informal Settlements in Ethiopia is a guideline that includes several targets such as capacity building of the private sector, the creation of lines of credit, development and promotion of products and services that respond to consumer preferences (GoE, 2011). However, it is only targeted for rural, peri-urban and informal settlements, not for urban areas (GoE, 2011).

There is a business plan to improve the WaSH sector in Holleta by improving the drinking water supply, increasing the water coverage and introducing the liquid waste service by the HTWSSSE (HLT, 2015). However, key barriers related to the lack of financial resources, insufficient human resources, improved technical understanding and appropriate planning need to be addressed first (HLT, 2015; HLT, 2016a; HLT, 2016d).

## 3 **Service Outcomes**

### 3.1 **Offsite technologies**

There is no sewerage system in Holleta. All faecal sludge management systems rely on onsite sanitation technologies (HLT, 2016a).

### 3.2 **Onsite technologies**

Holleta has no liquid waste treatment plant. All liquid waste is either discharged to the city's open drainage network or to a dumpsite without any treatment at all (HLT, 2016a).

#### 3.2.1 *Flush toilets*

Flush toilets (locally known as water closets) are only found in high-income households and hotels. All flush toilets are connected to fully lined tanks (sealed) with no outlet (often referred to locally as septic tanks).



### 3.2.2 Pit latrines

Pit latrines are used by the majority of the population in Holleta (HLT, 2016a). An example of this type of latrine inside a household can be seen in Figure 4a. Outside the latrine, a bucket of water is provided to wash the hands after use (Figure 4b). A groundwater well is also located near the latrine (Figure 4b), which according to the household and the HEWs, is only used for gardening purposes, not for drinking water. However, due to the close proximity to the latrine, some cross-contamination might occur.



Figure 4a, b: Inside and outside of a latrine in Holleta (photo credit: Oscar Veses).

### 3.2.3 Improved latrines

People who can afford to build an improved latrine to reduce fly and odour nuisance by ventilating the pit by means of a pipe, use this type of latrine (HLT, 2016a), as shown in Figure 5.



Figure 5: Inside of an improved latrine in Holleta (photo credit: Oscar Veses).

### 3.3 Usage

Table 6 summarises study results (CSA, 2007 and WaterAid, 2013) that show the percentage of people using a flush toilet, VIP, pit latrines and no toilet at all.. The WaterAid values are used in this study since they are the most up-to-date values available.

**Table 6 Percentage of people using different sanitation technologies in 2007 and 2013**

	CSA (2007)	WaterAid (2013)
<b>No toilet</b>	10%	1%
<b>Flush toilet</b>	3%	1%*
<b>Improved latrine</b>	6%	46%
<b>Pit latrine</b>	81%	52%

\*The 1% of flush toilets is calculated by subtracting the 99% (52%+48%+1%) from the 100%

### 3.4 Categories of origin

Categories of origin can be classified as households, shared or communal latrines, public toilets and institutional toilets. A brief description of each origin is presented as follows.

#### 3.4.1 Households

The majority of people use pit latrines or VIPs (Table 6).

#### 3.4.2 Shared or communal latrines

There are nine communal latrines in Holleta. People with less economic resources who cannot afford to build a latrine use shared or communal latrines.

#### 3.4.4 Institutional toilets

In places such as educational institutions, public institutions, hospitals, and some local restaurants and hotels the use of pit latrines is the preferred option. However, in high standard hotels, lodges, etc., a flush toilet connected to a septic or a fully lined (sealed) tank is the normal arrangement.

### 3.5 Motorised Emptying

Motorised emptying is the main option used to empty the pit latrines or the septic tanks in Holleta. This is carried out by several private companies that come directly from the near capital, Addis Ababa (HLT, 2016a). Although it was not possible to know the name of these companies, the procedure when somebody at any level requires their services is as follows: When somebody needs emptying of any latrine, he/she contacts the municipality. When there is a minimum of nine people requiring this emptying service, the municipality calls these private companies from Addis Ababa and they come and provide the required service (HLT, 2016a). They are provided with trucks with a capacity of 10 m<sup>3</sup> (HLT, 2016a). The frequency of emptying the latrines and septic tanks varies depending on the usage but the

minimum time is in average nine months (HLT, 2016f; HLT, 2016g; HLT, 2016h). All the faecal sludge is dumped into the dumpsite and these companies charge 900 ETB per emptying service (HLT, 2016a).

### 3.6 Treatment, end-use and disposal

The main disposal site is the dumpsite located in the city outskirts, built in 2011. This site is just an open field, not a structured sanitary landfill (Figure 6). All wastes (organic, inorganic, solid and liquid wastes) coming from industries, households, public and private institutions are dumped into this field. Although these wastes are not completely mixed together, it can be noticed that they are not properly handled.



**Figure 6: Faecal sludge dumpsite (photo credit: Oscar Veses).**

This open field has no protection such a fence or any proper design (drainage line, multiple layer design, etc.) to handle any waste. Animals such as birds, cows and dogs can be seen feeding themselves with the wastes and also flies and/or mosquitoes are easily found in the area. Locals also complain about the strong odours that come from the site, also creating a potential health risk for the people.

Solid waste is collected by five private companies (micro enterprises), each one having 10 to 12 workers. They collect solid wastes and take them to the dumpsite in Figure 6. Workers wear gloves and (yellow) working clothes but no other protection (Figure 7). There is an agreement with hotels, households, etc. and they charge between 20 ETB to 900 ETB per month depending on the quantity of solids generated (HLT, 2016a). These companies not only collect solid wastes but also greywater. This water is collected in a yellow jerry can and also dumped into the dumpsite with no treatment (HLT, 2016a; HLT, 2016b).



**Figure 7: Workers collecting solid wastes (photo credit: Oscar Veses).**

Jardin Meubles PVT.LTD.CO is a private company operating in Holleta to transform plastic residues into new plastic materials. The company has been operating since 2001 with a total of 108 workers. It receives plastic residues from households or the dumpsite (people collecting plastics are visible in Figure 8b), where they are stored outside the factory (Figure 9).



**Figure 8: a) Solid dumpsite. b) Workers collecting solid wastes (mainly plastics) (photo credit: Oscar Veses).**

Plastics are separated inside the factory using no chemicals, producing new plastic products such as chairs, tables, etc. Workers do not wear masks, gloves or any protection since there is no regulation or awareness regarding safe working conditions (HLT, 2016c). (Permission was not given to take photographs inside the factory).



**Figure 9: Outside of a private company that transforms plastic residues into new plastic products (photo credit: Haile Dinku).**

Stormwater runoff is collected in a drainage system distributed through the city with no treatment at all. This network also serves for some of the greywater collection and even for improper solid waste disposal (Figure 10). However, there is no monitoring or penalty imposed on offenders to reduce this occurrence (HLT, 2016a).



**Figure 10: Drainage system (photo credit: Oscar Veses).**

The city's sludge disposal site (Figure 11) is simply a hole, approximately 4 metres deep and 5 metres in diameter. Vacuum trucks discharge faecal sludge directly into this hole with no treatment at all, where it mixes with some solid wastes, mainly plastics (HLT, 2016a). There is no fence surrounding the disposal site - cows and other animals are seen feeding around the site.

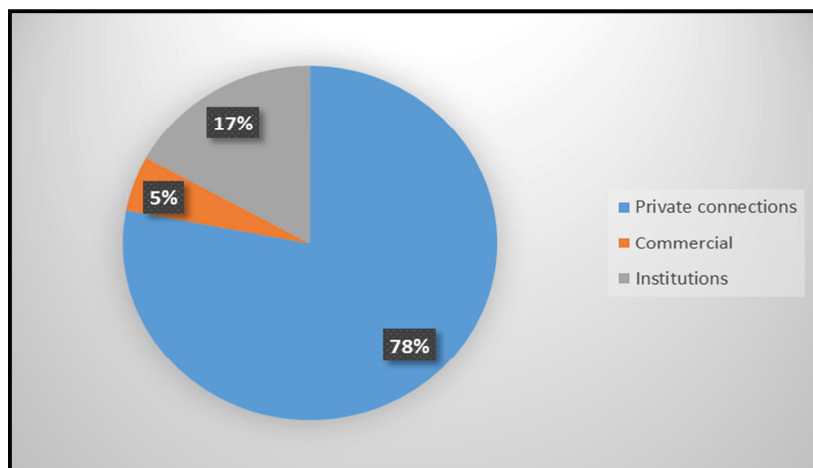


**Figure 11: Faecal sludge dumpsite in Holleta (photo credit: Oscar Veses).**

The municipality are aware of the need for a properly designed dumpsite but due to a lack of budget and the required skilled people, there are currently no firm plans to construct one (HLT, 2016a).

### 3.7 Drinking water supplies in the city

Holleta water supply is from groundwater. There are five functional wells with a total production of 28l/s and a total reservoir capacity of 425m<sup>3</sup>. There are about 28.5km of pipelines in good condition. In 2014, the water utility produced 885,229m<sup>3</sup> of water. The utility has 4,427 connections with a total water consumption of 266,244m<sup>3</sup> per year (Figure 12) in addition to 72,729m<sup>3</sup> consumed by the 32 public taps functioning in the city (HLT, 2015), making the water coverage at 70% of population with a consumption of 20 litres per capita and per day (HLT, 2015). According to the HTWSSSE (HLT, 2016d; HLT, 2016e), there is a new project to construct four new wells in the future (within 1 to 2 years).



**Figure 12: Existing number of connections by type of services and population served in 2014. Adapted from (HLT, 2015).**

All wells are protected by a fence. However, agricultural and livestock practices are common in the proximities of the wells leading to a potential risk of cross-contamination. Chlorination is performed twice per month.

Several problems such as illegal connections, overflows from reservoirs, improper metering, and leakage in distribution network have been accounted lately (HLT, 2015). Although there is a lack of qualified staff including technicians and professionals, WaterAid has provided some capacity building on subjects such as liquid and solid management, water quality, technical advice on pumping, etc. (HLTd, 2015; HLTe, 2015).

Water quality is assessed by measuring different physico-chemical parameters and biological tests at different wells and selected taps in the city (HLT, 2015d). However, there is no control or monitoring of the presence of heavy metals or organic compounds in the water.

### 3.7.1 Ground water pollution assumptions

There are no studies regarding the soil type near the ground water sources in Holleta (HLT, 2016a; HLT, 2016d). According to the HTWSSSE, the minimum water table is 9m (HLT, 2016d). All wells are located further away from latrines but some cross-contamination might occur due to the presence of agriculture and cattle raising near the groundwater wells, as stated in section 3.8.

### 3.7.2 Levels of uncertainty

The main uncertainty of the data is the census on the percentage of people using the on-site technologies and the percentage of latrines that are covered and safely abandoned when they get full. The lack of reliable data, especially in the latter, was solved by taking a few assumptions, as stated in section 3.7.

## 3.8 SFD Matrix

The data outlined in Table 6 shows two different data sources regarding the percentage of people using onsite sanitation technologies. It was decided to use the latest data (from the WaterAid study in 2013) as this refers more accurately to the current situation.

Since there is no data on emptying and transport the following assumption was made. Assuming that humans produce an average of 1 l/day of excreta (around 0.8 l of urine plus 0.2 l of faeces) (Franceys et al. 1992), the total sludge produced per day is:

$$\frac{1L}{day * person} * 57,828 person * \frac{1m^3}{1,000L} \approx 58m^3$$

According to the municipality, a total of 27m<sup>3</sup> of faecal sludge per day is collected and discharged in the dumpsite (HLT, 2016a). Therefore, around 31m<sup>3</sup>/day (53%) of faecal sludge remains unaccounted for.

From that 53%, 1% is coming from open defecation practices, leaving a 52% of the sludge unaccounted. Since there is no available data regarding the percentage of people who abandon their latrines when full, it is assumed that this unaccounted for faecal sludge (52%) is managed in this way.

There is no data that indicates how much of this faecal sludge is safely buried and how much is not safely buried. Therefore, it is assumed that 50% of this faecal sludge is safely buried (i.e. the latrines are safely abandoned) and 50% of this faecal sludge is not safely buried (i.e. the latrines are not safely abandoned). It is estimated that 26% of the total population uses pit latrines that are never emptied but abandoned when full and safely covered with soil – i.e. excreta is safely managed. While 26% of the population use pit latrines that are never emptied but abandoned unsafely i.e. excreta is unsafely managed (e.g. pit latrines that are failed, damaged or collapsed, etc.).

Of the remainder, 47% of the population uses pit latrines and septic or fully lined tanks (sealed with no outlet or overflow) that are emptied and the faecal sludge discharged to the dumpsite.

Table 7 summarizes the types of the sanitation containment systems currently in use. This table shows the description of the system, how it is defined in the SFD calculation tool and its reference and the percentage of people using each system.

**Table 7 Estimation of the containment systems for the SFD matrix calculations.**

Description of the system	SFD defined	Reference	% Faecal sludge
Open defecation	T1B11C7TOC9	L20	1
Containment (septic tanks and pits) failed, damaged, collapsed or flooded - connected to water bodies, or open ground or 'don't know where'	T1B10C7TOC9	Reference L18	26
Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow	T1B7C10	Reference L12	26
Lined pit with semi-permeable walls and open bottom, no outlet or overflow	T1A5C10	Reference L11	46
Fully lined tank (sealed), no outlet or overflow	T1A3C10	Reference L10	1

## 4 Stakeholder Engagement

The municipality of Holleta was contacted ahead to gain permission to undertake this study. Seven Key Informant Interviews (KIIs) were conducted to primary stakeholders in relation to faecal sludge management in Holleta. A telephone call was made upon arrival in Ethiopia to the municipality of Holleta (Mr. Haile Dinku from WaterAid kindly did that call in Amharic) to



explain the project and to arrange the days of the field trips. Those KIIs included stakeholders from the municipality, Health Office, HTWSSSE, etc. All interviews were conducted either in the offices of the stakeholders or during the visits to different places of interest such as the dumpsite, the groundwater wells, etc.

In addition to those interviews, five more KIIs were conducted to different stakeholders in Addis Ababa in order to provide with an overview of the sanitation situation in Ethiopia. Previous to the field visit, an introduction letter explaining the project was sent through email to the different stakeholders in Addis Ababa to explain the project and to set up a day for the interview. Those KIIs included stakeholders from the MoWIE, the Ethiopian Institute of Architecture and the Addis Ababa Water and Sewerage Authority, among others.

The town had very few documents available on the internet. The visit was essential to collect data and to have access to unpublished reports. The visit was also essential to gain knowledge about the current situation of sanitation in Holleta as well as for having access to the future plans for the WaSH sector in the city.

Another benefit from the visit was to have first-hand data on the tariffs charged to people for the emptying services, the type of work the HEWs carry out and how the latrines at household level are maintained. This increases the quality of the data collected and provides with a better understanding of the responsibilities and quality of the service provided by the municipality and the HTWSSSE on the WaSH sector in Holleta.

#### 4.1 Key Informant Interviews

All data were collected by unstructured key informant interviews. The unstructured interviews were useful to have access to unpublished reports or even the business plan from the HTWSSSE to increase the WaSH sector in Holleta. Some of these interviews were conducted jointly with different stakeholders.

For example, interviews with the HEWs and the manager of the municipality were held together during the field visit to different households. This was helpful to cross-check data regarding the current condition of the private latrines and the type of work the HEWs perform. Finally, just to mention that all interviewed people answered any question asked and they are willing to participate in further discussions and projects in the future.

#### 4.2 Focus Group Discussions

Unfortunately, focus discussion groups were not carried out since there was a lack of available time. However, as mentioned in section 4.1, some interviews were conducted jointly with different stakeholders, allowing for an interchange of opinions and views regarding the sanitation situation and for data triangulation. Moreover, vivid discussions on the main challenges that need to be addressed in Holleta were taken during these jointly-made interviews. It is suggested for the future that all the primary stakeholders in the city such as the municipality, the HTWSSSE, the private sector, HEWs, among others, could celebrate a meeting (maybe on a monthly basis) to share their views and interests on the WaSH sector and to address jointly the main problems and challenges of this sector in Holleta.

### 4.3 Observation of service providers

Several observations of service providers included the visit to the dumpsite, visits to private and public toilets, interviews with the manager of the HTWSSSE or HEWs. The field visit to the dumpsite helped to understand how the faecal sludge is disposed of and make a visual assessment of the current situation of the disposal site. The visits to the private and public toilets were useful to understand how the sanitation technologies operate and how they contain the faecal sludge. Besides, some KIs were conducted during these visits. This allowed for cross-checking of data and also to take photographs to provide with more credibility on the observations.

## 5 Acknowledgements

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- ETP, 2016b. Interview with Tamene Hailu. Coordinator of the national WaSH inventory from the MoWIE.
- ETP, 2016c. Interview with Ato Yared. Addis Ababa Water and Sewerage Authority.
- ETP, 2016d. Interview with Kassahun Bedene. WaSH Project Coordinator from the Horn of Africa Regional Environment Centre and Network.
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HLT, 2016a. Interview with Demissie Lemma, manager of the municipality of Holleta.

HLT, 2016b. Interview with Zelalem Tolera, process owner of the municipality of Holleta.

HLT, 2016c. Interview with Chala Tulu, human resource manager-owner of “Jardin Meubles PVT.LTD.CO”, a private company of Holleta.

HLT, 2016d. Interview with Diriba Beyene, head of the water utility of Holleta.

HLT, 2016e. Interview with Birhanu Daba, accountant of the water utility of Holleta.

HLT, 2016f. Interview with Tisist Hailu, Urban Health Extension Worker of Holleta.

HLT, 2016g. Interview with Mesenesh Gobe, Urban Health Extension Worker of Holleta.

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## 7 Appendix

### 7.1 Appendix 1: Stakeholder identification

Name of organisation	Name of contact person	Position	Influence (high/medium/low)	Interest (high/medium/low)
Municipality of Holleta	Demissie Lemma	Manager	High	High
Municipality of Holleta	Zelalem Tolera	Process owner	High	High
"Jardin Meubles PVT.LTD.CO"	Chala Tulu	Human resource manager owner	High	High
HTWSSSE	Diriba Beyene	Head	High	High
HTWSSSE	Birhanu Daba	Accountant	Medium	High
Health Office	Tisist Hailu	HEW	High	High
Health Office	Mesenesh Gobe	HEW	High	High
Ethiopian Institute of Architecture	Tesfaye Hailu	Chair holder of infrastructure design and construction	Low	High
MoWIE	Tamene Hailu	Coordinator of the national WaSH inventory	Low	High
Addis Ababa Water and Sewerage Authority	Ato Yared	Engineer	Low	High
Horn of Africa Regional Environment Centre and Network	Kassahun Bedene	WaSH Project Coordinator	Low	High
JSI	Birhanu Genet	Senior Environmental Health Advisor	Low	High

7.2 Appendix 2: Tracking of Engagement

Comment: List stakeholder that was directly engaged in the study.	Date of Engagement	Purpose of Engagement	Maximum 100 word summary of outcomes
Demissie Lemma	42394	To know about the WaSH situation	Interview conducted to provide a general view on the WaSH situation
Zelalem Tolera	42394	To know about the WaSH situation	Interview conducted to provide a general view on the WaSH situation
Chala Tulu	42395	To know about the solid waste situation	Interview conducted to provide a view on the solid waste situation
Diriba Beyene	42395	To know about the water supply in the city	Information about the drinking water supply and plans to increase the capacity, leakage, water coverage, etc.
Birhanu Daba	42395	To know about the water supply in the city	Information about the drinking water supply and plans to increase the capacity, leakage, water coverage, etc.
Tisist Hailu	42395	Situation of HEWs and their work	Information on the work of the HEWs was obtained: training, monitoring, etc.
Mesenesh Gobe	42395	Situation of HEWs and their work	Information on the work of the HEWs was obtained: training, monitoring, etc.
Tesfaye Hailu	42354	Introductory email was sent to him to see the willingness to participate in the project	Interview was conducted to gain knowledge about the WaSH situation in Ethiopia on national level.
Tesfaye Hailu	42383	Introductory email was sent to him to see the willingness to participate in the project	Interview was conducted to gain knowledge about the WaSH situation in Ethiopia on national level.
Tamene Hailu	42340	Introductory email was sent to him to see the willingness to participate in the project	Interview was conducted to gain knowledge about the WaSH situation in Ethiopia on national level.
Tamene Hailu	42384	Introductory email was sent to him to see the willingness to participate in the project	Interview was conducted to gain knowledge about the WaSH situation in Ethiopia on national level.
Ato Yared	42398	Introductory email was sent to him to see the willingness to participate in the project	Interview was conducted to gain knowledge about the WaSH situation in Ethiopia on national level.
Kassahun Bedene	42354	Introductory email was sent to him to see the willingness to participate in the project	Interview was conducted to gain knowledge about the WaSH situation in Ethiopia on national level.
Kassahun Bedene	42383	Introductory email was sent to him to see the willingness to participate in the project	Interview was conducted to gain knowledge about the WaSH situation in Ethiopia on national level.
Birhanu Genet	42699	Introductory email was sent to him to see the willingness to participate in the project	Information about the organizations in charge of WaSH in Ethiopia was acquired
Birhanu Genet	42699	Introductory email was sent to him to see the willingness to participate in the project	Information about the organizations in charge of WaSH in Ethiopia was acquired

7.3 Appendix 3: SFD matrix Appendix

