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# Strengthening Ethiopia's Urban Health Program (SEUHP)

John Snow Inc. Addis Ababa, Ethiopia

## Consultant:

**Addis Continental Institute of  
Public Health**

## Study team:

Dr. Abera Kumie

Dr. Mamo Wubshet

Dr. Takele Tadesse

Mr. Walelegn Worku

Mr. Sileshi Taye

Ms. Dagmawit Tewahido

## Senior advisors:

Prof. Yemane Berhane

Dr. Alemayehu Worku

# Situational Analysis of Urban Sanitation and Waste Management

*"The Structural, Socio-Economic, Institutional,  
Organizational, Environmental, Behavioral, Cultural,  
Socio-Demographic Dimensions"*

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# SITUATIONAL ANALYSIS OF URBAN SANITATION AND WASTE MANAGEMENT

*"The Structural, Socio-Economic, Institutional, Organizational,  
Environmental, Behavioral, Cultural, Socio-Demographic  
Dimensions"*

Commissioned by: Strengthening Ethiopia's Urban Health Program (SEUHP)

John Snow, Inc. (JSI)

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Consultant: Addis Continental Institute of Public Health

P O Box 26751/1000

Office Phones: + 251 118-963494; + 251 913 038534

Email: Yemaneberhane@ethionet.et

Website: <http://www.addiscontinental.edu.et>

Addis Ababa, Ethiopia



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Addis Continental Institute of Public Health

# ACRONYMS AND ABBREVIATIONS

ACIPH	Addis Continental Institute of Public Health
CSA	Central Statistical Agency
DHO	District health office
EDHS	The Ethiopian Demographic and Health Survey
EPA	Environmental Protection Authority
FDRE	Federal Democratic Republic of Ethiopia
FGD	Focus group discussion
FMHACA	Food, Medicine and Health Care Administration and Control Authority
FMOEPF	Federal Ministry of Environmental Protection and Forestry
FMOH	Federal Ministry of Health
HEP	Health Extension Program
HMIS	Health management information system
HSDP	Health Sector Development Program
HWTS	Household water treatment and safe storage
ISO	International Standard Organization
JSI	John Snow, Inc.
KAP	Knowledge, attitudes, and practices
NGO	Nongovernmental organization
NHSSAP	National Hygiene and Sanitation Strategic Action Plan
ORS	Oral rehydration salt
ORT	Oral rehydration therapy
PPE	Personal protective equipment
PPP	Public-private partnership
PPS	Probability proportional to size
RHB	Regional health bureau
SD	Standard deviation
SEUHP	Strengthening Ethiopia's Urban Health Program
SPSS	Statistical Program for Social Sciences
SWM	Solid waste management
UHEP	Urban Health Extension Program
UHE-p	Urban health extension professional
USWM	Urban sanitation and waste management
VIPL	Ventilated improved pit latrine
WASH	Water supply, sanitation, and hygiene

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# EXECUTIVE SUMMARY

## Introduction

The Government of Ethiopia is committed to meeting the public health needs of its population by providing grass-root health extension services in both rural and urban areas. The Urban Health Extension Program (UHEP) targets the wellbeing of urban populations through selected high-impact interventions, which include improving sanitation and waste management services and practices. Because of the existing poor waste management systems in Ethiopia, cities have neither adequate nor acceptable levels of practice in waste handling and disposal systems. Even if there is drinking water supply, sanitation, and hygiene sector policies and strategies, there are serious challenges to their implementation and enforcement.

Urban sanitation has no clear institutional ‘home,’ which means responsibilities are diffused among several agencies, the sector is under-financed, facilities for the treatment of liquid waste are almost nonexistent, and there is no clear implementation approach. In addition, existing practice and enforcement of urban sanitation is far behind the provisions of sanitation policy frameworks.

The overall purpose of this analysis was to review and analyze national, regional, and city/town level policies and strategies on sanitation and waste management; assess availability and enforcement of regulations, institutional capacities, and existing/potential financing mechanisms for waste management; and describe the current sanitation and waste management-related knowledge, perspectives, and practices among urban communities. The findings in this assessment will inform the interventions that stakeholders will design to improve sanitation policy nationwide.

## Methods and materials

The research was conducted in 30 cities/towns of Ethiopia from June to July 2014. The mixed-method cross-section study was triangulated with qualitative (focus group discussions [FDG], in-depth interview, and document review) and quantitative data.

The source population was all households in 30 cities, including three subcities in Addis Ababa and key informant-experts from national and city/town offices. The respondents for the household survey were mothers with children under five and who were reported to be responsible for household affairs.

Sample size was calculated using Epi Info Version 3.5.2 statistical software with various assumptions. The actual surveyed households were 1,472. Eighteen cities were selected for the qualitative component of the assessment. Seventy-six in-depth interviews (4 per city/town in 18 cities plus 4 at federal level) and 42 FGD (2 per city/town in 18 cities plus 6 FGDs at regional cities) were conducted.

A two-stage cluster sampling approach was used for the quantitative study. The first stage involved random selection of clusters (kebeles) in each town/city using a probability proportional to population size (PPS) technique that also considered stratification by slum status (slum, non-slum, and mixed).

The second stage involved selecting households (study units) in each cluster. In the selected clusters, households were selected randomly using systematic sampling approach. The qualitative study

employed a purposive sampling strategy to identify eligible respondents from each study site who were believed to have substantive knowledge on the subject matter.

Structured questionnaire and semi-structured interview guides were used to collect data. A data abstraction format was used to summarize information on urban sanitation and waste management (USWM) issues to facilitate the desk review (record review and literature search). For the quantitative portion, data collectors were trained to collect data through face-to-face interviews with eligible respondents. Trained research assistants who have masters-level training in health related fields and experience in qualitative data management conducted the qualitative component of the study. Qualitative interviews and FGDs were tape recorded whenever possible. Quantitative data were double-entered and cleaned using Epi-Info Version 3.5.2 at the ACIPH data processing unit.

SPSS Version 20 for windows program was employed for descriptive, bivariate, and logistics regression analysis. Qualitative data were analyzed using the framework analyses approach based on identified thematic issues. Summary field notes, as well as transcribed and translated in-depth interviews and focus group discussions, were used during the analysis

Ethical clearance was obtained from Ethical Review Committee of Addis Continental Institute of Public Health. A letter of support was obtained from the FMOH and regional health bureaus. Local authorities were formally contacted to obtain permission to collect data in the field. Both respondents for the quantitative and qualitative method were enrolled in the study after giving informed verbal consent. Confidentiality was assured using anonymity. Privacy during interviews was maintained by conducting interviews at sites free from any form of disturbance.

## Results

Upper respiratory tract infection, diarrhea, skin diseases, eye diseases, and typhoid were leading causes of morbidity. The majority of participants mentioned that open-field urination and defecation were highly practiced among the urban community. Organizational setups for proper urban municipal sanitation and waste management were not fully functional because of low salary, placement, and motivation. The findings indicated that there were lack of integration, harmonization, and alignment among various sectors working on USWM. No special USWM service attention was given to slums. The provision of personal protective equipment was inadequate and a health insurance system was non-existent for workers engaged in urban cleaning.

Outsourcing of primary waste collection services, green area, and parking services to private microenterprises was considered one of best practices in the USWM program because it created job opportunities for youth and women. The majority of study participants reported that the current cost recovery by the government and private microenterprises was very low and could not recover the cost invested for staff salary, transport, maintenance, and other operational expenses. Participants identified poor implementation of existing national and regional policies, strategies, and guidelines at regional and local levels; poor coordination of sector actors; and low level of public awareness as key challenges for USWM.

Urban sanitation and waste management policies, strategies, plans, duties, and responsibilities in Ethiopian towns/cities have definite gaps and overlaps. Waste management in urban areas is poorly coordinated and difficult to systematically regulate due to duplication of effort and unclear roles among various stakeholders. At the town/city level there is overlap in responsibilities for activities,

low assessment mechanisms, and poor supportive mechanisms that could harmonize the national and regional policies, strategies, and plans for USWM services.

Data from urban communities showed that 59.4% of the respondents had poor knowledge of the health extension package components. Further, 58% of the respondents had poor knowledge of human waste management. Moreover, 42.5% of the respondents had poor knowledge on solid waste management. This includes knowledge of households on onsite sorting and waste reduction of solid waste. 56.1% of the urban community households had poor knowledge of hand hygiene. The majority (70.7%) of the respondents responded that handwashing is important to remove dirt and make them clean. However, only 6.3% understood that handwashing is important to remove microbes. Furthermore, urban communities' current knowledge of safe handling of drinking water and prevention of diarrhea is below the expected level, and found to be poor. Although current attitudes on USWM and water quality and quantity and service provision were unfavorable, urban communities showed willingness to pay for USWM services. These findings indicate that stakeholders should continue health education and advocacy on urban sanitation and waste management.

USWM practices vary from a low to an average performance of key indicators in five major areas. Access to sanitation, at 91% is predominated largely by traditional pit latrine, which may not sustain utilization because of odor. Utilization of sanitation, at 89%, is adequate although the hygienic handling of babies' excreta will continue to pose a health risk as long as handwashing practices remain inadequate. A large proportion of urban communities have primary solid waste collection system run by micro-enterprise, public assets that have a critical role in urban solid waste management. Improving the performance (both quality and quantity) of micro-enterprises largely depended on the need-based provisions, defined by number of containers and lift trucks. Government authority involvement is needed to improve the working environment through incentives and protective devices.

The management of liquid waste at household level was very poor. About half of the households handle grey water (household liquid waste) by openly discharging into any accessible public properties, such as streets, and nearby open space. The existing facilities in some households (soak-away pit) could not accommodate to handle daily generated liquid waste. This requires improved design criteria and alternatives when soak-away pits are saturated. The extent of piped drinking water supply, 98%, is a good indicator of the benefit of urbanization. However, residents were concerned about frequent interruption in piped water supply. This indicates the need for water treatment options and water treatment options, as only 35% respondents practiced proper household water treatment. The practice of handwashing at critical times is assumed to be very low. The reported handwashing with soap after latrine was about 95% which is believed to be an answer to please the interviewer and not a reflection of reality. This study checked only one critical time, which was not enough to measure other key critical times (FMOH uses 5 critical times). The maximum possible theoretical handwashing in households that have water, a handwashing facility, and soap is believed to be 24%. Generally, the overall poor practice in USWM is 56%, which was assessed using 23 proxy measurements.

Data from systematic review showed that the average rate of solid waste generated from households per capita per day ranged from 0.23 to 2.03 kilograms. Moreover, the compostable fraction of solid waste was as high as 60%, in the case of Addis Ababa.

The current areas of public-private partnerships in Ethiopia are not uniform throughout cities/ towns. There is poor informal sector engagement. Support for formal private sector in USWM is undefined. There is no clear responsible government institution with policies and guidelines to promote private-

sector USWM engagement. Sectors that are promoting waste reduction, re-use, and recycling of USWM are not strong enough to bring changes to this practice.

## Conclusion and recommendations

The overall USWM situation was grossly poor, characterized by poor linkage between policies/strategies and operational practices. There are both gaps and overlap in policies, strategies, plans, duties, and responsibilities, and all are poorly coordinated. Assessment of and support for implementation of policies and strategies in cities/towns was low.

Urban communities' knowledge and attitudes on human waste management, urban waste management, hand hygiene, safe handling of drinking water, and prevention of diarrhea and USWM service provision was generally low. In contrast, willingness to pay for the service was high. USWM practices were unsatisfactory for urban dwellers to live in a healthy environment and prosper. In addition, handwashing was understood to be very low compared to the desire national level. The practice of solid waste management was not adequate to satisfy the growing needs of urbanization. Access to protected drinking water was found to be relatively better than other sanitation services, although the use of household treatment practices were low. The proportion of compostable urban solid waste that did not get recycled or re-used was relatively high.

Public-private partnerships in Ethiopia are not uniform. Formal and informal sector engagement is low, and there is no support for promoting private sector engagement in urban waste management. Some policies are old and need urgent updating, and principles and strategies of USWM need standardizing. Stakeholders need clear strategies and policies to promote public private USWM partnership.

The approach for developing a USWM strategy to promote efficient intersectoral collaboration must include a systematic review/assessment of national and regional policies. Public-private partnerships should be advocated and strengthened by introducing formal local policies and strategies in USWM activities. Promotion and advocacy of these policies and strategies to the public and owners of the services to establish understanding, responsibilities, accountability, and transparency should be considered.

Residents should participate in urban sanitation and waste management interventions. Use diverse information education communication and behavior change communication tools to build residents' knowledge and awareness of proper USWM. Provide adequate facilities, timely service of public containers, and frequent USWM public promotion to meet residents' needs. The options of waste recycling from points of generation to disposal sites with public involvement must be identified scientifically and promoted publicly.

# OPERATIONAL DEFINITIONS

**Urban sanitation** is the collection, storage/treatment, transportation, re-use, or disposal of excreta in ways that improve or sustain human health and decrease negative effects on human environment.

**Urban waste management** includes onsite storage, onsite waste recovery and reuse, collection, transportation, and disposal of solid waste and liquid (other than human) waste—ideally in ways that improve or sustain health and decrease negative effects on the environment.

**Improved sanitation facility** in this survey is defined as the facility that has structures related to pit, privacy, and squatting floors with proper provision of safety and that is environmentally friendly. Structurally, it includes flush latrines, traditional pit latrines with durable/washable slab, and ventilated improved latrines.

**Latrine utilization** is the reported use of the latrine, verified physically by footprints and fresh excreta inside the pit; and an absence of feces around the home.

**Improved water sources** are those that, by the nature of construction, protect the source from outside contamination, particularly fecal matter. Improved source categories are: piped water (bono, yard, or in-house connection), protected spring, and well water.

**Door-to-door collection** is collection of solid waste by micro-enterprises or day laborers who mainly use manually operated carts with “sacks” at least once per week.

**Block collection** is a micro-enterprise collection system for apartments and condos.

**Liquid waste** is water that has been used for kitchen activities, handwashing, cloth washing, bathing, child bottom attending, and floor sweeping. It is also known as grey water.

**Overall knowledge of urban sanitation, water and hygiene:** 18 different attitude questions with ‘yes/no’ responses were aggregated. A composite score above the mean or median is labeled as good, else poor. Definitions for sub-scores are indicated in Annex III.

**Overall attitude toward urban sanitation, water and hygiene:** 27 different attitude questions with ‘yes/no’ responses were aggregated. A composite score above the mean or median is labeled as good, else poor. Definitions for sub-scores are indicated in Annex III.

**Overall current practice on urban sanitation, water and hygiene:** 23 different practice questions with ‘yes/no’ responses were aggregated. A composite score above the mean or median is labeled as good, else poor. Definitions for sub-scores are indicated in Annex III.

# 1. INTRODUCTION

## 1.1 Urban Health Extension Program (UHEP)

The Government of Ethiopia is committed to meeting the public health needs of its population by providing grassroot health extension services in both rural and urban areas. The Urban Health Extension Program (UHEP) has an essential health service package grouped into four core preventive health services: hygiene and environmental sanitation; disease prevention and control; family health services; and accident prevention and first aid. UHEP targets the wellbeing of urban populations through selected high-impact interventions, including improving sanitation and waste management services and practices (1). UHEP strives to create healthy environments as well as healthful living at *kebele* and household levels by improving access and equity to basic preventive health services, increasing health awareness, sustaining preventive practices, and effecting related behavioral change. The promotion of urban sanitation and improving waste management (personal hygiene, healthful housing, safe drinking water supply, vector control, food hygiene) are priority areas and have been implemented by the UHEP since 2010 (2). Urban health extension professionals (UHE-ps), who are nurses, provide the urban health extension service. Each UHE-p in an urban area is expected to serve 500 households. The UHE-p workplace is located in either in the nearby health center or the *kebele* office, depending on available space. Households graduate as ‘model households’ when they implement 75% of the package after 96 hours of theoretical and practical training for four months.

## 1.2 Profile of urban sanitation and waste management

The number of urban areas and people living in urban areas of Ethiopia has been steadily increasing over the last 4-5 decades, especially in the last decade. Urbanization in Ethiopia created opportunities for improved energy availability, better road infrastructures, and improved housing conditions. However, it has also created growing challenges in sanitation and waste management systems, which pose serious health risks to the urban population. The three critical components of urban sanitation include excreta disposal, and liquid and solid waste management. Services to handle the waste are grouped into two related services: urban sanitation and urban waste management.

Urban solid waste management (USWM) requires a system that ensures the maintenance of human health and the surrounding environment. Although the sources of waste generation are diverse, the proportion of household wastes (by volume and weight) makes significant contribution to the overall improvement of urban health (3). Onsite sanitation systems involve waste generation and final disposal at the point of waste generation. Offsite systems are used if the generation and final disposal sites are distinctly different. Both systems are used in the cities of Ethiopia.

The Ethiopian Demographic and Health Survey (EDHS) in 2014 showed that only 14% of the urban population has access to improved sanitation facilities (4), which are capable of breaking feco-oral routes of infection transmission. The same data source indicated that access to shared sanitation was 33%. These data were not different from that indicated by EDHS 2011 (5). Welfare data and monitoring (5),

however, indicated access to a latrine in urban areas was 86.6% at the national level, which is operationally inconsistent with EDHS data.

EDHS data assumed sustainable access to sanitation, while welfare data assumed access to any kind of latrine. The FMOH, using health management information systems (HMIS), also reported 75% latrine coverage in 2010 (2002 EFY) (6). Another recent estimate indicated that open defecation in urban of Ethiopia had declined significantly, from 41% in 1990 to 8% in 2011(7), while the same data source indicated the proportion of improved latrines in urban setting in 2011 was 27%. Because presence of latrine does not imply utilization, latrine utilization levels may not be equivalent to ownership levels.

The population influx to major cities threatens optimum use of available latrines. In some kebele housing units latrines are being converted into habitable rooms to accommodate additional family members. The most common urban sanitation facilities, about 95%, are pit latrines, which are often poorly constructed and maintained; about 50% are structurally unsafe and 50% hygienically inappropriate (8). Urban sewer systems are generally limited to very few areas and not fully functional. Free-flowing odiferous liquid waste in some big cities of the country is not uncommon.

The fourth National Health Sector Development Program (HSDP IV) targeted 82% improved sanitation facilities at country level and 95% access to latrine facilities (2). The National Hygiene and Sanitation Strategic Action Plan (NHSSAP), on the other hand, has indicated the provision of 60-100% proportion of households accessing both improved and unimproved sanitation facilities; 82% of households with improved sanitation facility is the goal for the end of 2015. In addition, it targeted 77% of household to practice handwashing with soap (or its equivalence) at critical times; 80% of kebeles to become open-defecation-free areas; and 77% of households get either water treatment or access to safe water (9).

Waste management systems in Ethiopian cities are neither adequate nor proper. Unhygienic solid waste storages and disposal systems in some cities serve as vector breeding sites and gross unsightliness. For example, the unit generation of solid waste in Addis Ababa is about 0.4 kg per capita per day (10), of which about 60%-80% is collected and disposed. Unit generation for the regional cities was found to be lower than that of Addis Ababa. For example, a survey in Dessie town identified 0.231 kg/person/day (11). Other sources indicated 0.277 kg/d/c for Mekelle; 0.22 kg/d/c for Bahir Dar; 0.227kg/d/c for Debre Markos; and 0.267kg/cd/c for Adama town (12).

Many latrines use septic tanks, latrine pits (seepages), and cesspools to store liquid waste. When these storages get full, municipal vacuum trucks are either used, or the storage is simply drained openly or into drainage systems such as public ditches. For example, a study in Bahir Dar indicated that 64% of the households discharge liquid wastes into the surrounding public space (13). The service efficiency of vacuum truck is unable to satisfy the growing demand for services; sludge collection service was available in only 3 of 30 large towns surveyed (14), indicating unmet need for sanitation management. The municipal treatment plant for liquid waste is available only in Addis Ababa (the Kaliti site), which currently (2014) handles about 10, 000 m<sup>3</sup>(14). There is an expansion project to increase its capacity to 100,000 m<sup>3</sup>.

The Welfare 2011 survey provides a snapshot of urban solid waste management. The proportion of households using a refuse truck was about 39%; handling disposal locally (pit, burning, composting) 34.5%; and throwing into open spaces 27%. Almost 40% of the surveyed households disposed solid

waste in an open-space, street, or river (15). Generally, about 95% of municipally uncollected solid waste is indiscriminately thrown into open spaces and empty lots scattered thorough out the City.

The efficiency of collection of solid wastes is expected to worsen given the current low service capacity and rapid urbanization. The growth of urbanization requires effort to maintain existing coverage levels in sanitation and waste management (16).

Hygienic practices are also generally poor. Handwashing and hygienic behaviors at critical times among caregivers of children was reported to be as low as 19% (17). The compliance of handwashing after four critical times was found to be 7% (18).

### 1.3 Problem statement

While drinking water supply, sanitation, and hygiene (WASH) sector national policies and strategies exist, there are serious challenges in their implementation and enforcement. The capacity and governance issues in the sector implementing agencies are among the major challenges in performing relevant national programs (19).

The growing environmental sanitation and waste management problems in urban Ethiopia can be seen as a result of many factors, described as follows:

#### a) Waste management service provider's perspective (capacity and delegation)

First, urban sanitation has no clear institutional 'home,' which means responsibilities are diffused among several agencies. Secondly, the sector is under-financed, and facilities for the treatment of liquid waste are almost nonexistent. Thirdly, there is no clear implementation approach of the urban sanitation strategy.

#### b) Policy, strategy, regulation, and enforcement

The Ethiopian constitution has many underlying provisions for the maintenance of a safe environment. Several proclamations were also issued based on the constitutional provisions to safeguard the living and working environment from any act of harm and pollution. Although the FMOH recently developed a National Sanitation and Hygiene Strategic Action Plan (NSAHP), which covers sanitation and hygiene promotion, it focuses predominantly on rural and peri-urban areas. There needs to be an integrated strategy that clearly addresses urban sanitation needs because existing practices and enforcement of urban sanitation is far behind the sanitation policy frameworks. These organizational and resource gaps are serious impediments to improving USWM services.

#### c) Individual and community behavior-related problems

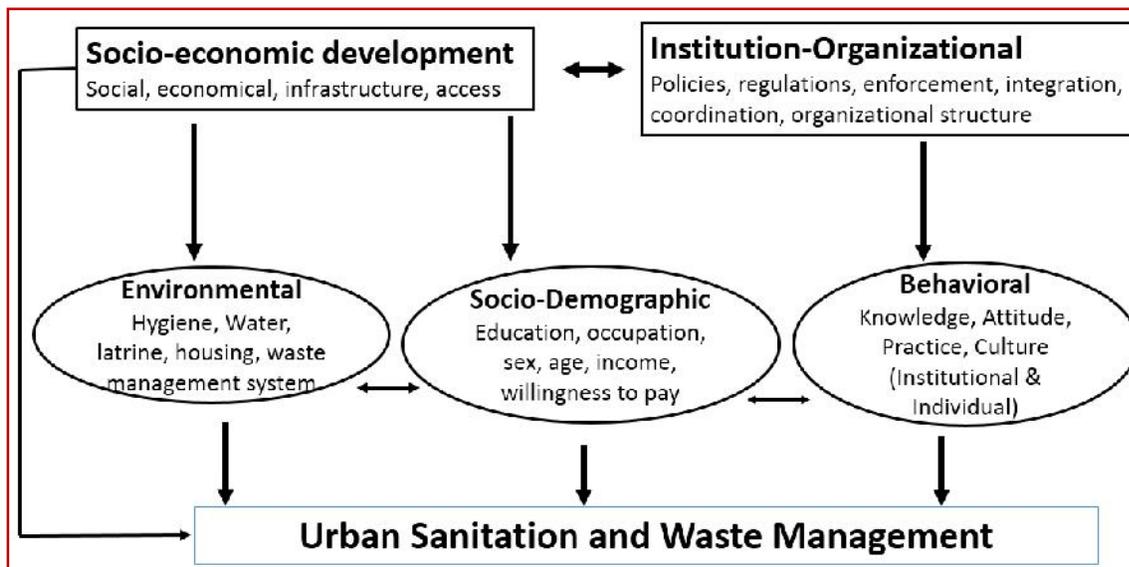
Defecation and urination in public places, littering wastes, flushing liquid waste into storm drainage lines, and sweeping waste toward the street are routine urban waste management practices that severely damage the image of cities in the country. Efforts to increase knowledge and awareness are critical to change or modify behaviors necessary to sustaining a clean and healthy living environment.

Research on sanitation and waste management knowledge, opinion, and practices in the Ethiopian context are uncommon. The challenges related to knowledge and practices on sanitation and waste management, barriers to law enforcement, community participation, and governance should be

researched. Regular situational profiles and needs assessments are essential for evidence-based decisions in policies, strategies, and action plans. This assessment generated baseline data to lay the foundation upon which stakeholders will design interventions.

## 1.4 Conceptual framework of the study

The study adopted a conceptual framework (Figure 1) to fit the ecological model that assumes that sanitation and waste management is influenced by multi-dimensional and multi-level factors (personal, family, and community-level factors as well as governmental policies). The framework shows the multiple factors, including environmental, individual socio-demographic, behavioral, national socio-economic development status, and institutional and organizational issues. The conceptual framework was used to review the literature, prepare study tools, and perform data analysis.



**Figure 1: USWM study conceptual framework**

## 2. ASSESSMENT OBJECTIVES

The overall purpose of the assessment was to review and analyze national, regional, and city/town level policies and strategies on sanitation and waste management; assess availability and enforcement of regulations, institutional capacities, and existing/potential financing mechanisms for waste management; and describe the current sanitation and waste management knowledge, perspectives, and practices among urban communities. The specific objectives were:

- I. Assess the sanitation and waste management services profile of the SEUHP-targeted cities/towns and identify key challenges, needs, and good practices (innovative technologies and/or promotion approaches, sanitation program that is part of urban health extension professionals' duties and responsibilities) for proper urban waste management and sanitation.
- II. Review and analyze urban sanitation and waste management national policies, national and regional strategies, town-level plans, and duties and responsibilities to identify strengths and gaps/overlaps for addressing current needs and problems.
- III. Describe the current sanitation and waste management knowledge, perspectives, and practices of urban communities, particularly regarding household latrines, solid and liquid waste management, and associated problems.
- IV. Analyze the solid waste generation rate and composition at the household level.
- V. Assess existing practices and opportunities for private sector involvement in waste management and urban sanitation. Assess institutional capacity and existing potential financing mechanisms for convergence and private public partnership.

The detailed study questions for specific objectives are annexed in this report (Annex I).

### 3. METHODS

The assessment was conducted in selected towns in Ethiopia that are targeted for Strengthening Ethiopia's Urban Health Program (SEUHP) interventions. The towns' population size, number of households, and households reached by UHE-ps are listed in Table I.

*Table 1: JSI/SEUHP's first-year target cities/towns for USWM study*

Region	City/town	#	Population	HHs	# of kebeles	HHs reached by UHE-ps
<b>Addis Ababa</b>	Arada Subcity	1	245,208	59,807	10	41,000
	Yeka Subcity	2	403,098	98,317	13	81,000
	AkakiKality Subcity	3	245,208	61,302	10	52,500
<b>Dire Dawa</b>	<b>Dire Dawa</b>	<b>4</b>	<b>275,950</b>	<b>61322</b>	<b>9</b>	<b>44,550</b>
<b>Harar</b>	<b>Harar</b>	<b>5</b>	<b>128,486</b>	<b>32,945</b>	<b>19</b>	<b>27,500</b>
<b>Amhara</b>	Bahir Dar	6	274,836	63,916	9	26,000
	Dessie	7	160,367	37,295	10	22,500
	Gondar	8	220,606	51,304	13	29,500
	Debremarkose	9	83,857	18,857	7	12,000
	Debrebirhan	10	84,920	19,749	9	9,000
	Enjibara	11	24,584	5,425	2	4,000
	Debretabor	12	46,397	10,790	4	7,500
<b>Oromia</b>	Adama	13	311,483	64,892	18	47,000
	Jimma	14	174,778	36412	17	21,000
	Nekemte	15	100,596	20958	6	14,500
	Shashamane	16	153,462	31971	8	22,000
	Bishoftu	17	167,064	34805	13	24,500
	Assela	18	89,964	18743	8	13,500
	Sebeta	19	107,298	22354	8	18,000
<b>SNNP</b>	Arbaminch	20	103,962	21,217	11	19,000
	Hawassa	21	341,659	69,727	32	53,400
	Hossana	22	97,184	19,833	8	19,200
	WolytaSodo	23	105,590	21,549	11	14,000
	Dilla	24	82,127	16,760	9	15,000
	Wolkite	25	58,000	11,837	6	9,000
	<b>Tigray</b>	Adigrat	26	66,766	15,174	6
Axum		27	59,284	13,473	4	18,000
Mekelle		28	301,642	68,555	33	71,000
Shire		29	55,134	12,530	5	11,000
Maychew		30	27,915	6,344	4	13,000

A mix of study methods, including quantitative and qualitative were used to address the specific objectives (SOs) of this study. A literature review was conducted to address SO IV. A cross-sectional study was conducted to address SOs I and III. The summary of the methods is depicted in Table 2, and the following section provides a separate narrative description of each procedure used during the assessment.

### 3.1 Document and literature review

A document review was done to gather information and secondary data on existing policies, strategies, regulations, implementation documents, and various reports from Federal Ministry of Health (FMOH), regional health bureaus (RHBs), and municipalities to meet SO II.

A data abstraction format was used to summarize information on USWM issues as part of the desk review (record review and literature search). The procedure focused on obtaining information about national policies, national and regional strategies, and town-level plans as well as duties and responsibilities specified in the documents.

In addition, in-depth interviews were conducted with key informants to supplement the quantitative findings. Furthermore, a systematic literature review based on both published and unpublished reports was conducted to synthesize information on household solid waste generation rates, characteristics, and composition.

**Table 2: Summary of data collection and analysis methods**

Specific objective	Data collection methods	Study subjects/units	Sample size	Analysis	Data acquisition method
I	In-depth interview	Key informants: 1) City/town health office 2) Urban development and construction 3) Urban cleaning and beautification 4) Municipal/utility (liquid waste management)	4 per city/town	Framework analysis	Interview guide, transcription and translation, audio tape, field note-taking, summary of interviews
	Focus group discussion (FGD)	UHEPs and supervisors	1 per city		
	FGD	Solid and liquid waste collectors, supervisors, and private organizations on USWM	1 per city		
II	Record review	Reports (published and unpublished), Negarit Gazeta, other documents	All available documents	Framework analysis	Data abstraction form
	In-depth interview	Key informants: 1) FMOH; 2) Ministry of Water, Irrigation and Energy 3) Ministry of Urban Development and Construction 4) Ministry of Environmental Protection and Forestry	A total of 4		
III	Cross-sectional survey complemented with observation	Mothers with under-five children	1389 (46 clusters each 30 HH)	Descriptive and logistic regression analysis	Questionnaire, observational check list, pictures
	FGDs	HH mothers in 6 regional cities: Addis Ababa, Bahirdar, Adama, Hawassa, Dire Dawa, and Mekelle.	6 regional cities	Framework analysis	
IV	Searching literatures	Peer reviewed articles and reports	Publications and reports in the last 5 years	Systematic review	Electronic databases and printed materials
V	In-depth interview	Key informants: 1) City/town health office 2) Urban development and construction 3) Urban cleaning and beautification and 4) Municipal/utility (liquid waste management)	4 per city/town)  (Used integrated interview guide with SO I)	Framework analysis	Interview guide, transcription and translation, audio tape, field note-taking, HH data analysis, willingness to pay and alternative mechanism of collection waste

### 3.2 Qualitative assessment methods

The assessment used qualitative study methods to explore the challenges of USWM, current needs, existing good practices (SO I), and opportunities for private-sector involvement (SO V). In-depth interviews were used to collect information from key stakeholders working on USWM: city/town health officers, urban development and construction officers, urban cleaning and beautification workers, and municipal/utility (liquid waste management) personnel. Focus group discussions involved urban health extension professionals (UHE-ps) and their supervisors, as well as staff from private organizations working on USWM.

Eighteen cities were selected for the qualitative component of the assessment. Towns were categorized into three levels using population size and level of solid waste management (advanced, moderate, and weak). The study included seven cities fell into the advanced category; six in moderate; and five in the weak category. A purposive sampling strategy identified eligible respondents from each study site who were believed to have good knowledge and memory on the subject matter. As indicated in Table 2, a total of 76 in-depth interviews (four per city/town in 18 cities, and four at the federal level), and 42 FGD (two per city/town in 18 cities and six in regional cities) were conducted. An additional six FGDs were conducted to describe urban mothers' sanitation and waste management knowledge, perspectives, practices, and challenges.

The qualitative component of the study was conducted by trained research assistants who have masters' level training in health-related sciences and experience in qualitative data management. They conducted face-to-face in-depth interviews using a semi-structured interview guide in venues convenient for the participants and where privacy and confidentiality were reasonably assured. Two research assistants, one serving as moderator and the other as note-taker, facilitated each FGD. Qualitative interviews and FGDs were tape recorded when possible. Data were analyzed using the framework analyses approach based on identified thematic issues. Summary field notes, as well as transcribed and translated in-depth interviews and focus group discussions were used during the analysis.

### 3.3 Quantitative cross-sectional assessment

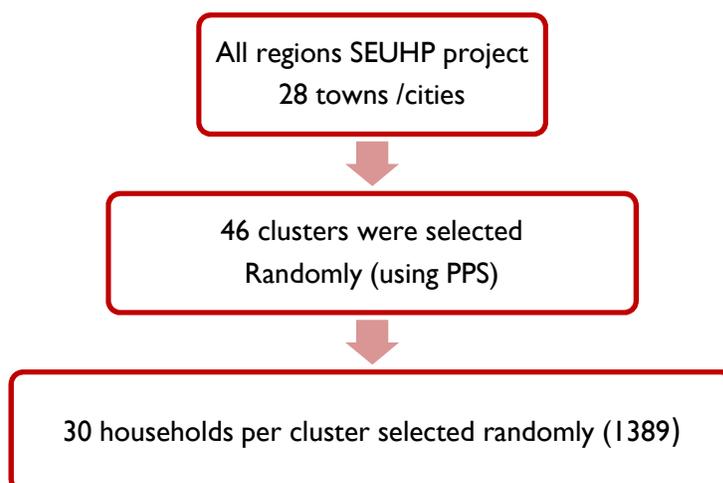
A cross-sectional study involving a multi-stage cluster sampling approach was used to address SO III (household knowledge, attitudes, and practices related to sanitation and waste management). Kebeles, as the smallest administrative unit in Ethiopia, were considered cluster in this study. The source population was all households in 30 cities, including three sub-cities in Addis Ababa (Table 4). The study units were households in the randomly selected cities and kebeles using the probability proportional to size (PPS) method. People sharing the same housing units and meal were considered a household. Respondents to the household survey were mothers with children under-five and who were reported to be responsible for household affairs.

Sample size was calculated using Epi Info Version 3.5.2 statistical software with various assumptions, shown in Table 3. The largest calculated sample size was considered for the assessment in order to address all objectives. 1,472 households were actually surveyed, which was more than adequate for analysis.

**Table 3: Assumptions for sample size estimation**

Parameter, p	Level of significance (%) $\alpha$	Desired precision (%), d	Design effect	No response (10%)	Estimated sample size
Not improved sanitation (53.7%) EDHS 2011	5 %	5%	2	10	850
Poor knowledge 60% (EDHS 2011)	5 %	5%	2	10	820
Improved latrine coverage (14.1%) EDHS 2011	5 %	3%	2	10	1,149
Handwashing practice after critical times (7%), HSDP IV 2010/11	5 %	2%	2	10	<b>1,389</b>

The first stage of the two-stage cluster sampling approach involved random-selection of clusters (kebeles) in each town/city using a PPS technique that also considered stratification by slum status; slum and non-slum. The second stage involved selecting households (study units) in each cluster. In the selected clusters, households were selected randomly using a systematic sampling approach. In each study unit, respondents were mothers with children under-five and who were identified as mother for household (Figure 2). A total of 24 cities in 7 regions were identified by PPS application (Table 4).



**Figure 2: Sampling procedure of the study**

*Table 4: Selected cities and clusters for quantitative and qualitative assessment*

Region/city administration	SN	Selected cities/towns for HH survey	# of Kebeles	No. of selected clusters for a HH survey	Cities selected for qualitative survey
Addis Ababa	1	Arada Subcity	10	3	Yes
	2	Yeka Subcity	13	4	No
	3	AkakiKality Subcity	10	3	Yes
Dire Dawa	4	Dire Dawa	9	2	Yes
Harar	5	Harar	19	2	Yes
Amhara	6	Bahir Dar	9	3	Yes
	7	Dessie	10	1	Yes
	8	Gondar	13	3	Yes
	9	Debremarkos	7	1	Yes
	10	Debrebirhan	9	1	No
Oromia	11	Adama	18	3	Yes
	12	Jimma	17	2	Yes
	13	Nekemte	6	1	Yes
	14	Shashamane	8	1	Yes
	15	Bishoftu	13	2	Yes
	16	Assela	8	1	No
	17	Sebeta	8	1	No
SNNP	18	Hawassa	32	4	Yes
	19	WolytaSodo	11	1	Yes
	20	Dilla	9	1	No
	21	Wolkite	6	1	Yes
Tigray	22	Axum	4	1	Yes
	23	Mekelle	33	3	Yes
	24	Shire	5	1	No
		<b>Total</b>	<b>287</b>	<b>46</b>	<b>18</b>

The quantitative component of the assessment used a pretested and structured household survey questionnaire (Annex II). Properly recruited and trained staff collected data through face-to-face interviews with eligible respondents. The availability of sanitation and waste management facilities, their functionality, and current use was ascertained by observation. The qualitative data study tools are found in Annex II.

Data collectors had at least diploma-level education and experience in field data collection. Field supervisors had at least a diploma or BSc-level training in health-related fields and experience in field supervision. They were trained for four days and rigorously supervised by ACIPH team and JSI/SEUHP regional staff to ensure data quality.

Quantitative data were double-entered and cleaned using Epi-Info Version 3.5.2 at the ACIPH data processing unit. Standard procedures for cleaning data were observed. SPSS Version 20 for windows program was employed for descriptive, bi-variant, and logistics regression analysis.

### **Generating composite variables**

Composite variables of knowledge, attitudes, and practice on existing urban sanitation, waste management (solid and liquid waste), drinking water, hand hygiene, and service delivery were generated using individual variables for each theme. The overall composite used 18 for knowledge, 27 for attitude, and 23 for practice and were used first to generate a composite score that was dichotomized into “poor” and “good,” using the mean or median as a cut-off after checking normality (Annex VII).

### **Multivariate logistic regression analysis**

Composite variable on practice as dependent variables was subjected first in a bivariate analysis with the socio-demographic and household characteristics. Odds ratios with 95% CI and  $p < 0.05$  were used to identify relevant variables. Variables with  $p < 0.05$  in the bivariate were considered for the multivariate logistic regression using the backward method for model building in SPSS.

## **3.4 Ethical considerations**

Ethical clearance was obtained from ACIPH’s Ethical Review Committee. Letters of support were obtained from the FMOH and regional health bureaus. Local authorities were formally contacted to obtain permission to do data collection in the field. Both quantitative and qualitative respondents were reenrolled in the study after giving informed verbal consent. Confidentiality was maintained by using codes instead of real names during data collection, data analysis, and reporting. Tape recording cassettes had unique identifiers with place and type of interview. Field questionnaires, notes, and transcripts were kept in private locked cabinets. Access to the data processing unit was limited to authorized survey staff. Privacy during interviews was maintained by conducting interviews at sites free from any form of disturbance. Experienced data collectors and field supervisors were recruited and trained to ensure proper implementation of ethical provisions. Study investigators supervised extensively to ensure consistent adherence to ethical principles.

## 4. ASSESSMENT FINDINGS

The findings of the assessment are organized systematically based on the specific objectives of the study. When appropriate, the findings from the various components of the study are integrated and synthesized to ease understanding of the issues.

### 4.1 USWM services profile, current needs, good practices, and challenges

#### Study population profile

A total of 72 in-depth interviews and 36 focus group discussions were conducted. The majority of the study participants were male. Participant mean age and years of service were 37 and 8 years, respectively. The main findings are as follows:

#### Urban sanitation and waste management services profile and current needs

The majority of study participants reported that upper respiratory tract infection, diarrhea, skin diseases, eye diseases, typhoid, typhus, parasitic diseases, pneumonia, malaria, tuberculosis, and other unspecified ailments were the most common health problems in the study settings. This finding is consistent with national reports, in which the leading causes of outpatient morbidity are communicable diseases (21, 22).

The majority of study participants described sanitation and waste management practices in the study settings as poor, as was onsite storage and reuse of waste. Stored wastes were not picked up and disposed of in a timely manner (Figure 3). Refuse containers were scant, overfilled, and not cleaned or emptied on a regular basis. Moreover, the design of the refuse containers was not appropriate: containers lacked covers, allowing scavengers and the wind to remove waste during storage and transportation. The final disposal sites were not well-designed or protected (Figure 4). There were few microenterprises in each city and town, and majority of them did not have adequate staff (Table 5), technical support, training, or carts, leading workers to carry waste sacks on their backs.



**Figure 3: Solid waste storage and transportation practices**



**Figure 4: Solid waste disposal practices**

**Table 5: Distribution of micro-enterprises by number of workers in selected towns/cities**

Name of city/town	Number of microenterprises	Number of workers in each microenterprise
Adigrat	1	60
Shire	1	57
Dilla	3	15
Nekemte	3	47
Debre Markos	3	41
Wolaita	4	26
Gondar	4	50
Axum	5	16
Mekele	5	18
Bahir Dar	5	35
Dessie	5	74
Debrebrehan	6	11
Bishoftu	7	10
Sebeta	7	10
Arbaminch	7	7
Hossaina	8	10
Harar	8	10
Shashemane	11	10
Wolkite	15	10
Jimma	20	12
Dire Dawa	24	10
Hawassa	28	32
Assela	76	25
Addis Ababa	57	15

Study participants mentioned that open-field urination and defecation were highly practiced in urban communities. Sewage from condominiums, hotels, and industries created many problems. The municipality constructed public and communal latrines, but majority were not functional because of poor design, construction, maintenance, and de-sludging services. Further, there were problems in the utilization and cleaning of latrines. Hand-washing facilities were available for some of the latrines but handwashing was poorly practiced by the community due to shortage of water and inappropriate health habits. The majority of town dwellers obtain water from a piped supply system that is assumed to be safe, so household water treatment practices were very limited.

“Well, open-field urination and defecation is commonly practiced in the town. There are about 20 public latrines constructed by the government and nongovernmental organizations in the town, half of are not currently functional... there is a lack of community awareness, regular cleaning and maintenance, sense of ownership by the users, and supervision by UHE-ps. The practice of handwashing is also poor due to shortage of water and lack of behavioral changes,” said a 28-year-old female UHE-p.

Respondents reported that there were non-functional organizational setups for proper sanitation and waste management in the study settings. There were problems related to placement, motivation, and salary due to budget and skilled human resources shortages. There were also vacant posts but the recruitment processes were long and time-consuming. Besides, the few functional refuse trucks for collection and transportation of solid waste to the final disposal sites were very old.

The study participants also mentioned that a multitude of sectors, including health offices, trade and tourism, sanitation and beautification, environmental protection, land and construction management, municipality, and nongovernmental organizations worked on sanitation and waste management. They indicated that there were problems in integration, harmonization, and alignment of these entities to effectively and efficiently run the sanitation and waste management services. In addition, the majority of study participants reported that there was no WASH forum in their settings, except for World Handwashing Day, celebrated once a year and in collaboration with school communities.

The majority of participants said there was good community participation in sanitation and waste management programs. The community cooperates in the onsite storage, proper usage of dust bins, cleaning a 20 meter radius of their homes, and paying some money for primary solid waste collection.

Study participants said that the division of labor for sanitation and waste management favored settings with a high rate of waste generation, with more resources given to condominiums and institutions like hotels that generate more waste than private houses. No special attention was given to slums or the population living in slum areas. There were also gaps in the identification of priority areas in terms of the amount of waste generated, the number of communal containers, latrines, and other facilities needed for sanitation and waste management services.

Most participants said that the provision of personal protective equipment (PPE) was inadequate and that a health insurance system is totally non-existent. Some PPE was provided to waste collectors and street sweepers through funding from private organizations.

The national policies known in the study settings were the FMHACA 661, the National Building Proclamations 2001, EPA Policy, the Hygiene Proclamation 1992, the Sanitation Proclamation 1993, and the Hygiene Proclamation 961/2000. However, at regional and town levels there was limited integration between national sanitation and waste management policies and implementation.

## **Best practices on urban sanitation and waste management**

The majority of study participants stated that outsourcing primary waste collection, green area, and parking services to private microenterprises created job opportunities for youth and women. Box I shows USWM service best practices identified in this study.

### **Box I: Best practices for urban sanitation and waste management services**

1. Engaging community in waste management activities through I-to5 development army networks.
2. Implementing 50% open-defecation-free practice in kebeles.
3. Introducing solid waste reuse strategies like community-level composting and biomass fuel production.
4. Cleaning of 20 meter radius of homes by residents.
5. Conducting sanitation campaigns with community and institutional participate during national and religious holidays.
6. Constructing model waste management and handwashing facilities at selected sites.
7. Organizing women's development clubs for women to discuss sanitation and waste management.
8. Collecting waste-collection payments with water supply service bills.
9. Willingness of the community to pay more for sanitation and waste-management services.

## **Outsourcing sanitation and waste management services to microenterprises, and financial sustainability issues**

We observed two types of solid waste collection service payment modalities in this study. In the first, the government collects solid waste service charges with the water bill. Payments depend on the amount of water used and range from 0.31 cents to 2500 birr per month. The main limitation was that households and institutions without a piped water supply were not captured by this modality. In the second modality, the government outsourced sanitation and waste management services to private microenterprises which directly collect service charges, ranging from 100 to 10,000 birr per month, from respective clients using legal receipts. In this modality, the payment depends on amount of solid waste and frequency of collection. The majority of study participants reported that in both payment modalities, service charges for solid waste collection was very low and even didn't recover the cost of staff salary, transport, maintenance, and other expenses. Despite that, the community needs waste management services from the government because the private cost is expensive. In the words of a 27-year-old male respondent, "I have big concerns on the cost effectiveness and financial sustainability of waste management services that we provide for our clients. First, the payment we collect from our clients was not comparable with the workload and associated health risks. For instance, a household with a water service cost of 41 birr pays 0.31 cents for solid waste collection. Our staff collects solid waste from each household at least six times per month. Thus, the payment for waste management services must be improved."

## **Challenges to urban sanitation and waste management**

Poor implementation of existing national and regional policies and guidelines, low levels of public awareness, and lack of consistent separation at the source—particularly from households—results in 70-75% of organic decomposable waste that could be used for compost or to produce methane to generate energy being taken to landfills/dumpsites. Box 2 summarizes the key USWM challenges in the study setting.

## **Box 2: The challenges for sanitation and waste management operators**

- Insufficient budget and absence of a cost-recovery mechanism.
- Lack of proper truck maintenance.
- Absence of incentive systems.
- Low private-sector involvement.
- Lack of properly planned landfill.
- Lack of promotion and education on waste reduction, recycling, recovery, composting, and energy generation.
- Communal containers not properly collected or emptied when full, causing the areas around skips to become littered and foul-smelling, thus encouraging illegal dumping.
- Poor organizational structure and function of waste management services for human resources and logistics.
- Households and institutions do not pay based on capacity, quantity of waste generated, or associated health risks.
- Weak collaboration between stakeholders for sanitation and waste-management activities.
- Lack of training and financial support for micro-enterprises.
- Lack of space to construct latrines in overcrowded slum areas.
- Failure to synthesize and disseminate best practices for waste management services.

## 4.2 USWM policies, strategies, and plans

Key informants interviews and document reviews were used to address this objective. The key informants work in the Ministry of Urban Development and Housing Construction, the Ministry of Environment and Forestry, the Ministry of Water, Irrigation and Energy, and the Ministry of Health. Table 5 summarizes the distribution of various duties and responsibilities related to implementation of sanitation and waste management to different line ministries. Town/city level availability, overlap, assessment mechanisms, and supportive means of policies, strategies, and plans for USWM were assessed from interviews with 72 key informants from health offices, beautification, municipality/utility, and urban development and construction agencies.

### 4.2.1 National policies and strategies

Findings indicate that there are definite gaps in USWM policies, strategies, plans, duties, and responsibilities, and overlapping authority is given to various sector ministries. Although experts are aware of policy and strategic documents, most did not have them available for reference, indicating that many important issues in these documents are easily overlooked and/or forgotten. Some policies are old and need urgent updating to be relevant to current and rapidly growing Ethiopia. For instance, the health policy was issued long time ago and provided no clear emphasis on waste. As mentioned, waste management in urban areas is poorly coordinated and difficult to systematically regulate due to overlapping and unclear roles among these various stakeholders.

The sanitation and hygiene strategic action plan focuses only on peri-urban and small towns, excluding medium and large towns where sanitation and waste management problems are more severe. There is solid waste management overlap (same responsibility on regulatory and operational activities) between the Federal Ministry of Health, Food, Medicine and Health Care Administration (FMHACA)'s Control Proclamation Number 661/2009 and the Ministry of Environmental Protection and Forestry Solid Waste Management's Proclamation No. 513/2013. Each ministry has the mandate to draft and execute proclamations when ratified by the Council of Ministers and Parliament. Legal experts in both ministries must take coordinated corrective measures before forwarding draft proclamations to higher officials for ratification (Annex IX). Gaps in national policies are indicated in Box 3.

### **Box 3: Gaps in national USWM policies and strategies**

#### **Health Policy 1993: Federal Ministry of Health**

- The policy does not emphasize USWM or waste from commercial areas or institutions.

#### **Food, Medicine and Health Care Administration and Control Proclamation Number 661/2009**

- Proclamation does not clearly indicate urban management of human, solid, or liquid waste.

#### **Food, Medicine and Health Care Administration and Control Regulation Number 299/2013**

- The regulation does not clearly indicate the management of urban sanitation, and penalty is not indicated for those who failed to comply with Article 39 waste handling or Article 42 toilets in public facilities.

#### **National Sanitation and Hygiene Strategic Action Plan (2011 – 2015): Federal Ministry of Health**

- The strategy focuses exclusively on hygiene and sanitation that is implemented only in peri-urban and small towns. It does not treat large and medium towns or solid and liquid wastes handling in these towns.

#### **Environmental Policy: 1997 (Ministry of Environment and Forestry)**

- There was no overall comprehensive policy formulation to address the cross-sectoral issues concerning urban sanitation.

#### **Proclamation 300/2002, Environmental Pollution Control: (Ministry of Environment and Forestry)**

- The proclamation does not clearly confer on waste management and urban sanitation at large.

#### **Solid Waste Management Proclamation No. 513/2013: (Ministry of Environment and Forestry)**

- The proclamation does not clearly confer on waste management or urban sanitation at large.

#### **Water Supply and Sanitation Policy 2001: (Ministry of Water Irrigation and Energy)**

- The health and water and sanitation policy was issued a long time ago (1993 and 2001). Expected progress in sanitation was not made, and sanitation policies are not properly treated or implemented.

#### **Urban Waste Management and Green and Beautification Draft Strategy: (Ministry of Urban Development and Construction)**

- Important stakeholders do not participate in the strategy development process and there is no collective ownership.

According to key informants, there are no clear policies, regulation, strategies, or guidelines promoting USWM public-private partnership (PPP), although there are some efforts to develop new documents to engage PPP in waste collection, transportation, reuse, and recycling.

**Figure 5: Framework analysis table for USWM policies, strategies, plans, duties, and responsibilities**

Major Roles and Responsibilities	Promotion of hygiene and sanitation	Solid waste management	Liquid waste management	Both solid and liquid waste management
Leading national USWM stakeholders (regulatory)	<ul style="list-style-type: none"> <li>Ministry of Health (National Hygiene and Environmental Health)</li> </ul>	<ul style="list-style-type: none"> <li>Ministry of Urban Development and Construction</li> </ul>	<ul style="list-style-type: none"> <li>Ministry of Water Irrigation, and Energy</li> </ul>	<ul style="list-style-type: none"> <li>Ministry of Environment and Forestry</li> </ul>
Leading regional USWM stakeholders	<ul style="list-style-type: none"> <li>Health bureaus</li> <li>Health offices</li> </ul>	<ul style="list-style-type: none"> <li>UDC bureaus</li> <li>Municipalities/town administrations</li> <li>Urban cleaning and beautification</li> <li>Vary from region to region</li> </ul>	<ul style="list-style-type: none"> <li>Depends on regions to regions (board of offices) e.g., Addis Ababa and Harar region it is authority.</li> </ul>	<ul style="list-style-type: none"> <li>Land administration and environmental protection</li> </ul>
Availed USWM policies, regulations, strategies, guidelines	<ul style="list-style-type: none"> <li>Health Policy 1993</li> <li>Food, Medicine and Health Care Administration and Control proclamation 661/2009</li> <li>Food, Medicine and Health Care Administration and Control Regulation Number 299/2013</li> <li>National Sanitation and Hygiene Strategic Action Plan (2011 – 2015)</li> <li>Health Sector Development Program IV (HSDP IV) 2010/11 – 2014/15</li> </ul>	<ul style="list-style-type: none"> <li>Ministry of Urban Development and Construction (FMoUDC) Urban Development Policy</li> <li>Urban Waste Management and Green and Beautification Draft Strategy</li> </ul>	<ul style="list-style-type: none"> <li>Ministry of Water, Irrigation and Energy Water Supply and Sanitation Policy 2001</li> <li>Urban Sanitation Universal Access Plan (Part IV)</li> </ul>	<ul style="list-style-type: none"> <li>Ministry of Environment and Forestry (Environmental Policy)</li> <li>Proclamation 300/2002, Environmental Pollution Control</li> <li>Solid Waste Management Proclamation No. 513/2013</li> </ul>
Communicate policies to staff through:	<ul style="list-style-type: none"> <li>Review meetings</li> <li>Integrated supportive supervision</li> <li>Media communication</li> <li>Training</li> <li>Advocacy workshop</li> <li>Experience exchange visit</li> </ul>	<ul style="list-style-type: none"> <li>Training</li> </ul>	<ul style="list-style-type: none"> <li>Training</li> </ul>	<ul style="list-style-type: none"> <li>Supervisors at federal, regional, and woreda levels</li> </ul>

Major Roles and Responsibilities	Promotion of hygiene and sanitation	Solid waste management	Liquid waste management	Both solid and liquid waste management
Existing Overlap in national policies, strategies	Solid Waste Management Proclamation No. 513/2013 overlaps with Food, Medicine and Health Care Administration and Control Regulation Number 299/2013			Solid Waste Management Proclamation No. 513/2013 overlaps with Food, Medicine and Health Care Administration and Control Regulation Number 299/2013
Supportive means of regional and national authorities	Review meeting and supportive supervision every 6 months.	None	none	Provide trainings and other technical supports
Assessment process to measures outputs associated with national and regional policies	Evaluation method by organizing review meetings and calling upon federal and regional level staff to make aware of the constitution, strategies, health extension programs, and other WASH documents.	None	None for assessment but they have evaluation method by review meeting, supportive supervision	None
Availability of policies, regulations, strategies, or guidelines for the promotion of PPP in urban sanitation and waste management services	No existing policies, regulations, strategies, or guidelines related to USWM appreciate the promotion of PPP.	No existing policies, regulation, strategies, or guidelines related to USWM appreciate the promotion of PPP, we are planning to develop.	No existing policies, regulation, strategies, or guidelines related to USWM appreciate the promotion of PPP is on the way.	No existing policies, regulation, strategies guidelines related to USWM appreciate the promotion of PPP
Implementation of USWM-related activities/services by UHE-ps	UHE-ps doing the promotion and behavior change; regulatory work is being done by FMHCA and legal control office.			

Major Roles and Responsibilities	Promotion of hygiene and sanitation	Solid waste management	Liquid waste management	Both solid and liquid waste management
Performance measures for the UHE-ps	On the HMIS there are some indicators to monitor and evaluate activities, such as access to basic latrine, WASH.			
Existing Challenges	<ul style="list-style-type: none"> <li>- Lack of WASH knowledge</li> <li>- Lack of skilled professionals</li> <li>- Absence of land to construct latrines</li> <li>- Resistance to health education</li> <li>- Lack of capacity</li> <li>- Lack of finance and materials, especially in slum areas.</li> </ul>	<ul style="list-style-type: none"> <li>- Poor inter-sectorial collaboration</li> <li>- Shortage of cars for filed supervision</li> <li>- Lack technical professionals</li> <li>- Low attention by higher officials</li> </ul>	<ul style="list-style-type: none"> <li>- Poor inter-sectoral collaboration</li> </ul>	<ul style="list-style-type: none"> <li>-The comprehensiveness of policies</li> </ul>

## 4.2.2 Regional and town/city level policies and strategies

Town/city level availability, overlap, and assessment mechanisms and support to USWM policies, strategies, and plans were assessed in key informant interviews with staff from health offices, beautification, municipality/utility, and urban development and construction.

Policies are issued by the regional and federal government. Some regions, including Oromiya, Tigray, and Harari, have derived their own sanitation and hygiene policies and proclamations from national policy. The Oromia Region public health proclamation was established in 1993-4, and is known locally as “*megeto Oromiya*.” The Nekemete city council established proclamation number 7/200. Harari regional council ratified a sanitation and waste handling proclamation in 2005 E.C. and Tigray regional waste management proclamations launched in April 2014. Other regions, cities, and towns use the national policies and proclamations related to urban sanitation and hygiene.

The national and regional policies known and available at city/town level on USWM were Article 661 Regulatory Policy Federal Drug Administration and Control Authority (FDACA); Environmental protection proclamation 553/2004; health policy, solid waste handling, and disposal proclamation 513/1999; Oromia region public health proclamation established in 1993; Policy and Strategy formulated by city council in 2003; solid waste handling and disposal proclamation 513/1999; and sanitation and waste handling ratified by Harari regional council in 2005 E.C.

### Overlap of policies

In some regions there is overlap of USWM responsibilities. Culture and tourism and health offices regulate licenses for food and drinking establishments; city health office and city cleaning and beautification offices regulate urban solid waste management, and water and energy with health office regulates hygiene and sanitation matters. In some cities there are gaps in responsibility for construction and maintenance of urban development and office construction (e.g., maintenance is the responsibility of another sector).

### Assessment of implementation of policies and strategies

Most city/town authorities did not assess implementation of national-level policies, although some cities (Wolkite, Wolaita, Dessie, Nekemtie, and Mekele) have a USWM implementation mechanism.

As one health office key informant said, “...we do not periodically assess the implementation of these national-level policies because we have not planned [as other] activities to follow and evaluate this work.”

Some policy and strategy assessments were quarterly and yearly activity reporting, monitoring, and supervision.

### Level of support from regions

The majority of the cities/towns did not have regional level support for USWM. Some cities/towns were had regional and national minister office support in technical support, proclamations and guidelines for

training, regular supervision, capacity-building activities, funding allocation, meetings, information and awareness, and purchase of vehicles for waste collections and transport.

Key policy issue findings are listed in Box 4.

#### **Box 4: Key findings**

- The current urban sanitation and waste management situation is poor and fraught with multiple operational challenges.
- There are definite gaps in USWM policies, strategies, plans, duties, and responsibilities, as well as responsibility overlap on various levels.
- Some policies are old and need urgent updating.
- Waste management services in urban areas are poorly coordinated and difficult to systematically regulate.

### **4.3 Current USWM knowledge, attitudes, and practices in urban communities**

#### **4.3.1 Study population profile**

Table 6 and 7 shows the distribution of socio-demographic characteristics of the study respondents in selected cities/towns of Ethiopia. The mean age of the respondents was 34.36 (9.43) the total population counted in the survey was 2,840 with females slightly outnumbering (51.4%) males. Close to 21% of respondents do not read or write. About 35% of respondents reside in slum areas evidenced by higher proportion of the households (39%) were in lower and second wealth quintile and 56% were unemployed. This finding is in line with EDHS 2011 (21).

**Table 6: Socio-demographic characteristics of households in selected towns** (n=1,472)

Characteristics	Number	%
<b>Age (years)</b>		
=<24	213	14.5
25-29	297	20.2
30-34	226	15.4
35-39	272	18.5
40-44	191	13.0
=>45	273	18.5
<b>Marital status</b>		
Married	1,008	68.6
Single	194	13.2
Widowed	130	8.8
Divorced	138	9.4
<b>Educational status of respondent</b>		
Cannot read or write	302	20.6
Read only	66	4.5
Read and write	95	6.5
Primary	368	25.1
Secondary	441	30.0
Technical or vocational	131	8.9
Higher education	66	4.5
Missing	3	0.2
<b>Educational status of husband (N=1,008)</b>		
Cannot read or write	74	7.3
Read only	96	9.5
Read and write	2	0.2
Primary	223	22.1
Secondary	358	35.5
Technical or vocational	102	10.1
Higher education	131	13.0
Missing	22	2.2
<b>Religion</b>		
Christian	1,261	85.8
Muslim	208	14.2
Other	3	0.02
<b>Total number of people living in HHs (N=2,840)</b>		
Male	1,381	48.6
Female	1,459	51.4
<b>Total number of &lt;5 children (N=764)</b>		
Male	375	49.1
Female	389	50.9

**Table 7: Socio-economic and housing characteristics in selected towns (n=1,472)**

Characteristics	Number	%
<b>Wealth quintile</b>		
Lowest	280	19.0
Second	296	20.1
Middle	285	19.4
Fourth	294	20.0
Highest	285	19.4
Missing	32	2.2
<b>Employment status</b>		
Unemployed	821	55.9
Employed	217	14.8
Self	379	25.8
Retired	20	1.4
<b>Type of kebele</b>		
Slum	520	35.3
Non-slum	349	23.7
Mixed	603	41.0
Other	35	2.2
<b>Housing ownership</b>		
Owned	756	51.8
Rented	707	48.3
Missing	9	0.6
<b>Type of material the wall of house made of</b>		
Concrete/brick	29	2.0
Fibrous cement	351	23.9
Galvanized sheet	15	1.0
Wood and mud	918	62.4
Palm/bamboo/thatch	1	.1
Stone with mud/cement	141	9.6
Salvaged material	2	.1
Other	13	.9
<b>Type of material the roof of the house made of</b>		
Concrete	4	.3
Fibrous cement	2	.1
Galvanized sheet	1,455	98.9
Tile	2	.1
Other	9	0.7

#### 4.3.1.1 USWM knowledge

59.4% of respondents had poor knowledge of the components health extension packages. This may be due to the fact that the urban health extension program is a relatively new phenomenon and there are alternative health systems in urban areas. However, compared to other environmental health and hygiene components of health extension packages, the solid and liquid waste disposal package was familiar to (61%) urban residents (Table 8).

**Table 8: Urban community knowledge of environmental components of health extension packages**

Components of health extension program	Yes	%
Excreta disposal	442	30.0
Solid and liquid waste disposal	898	61.0
Supply and safety measures	54	3.7
Food hygiene and safety measures	246	16.7
Healthy home environment	404	27.4
Personal hygiene	623	42.3
Health education and communication	226	15.4
I don't know	330	22.4
Rodent control	2	.1
Others	96	6.5
<b>Composite mean score (SD)</b>	<b>2.26 (1.19)</b>	
<b>*Knowledge category</b>		
<b>Poor knowledge</b>	<b>875</b>	<b>59.4</b>
<b>Good knowledge</b>	<b>597</b>	<b>40.6</b>

58% of the respondents had poor knowledge of human waste management. The KAP survey conducted in seven states of South Sudan (24) showed that most communities do not use pit latrines because they are accustomed to open defecation. Although the majority (63.7%) of participants responded they used latrine to prevent disease from open defecation in this study, the composite score on human waste management showed poor knowledge. And although the utilization of latrine is high (89.1%), the expected overall knowledge on human waste management is low (Table 9).

**Table 9: Urban community knowledge of human waste management**

Characteristics	Yes	%
<b>What major diseases are transmitted from using unimproved latrines?</b>		
None	12	0.8
Skin disease	34	2.3
Eye problems	191	13.0
Diarrhea	977	66.4
Typhoid	665	45.2
Scabies	27	1.8
Cholera	149	10.1
Intestinal parasites	131	8.9
Other	764	51.9
<b>What can you do to prevent diseases from unimproved latrines?</b>		
Keep latrine clean	1351	91.8
Utilize the latrine properly	857	58.2
Construct latrine with appropriate material	114	7.7
Prevent flies from breeding	147	10.0
Other	134	9.1
<b>What major diseases are transmitted by open defecation?</b>		
None	13	.9

Characteristics	Yes	%
Skin disease	46	3.1
Eye problems	212	14.4
Diarrhea	896	60.9
Typhoid	584	39.7
Scabies	48	3.3
Cholera	177	12.0
Intestinal parasites	162	11.0
Other	701	47.6
<b>What can you do to prevent diseases due to open defecation?</b>		
Defecate in a latrine	937	63.7
Avoid open defecation	1,140	77.4
Wash hands with soap after defecation	127	8.6
Use communal latrine	70	4.8
Use public latrine	71	4.8
Use private latrine	136	9.2
Others	147	10.0
<b>What types of latrine do you know about?</b>		
Flush/pour flush	1,240	84.2
Ventilated improved pit latrine (VIPL)	386	26.2
Traditional pit latrine with slab	1376	93.5
Composting toilet	22	1.5
Other	2	0.1
<b>Where/how did you learn about these latrines?</b>		
Community meeting	283	19.2
Health workers	376	25.5
Neighbors	823	55.9
Relatives	709	48.2
School	84	5.7
Radio	81	5.5
Poster/picture	1	.1
Billboard advertisement	1	.1
Television advertisement	132	9.0
NGO/agency worker	59	4.0
Government representative	92	6.3
Other	269	18.3
<b>What kind of latrine would you most prefer for your household?</b>		
Flush/pour flush	1,237	84.0
Dry pit latrine	206	14.0
Other	72	4.9
<b>What particular feature do you like most about your preferred latrine?</b>		
Looks good/comfortable	559	38.0
No smell	604	41.0
No flies	368	25.0
Don't see feces	166	11.3
Easy to clean	1,032	70.1
Less expensive	67	4.6
Other	166	11.3
<b>What are the advantages of owning a latrine?</b>		
Improved hygiene/health/cleanliness	1,294	87.9
More privacy	451	30.6

Characteristics	Yes	%
Improved safety	519	35.3
Improved status/prestige	111	7.5
Guest can use it	82	5.6
No smell	328	22.3
No advantage	1	.1
Other	203	13.8
<b>What are the disadvantages of owning a latrine?</b>		
No disadvantages	1,255	85.3
Bad smell	190	12.9
Attracts flies	105	7.1
Cost to construct	7	0.5
Cost to maintain	3	0.2
Other people come to use it	4	0.3
Affects ground water quality	1	0.1
Overflows	13	0.9
Other	39	2.6
<b>Mean score (SD)</b>	<b>18.14</b>	
	<b>(4.06)</b>	
<b>*Knowledge category</b>		
<b>Poor knowledge</b>	<b>854</b>	<b>58.0</b>
<b>Good knowledge</b>	<b>618</b>	<b>42.0</b>

\* < mean score = poor knowledge; > mean score = good knowledge

42.5% of the respondents had poor knowledge of solid waste management, including knowledge of households onsite sorting and solid waste reduction. This is inconsistent with what might be expected. In the literature review on matters of waste management, for example, studies showed that the composition of solid waste in Addis Ababa is 60% organic, of which 15% can be recycled (24). A study from East Harerege (24) showed that the majority of households (66%) disposed solid waste in open dumps and only 6.9% of the households had temporary storage means for solid waste. The same study result indicated that 98.4% of the respondents declared that the responsibility of waste management falls to women and girls. This study showed that using solid waste for economic benefit is low (9.3%). The first level of source separation is at household: plastic material, glass, and bottles, which are considered valuable and usually sorted for reuse (Table 10).

**Table 10: Urban community knowledge of solid waste management**

Characteristics	Yes	%
<b>What is the importance of onsite sorting and solid waste reduction?</b>		
Improved hygiene	1,137	77.2
Improved health	757	51.4
Improved safety	194	13.2
Economic benefit	113	7.7
No importance	24	1.6
Other	166	11.3
<b>What are the problems of poor solid waste management?</b>		
No problem	166	11.3
Bad smell	930	63.2
Clogs canals	191	13.0
Makes town dirty	574	39.0
Fly menace	661	44.9
Mosquito menace	360	24.5
Stray dog menace	80	5.4
Pollutes water sources	57	3.9
Disgusts viewer	179	12.2
Other	249	16.9
<b>Mean score (SD)</b>	<b>3.97 (1.53)</b>	
<b>*Knowledge category</b>		
<b>Poor knowledge</b>	<b>625</b>	<b>42.5</b>
<b>Good knowledge</b>	<b>847</b>	<b>57.5</b>

\* < mean score = poor knowledge; > mean score= good knowledge

56.1% of households in urban communities had poor knowledge of hand hygiene. The majority (70.7%) of the respondents said that handwashing removes dirt and makes them clean. However, only 6.3% were aware that handwashing is important because it removes microbes. In a similar study in Harer, Ethiopia, 8.3% of respondents had hand-washing facilities near the latrine. However, only 5.1% of the respondents from households with latrines reported washing their hands after defecation (24) (Table 11). Information on handwashing in Ethiopia is limited to a number of qualitative studies but compliance with the four critical times (34) (as a basic minimum) is thought to be as low as 7% (35). The emerging picture suggests that there is a culture of handwashing before eating but with water only. The frequency of washing hands after defecation and cleaning a child after defecation is also primarily with water only and generally not widely practiced. Personal hygiene is key to model household status but the availability of soap and water to enable handwashing at critical times remains a considerable challenge (19).

**Table 11: Urban community knowledge of hand hygiene**

Characteristics	Yes	%
<b>Why do you wash your hands with soap?</b>		
To remove dirt/make clean	1040	70.7
Personal appearance	199	13.5
To make them smell good	84	5.7
To prevent disease	753	51.2
To remove microbes/bacteria	509	34.6
Other	92	6.3
<b>When do you usually wash your hands with soap?</b>		
After defecation	1034	70.2
After contact with child's stool	132	9.0
Before eating	1214	82.5
After eating	1006	68.3
Before preparing food	797	54.1
Before feeding a child	169	11.5
Before handling water for storage	43	2.9
When I wake up	754	51.2
Other	168	11.4
<b>Where do you usually wash your hands with soap?</b>		
At the water source	791	53.7
In the latrine	164	11.1
Near the latrine	202	13.7
In the kitchen area	448	30.4
Other	202	13.7
<b>What hygiene/health advice have you heard?</b>		
None	312	21.2
Use a latrine	810	55.0
Drink safe water	475	32.3
Store water safely	180	12.2
Wash hands	493	33.5
Wash hands with soap	438	29.8
Practice good hygiene	605	41.1
Waste and stagnant water management	61	4.1
Safe disposal of babies' feces	72	4.9
Other	121	8.2
<b>From which sources have you heard hygiene advice in the past year?</b>		
Community meeting	217	14.7
Health workers	885	60.1
Neighbors	170	11.5
Relatives	152	10.3
School	155	10.5
Radio	237	16.1
Poster/picture	2	0.1
Billboard	1	0.1
Television	288	19.6
NGO/agency worker	22	1.5
Government representative	53	3.6
Other	58	3.9

<b>Mean score</b>		<b>13.28 (3.90)</b>	
<b>*Knowledge category</b>	<b>Poor knowledge</b>	<b>826</b>	<b>56.1</b>
	<b>Good knowledge</b>	<b>646</b>	<b>43.9</b>

\* < mean score= poor knowledge; > mean score= good knowledge

Treating water at the household level has been shown to be one of the most effective ways to prevent waterborne disease in developing and emergency settings. Promoting household water treatment and safe storage (HWTS) helps vulnerable populations control their own water security by providing them with the knowledge and tools to treat their own drinking water (UNICEF, 2008). Table 12 shows the current urban community knowledge of safe handling of drinking water. The question was based on a single question asking why they treat water before drinking. Based on the composite score, 52.1% did not know the reasons for water treatment before drinking.

**Table 12: Knowledge of urban communities on handling of safe drinking water**

\*< mean score= poor knowledge; > mean score= good knowledge

<b>Characteristics</b>	<b>Yes</b>	<b>%</b>
<b>Why do you treat your water before drinking?</b>		
Contaminated with dirt	497	33.8
Contaminated with feces	122	8.3
Contaminated with germs	987	67.1
Good for health/appearance	347	23.6
Animals use the water	18	1.2
Smells bad	21	1.4
Looks bad	28	1.9
Insects in it	146	9.9
I don't get sick	144	9.8
Other	103	7.0
<b>Mean score (SD)</b>	<b>1.64 (0.83)</b>	
<b>*Knowledge category</b>		
<b>Poor knowledge</b>	<b>767</b>	<b>52.1</b>
<b>Good knowledge</b>	<b>705</b>	<b>47.9</b>

A simple and effective response to dehydration caused by diarrhea is a prompt increase in the child's fluid intake through some form of oral rehydration therapy (ORT). ORT may include the use of a solution prepared with commercially produced packets of oral rehydration salts (ORS); a homemade mixture of sugar, salt, and water; any kind of thin, nutritious fluid such as rice water, coconut milk, or watery soup; or simply increased fluids. According to EDHS, 2011, 87% of urban mothers knew about ORS packets. Our findings seem underestimated because respondents were asked more than one question. Table 13 shows that 48.8% of urban community respondents had poor knowledge of diarrheal diseases prevention.

**Table 13: Urban community knowledge of diarrheal disease prevention**

Characteristics	Yes	%
<b>Do you think that diarrhea is a serious problem in your community?</b>	452	30.7
<i>How diarrhea spread?</i>		
Dirty water	715	48.6
Dirty Food	992	67.4
Eating too much food	16	1.1
Eating with dirty unwashed hands	429	29.1
Dirty cloth	32	2.2
Dirty nose	30	2.0
Dirty and long finger nails	141	9.6
Playing in the sunshine	4	0.3
Eating unwashed fruits	113	7.7
Eating hot /bitter fruits	4	.3
Air	31	2.1
Other	395	26.8
<b>How you can prevent yourself or family members from getting diarrhea?</b>		
Outside our control	6	0.4
Protect environment	606	41.2
Protect food	1028	69.8
Balanced diet	118	8.0
Prevent germs	388	26.4
Keeping hygiene	945	64.2
Proper washing vegetables	100	6.8
Mothers' milk	10	0.7
Eating cooked food	283	19.2
Other	128	8.7
<b>What do you do in case a child gets diarrhea?</b>		
Nothing	2	0.1
Go to health facility	1330	90.4
Consult health professionals	228	15.5
ORS	177	12.0
Consult peer	10	0.7
Keep home	2	.1
Traditional healer	46	3.1
Other	77	5.2
<b>What is the treatment for diarrhea?</b>		
Homemade ORS	114	7.7
Medical ORS	1069	72.6
Medicine	729	49.5
Fluids	239	16.2
Other	145	9.9
<b>Mean score (SD)</b>	<b>7.85 (2.38)</b>	
<b>*Knowledge category</b>		
<b>Poor</b>	<b>719</b>	<b>48.8</b>
<b>Good</b>	<b>753</b>	<b>51.2</b>

\* < mean score= poor knowledge; > mean score= good knowledge

The regional distribution of knowledge is indicated in Table 14. Poor knowledge of waste management tends to be high in SNNPR, while knowledge about hand hygiene and prevention of diarrhea seem to be high in Harar. However, it is difficult to comment statistically on which region had poor knowledge due to the limited sample size distribution, which did not reflect the source population.

*Tables 14 : Regional distribution of USWM knowledge of respondents in cities*

*Table 14.1: Household knowledge of health extension program components, by region*

Knowledge category	Name of region							Total
	Addis Ababa	Amhara	Dire Dawa	Harar	Oromia	SNNPR	Tigray	
Poor	205	121	27	39	167	167	132	858
Good	117	169	37	25	184	48	33	613
Total	322	290	64	64	351	215	165	1471
<b>Poor knowledge, %</b>	<b>63.7</b>	<b>41.7</b>	<b>42.2</b>	<b>60.9</b>	<b>47.6</b>	<b>77.7</b>	<b>80.0</b>	<b>58.3</b>

*Table 14.2: Household knowledge of human waste disposal, by region*

Knowledge category	Name of region							Total
	Addis Ababa	Amhara	Dire Dawa	Harar	Oromia	SNNPR	Tigray	
Poor	157	113	27	31	182	132	64	706
Good	158	174	33	29	155	81	99	729
Total	315	287	60	60	337	213	163	1435
<b>Poor knowledge, %</b>	<b>49.8</b>	<b>39.4</b>	<b>45.0</b>	<b>51.7</b>	<b>54.0</b>	<b>62.0</b>	<b>39.3</b>	<b>49.2</b>

**Table 14.3: Household knowledge of safe handling of drinking water, by region**

Knowledge category	Name of region							Total
	Addis Ababa	Amhara	Dire Dawa	Harar	Oromia	SNNPR	Tigray	
Poor	126	142	53	39	127	64	74	625
Good	196	149	11	25	224	151	91	847
Total	322	291	64	64	351	215	165	1472
<b>Poor knowledge, %</b>	<b>39.1</b>	<b>48.8</b>	<b>82.8</b>	<b>60.9</b>	<b>36.2</b>	<b>29.8</b>	<b>44.8</b>	<b>42.5</b>

*Table 14.4: Household knowledge of hand hygiene, by region*

Knowledge category	Name of region							Total
	Addis Ababa	Amhara	Dire Dawa	Harar	Oromia	SNNPR	Tigray	
Poor	91	75	12	35	169	118	86	586
Good	160	103	20	18	97	85	63	546
Total	251	178	32	53	266	203	149	1132
<b>Poor knowledge, %</b>	<b>36.3</b>	<b>42.1</b>	<b>37.5</b>	<b>66.0</b>	<b>63.5</b>	<b>58.1</b>	<b>57.7</b>	<b>51.8</b>

*Table 14.5 Household knowledge of diarrhea prevention, by region*

Knowledge category	Name of region							Total
	Addis Ababa	Amhara	Dire Dawa	Harar	Oromia	SNNPR	Tigray	
Poor	150	116	27	39	188	120	106	746
Good	168	172	34	24	155	89	58	700
Total	318	288	61	63	343	209	164	1446
<b>Poor knowledge, %</b>	<b>47.2</b>	<b>40.3</b>	<b>44.3</b>	<b>61.9</b>	<b>54.8</b>	<b>57.4</b>	<b>64.6</b>	<b>51.6</b>

*Table 14.6: Overall household knowledge, by region*

Overall knowledge category	Name of region							Total
	Addis Ababa	Amhara	Dire Dawa	Harar	Oromia	SNNPR	Tigray	
Poor	171	127	29	39	179	128	32	705
Good	151	164	35	25	169	87	133	764
Total	322	291	64	64	348	215	165	1469
<b>Poor knowledge, %</b>	<b>53.1</b>	<b>43.6</b>	<b>45.3</b>	<b>60.9</b>	<b>51.4</b>	<b>59.5</b>	<b>19.4</b>	<b>48.0</b>

### Box 5: Key findings of respondents' USWM knowledge

- 59% of respondents had poor knowledge of sanitation, including excreta disposal, liquid waste handling, and healthy environment.
- 58% of respondents had poor knowledge of disease transmission and prevention, and type and use of latrine.
- 53% of respondents had poor knowledge of solid waste management benefits and risks.
- 56% of respondents had poor knowledge handwashing benefits and risks, and were unable to cite sanitation and hygiene messages.
- 52% of respondents had poor knowledge on the benefits and risks of household water treatment.
- 49% of respondents had poor knowledge of diarrheal disease transmission and prevention.

**Overall respondent the knowledge of sanitation and waste management is very poor (56%).**

#### 4.3.1.2 Current attitudes on USWM

Table 15 presents community attitudes on current urban sanitation practices. Respondents were asked about their access to and utilization of latrines and whether they were satisfied with the practices in their neighborhood. About 44.7% had unfavorable attitudes about current neighborhood practices. The FGD participants in Arada Subcity in Addis Ababa agreed that most people defecate and urinate openly, even though they have good awareness. The FGD with mothers in Bahir Dar confirmed that although they practice good hygiene or clean the environment, there are always feces in the compound. In slum areas where people from rural areas board for several days, open defecation is common.

*Table 15: Urban community attitudes about current urban sanitation*

Attitude questions	Mean (SD)	
Do you worry about access to latrine?	4.26 (1.30)	
Are you satisfied with your current defecation place?	4.58 (0.79)	
Are you satisfied with latrine utilization in your neighborhood?	3.51(1.26)	
Do you feel bad when someone urinates in the open field?	4.49 (0.84)	
Do you feel bad when someone defecates in the open field?	4.64 (0.71)	
Do you think that waste has a value?	3.06 (1.37)	
<b>Composite mean score</b>	<b>24.53 (3.45)</b>	
<b>*Attitude category</b>	<b>n</b>	<b>%</b>
<b>Unfavorable</b>	<b>658</b>	<b>44.7</b>
<b>Favorable</b>	<b>814</b>	<b>55.3</b>

\* < mean score = unfavorable attitude; > mean score = favorable attitude

Table 16 shows urban community attitudes about solid and liquid waste management. The quantitative data suggests that 46.1% of households had unfavorable attitudes about solid and liquid waste management in their neighborhood. During the FGD with mothers in Hawassa, participants reported that they were unhappy with liquid waste disposal practices. One said, “I encounter people disposing the waste after slaughtering sheep to the drainage system. After a dialogue we could not reach an agreement (they are claiming as if it is not my concern) and I told them am a model family and it concerns me.”

**Table 16: Urban community attitudes about waste management practices**

<b>Attitude questions</b>	<b>Mean (SD)</b>	
Do you think your neighbors dispose waste properly?	3.29 (1.21)	
Do you feel bad when someone disposes waste in the open field?	4.43 (0.78)	
How satisfied are you with your current solid waste disposal place?	3.33 (1.26)	
How satisfied are you with liquid waste disposal using open ditch?	3.18(1.30)	
Are you satisfied with general cleanliness of your living neighborhood?	3.20 (1.22)	
Are you satisfied with municipal solid waste container utilization in your neighborhood?	2.60 (1.41)	
Do you value the benefits of proper waste management?	4.64 (0.60)	
<b>Composite mean score</b>	<b>22.73 (5.65)</b>	
<b>*Attitude category</b>	<b>n</b>	<b>%</b>
<b>Unfavorable</b>	<b>678</b>	<b>46.1</b>
<b>Favorable</b>	<b>794</b>	<b>53.9</b>

\* < mean score = unfavorable attitude; > mean score = favorable attitude

Table 17 shows urban community attitudes about water quality and quantity. The quantitative data showed that 48% of the participants had unfavorable attitudes. Most FGD participants in different towns claimed that there is a shortage of drinking water. They agreed that they may go 2-3 days without water. In some areas like Dire Dawa, they complained that the water quality is not good. One participant said, “The water in Dire Dawa is salty; previously, when we had a pipeline, the tube was made of iron but was recently changed to plastic tube. The water resource and development (Birka) should be cleaned at least twice per month; there should be a chemical added.”

**Table 17: Urban community attitudes about water quality and quantity**

Attitude questions	Mean (SD)	
How satisfied are you with your drinking water quality?	3.75 (1.11)	
How satisfied are you with your drinking water quantity?	3.43 (1.10)	
How important is it to treat drinking water?	4.25 (1.01)	
<b>Composite mean score</b>	<b>11.39 (2.13)</b>	
<b>*Attitude category</b>	<b>n</b>	<b>%</b>
<b>Unfavorable</b>	<b>706</b>	<b>48.0</b>
<b>Favorable</b>	<b>766</b>	<b>52.0</b>

\* < mean score = unfavorable attitude; > mean score = favorable attitude

Table 18 shows the urban community attitudes about USWM service provision, which may relate to UHE-ps, solid waste collectors, pit-emptying service providers, municipalities, etc. The quantitative data suggested that 43.1% of respondents had unfavorable attitudes. The FGD participants from Arada Subcity, Addis Ababa, suggested that micro-enterprises collect solid waste in their respective vicinity.

“The micro-enterprises were collecting waste two days per week. But sometimes we put solid waste temporary in municipal container.”

Some FGD participants were unhappy with their solid waste collection service. One participant from Hawassa complained “The solid waste collection process is not good... especially collectors who use donkey-driven carts [they] disperse waste here and there when they take waste to containers. It’s like collecting from my house and drop it another house.”

**Table 18: Urban community attitudes about USWM service provision**

Attitude questions	Mean (SD)	
Do you believe that UHE=ps are important for your family’s health?	4.51 (0.76)	
Do you believe that private solid waste collector associations contribute to proper waste management?	4.28 (0.98)	
Do you think that pit-emptying service providers are important for proper latrine management?	3.52 (1.34)	
Are you satisfied with municipal solid waste container availability in your neighborhood?	2.94 (1.53)	
Do you worry about access to primary and/or secondary solid waste collection service?	3.90 (1.09)	
Do you worry about access to liquid waste management service?	3.83 (1.17)	
<b>Composite mean score</b>	<b>22.81 (4.00)</b>	
<b>*Attitude category</b>	<b>n</b>	<b>%</b>
<b>Unfavorable</b>	<b>634</b>	<b>43.1</b>
<b>Favorable</b>	<b>838</b>	<b>56.9</b>

\* < mean score = unfavorable attitude; > mean score = favorable attitude

Table 19 shows the quantitative data on urban community willingness to pay for waste management services. Households were asked if they were willing to pay for latrine and solid and liquid waste collection and disposal services. Most (61.3%) said they would. In Mekele town, similar study shows that the urban community is eager for improved SWM, so there is room to increase the fee to acquire funds to improve and modernize SWM services. Moreover, the study suggested that private solid waste collectors currently charge households for its service (ETB 10 per month), which is a starting point for municipal officials in determining a more appropriate sanitation fee. The FGDs in different urban centers indicated that if organized and systematized mechanisms were in place, they would pay for the services.

In contrast, the cost for liquid waste seemed a bit expensive to residents. “The cost of excreta emptying truck is not affordable. Those who have money can pay up to 1,000 birr and on the contrary it may be difficult to pay even 50 birr for some people.”

**Table 19: Urban community willingness to pay for waste management services**

Attitude questions	Mean (SD)	
Are you willing to pay for a latrine service?	4.44 (0.88)	
Are you willing to pay for solid waste collection and disposal services?	4.53 (0.78)	
Are you willing to pay for liquid waste collection and disposal services?	4.38 (0.91)	
How important is spending money for a good latrine to your family's health?	4.60 (0.66)	
How important is spending money for solid waste collection to your family's health?	4.59 (0.64)	
<b>Composite mean score</b>	<b>22.50 (3.11)</b>	
<b>*Attitude category</b>	<b>n</b>	<b>%</b>
<b>Unfavorable</b>	<b>569</b>	<b>38.7</b>
<b>Favorable</b>	<b>903</b>	<b>61.3</b>

\* < mean score = unfavorable attitude; > mean score = favorable attitude

The regional distribution of respondent attitudes is indicated in Tables 20. There were regional variations, as unfavorable attitudes were higher in Harar and Oromia than in other regions. However, this interpretation must be considered carefully as the sample size was not meant to generate attitude data at the regional level.

*Tables 20: Regional distribution of respondents USWM attitudes*

*Table 20.1: Households urban waste management attitudes, by region*

Attitude category	Name of region							Total
	Addis Ababa	Amhara	Dire Dawa	Harar	Oromia	SNNPR	Tigray	
Unfavorable	103	166	12	36	223	105	33	678
Favorable	19	125	52	28	128	110	132	794
Total	322	291	64	64	351	215	165	1472
<b>Unfavorable attitude, %</b>	<b>32.0</b>	<b>57.0</b>	<b>18.8</b>	<b>56.3</b>	<b>63.5</b>	<b>48.8</b>	<b>20.0</b>	<b>46.1</b>

*Table 20.2: Household water quality attitudes, by region*

Attitude category	Name of region							Total
	Addis Ababa	Amhara	Dire Dawa	Harar	Oromia	SNNPR	Tigray	
Unfavorable	139	135	42	52	180	97	61	706
Favorable	183	156	22	12	171	118	104	766
Total	322	291	64	64	351	215	165	1472
<b>Unfavorable attitude, %</b>	<b>43.2</b>	<b>46.4</b>	<b>65.6</b>	<b>81.3</b>	<b>51.3</b>	<b>45.1</b>	<b>37.0</b>	<b>48.0</b>

*Table 20.3: Household attitudes on current service provision, by region*

Attitude category	Name of region							Total
	Addis Ababa	Amhara	Dire Dawa	Harar	Oromia	SNNPR	Tigray	
Unfavorable	127	123	14	51	204	91	24	634
Favorable	195	168	50	13	147	124	141	838
Total	322	291	64	64	351	215	165	1472
<b>Unfavorable attitude, %</b>	<b>39.4</b>	<b>42.3</b>	<b>21.9</b>	<b>79.7</b>	<b>58.1</b>	<b>42.3</b>	<b>14.5</b>	<b>43.1</b>

*Table 20.4: Household willingness to pay for waste management services, by region*

Attitude category	Name of region							Total
	Addis Abeba	Amhara	Dire Dawa	Harar	Oromia	SNNPR	Tigray	
Unfavorable	128	97	20	44	198	62	20	569
Favorable	194	194	44	20	153	153	145	903
Total	322	291	64	64	351	215	165	1472
<b>Unfavorable attitude, %</b>	<b>39.8</b>	<b>33.3</b>	<b>31.3</b>	<b>68.8</b>	<b>56.4</b>	<b>28.8</b>	<b>12.1</b>	<b>38.7</b>

*Table 20.5: Household attitudes on human waste disposal, by region*

Attitude category	Name of region							Total
	Addis Ababa	Amhara	Dire Dawa	Harar	Oromia	SNNPR	Tigray	
Unfavorable	107	145	13	52	233	85	17	652
Favorable	215	146	51	12	118	130	148	820
Total	322	291	64	64	351	215	165	1472
<b>Unfavorable attitude, %</b>	<b>33.2</b>	<b>49.8</b>	<b>20.3</b>	<b>81.2</b>	<b>66.4</b>	<b>39.5</b>	<b>10.3</b>	<b>44.3</b>



### **Box 6: Key respondent attitudes on USWM**

- 45% of study respondents had unfavorable attitudes about latrine access and utilization.
- 46% of study respondents had unfavorable attitudes about urban solid and liquid waste management.
- 48% of study respondents had unfavorable attitudes about drinking water quality and quantity.
- 43% of study respondents had unfavorable attitudes about solid and liquid waste management services.
- 61% of respondents were willing to pay for improved USWM services.

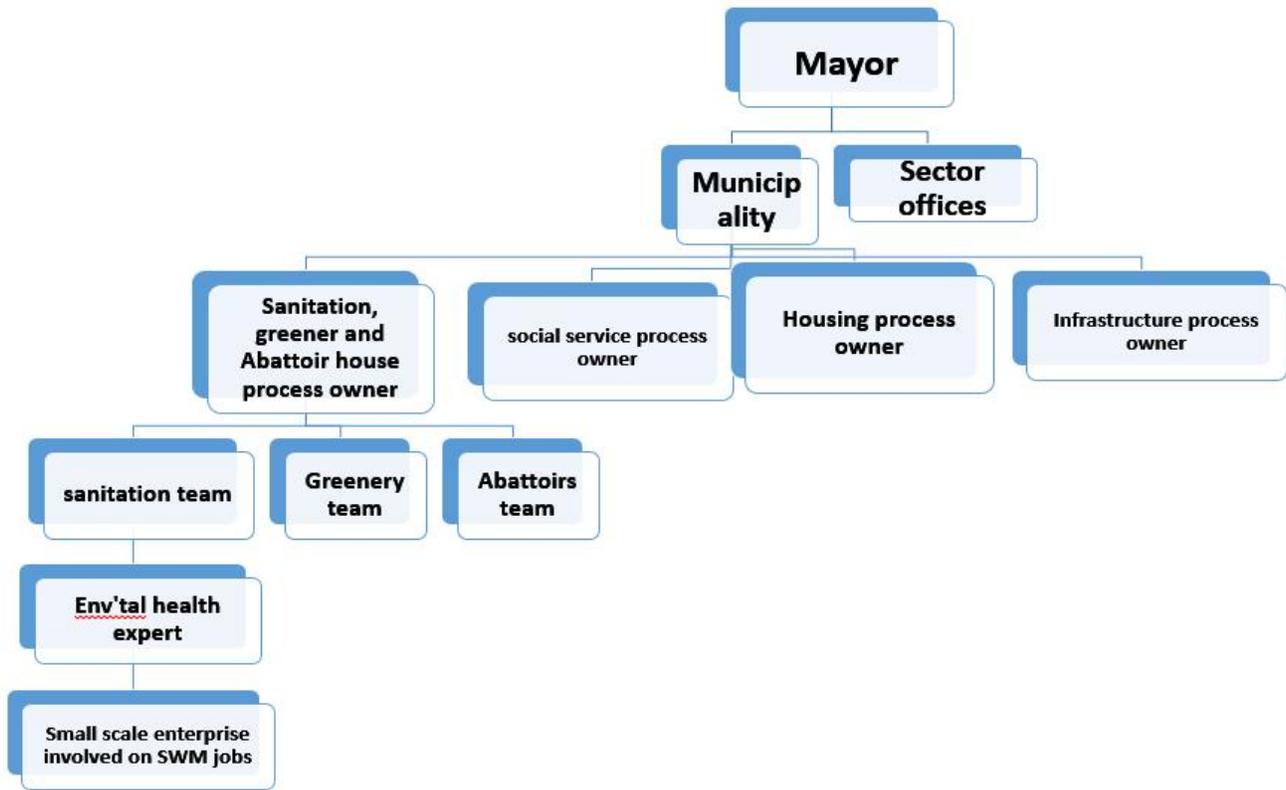
**Overall respondent USWM attitudes are not encouraging (43%).**

#### **4.3.1.3 Current USWM practices**

The typical organizational structure for delivering USWM services is described briefly, using the example of Adama City.

#### **Organizational structure of Adama municipality for USWM**

The total population is about 350,000. Three main city/town level offices are involved in USWM: environmental protection, health bureau, and municipality. The first two are primarily involved in enforcing regulations pertaining to sanitation and waste management. Municipalities are involved in the provision of services needed for solid and liquid waste collection and disposal, public latrine construction and management, and managing green areas. The structure of the municipality to carry out these responsibilities is indicated in Figure 6.



Source: Adama Municipality

**Figure 5 : Organizational structure of Adama municipality for USWM**

The sanitation team is involved mainly in waste management. The Adama city administration council uses national policies and local regulation No. 001/2002 (June 26/2002 E.C) to administer service fees for solid waste management. Micro-enterprises are involved in primary collection, while a limited number of lift and dump trucks are used for secondary collection. Twenty-six micro-enterprises with 10-12 persons each operate in the city. Liquid waste collection and disposal is outsourced to three private companies. Street sweepers are involved in cleaning the urban asphalted streets. An open disposal site is used for handling municipal wastes (both liquid and solid).

Various factors retard the efficiency of service, including a shortage of refuse trucks, containers, and human resources; low motivation of workers in micro-enterprises; weak enforcement and monitoring; low involvement of households in proper handling of waste; and ineffective decentralization of responsibility for resources at kebele level.

## Urban human waste management (sanitation)

Table 21 presents sanitation access and utilization practices in of sanitation. From the total study households, 90.6% (n=1,333) had access to latrines and 96.7% of these were functional at the time of the survey. The proportion of households with improved latrine (assumed to be pour flush, VIPLs, or traditional toilets/latrines with slabs), was estimated at 36%. This is relatively greater than the Joint Monitoring Program (JMP) data for Ethiopia, 27% (25). Of the total traditional pit latrines, pit latrines with durable concrete slabs were estimated to be 22.6% in EDHS 2011, 2014.

Of households with latrine, 71% have a traditional pit latrine. The number of seats per latrine varied from 1 and 4; the majority, 86% (n = 1,177), had one seat. Seventy-five household latrines had wells in proximity of a latrine, with a mean estimated distance of 11 meters between them (range 1-30 meters). This is less than the recommended 15 meter minimum (26) if the well water is the drinking source. Data on the distance between latrines located outside the home and the home itself was available for 113 households. The median distance was 14 meters (IQR=13 meters). Sanitation experts advise the location of pit latrine as close as 6 meters, but not near kitchens, as odor from traditional pit latrines is abhorrent. Ventilated improved latrines reduce odor, thus allowing proximity and sustaining utilization. This study found the average distance for VIPL location was about 2 meters, less than that of the traditional pit latrine.

About 31% of the households had ever-emptying services using vacuum trucks when the latrine was full. Both municipals/public and private companies are engaged in emptying services, 64% (n=264) and 30% (n=124) respectively. These figures seem too low to satisfy the growing demand of emptying services, as indicated by the data from the qualitative study. The low-level of service was also attributed to affordability: a concern voiced by mothers in the Arada Subcity FGD.

“The emptying trucks must be added by government and the payment for service shall be about 200 birr. The accessibility of emptying trucks must be improved and the current payment for the service should be minimized.”

The proportion of reported latrine utilization was 1,188 (89.1%). The utilization was mainly verified by the absence of feces around the household and functionality of the latrine. Adults used the latrine far more than children; only 1.5% of children under five years old used latrine. Fifty-four % of the surveyed households had children under-five whose feces were mainly disposed into a latrine (97% of households with children) using bedpans (“popo”). As indicated above, this data was consistent with smaller proportion of households with babies using latrines. Mothers in the Mekele FGDs discussed children less than four-years-old defecating openly around the household, which the mothers collect and dispose in the latrine.

The regional distribution of sanitation facilities is indicated in Table 22. Addis Ababa and Amhara Regions had sanitation coverage below average. Traditional pit latrine was typical to all regions, and the service of latrine emptying is significantly low in Harer, Oromia, SNNPR, and Tigray.

**Table 21: Household sanitation facility characteristics of survey respondents**

<b>Characteristics</b>	<b>Number (%)</b>
<b>Access to latrine (n=1,472)</b>	1,333 (90.6)
<b>Type of sanitation facility (n=1472)</b>	
<b>Improved facility</b>	526 (35.7)
Flush/pour flush to septic tank/pit latrine/sewer line	224 (15.2)
Ventilated improved pit latrine	90 (6.1)
<b>Traditional pit latrine (slab and no slab)</b>	940 (63.9)
<b>Non-improved</b>	218 (14.8)
Bucket	75 (5.1)
<b>No latrine</b>	139 (9.4)
Missing	4 (0.3)
<b>Latrine functioning (n=1,333)</b>	96.7
<b>Ownership/location of latrine (n=1,333)</b>	
Private outside house	950 (71.3)
Shared with other households/communal	136 (10.2)
Private inside house	113 (8.5)
Public/municipal	113 (8.5)
Missing	21 (1.6)
<b>Latrine utilization (n=1,333)</b>	1,188 (89.1)
<b>Household latrine users (n=1,188)</b>	
Anybody in household	945 (79.5)
Adults-women	331 (27.9)
Adults- men	323 (27.2)
Anybody in neighborhood	145 (12.2)
Under-five children	18 (1.5)
<b>Connection to municipal sewerage line (n=1,333)</b>	66 (5.0)
<b>Baby feces usual disposal(n=791)</b>	
Put into latrine using “poto”	766 (96.8)
Thrown in garbage	16 (2.0)
Put into drain/ditch	5 (0.6)
Burial	1(0.1)
Open field	1(0.1)
Other*	2 (0.35)
<b>Ever-emptied latrine (n=1,333)</b>	414 (31.1)
<b>Emptying service provider (n=414)</b>	
Municipality	264 (64.1)
Private organization	124 (30.1)
Day laborers	21 (5.1)
<b>Overall good practice of sanitation (7 questions)</b>	1153 (78)

\*Other do not know

**Table 22 : Regional distribution of sanitation facilities**

Region	Access to latrine/toilet, % (n=1470)	Type of sanitation facility, % (n=1329)				Ever-emptied latrine, % (n=1311)
		Flush/pour flush	Traditional pit latrine	VIP	Bucket	
Addis Ababa	84.7	19.2	70.1	5.2	5.5	68.2
Amhara	79.0	18.8	60.7	2.6	17.9	28.4
Dire Dawa	100.0	17.2	82.8	-	-	57.8
Harar	96.9	9.8	85.2	1.6	3.3	12.9
Oromia	93.7	13.7	77.2	7.0	2.1	17.1
SNNPR	99.1	4.7	73.9	17.5	3.8	17.8
Tigray	99.4	34.8	58.5	5.5	1.2	20.7
<b>Average</b>	<b>90.7</b>	<b>16.9</b>	<b>70.7</b>	<b>6.8</b>	<b>5.6</b>	<b>31.6</b>

### Urban household solid waste management practice

Household solid waste generation varied by components. The majority of households (89%) had floor sweepings. Leftover food, paper, and ash were also common types of waste. Frequency of solid waste collection was reported to be every day in 35% of households and once a week in 47%. The various forms of solid waste collection from households were door-to-door (45%); block collection (26%); and container service (10%). Generally, 77% of households used municipal containers. Because of the demand for containers, urban mothers complained, there are inadequate supplies properly located containers and services are delayed. Mothers in the Adama FGD agreed that, “The municipal container in our community is not timely served for months. This created health problems in our community.”

Micro-enterprises provided solid waste collection for 71% of households. Eighty-eight % of the households stored solid waste in a sack (“madaberia”) until collection or a household member disposed the waste in a municipal container (Table 23). Females in 87% of households are responsible for solid waste. Micro-enterprises that serve households on payment were appreciated by FGD participants. However, participants expressed concern that households in slum areas might not get service because they cannot pay for it. In addition, households not served by microenterprises dump solid waste in open fields and public places, and in rainy season floods the waste resurfaces.

Municipal containers were the destination of micro-enterprise primary collection services, which used manually operated and donkey-driven carts. Refuse trucks were used in many regional cities. Municipal containers (many are 8 cubic meter capacity) are lifted by refuse trucks for transport to final disposal sites. The efficiency of public container service, however, was found to be very low, as discussed by mothers in the Adama, Bahirdar, and Hawassa focus groups.

Lift trucks are specifically designed to serve the containers. However, dump trucks served the collection of solid waste, even though dump trucks are non-specific to solid waste collection and are meant to be used when there are space shortages in standard refuse trucks.

Existing solid waste disposal sites do not satisfy sanitary landfill requirements. In some cities, landfills are meant to accommodate solid waste by leveling with bulldozers. The following few photos demonstrate the existing facilities used for urban solid waste management system (Figures 7-9).



**Figure 6 : Municipal solid waste collection in cities**



**Figure 7: Municipal solid waste transport in cities**



**Figure 8: Municipal solid waste disposal site handling in cities**

**Table 23: Characteristics of solid waste management among household survey respondents**

<b>Variable</b>	<b>Number (%)</b>
<b>Component of solid waste generation</b>	
Floor sweeping (Yebet Tiragi)	1,309 (88.9)
Leftover food	756 (51.4)
Paper	749 (50.9)
Ash	616 (41.8)
Vegetable peelings	378 (25.7)
Plastic/bottles	301 (20.4)
Other*1	29 (2.0)
<b>Frequency of solid waste collection</b>	
Every day	513 (34.9)
Once a week	685 (46.5)
Twice a week	140 (9.5)
Once in two weeks	78 (5.3)
Once a month	18 (1.2)
Other*2	38 (2.6)
<b>Solid collection from a household</b>	
Door to door	672 (45.7)
Block collection	385 (26.2)
Municipal container	146 (9.6)
Backyard	139 (9.4)
Dumping outside	63 (4.3)
Other*3	71 (4.8)
<b>Type of solid waste storage facility</b>	
Sack (“madaberia”)	1,299 (88.2)
Plastic bag	48 (3.3)
Plastic/metal	42 (2.8)
Other*3	85 (5.6)
<b>Access to micro-enterprise service</b>	
	891 (60.57)
<b>Solid waste disposal facilities</b>	
Municipal container	1,046 (71.1)
Open burning	195 (13.2)
Open dump inside	68 (4.6)
Use as compost	66 (4.5)
Open dump outside	62 (4.2)
Other*4	35 (2.4)
<b>Overall good practice of solid waste management (6 questions)</b>	
	1,003 (68)

Other\*1 diaper soil, metal, missing; Other\*2 no service, missing; Other\*3 missing, pit, basket, burning, open field; Other\*4 missing.

## Solid waste reusing and recycling

Eighteen % of households were involved in waste recycling for energy recovery (mainly heat for cooking), composing organic matter to a certain extent, and reusing plastic/glass containers for household purposes (water and cooking oil storage). The proportion of recyclable matter to the overall generation, however, was estimated to be too low at less than 15% (secondary data sources-check list administered by municipality) (Table 24).

The above finding was consistent with qualitative data. Households are involved in separating combustibles and metals and there are informal-sector plastic jar collectors (as reported in Adama and Addis FGDs). Composting is not commonly practiced in urban settings (Mekele FGD), and some mothers are unaware of the benefits of waste recycling (FGD Dire Dawa).

*Table 24: Household solid waste recycling practices*

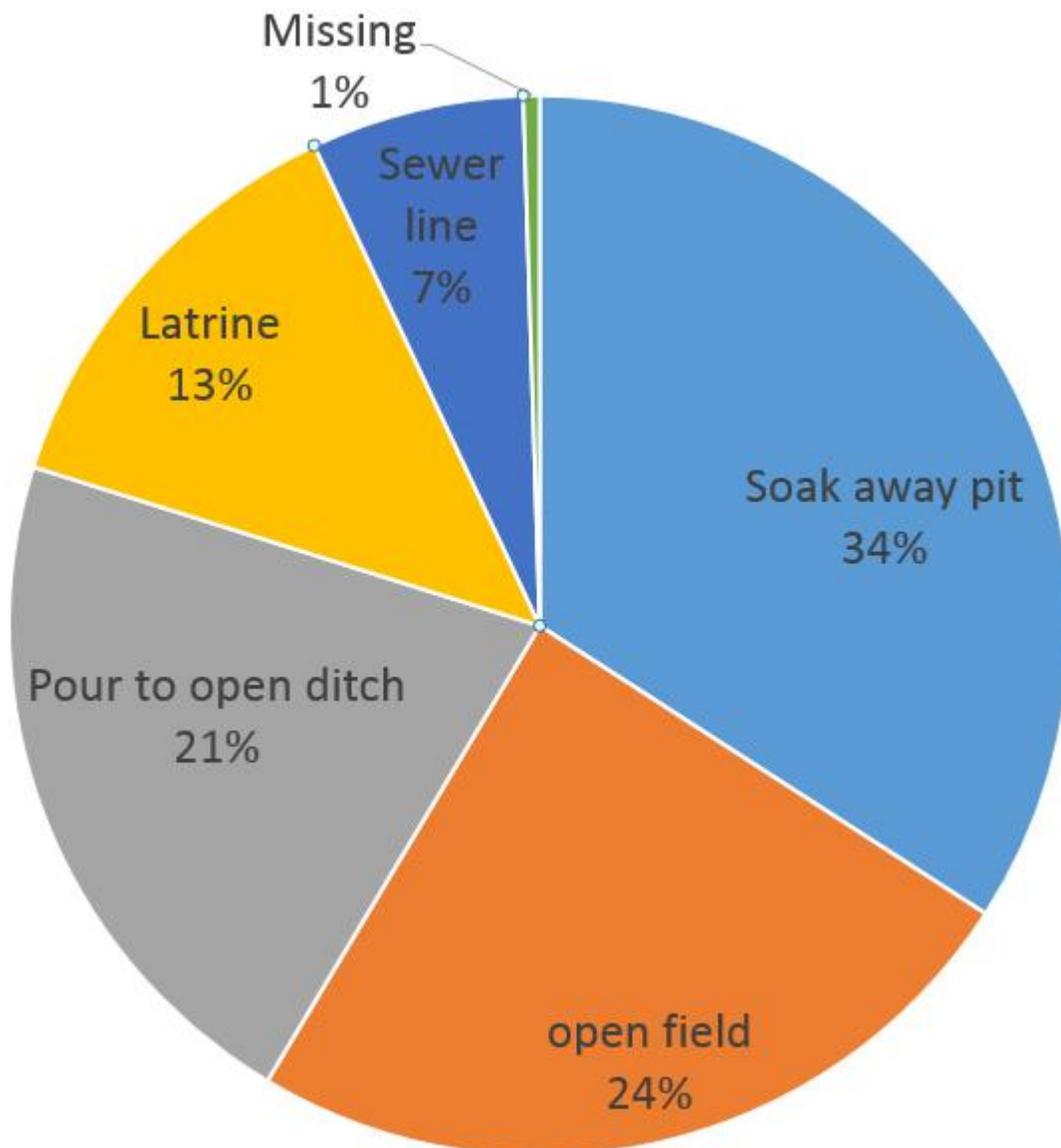
Variable	Number (%)
<b>Waste recycling</b> (n=1,472)	267 (18.7)
<b>Recycled solid wastes</b> (n=267)	
Plastic glass and containers	104 (40.0)
Vegetable peelings	40 (15.0)
Leaf and corncob	35 (13.1)
Paper and carton	26 ( 9.7)
Combustibles from household sweeping (spent sugarcane spent, dried leaves)	23 (8.9)
Animal waste (dung)	20 (7.5)
Other*	9 (8.6)
Missing	11 (4.1)

\*Bone, khat leftovers, ash

## Urban liquid waste management practices

Liquid waste was labeled as waste generated by washing clothes, dishes, and floor, as well as left-over coffee and is stored in a jerry-can, bucket (“baldi”), or metal bowl (“sahin”) as reported in the Mekele, Adama, and Arada Subcity FGDs. About 47% of households used local facilities to drain household liquid waste, as follows: soak-away pit (34%) and connecting to a latrine (13%). Half of the surveyed households used public places to dispose liquid waste illegally, reportedly because there are no disposal facilities. Sewer-line connection and septic tank use were not reported in many cities (Figure 8). There was regional variation in liquid waste disposal options. Soak-away pits were used predominately in Amahara and SNNPR; pouring into open ditches in Addis Ababa; latrine in Tigray; and open-place/field disposal in Diredawa (Table 25). Only Addis Ababa has public sewer lines; report of them in other cities is because of data collector misinterpretation.

Soak-away pits were type of facility used to drain household grey water and are promoted by the health extension professionals. The existing soak-away was described in the Bahir Dar FDG as “A pit 3 meters deep and filled with gravel. At the top it is covered with rubber that has a narrow hole to prevent the entrance of solid particles.” However, many observed soak-away pits were shallow, saturated, located close to the streets, and overflowing. They clog easily in wet seasons. The local approaches to and facilities for liquid waste disposal implies greater quantities disposed in public places that are sources of nuisance, odor, vector-breeding, cobble-stone damage, and surface water pollution. This practice persisted although the community does not like it. “It is bad looking [to see]. The liquid waste is harmful; while playing a child will put it in its mouth; it will bring disease and vomiting.” (Dire Dawa FGD).



**Figure 9: Characteristics of household liquid waste disposal facilities**

**Table 25: Regional distribution of liquid waste disposal facilities among household survey respondents (n=1465)**

Region	Soak-away pit, %	Open field, %	Pour to open ditch, %	Latrine, %	“Sewer line”, %	Total n (%)
Addis Ababa	10.7	25.1	51.1	5.6	7.5	319
Amhara	66.9	19.0	11.4	2.1	0.7	290 (100)
Dire Dawa	9.4	67.2	6.3	17.2	-	64 (100)
Harar	7.8	39.1	23.4	4.7	25.0	64 (100)
Oromia	25.3	34.8	21.3	6.6	12.1	348 (100)
SNNPR	67.0	14.4	10.2	3.3	5.1	215 (100)
Tigray	8.8	3.0	1.2	77.0	-	165 (100)
				195		
<b>Total</b>	<b>502 (34.3)</b>	<b>360 (24.6)</b>	<b>313(21.4)</b>	<b>(13.3)</b>	<b>6.5</b>	<b>1,465* (100)</b>

\*7 were missing

### Drinking water handling

Ninety-eight % of urban households accessed improved water sources. The most common, representing 87% of households was piped line. Water taps were located mostly in the compound of households (71%); connection inside dwelling was only 5%. The proportion of households using different options of drinking water treatment was 35%, of which 68% used Wuha agar, Beshangari. Use of ceramic filter was negligible. Women shouldered the burden of drinking water collection (92% of households). Narrow-mouthed containers were used to store drinking water, 74% and 24% jerry can and plastic bottle, respectively (Table 26). Household drinking water treatment practice was relatively high in Dire Dawa, whereas proper drinking water storage was lower in Amhara compared to others (Table 27).

Household-level drinking-water treatment was confirmed by the qualitative data. “Boling, chlorine tablets and “Wuha” agar are used to treat unreliable water that is collected when the municipal piped lines are interrupted.” (As reported in Arada Subcity and Hawassa FGDs.) Health centers and pharmacists were indicated as sources of “Wuha” agar, which cost about 3 birr at the time of the survey. The use of jerry cans was preferred over pails locally known as “baldi.” “Jerri-can is better storage for drinking purpose because it’s safe and not easily contaminated,” according to respondents in the Mekele, Arada Subcity, and Hawassa FGDs.

**Table 26: Characteristics of household drinking water services**

<b>Characteristics</b>	<b>Number (%)</b>
<b>Usual source of drinking water (n=1,472)</b>	
Piped to yard	1,113 (75.6)
Public tap	156 (10.6)
Piped outside house	88 (6.0)
Piped to house	73 (5.0)
Unprotected spring	19 (1.3)
Bottled	8 (0.5)
Protected well	6 (0.4)
Protected spring	2 (0.1)
Missing	8 (0.5)
<b>Household drinking water treatment practice (n=1472)</b>	514 (34.9)
<b>Frequency of drinking water treatment (n=514)</b>	
Always	137 (26.9)
Usually	109 (21.4)
Sometimes	264 (51.8)
<b>Options of household water treatment (n=514)</b>	
Wuha agar, Beshangari	348 (67.7)
Boil	161 (31.3)
Strain through a cloth	27 (5.3)
Ceramic waste filter	12 (2.3)
Let stand and settle	2 (0.4)
Other	21 (4.1)
<b>Drinking water collection provider (n=1,472)</b>	
Woman	1,358 (92.3)
Man	31 (2.1)
Child	9 (0.6)
Other	1 (0.1)
Any family member	48 (3.3)
Day laborer	8 (0.5)
Missing	17 (1.2)
<b>Drinking water storage facility (n=1,472)*</b>	
Jerry-can	1,083 (73.6)
Plastic bottle	351 (23.8)
Barrel	41 (2.8)
Clay pot	19 (1.3)
Pail	170 (11.5)
Other	42 (2.9)
<b>% with narrow container= 73.6%</b>	
<b>Overall good practice of drinking water (3 questions)</b>	443 (30)

\*Percentage do not add up to 100% for multiple responses

**Table 27: Regional distribution of urban household drinking water treatment and storage practices**

Region	Household water treatment, % (n=1,457)	Jerry can, % (n=1,456)	Plastic bottle, % (n=1,456)
Addis Ababa	31.6	60.1	34.6
Amhara	27.9	65.7	21.1
Dire Dawa	65.6	87.5	20.3
Harar	48.4	93.8	14.5
Oromia	24.8	74.5	29.0
SNNPR	50.2	96.7	18.8
Tigray	40.6	76.2	21.5
<b>Total</b>	<b>35.3</b>	<b>74.4</b>	<b>25.2</b>

### Hygiene practice, provision of hand-washing facility, and diarrhea status

One question addressed the practice of hand hygiene after latrine use. About 91% of the respondents reported handwashing with soap after latrine “yesterday.” This was much overestimated compared to the national data of 7% (18), probably because of social desirability bias, i.e., respondents wanting to provide the ‘correct’ response. Furthermore, this study explored only one critical time, compared to the required five critical times that estimated the 7%. Generally, handwashing at critical times, such as after defecation/latrine, is found to be rare. This practice in Bangladesh was 14% using structured observation (27) compared to 23% just rinsing with water (without use of soap), The handwashing practice in India using intervention trials is 2% (28). Generally, reported handwashing practice tend to overestimate compared to that using structured observation (29).

If we use proximal index i.e., current availability of proper handwashing facility and soap in or close to a latrine, the maximum theoretical possible handwashing practice at critical times will not be greater than 24%. Three-hundred-and-forty-seven households of all surveyed had standard a handwashing facility with fixed water taps. Handwashing with soap is believed to be a rare practice in households, given the prevailing illiteracy and limited access to soap, water, and handwashing facilities. The Ethiopian HSDP IV (2) has targets of household handwashing practice at critical times at 77%, which requires extensive intervention given the current slow progress in this regard.

Promotion of hygiene at household levels was provided by health professionals during health center visits, and UHE-p coffee ceremonies on personal hygiene, solid and liquid waste management, and prevention of communicable diseases (Arada Subcity, Mekele FGDs).

The prevalence of diarrhea in a household for previous two weeks at the time of the survey was 4.1% with a total of 53 sick people (f=28). This figure was relatively smaller than the prevalence of diarrhea among under-five children in urban communities (21), assuming one case was counted in one household.

Direct access to handwashing facility in and/or close to a latrine facility was limited to only 26% (n=347) of households that had a latrine. Addis Ababa and SNNPR had few handwashing facilities. Fixed handwashing facilities with piped running water were in 50% of the households that possessed some kind of handwashing facility (Table 28). An equal proportion of handwashing facilities used jag with a recipient container and tilting bigger narrow-mouthed containers. Soap was available in 73% of the handwashing facilities. Reasons for not having soap included the preference of keeping it at home because of the fear of loss and being stolen (Table 29).

**Table 28: Regional distribution of presence of functional handwashing facility in or close to latrine/toilet facility**

Region	Availability ,% (n=1,312)	Handwashing facility fitted with a water tap, % (n=347)	Soap observed, % (n=340)
Addis Ababa	20.2	72.0	85.7
Amhara	28.3	50.0	84.4
Dire Dawa	40.6	44.0	66.7
Harar	48.4	26.7	66.7
Oromia	25.5	45.7	67.9
SNNPR	18.4	33.3	69.2
Tigray	32.3	63.5	71.7
<b>Average</b>	<b>26.4</b>	<b>49.9</b>	<b>74.1</b>

**Table 29: Characteristics of handwashing facilities of household survey respondents**

Variable	Number (%)
<b>Availability of handwashing facility in or close to latrine</b> (n=1,333)	347 (26.4)
<b>Type of handwashing facility</b> (n=347)	
Standard handwashing basin	170 (49.9)
Jug and water recipient set	98 (28.2)
Jerry-can container (tilting)	58 (16.7)
Bottled water container	11 (3.2)
Container (pot) made of clay	9 (2.6)
Presence of soap in handwashing facility (n=347)	252 (72.6)
Handwashing proper placement (n=347)	245 (70.6)
Shower facility in the latrine (n=1,333)	243 (18.2)
Diarrhea in the last two weeks (n=1,472)	60 (4.1)
Number of sick in a (n= 60 HHs)	
Male	25
Female	28
<b>Overall good practice of hand hygiene (5 questions)</b>	436 (30)

### Characteristics of service payment

About 32% (n= 414) of households with latrine had ever experienced emptying the pit with median charges of 300 birr (IQR- 330 birr, range 3 to 4000 birr) per service. Manual-labor services cost less. Municipal and private companies, 64% (n= 264), and 30% (n= 124), respectively, covered the service. The payment modality was cash in 92% (n= 404) and credit in 7% of the emptying services in Bahir Dar, Gondar, and Addis Ababa.

Data was available for 405 and 333 households to estimate the monthly payment for solid waste collection based on water bills and direct cashing, respectively. The median service charge was 10 birr per month (min 0.35, max 600 birr), accounted in water bill and 15 birr in direct cashing (min 1, max 300 birr). Payments in general are highly variable due to the varying payments extended to manual and machine based services.

Mothers in the Arada Subcity FGD complained about the irregular collection frequency as managed by the micro-enterprises. There are also concerns about the frequency of collection not incentivized with proper payment. There is a varying perception of the amount of payment for the solid waste fee collected by the public (micro-enterprises). “The current payment for the service is very low. We are proposing to the government that the payment should be arranged and the frequency of collection should be increased.” (Mekele FGD).

“For me paying 8 birr may be enough because I manage the waste properly before giving to micro-enterprises. On the other hand, it may not be enough because there are households that generate large volume of wastes. There are also households that do not pay totally, since they do not have water bill.

Therefore, the payment should be context based; I suggest 20 birr per household per month.” (Bahir Dar FGD).

Other participants were concerned that many households don't paying for the service with water bill, suggesting some ways to get payment for the service. “The payment is not enough. I suggest 15 birr/month. Moreover some people who do not have water bills are not paying therefore some other mechanism shall be designed to track those who do not have water bills.” (FGD Bahir Dar).

The emptying service delivery is poor in many urban cities. Fore, example Shashemene gets emptying trucks from Hawassa at increased cost. The concern of inadequate pit latrine emptying service as well was greatly acknowledged by FGD participants. “There is only one vacuum truck in the town involved in liquid waste collection and disposal, which leads to long waiting list to get service. Additional vehicles should be provided.” (Bahr Dar FGD). A summary of key indicators of USWM practice is indicated in Table 34.

### **Overall practice of USWM**

Twenty-three different practice questions with (yes/no) responses were aggregated. A composite score above the mean or median is labeled as good, (otherwise poor). The aggregated data indicated good practice in 45% of the households. Regional variation is shown in Table 30. Harar, Oromia, Amahara, and Addis Ababa had practice levels below the regional average. Key findings on USWM practice are indicated in Box 7.

**Table 30: Regional distribution of overall USWM practice in cities**

Regions		Overall practice, % (n=1,472)
Addis Ababa	322	52.8
Amhara	291	48.5
Dire Dawa	64	50.0
Harar	64	40.6
Oromia	351	43.6
SNNPR	215	68.8
Tigray	165	87.9
<b>Average</b>	<b>1472</b>	<b>55.4</b>

### Results of multivariate analysis

The educational status of mothers and the knowledge on USWM among socio-demographic attributes were significantly associated with practice of USWM. Households with mothers who were not able to read or write were almost three times more likely to have “poor practice” compared to households with better-educated mothers [(OR (95%CI) = 2.81 (1.47, 5.35)]. Increased knowledge of mothers about sanitation and waste management was associated with good practices [(OR (95%CI) = 1.58 (1.18, 2.1)].

Household-level factors—type of *kebele*, type of wall material, and wealth index—were associated with the overall USWM practice. Households in mixed type of neighborhood were 34% less likely to have “poor” sanitation and waste management practices than those in non-slum *kebeles* [(OR (95%CI) = 0.66 (0.44, 0.97)]. Although the odds of poor sanitation among households in urban slum did not reach a significance level, it is 1.3 times greater than poor practices in non-slums. This might be due to the misclassification in categories of *kebeles* as identified earlier by JSI field workers and observed in the field (in Gondar and Dire Dawa).

As the wealth index increases, the odds of poor practice decline significantly ( $p < 0.01$ ); the degree of poor sanitation highest in households in the lowest quintile (Tables 31-33).

Households with more-educated mothers had better drinking water handling and sanitation and waste management. Mothers who cannot read or write were more likely to live in slum *kebeles* with low wealth indices. They are also less likely to have access to sanitation/ health information. We can say surveyed households in slum *kebeles* have low wealth indices and educational status. The quality of houses with walls made of mud and wood is consistent with low wealth indices, each of which is a reliable measure of slum. The development of sanitation strategies to reach slum *kebeles* will help mothers improve and sustain healthy environments.

**Table 31: Bivariate logistic regression analysis on socio-demographic factors associated with overall practice of USWM in cities**

Characteristics	Practice USWM		COR (95%CI)	P value
	Poor	Good		
<b>Age (years)</b>				
≤29	229	279	1.04 (0.81, 1.34)	0.95
30-39	221	274	1.02 (0.79, 1.32)	
≥40	204	259	1.0	
<b>Marital status</b>				0.20
Married	437	571	0.68 (0.48, 0.97)	
Single	89	105	0.76 (0.49, 1.17)	
Widowed	57	73	0.69 (0.43, 1.13)	
Divorced	73	65	1.0	
<b>Education of respondent</b>				0.001
Can't read or write	164	138	<b>2.85 (1.95, 4.17)*</b>	
Read and write	59	102	1.39 (0.89, 2.16)	
Primary and secondary	373	436	2.05 (1.47, 2.87)**	
Technical and above	58	139	1.0	
<b>Education of husband</b>				0.001
Can't read or write	51	23	<b>4.67 (2.66, 8.21)**</b>	
Read and write	35	63	1.17 (0.71, 1.92)	
Primary and secondary	265	316	1.77 (1.28, 2.43)**	
Technical and above	75	158	1.0	
<b>Employment status</b>				0.706
Unemployed	367	454	1.03 (0.80, 1.31)	
Employed	103	114	1.15 (0.82, 1.60)	
Self employed	167	212	1.0	
<b>Knowledge</b>				0.001
Good	242	400	1.00	
Poor	415	415	<b>1.65 (1.34, 2.04)**</b>	
<b>Attitude</b>				0.011
Favorable	342	478	1.0	
Unfavorable	315	337	<b>1.31 (1.06, 1.61)*</b>	

\*\*p<0.001; \*p<0.05

**Table 32: Bivariate logistic regression analysis on household factors associated with overall practice of USWM in cities**

Characteristics	Practice USWM		COR (95%CI)	P value
	Poor	Good		
<b>Type of kebele</b>				
Non-slum	108	241	1.0	0.001
Mixed	290	313	<b>2.07 (1.57, 2.73)*</b>	
Slum	259	261	2.21 (1.67, 2.95)	
<b>House ownership</b>				
Owned	281	475	<b>1.88 (1.52, 2.31)*</b>	0.001
Rented	372	335	1.0	
<b>Type of house</b>				
Detached	344	390	1.0	0.001
Semi detached	233	360	<b>0.73 (0.59, 0.91)*</b>	
Apt/condos	54	35	<b>1.75 (1.12, 2.74)*</b>	
<b>Wall type</b>				
Concrete/brick	106	274	1.0	0.001
Wood and mud	486	432	<b>2.91 (2.25, 3.76)*</b>	
Stone with mud/cement	45	96	1.21 (0.80, 1.84)	
<b>Household size</b>				
< 3.0	196	223	1.0	0.216
≥3.0	415	546	0.87 (0.69, 1.09)	
<b>Number of under-five</b>				
<2.0	65	114	1.0	0.687
≥2.0	3	7	0.75 (0.19, 3.01)	
<b>Wealth quintile</b>				
Lowest	187	98	<b>5.12 (3.58, 7.34)*</b>	0.001
Second	150	144	2.80 (1.97, 3.96)*	
Middle	125	160	2.10 (1.47, 2.98)*	
Fourth	106	190	1.50 (1.05, 2.14)*	
Highest	76	204	1.0	

\*\*p<0.01; \*p<0.05

**Table 33: Multivariate logistic regression analysis on household factors associated with overall practice of USWM**

Characteristics	Practice USWM		COR (95%CI)	AOR (95%CI)
	Poor	Good		
<b>Education of respondent</b>				
Can't read or write	164	138	<b>2.85 (1.95, 4.17)*</b>	<b>2.81 (1.47, 5.35)**</b>
Read and write	59	102	1.39 (0.89, 2.16)	1.70 (0.87, 3.31)
Primary and secondary	373	436	2.05 (1.47, 2.87)**	<b>1.85 (1.10, 3.14)*</b>
Technical and above	58	139	1.0	1.0
<b>Education of husband</b>				
Can't read or write	51	23	<b>4.67 (2.66, 8.21)**</b>	1.74 (0.87, 3.47)
Read and write	35	63	1.17 (0.71, 1.92)	0.58 (0.30, 1.09)
Primary and secondary	265	316	1.77 (1.28, 2.43)**	1.09 (0.74, 1.61)
Technical and above	75	158	1.0	1.0
<b>Knowledge</b>				
Good	242	400	1.00	1.0
Poor	415	415	<b>1.65 (1.34, 2.04)**</b>	<b>1.58 (1.18, 2.11)**</b>
<b>Type of kebele</b>				
Non-slum	108	241	1.0	1.0
Mixed	290	313	<b>2.07 (1.57, 2.73)*</b>	<b>0.66 (0.44, 0.97)*</b>
Slum	259	261	2.21 (1.67, 2.95)	1.26 (0.90, 1.77)
<b>Type of house</b>				
Detached	344	390	1.0	1.0
Semi detached	233	360	<b>0.73 (0.59, 0.91)*</b>	0.84 (0.62, 1.14)
Apt/condos	54	35	<b>1.75 (1.12, 2.74)*</b>	1.88 (0.99, 3.56)
<b>Wall type</b>				
Concrete/brick	106	274	1.0	1.0
Wood and mud	486	432	<b>2.91 (2.25, 3.76)*</b>	<b>1.86 (1.29, 2.69)**</b>
Stone with mud/cement	45	96	1.21 (0.80, 1.84)	1.14 (0.66, 1.96)
<b>Wealth quintile</b>				
Lowest	187	98	<b>5.12 (3.58, 7.34)*</b>	<b>3.06 (1.81, 5.16)**</b>
Second	150	144	2.80 (1.97, 3.96)*	<b>1.85 (1.16, 2.95)*</b>
Middle	125	160	2.10 (1.47, 2.98)*	<b>1.68 (1.06, 2.67)*</b>
Fourth	106	190	1.50 (1.05, 2.14)*	1.41 (0.89, 2.24)
Highest	76	204	1.0	1.0

## Box 7: Key findings on USWM practice

USWM service	Key findings (indicator)
<b>Organizational structure</b>	Urban municipalities are under-resourced in solid waste management services. Refuse trucks, municipal containers, emptying trucks, and use of personal protective devices are examples of what is lacking.
<b>Urban sanitation</b>	<ol style="list-style-type: none"> <li>1. Access to improved sanitation is estimated to be low.</li> <li>2. There is increased level of latrine access and utilization. Traditional pit latrines are the predominant sanitation facilities.</li> <li>3. Latrine emptying service coverage is very low; below the average of more than 50% of surveyed regions.</li> <li>4. Under-five children rarely use latrines. Disposing children's feces into a latrine and around the household is common.</li> <li>5. Private companies are not greatly involved in providing solid and liquid waste management services.</li> </ol>
<b>Solid waste management</b>	<ol style="list-style-type: none"> <li>1. Micro-enterprises are the primary solid waste collection service providers, although there was an indication of low motivation among workers.</li> <li>2. There are urban slum households that are not served by micro-enterprises because they cannot pay. Many of these households dispose solid waste in open places.</li> <li>3. House-to-house collection is the typical mode of solid waste collection.</li> <li>4. Households heavily use municipal containers.</li> <li>5. Inefficient and non-standard trucks (dump trucks) are used to collect solid waste.</li> <li>6. Lift/skip trucks are the major types of refuse trucks serving primary and secondary solid waste collection</li> <li>7. There is no structured sanitary land fill. Solid waste is openly disposed in dump fields, where in the majority of heavy-duty trucks do not operate.</li> <li>8. Dump fields for solid waste pose water and air pollution due to poor handling.</li> <li>9. Sack ("madaberia") is the primary storage of household solid waste.</li> <li>10. Smaller proportion of waste is recycled at household level.</li> </ol>
<b>Liquid waste management</b>	<ol style="list-style-type: none"> <li>1. The proportion of households that had ever-emptied a latrine is small.</li> <li>2. Household liquid waste (grey water) is indiscriminately disposed in open public places.</li> </ol>
<b>Drinking water supply</b>	<ol style="list-style-type: none"> <li>1. Almost all urban households have access to improved water supply (98%).</li> <li>2. Household water treatment practice is low (35%).</li> <li>3. Wuha agar and Beshangari are the main chemicals used to treat household water.</li> <li>4. Women and female children are involved in household water collection (93%).</li> <li>5. Narrow-mouthed containers are used to collect and store water at household level (97%).</li> </ol>
<b>Hand hygiene</b>	<ol style="list-style-type: none"> <li>1. Access to handwashing facility in or close to the latrine is very small (26%).</li> <li>2. The proportion of households with standard handwashing facility fixed with tap water is low (13% estimated).</li> <li>3. Maximum estimated handwashing practice is very low (24%).</li> </ol>
<b>USWM services</b>	<ol style="list-style-type: none"> <li>1. About 32% of households with latrine had ever experienced emptying the pit with median charges of 300 birr.</li> <li>2. Public services predominate in solid and liquid waste management.</li> <li>3. The payment service includes direct cashing and indirect through water bills.</li> <li>4. Irregular servicing not satisfying demand is common.</li> </ol>
<b>Determinants</b>	The educational levels of respondents, household income, and household location are important

determinants of USWM practices.

**Table 34: Key indicators of USWM practice**

<b>Key indicators</b>	<b>Percent</b>	<b>Sample size</b>
% of HHs accessing sanitation/latrines	91	1,472
% of HH with private latrine	80	1,333
% households with “improved latrine”	36	1,472
% of households with baby feces disposed to latrine using “popo”	97	791
% households with reported latrine utilization among households accessed latrine	89	1,333
% households ever-emptied latrine	31	1,333
% households with “sack” to store solid waste	88	1,299
% households accessing micro-enterprise	61	1,472
% of households using municipal container	71	1,472
% of households recycling solid waste	19	1,472
% of households using soak-away pit and latrines to dispose liquid waste	45	1,472
% of households accessing improved drinking water	98	1,472
% of households storing drinking water in narrow mouthed container	97	1,472
% of households treating water for drinking	35	1,472
% of households with standard handwashing facility in/near a latrine	26	1,333
% of households with a shower	18	1,333
% of households with soap in handwashing facility	71	347
Overall “poor” knowledge of USWM (23 questions)	56	1,472
Overall “poor” attitude on USWM (27 questions)	43	1,472
Overall “poor” practice of USWM (23 questions)	45	1,472

## 4. 4 Solid waste generation rate and composition at the household level

Solid waste is generated from households, commercial centers, industries, and institutions. In modern cities and towns, huge volumes of solid wastes need regular collection, transportation, and disposal. As the scope and complexity of solid waste management grows and consumes an ever-increasing proportion of city budgets, the solid waste management sector must be carefully monitored and adjusted to balance service quality and cost effectiveness. Efficient solid waste management systems must have precise data about the quantity and type of waste materials. Unfortunately, in many developing countries, systems for managing waste are primitive and cannot process the volume of generated waste (30).

As in all developing countries, increased solid waste generation and related problems in Ethiopia are due to rapid urbanization and population increase. The severity of the problem is indicated by indiscriminate dumping of wastes along streets, drains, ditches, canals, and open spaces of the city. Such careless handling, collection, transportation, and disposal of waste are hazardous to public health and the environment. Because Ethiopia has no comprehensive data on solid waste generation and composition, it has not been able to develop a strategy to mitigate the problem. This systematic review analyzed literature on solid waste generation rate and composition at the household level in Ethiopia to provide information to improve the municipal solid waste management.

Studies conducted in Ethiopia towns/cities showed that the average rate of solid waste generated from households per capita per day ranges from 0.23 to 2.03 kg (Table 36). Measurements were done for last seven days of collection.

**Table 35: Summary of average rate of solid waste generation from households per capita per day**

Author(s), year of publication	City/town	Generation rate (kg/capita/day)
Tyagi V, et al 2014	Debre Berhan	0.55
Anrs E, 2010	Bahir dar	0.25
Cheru S, 2011	Dessie	0.23
Shimelis B, 2011	Aweday	0.85
Regass N, et al 2011	Addis Ababa	0.25
Getahun T, et al 2012	Jimma	0.55
Mary T, et al 2013	Mekele	0.30
Taddesse T, 2014	Debre Berhan	1.20
Abiot, et al, 2012	Hosa'ina	2.03

### Composition and characteristics of urban solid waste

Generally, urban wastes can be subdivided into two major components; biodegradable and non-biodegradable. The biodegradable component of urban solid waste constitutes organic matter that in controlled conditions can be turned into compost or organic fertilizer. Non-biodegradable waste includes inorganic materials that can't be decomposed and degraded.

The dominant types of biodegradable solid wastes are leftover food (kitchen and marketplace), seed coats, grasses, garden wastes, animal wastes, ash, dust, leaves, scarp of khat, paper, wood scraps, bones, straw, dead animals, cardboard, cartons, and paper packaging materials. Non-biodegradable waste includes plastic (bags or “festals,” broken pieces of plastic materials, plastic packaging materials, etc.), cables and electronic materials, bit of ceramics, glass, metal, textile scraps, and cans.

## 4.5 USWM public-private partnership

Public-private partnership (PPP) is seen as a potential alternative to the traditional model of USWM service delivery systems that are fully controlled by the public sector. More importantly, public private partnerships are believed to provide superior services (31). According to neo-liberal theory, limited government intervention in the economy and the superior economic performance of the private sector lead to competition and efficiency (32). In this line of thinking, public-private partnership provision of urban waste management services could be the best possible way to solve current urban waste problems in developing countries (33). This objective focuses on assessing the existing practices and opportunities for private sector involvement in waste management and urban sanitation, and possible financial mechanisms.

Pursuant to this objective, 72 key informants in 18 towns were interviewed. The mean age of respondents was 36.55 and the mean years of service were eight, with a minimum of one and a maximum of 30 years. Participants were drawn from health offices, beautification, municipality/utility, and urban development and construction. The findings are summarized based on the research questions.

### **Current areas of public-private partnerships**

Results indicate that current PPSs supported by the government in towns/cities vary by region, town/city and sector office. Some of the PPPs were public micro-enterprises involved in solid waste management, waste collection, transportation services, primary waste collection, green area and parking, and waste recycling.

The majority of the key informants agreed that their region appreciated promotion of PPP as a strategy for USWM, but this varied by region, town, and stakeholder category.

A health officer from a southern region said, “Except the municipality’s effort to organize private solid waste micro-enterprises, there are no driving forces that facilitate private sector engagement in waste

Only some city/towns identified approaches and stipulated how to promote PPP. Only some towns/cities like Adama implement waste management technologies for the promotion of the PPP and appreciated in solid waste management while poor in liquid waste management this may be due to the financial capacity and the level of the town varies the type of approaches.

In some towns/city like Wolkitie and Shashemene there is no private sector engagement in waste management. The different forms in which the private sector engaged in sanitation and waste management through; collection of liquid waste using vacuum trucks, collection of solid waste at household level by formally organized micro enterprises, private owned factories established to recycle solid wastes, personal protective equipment production, green area and parking, the construction of urban waste management like; side dish construction, prevention of flooding, household solid and liquid waste pit.

### **Formal and informal private sector involvement in waste management and urban sanitation**

In most towns/cities, the formal private sector is engaged in sanitation and waste management activities as associations, while informal private waste collectors are not supported by the government and are not structurally organized. In some cities, the informal private sector is engaged in 20 meter radius cleaning activities but not in liquid waste management.

A key informant in Addis Ababa said that “The town municipality never encourages informal private involvement. These individuals are sometimes mentally ill, working illegally, and are considered a threat to modern waste disposal systems. [At the same time, t]hey are very accessible to the community and request very low payments.”

Challenges to greater involvement of the private sector to support urban waste management in Ethiopian towns/cities are listed below and are classified as government, private, or community (Box 8).

## **Box 8: Challenges for public-private USWM partnerships**

### **Government side**

- Lack of sanitary landfill and liquid disposal for final disposal at the city/town level.
- Lack of sanitation facilities to minimize the burden of transporting material for small enterprises.
- Lack of road infrastructure to transfer equipment to the disposal site.
- Absence of clear policies and strategies for involving private partners.
- Budget constraint of USWM sector.
- Lack of USWM-trained professional workers
- Lack of coordination between town/city.
- Overlaps between different sectors. Management not prioritizing waste management system.
- Poor fee collection system for micro enterprises that currently provide USWM services.

### **Private-sector side**

- Lack of awareness of cost benefit of USWM.
- Poor private-sector capacity to handle waste management operations.
- Lack of available land is a challenge in some cities/towns.
- Unsure that business is profitable.
- Misinformation about urban waste management.
- Waste collection and transportation sector requires huge investment.
- Waste collection and transportation sector unfamiliar business; private partners afraid of losing investment.

### **Community side**

- Most community members can't afford cost of solid and liquid waste disposal services.
- Complaint about service bills collected by the private sector providers, including associations.
- Unaware of need to pay for the services.
  - Rampant littering.

## **Conditions needed to involve private sector in USWM**

A key to private-sector involvement is profit-oriented management. Box 9 lists conditions that have enabled private sector involvement in USWM in Ethiopian towns/cities.

### **Box 9: Enabling conditions for USWM PPP**

- Availability of cheap human labor.
- Good market and income and unlimited access to final disposing site.
- Good investment policy for the involvement of private organizations
- Provision of land for factories.
- Majority of the solid wastes generated in urban areas are good resources for recycling/reusing and engagement in sanitation and waste management is cost effective.
- Government provides loans for sanitation activities.
- Existing waste collector associations are not paying taxes because USWM is considered public service.
- The government does not tax cars used for urban sanitation services.
- Waste can be recycled and reused.
- The presence of micro-enterprises.

In Ethiopia the responsibility of the government varies depending upon the structure of policies and strategies. Federal offices focus on regulatory and supportive activities to regions, while the regional and city-level offices focus on the functional aspect of USWM activities. The structural responsibility of USWM varied between regions and cities. For example, urban development and construction in some regions (Tigray and Harari) has no USWM-related activity, while in other regions did. Some of the government institutions in cities/towns are responsible for promoting private-sector engagement in urban waste management. The following city/town institutions (public) work on USWM services; urban cleaning and beautification; municipality; chamber of trade; micro enterprise office, water and sewerage authority; health office; trade and tourism; land management and investment office; and construction office (Annex VIII).

Population growth and economic development increase volume of waste, which challenges public-sector waste management services in cities/towns. Although a significant number of key informants believed that their own organization (office) was the only sector sensitive to waste reduction, re-use, and recycling, a few key informants agreed that all sectors, including individuals, are important for proper USWM services.

One key informant from an urban development construction office said “This sector can’t be effective the only one concerned with waste management and reutilization...It is like clapping with one hand. ...many sectors... should participate in these activities, including culture and tourism and custom offices. Schools should encourage workers to participate in waste recycling and reuse activities. Like HIV and women’s affairs, waste management service needs collaboration of many sectors.”

Some sector offices mentioned by the key informants are sensitive to waste reduction, re-use, and recycling. These include the urban cleaning and beautification, health, environmental protection, land management and construction sectors; the community itself; private enterprise; municipalities; NGOs; universities; hotels; and technical and vocational training centers.

Formal and informal enterprises within the tourism, transport, construction, and other sectors were collaborating to properly dump waste in the public collection sites, while other sectors show lower

initiation on waste management. In many cities/towns, the construction sector causes tremendous problems, dumping demolition waste everywhere.

According to key informants, efforts to encourage development of environmentally sensitive sectors vary by region and town. Some mechanisms are:

- Encouraging sectors to be environmentally sensitive by raising awareness.
- Rewarding industries that are working in accordance with environmentally friendly principles.
- Involving sectors in a forum/coalition, especially for WASH.
- Certifying sectors and institutions to register for ISO certification.

### **Civil society participation in USWM**

The participation of civil societies in USWM was not well explained by most of the key informants in the towns/cities. Civil societies are believed to participate in mass campaigns; collaborate in greenery, sanitation, and capacity building; facilitate networking/coordination of the sector participants and, support micro-enterprise. In Bahir Dar, condominium resident associations (edirs) are involved in making compounds green.

Incentives to increase civil society involvement in environmental cleaning were: rewards for involvement in environmental cleaning like thank-yous and certificates; mass media publicity of efforts; participation in relevant meetings and campaigns; rewarding better performance; and holding sanitation competitions between localities.

According to the key informants, communities in most cities have a tremendous sense of ownership of the streets because of awareness created by UHEWs and local NGOs. In some cities, people are obliged to clean the 20-meter radius of their compound, which was not unheard of only a few years ago. Some respondents believed that this community willingness to participate in environmental cleanup might be a result of the government's 'one-to-five' program. This type of community structure has facilitated collection of solid waste using dustbins. In some areas, institutions, including Bahir Dar and Jimma universities, are participating in street cleaning and beautification activities in the city. In some cities private organizations take segments of road to keep clean.

In some towns/cities, NGO sustain the involvement of civil societies and community through finance, public awards, promotion, competitions, and public acknowledgement. Key findings of PPP are indicated in Box 10.

#### **Box 10: Key PPP findings**

- The current areas of public-private partnerships are not uniform throughout Ethiopia.
- There is no policy framework for private-sector engagement of private sector on USWM services or for public institution to support the private sector.
- There is no particular government institution responsible for promoting private-sector engagement in urban waste management.
- Few sectors are sensitive to waste reduction, re-use, and recycling.

## 5. CONCLUSION

This study showed that current sanitation and waste management in urban Ethiopia is poor, and fraught with many operational challenges. USWM policies, strategies, plans, duties, and responsibilities have definite gaps and overlaps at various levels. Some policies are old and need immediate updating. Waste management services in urban areas are poorly coordinated and difficult to regulate.

Urban community knowledge and attitudes on human and urban waste management, hand hygiene, safe handling of drinking water, prevention of diarrhea, and USWM service provision are poor. In contrast, willingness to pay for USWM services is high.

Practices related to USWM are unsatisfactory given peoples' right to live and prosper in a healthy environment. Moreover, handwashing practice is very low compared to desired national levels. Solid waste management practices are not on level to meet the growing needs of urbanization. Access to protected drinking water supplies was relatively better than other sanitation services, although household water treatment practices were less than optimal.

Solid waste generation rate composition analysis indicated the compostable fraction was high. This clearly demonstrates that cities/town are not promoting or centrally completing processes to reduce waste at its source, recycle waste, or recover energy from it. As cities expand and populations increase, problems with solid waste handling and management will increase.

The current levels of public-private partnerships are not uniform throughout Ethiopia. There is also poor engagement of informal and un-structured support to private sector in USWM. No clear government institution is supported by policies and guidelines to promote private sector engagement in urban waste management. Sectors that are responsible for waste reduction, re-use, and recycling have no strategic plans.

## 6. RECOMMENDATIONS

The following recommendations are in line with the provisions of the national One WASH Program developed in 2013. Generally, the focus should be on structural capacity building of sectors actors, providing clear accountability, and sustained monitoring and evaluation (M&E) functions.

### **Strengthen existing policies and strategies**

- Harmonize and implement national and regional policies, strategies, and guidelines on sanitation and waste management services to avoid duplication of efforts, overlap, and unclear roles among various stakeholders.
- Make national policies, strategies, and guidelines available at regional and local levels.
- Strengthen the links and support between national, regional, and local USWM sectors.
- Revise the Implementation Manual for Urban Health Extension Program to strengthen and intensify the USWM.
- Focus the coming HSDP strategic action plan on city/town sanitation and waste management.
- Translate the national policies, proclamations, and regulations into action at regional and local levels.
- Develop USWM strategy to promote intersectoral collaboration.
- Avoid overlaps in roles and responsibilities within USWM operational units and other government sectors. Formulate national and regional USWM implementation strategies and create city-wide platforms to monitor and evaluate performance.

### **Strengthen advocacy and promotion**

- Provide health/hygiene/sanitation promotion and advocacy to improve community knowledge and attitudes.
- Implement WASH forum at the national, regional, and local levels.
- Advocate and strengthen public private partnerships

### **Strengthen partnership**

- Strengthen partnerships between stakeholders engaged in sanitation and waste management services from need assessment to the final implementation of common objectives.
- Outsource and strengthen primary and secondary waste collection services to private microenterprises.
- Develop and implement legal framework to delineate USWM responsibilities and accountability for sectoral offices.
- Encourage informal waste collectors to organize as formal waste collectors.

## **Build capacity**

- Provide budget, skilled human resources, machinery, and other relevant facilities for sanitation and waste management services.
- Organize and facilitate credit services for private micro-enterprises participating in sanitation and waste management services.
- Design and implement motivation schemes like technical support, capacity building, and incentives for private microenterprises engaged in sanitation and waste management services.
- Strengthen UHEP to improve coverage and utilization of sanitation and waste management services.

## **Improve interventions and service delivery**

- Improve traditional pit latrines into a technology option that suits urban community needs. Such technology options include VIPLs and flushing facilities that can be promoted through education and demonstration.
- Improve design of local facilities to handle daily generation of grey water, using standard design and enforcement.
- Improve access to pit-emptying services based on urban needs assessment.
- Develop and implement sustainable technology of handwashing facilities in the urban environment. Such needs must satisfy the needs of households residing in slum areas.
- Increase access to municipal solid waste containers and lift trucks based on based on urban needs assessment.
- Municipalities should subsidize the services of USWM to assist the urban poor.
- Design and construct proper final solid and liquid waste disposal and treatment sites.

## **Strengthen research, monitoring, and evaluation**

- Strengthen the assessment of the outputs associated with national and regional policies.
- Develop and promote options for waste recycling and reuse.
- Generate national primary data on waste generation, composition, and characterization representing all categories of cities/towns.

# REFERENCES

1. Federal Ministry of Health. Health Sector Strategic Plan-III (HSDP-III: 2005/6-2009/10.
2. Federal Democratic Republic of Ethiopia, Ministry of Health. Health Sector Development program IV, 2010/11-2014/15. Nov 2010.
3. Van Rooijen D, G T. Urban sanitation and wastewater treatment in Addis Ababa in the Awash Basin, Ethiopia. Water, sanitation and hygiene:sustainable development and multisectoral approaches: 34th WEDC International Conference; Addis Ababa, Ethiopia 2009.
4. Central statistical Agency. Ethiopia Demographic and Health Survey 2014 ADDIS ABABA ETHIOPIA 2014.
5. Central Statistical Agency. Ethiopian Welfare Monitoring Survey 2011 Summary report. April 2012.
6. Federal Ministry of Health Ethiopia. Health and Health related indicators, 2003 EFY (2010/2011).
7. WHO, UNICEF. Progress on sanitation and drinking water, Joint Monitoring Program 2013 update. . 2013.
8. Federal Democratic Republic of Ethiopia, Ministry of Water and Energy. Part IV Urban Sanitation Universal Access Plan (USANUP), Addis Ababa. Dec 2011.
9. Democratic Republic of Ethiopia, Ministry of Health. Part II, final National Hygiene & Sanitation Strategic Action Plan for Rural, Peri-Urban & Informal Settlements in Ethiopia: 2011 – 2015, Addis Ababa, Ethiopia Main Document. 200.
10. Addis Ababa City Sanitation BaPDA. Current Status of Solid Waste Management in Addis Ababa. Unpublished material. Addis Ababa Health Office. 2010.
11. Solomon Cheru. Assessment of municipal solid waste management service in Dessie town. Addis Ababa: Addis Ababa University; June 2011.
12. Gebrie Kassa. Management of Domestic Solid Waste in Bahirdar Town: Operational Analysis and Assessment of Constraints that affect Solid Waste Management, Addis Ababa, Ethiopia. 2009.
13. Fesseha Hailu. Liquid waste management: The case of Bahir Dar, Ethiopia. Ethiop. J. Health Dev. 2012;26(1):49-53.
14. Federal Democratic republic of Ethiopia, Ministry of Water and Energy. Urban sanitation universal access plan, Part IV, Addis Ababa. Dec 2011.
15. Aklilu Amiga. Households' willingness to pay for improved solid waste management: the case of Addis Ababa: Addis Ababa University; 2002.
16. WHO, UNICEF. Meeting the MDG drinking water and sanitation: the urban and rural challenges of the decade. 2006.
17. Federal Democratic Republic of Ethiopia, Ministry of Health. Formative research on handwashing final report, PJ Sky draft report. Sept 2010.
18. Federal Democratic Republic of Ethiopia, Ministry of Health. National Hygiene & Sanitation Strategic Action Plan for Rural, Peri-Urban & Informal Settlements 2011 – 2015.
19. Federal democratic Republic of Ethiopia. Growth and Transformation Plan: 2010/11-2014/15, Volume I main text.

20. Abera Kumie, Ahmed Ali. An overview of Environmental Health Status in Ethiopia, with particular emphasis to its organization, and drinking water and sanitation: a literature survey. *Ethiopian J Health Dev.* 2005;19(2):89-103.
21. Central Statistical Agency Addis Ababa Ethiopia, ICF International Calverton M, USA,. Ethiopia Demographic and Health Survey 2011. March 2012.
22. Federal Democratic Republic of Ethiopia, Ministry of Health. Planning and Programming department, health and health related indicator reports, 2012/2013.
23. UNICEF, 2008. Progress on drinking water and sanitation. Available from: [http://www.wssinfo.org/fileadmin/user\\_upload/resources/1251794333-JMP\\_08\\_en.pdf](http://www.wssinfo.org/fileadmin/user_upload/resources/1251794333-JMP_08_en.pdf).
24. Mengistie B, N Baraki, 2010,• Community based assessment on household management of waste and hygiene practices in Kersa Woreda , Eastern Ethiopia, *Ethiopian Journal of Health Development, Kersa Woreda, Eastern Ethiopia.*
25. Progress on sanitation and drinking-water - 2014 update. WHO and Unicef. Available from: <http://www.wssinfo.org/definitions-methods/method/>.
26. Teka G-E. Human waste disposal - Ethiopia: a practical approach to environmental health. Addis Ababa, united printers Pvt.Ltd.Co, 1984. (DCH: RA 565 Gab 1984).
27. Halder AK, Tronchet C, Akhter S, Bhuiya A, Johnston R, Luby SP. Observed hand cleanliness and other measures of handwashing behavior in rural Bangladesh. *BMC Public Health.* 2010;10:545.
28. Biran A, Schmidt WP, Wright R, Jones T, Seshadri M, Isaac P, et al. The effect of a soap promotion and hygiene education campaign on handwashing behaviour in rural India: a cluster randomised trial. *Tropical medicine & international health : TM & IH.* 2009;14(10):1303-14. Epub 2009/08/28.
29. Manun'Ebo M, Cousens S, Haggerty P, Kalengaie M, Ashworth A, Kirkwood B. Measuring hygiene practices: a comparison of questionnaires with direct observations in rural Zaire. *Tropical medicine & international health : TM & IH.* 1997;2(11):1015-21.
30. Abiot Abera Aydamo, Akhila S. Nair , Zuberi, M.I Household solid waste generation rate and physical composition analysis: Case of Hosa'ina city, SNNPRS, Ethiopia. *J. Recent Trends Biosci.,* 2(1): 22-28, 2012.
31. UNESCAP, 2011. A Guidebook on Public Private Partnership in Infrastructure. Economic and Social Commission for Asia and the Pacific.
32. Bossman E. Asare and Mark K. Frimpong, Public-private partnerships and urban sanitation: Do expectations meet realities in Madina-Ghana, *Journal of African Studies and Development,* 2013, Vol. 5(5), pp. 113-124.
33. World Bank Report. 2011. Accessed 20, August 20, 2014.
34. The Federal Democratic Republic of Ethiopia. ONE WASH NATIONAL PROGRAM. Program Operational Manual (POM). for the Consolidated WASH Account's. Final September 2014.

# ANNEXES

## Annex I. Study research questions

Detailed study questions	
<p><b>Objective I</b> (Assess the sanitation and waste management service profile of the SEUHP targeted cities/towns and identify the key issues/challenges, current needs and good practices)</p>	<ol style="list-style-type: none"> <li>1. What are the current urban sanitation situation and the main challenges in USWM relevant to the SEUHP targeted cities/towns?</li> <li>2. What are the aspects of sanitation and waste management services that the towns/cities administrations are responsible for? Does it encompass               <ul style="list-style-type: none"> <li>▪ solid waste storage and collection</li> <li>▪ solid waste transfer and transport</li> <li>▪ availing communal solid waste collection containers and road side dust bins, solid waste disposal, and resource recovery</li> <li>▪ financial management; administrative activities such as routing, scheduling, and record keeping</li> <li>▪ staff management and development, and strategic waste management planning, pit latrine and septic tank emptying</li> <li>▪ solid and liquid waste disposal site management</li> <li>▪ street sweeping and keeping the sanitary condition of drainages and open places</li> <li>▪ available in the town</li> <li>▪ promotion proper liquid waste (grey water) management</li> <li>▪ provision of public and or communal latrines</li> <li>▪ mobilizing the community for USWM to keep the town/sub city clean</li> <li>▪ monitoring the quality of latrine available in the town,</li> <li>▪ monitoring the quality of latrines, etc.</li> </ul> </li> <li>3. To what extent are the cities/towns administrations able to carry out their responsibilities? What are the good practices<sup>3</sup> in discharging their responsibilities? What are the challenges/gaps?</li> <li>4. What is the current latrine coverage on the study towns/cites disaggregated with basic latrines, improved latrines, with handwashing facility near the latrines?</li> <li>5. What are the organizational/institutional setup in SEUHP targeted town/city for USWM service provision and regulatory works? How functional are these structures?</li> <li>6. How is domestic/household waste managed? What are the common practices among cities and what is the cost for solid and liquid waste collection, transportation, and disposal?</li> <li>7. How is the cost effectiveness and sustainability of waste management services? What is the extent of cost recovery of waste management</li> </ol>

	<p>services?</p> <p>8. How is the equity in the targeted cities/towns on waste management services? Is there special emphasis to slums and proportion of population living in slum areas?</p> <p>9. What are the mechanisms to ensure the health and safety of waste management workers; street sweepers, solid waste collectors, pit emptying service providers, waste disposal site workers, etc.?</p> <p>10. What are the best practices/progress (coverage) in USWM as perceived by the government? What the best sanitation and waste management service delivery models are, as understood by government?</p> <p>11. Is there public assistance or community participation in sanitation and waste management? Which institutions are involved and how are their services perceived?</p> <p>12. What is the public's level of cooperation regarding construct and use proper sanitation facilities, proper storage of household wastes, waste separation, placement of household containers and discipline in the use of public collection points, and source reduction?</p>
<p><b>Objective 2</b> (review and an analysis of USWM policies, strategies, plans, duties, and responsibilities)</p>	<p>1. Who are the leading national stakeholders in USWM and who are the leading stakeholders at the regional level?</p> <p>2. Which national documents outline USWM policies and strategies? Which policies, strategies, and plans do regional and city/town level authorities use as a guidance to USWM?</p> <p>3. Are national policies known and available at the regional and town/city level? Do regional and city/town authorities periodically assess the implementation of these national level policies at city and town level? Which national policies have proven helpful, which ones have not? What are the gaps in these national policies and strategies? Which are the relevant government institutions responsible for USWM policies and strategies, and what are their respective tasks and responsibilities in this?</p> <p>4. Which regional and/or city/town level policies/strategies and plans guide the USWM of individual towns and cities? Which policies/strategies and plans have proven helpful, which ones have not? What are the gaps in policies/strategies and plans? Which departments are involved in the implementation of sanitation and waste management plans? Are there any overlaps or gaps/areas that are not covered?</p> <p>5. What is extent of implementation of USWM related activities/services by UHE-ps? How well have the UHE-ps taken this as one of their duties and responsibilities? How is their performance measured in relation to this? What are the major challenges/gaps and lessons as learnt by UHE-ps while implementing their duties and responsibilities related with urban sanitation and waste management? What are the existing experience on integration, harmonization, alignment, and partnership with other sector actors that have role on USWM?</p>

	<p>6. Are national and regional policies known and available at city/town level? Are national policies implemented at city/town level? What are the principles of USWM that national policies adhere to?</p> <p>7. Is there any systematic review/assessment process to measure the outputs associated with national and regional policies to which implementation is assessed?</p> <p>8. Does the role of the regional governments entail in providing policy guidance, technical support, and funding for management of urban sanitation and waste to cities/towns? What are the supportive means of the regional and national authorities? What kind of regional and national level support do cities/towns receive with regards to USWM?</p>
<p><b>Objective 3</b> (current sanitation and waste management knowledge, practices, and perspectives among urban communities)</p>	<p>1. What are the knowledge, common practices and perspectives on access to latrines, solid and liquid waste management and hygiene among urban communities? What are their attitudes towards their practices? Do they understand the effect of their practices?</p> <p>2. What influences/drives these practices; affordability and willingness to pay for latrine construction, solid and liquid waste collection and disposal and/or gender and/or age and/or awareness and/or poverty and/or education level and/or other socio-demographic characteristics?</p> <p>3. What are the practices among urban communities on urban sanitation, waste management and hygiene? How do these practices differ and what socio-economic characteristics account for this? What is their understanding of the risks of poor urban sanitation, waste management and hygiene?</p> <p>4. What are the mechanisms to encourage good practices and positively influence attitudes to improve access for improved latrines facilities, hygiene and better waste management? What motivates individuals/households of different socioeconomic groups to reduce and reuse/recycle their wastes?</p> <p>5. What are urban community attitudes toward urban sanitation, solid and liquid waste management services rendered and towards the government institutions engaged in this line of work? Is it valued and what are the benefits? What would urban communities like to change about this service?</p> <p>6. In general, what are the main challenges in USWM as perceived by urban communities? How would they rate inadequate waste management among other urban environmental problems?</p>
<p><b>Objective 4</b> (analyze solid waste generation rate and composition at the household level)</p>	<p>1. What is the average rate of solid waste generation from households?</p> <p>2. What are the composition/characteristics of solid waste generated at the household level?</p> <p>3. What is the average amount of solid waste collected daily, transported and disposed?</p> <p>4. What is the average amount of grey water generated and composition?</p> <p>5. Are there segments of the population engaged in informal collection</p>

	reusing/recycling as a principal means of income? Are there any social groups that are consistently left out of the municipal solid waste service (for example, groups living in slum areas, or urban periphery)?
<p><b>Objective 5</b> (assess the existing practices and opportunities for private sector involvement in waste management and urban sanitation)</p>	<ol style="list-style-type: none"> <li>1. What are the current areas of public-private partnerships supported by the government? Can public private partnership be extended to areas of urban waste management?</li> <li>2. Does the national and/or regional USWM strategy appreciate promotion of public private partnership (PPP) and any alternative waste management technologies/approaches? If so are there identified approaches stipulated on how to promote PPP and have these approaches been effective?</li> <li>3. What are the different forms of the private sector engagement in waste management in urban areas? What drives/influences their involvement in the effort to address issues of urban waste management?</li> <li>4. What is the current level of engagement of the formal and informal private sector in waste management and urban sanitation?</li> <li>5. What are the challenges/constraints for greater and better involvement of the private sector to support the effort of addressing issues of urban waste management?</li> <li>6. What are the enabling conditions for the private sector to be engaged in the effort to manage waste in urban areas?</li> <li>7. Which government institution is responsible to promote engagement of the private sector in urban waste management? What policies and guidelines exist which would help this institution to better discharge the duties of creating enabling environment for greater engagement of the private sector in urban waste management?</li> <li>8. Which sectors of the economy tend to be sensitive to waste reduction, re-use, recycling, etc.? How do the formal and informal enterprises within the tourism, transport, construction, and other sectors collaborate for improved waste management? How could they be encouraged to develop greater environmental sensitivity?</li> <li>9. How does civil society participate in USWM? What set of incentives would further enhance civil society involvement in environmental cleaning? Do communities take ownership of streets, or other segments of their communities? What roles do NGOs play in this regard?</li> </ol>

## Annex II. Study tools

Addis Continental Institute of Public Health  
Addis Ababa, Ethiopia

### Survey questionnaire

Study group: **Urban Community- Mothers in HH**

Situational Analysis of Urban Sanitation and Waste Management: The Political, Structural, Socio-Economic, Institutional, Organizational, Environmental, Behavioral, Cultural and Socio-demographic Dimensions in Ethiopia

#### A. Consent form

Information for study participants

#### Greeting

Good morning/afternoon, and thank you for giving your time for this interview. My name is \_\_\_\_\_ . We are here on the behalf of FMOH, JSI/SEUHP, and ACIPH. The main purpose of this study is to review and analyze urban sanitation and waste management: The Structural, Socio-Economic, Cultural and Political/Institutional Dimensions at the national, regional and local levels in Ethiopia. We wish to find out ways by which we can improve USWM situations in the country. Whatever information you would provide will be kept confidential. We will not record your name on the questionnaire. As part of the study, you may be requested to give provide some relevant documents for the study. You have full right to withdraw from this study at any time without a need to mention the reason why you wanted to withdraw. We value your input to make this study a successful one. If you have questions about the research please contact Dr. Abera Kumie, at the ACIPH, at +251-0911-882912; or Sr Haregewoin Cherinet, who is chair of research ethics committee of ACIPH at +251-0911214408), or Professor Yeamane Berhane who is the advisor of the project at +251-0911-219785/+251-118963494. At this time, do you want to ask me anything about the purpose or content of this interview?  
Do I have your permission to continue?

1. If yes, continue to the next page
2. If no, skip to the next participant

- Name of data collector \_\_\_\_\_ Signature: \_\_\_\_\_
- Name of supervisor \_\_\_\_\_ Signature: \_\_\_\_\_
- Date of Interview: \_\_\_\_\_

**QRE ID:** \_\_\_\_\_

## Part I. General information

No	Questions	Code	Remark
101	Date of interview (dd/mm/yyyy)	/_____/_____/_____/	
102	Region	Name _____ Code No. /_____/	
103	City/town	Name _____ Code No. /_____/	
XX	Name of kebele	Name _____ Code No. /_____/	
104	Type of kebele (check one)	1. Slum 2. Non-slum 3. Mixed	
105	House no.	/_____/	

Part II. Demographics No.	Questions	Code	Remark
201	Age (write in completed years)	/_____/ years	
202	Educational status (circle only one)	1. Can't read or write 2. Read only 3. Read and write 4. Primary (1-8 grade) 5. Secondary (9-12 grade) 6. Technical or vocational 7. Higher education	
203	Religion (circle only one)	1. Christian 2. Muslim 3. Others (specify)-----	
204	Marital status (circle only one)	1. Single 2. Married 3. Widowed 4. Divorced	If 2-6, go to 206
205	If married, what is your husband's educational status? (circle only one)	1. Can't read or write 2. Read only 3. Read and write 4. Primary (1-8 grade) 5. Secondary (9-12 grade) 6. Technical or vocational 7. Higher education	
206	Does your household have one or more of the following		Yes

	items? (observe and circle all that applies, multiple response is possible)		No	
		• Watch/clock	1 2	
		• Radio	1 2	
		• Television	1 2	
		• Mobile telephone	1 2	
		• No mobile telephone (landline)	1 2	
		• Refrigerator		
		• Table	1 2	
		• Chair	1 2	
		• A bed with cotton/sponge/ spring mattress	1 2	
		• Electric mitad	1 2	
		• Kerosene lamp/pressure lamp	1 2	
		• Wall construed with concrete block/brick	1 2	
		• Roof constructed with corrugated iron sheet	1 2	
207	Employment status (Circle only one, current employment)	1. Unemployed 2. Employed 3. Self-employed 4. Retired 5. Other (specify) .....		
208	Housing ownership (circle only one)	1. Owned 2. Rented		
209	How many people usually live in this household (write in number)	1. Male /-----/ 2. Female /-----/		
210	Number of under-five children in the household (write in number)	1. Male /-----/ 2. Female /-----/ 3. No child		

211	Type of the household (circle only one)	1. Detached house (villa) 2. Semi-detached house 3. Apartment/condos 4. Other (specify) -----	
212	What the wall made of your house? (determine by direct observation if possible) (circle one, If more than one material is used, chose the material that covers the largest area)	1. Concrete/brick 2. Fibrous cement/block 3. Galvanized sheet 4. Wood with mud 5. Palm/bamboo/thatch 6. Stone with mud/cement 7. Salvaged material 8. No walls 9. Others (specify) -----	
213	What kind of roof does your house have? (determine by direct observation if possible) (Circle one, if more than one material is used, chose the material that covers the largest area)	1. Concrete 2. Fibrous cement/block 3. Galvanized sheet 4. Tiles 5. Palm/bamboo/thatch 6. Plastic sheet 7. Salvaged material 8. No roof 9. Others (specify) -----	

### Part III. Knowledge of households on sanitation and waste management

S.N	Questions	Code	Skip
301	What are the components of health extension packages related to environmental health? (DO NOT read options, circle all that apply)	1. I do not know 2. Excreta disposal 3. Solid and liquid waste disposal 4. Water supply and safety measures 5. Food hygiene and safety measures 6. Healthy home environment 7. Personal hygiene 8. Rodent control 9. Health education and communication 10. Other (specify)-----)	

302	What major diseases transmitted due to using unimproved latrines (DO NOT read options, circle all that apply)	<ol style="list-style-type: none"> <li>1. None</li> <li>2. Skin diseases</li> <li>3. Eye problems</li> <li>4. Diarrhea</li> <li>5. Typhoid</li> <li>6. Scabies</li> <li>7. Cholera</li> <li>8. Intestinal parasites</li> <li>9. Other (specify)-----)</li> </ol>	
303	What can you do to prevent diseases due to unimproved latrines? (DO NOT read options, circle all that apply)	<ol style="list-style-type: none"> <li>1. Keeping the latrine clean</li> <li>2. Utilize the latrine properly</li> <li>3. Construct the latrine with appropriate material</li> <li>4. Prevent flies from breeding</li> <li>5. Other (specify)-----</li> </ol>	
304	What are the major diseases transmitted due open defecation? (DO NOT read options, circle all that apply)	<ol style="list-style-type: none"> <li>1. None</li> <li>2. Skin diseases</li> <li>3. Eye problems</li> <li>4. Diarrhea</li> <li>5. Typhoid</li> <li>6. Scabies</li> <li>7. Cholera</li> <li>8. Intestinal parasites</li> <li>9. Other (specify)-----</li> </ol>	
305	What can you do to prevent diseases due to open defecation? (DO NOT read options, circle all that apply)	<ol style="list-style-type: none"> <li>1. Defecate in a latrine/use a latrine</li> <li>2. Avoid open defecation</li> <li>3. Wash hands with soap after defecation</li> <li>4. Use communal latrine</li> <li>5. Use public latrine</li> <li>6. Use private latrine</li> <li>7. Other (specify)-----</li> </ol>	
306	What are the parts of ventilated improved pit latrine which you think are very important in terms of disease prevention?	<ol style="list-style-type: none"> <li>1. The slab</li> <li>2. The shelter</li> <li>3. The mound</li> <li>4. The roof</li> <li>5. The vent</li> <li>6. Other (specify)-----</li> </ol>	
307	What type of latrine do you know about? (DO NOT read options, circle all that apply)	<ol style="list-style-type: none"> <li>1. Flush/pour flush</li> <li>2. Ventilated improved pit latrine (VIPL)</li> <li>3. Traditional pit latrine with slab</li> <li>4. Composting toilet</li> <li>5. Other (specify)-----</li> </ol>	
308	Where/how do you learn about these latrines?	<ol style="list-style-type: none"> <li>1. Community meeting</li> <li>2. Health workers</li> </ol>	

	(DO NOT read options, circle all that apply)	<ul style="list-style-type: none"> <li>3. Neighbors</li> <li>4. Relatives</li> <li>5. School</li> <li>6. Radio</li> <li>7. Poster/picture</li> <li>8. Billboard advertisement</li> <li>9. Television advertisement</li> <li>10. NGO/agency worker</li> <li>11. Government representative</li> <li>12. Other (specify)-----</li> </ul>	
309	What kind of latrine would you most prefer for your household? (DO NOT read options, circle all that apply)	<ul style="list-style-type: none"> <li>1. Flush/pour flush</li> <li>2. Dry pit latrine</li> <li>3. Other (specify)-----</li> </ul>	
310	What particular feature do you like most about your preferred latrine? (DO NOT read options, check all that apply)	<ul style="list-style-type: none"> <li>1. Looks good/comfortable</li> <li>2. No smell</li> <li>3. No flies</li> <li>4. Don't see feces</li> <li>5. Easy to clean</li> <li>6. Less expensive</li> <li>7. Other (specify)-----</li> </ul>	
311	What are the disadvantages of owning a latrine? (DO NOT read options, check all that apply)	<ul style="list-style-type: none"> <li>1. No advantages</li> <li>2. Smell bad</li> <li>3. Attracts flies</li> <li>4. Cost to maintain</li> <li>5. Work to maintain</li> <li>6. Other people come to use it</li> <li>7. Affects ground waste quality</li> <li>8. Overflows</li> <li>9. Other (specify)-----</li> </ul>	
312	What are the advantages of owning a latrine? (DO NOT read options; check all that apply)	<ul style="list-style-type: none"> <li>1. Improved hygiene/health/cleanliness</li> <li>2. More privacy</li> <li>3. More comfortable</li> <li>4. Convenience</li> <li>5. Guest can use it</li> <li>6. No smell</li> <li>7. No advantage</li> <li>8. Other (specify)-----</li> </ul>	
313	What is the importance of onsite sorting and reduction of solid waste?  (DO NOT read options; check	<ul style="list-style-type: none"> <li>1. Improved hygiene</li> <li>2. Improved health</li> <li>3. Improved safety</li> <li>4. Has economic benefit</li> <li>5. No importance</li> </ul>	

	all that apply)	6. Other (specify)-----	
314	What are the major problems happening in your areas because of the poor solid waste management situation? (DO NOT read options; circle all that apply)	1. No problem 2. Bad smell 3. Clogging of canals 4. Makes the town dirty 5. Cause fly menace 6. Cause mosquito menace 7. Causes stray dog menace 8. Pollute water sources 9. Not good for visual comfort 10. Other (specify)-----	
315	Why do you wash your hands with soap? (DO NOT read options; check all that apply)	1. To remove dirt/make clean 2. Personal appearance 3. To make them smell good 4. To prevent disease 5. To remove microbes/bacteria 6. Other (specify)-----	
316	State the list of diseases for not washing hands	_____	
317	When do you usually wash your hands with soap? (DO NOT read options; check all that apply)	1. After defecation 2. After contact with child's stool 3. Before preparing food 4. Before eating 5. After eating 6. Before feeding a child 7. Before handling water for storage 8. After sleep getting up 9. Other (specify) _____	
318	Where do you usually wash your hands with soap? (circle only one which is very often)	1. At the water source 2. In the latrine 3. Near the latrine (outside the latrine) 4. In the kitchen area 5. Other (specify)-----	
319	What do you do in your household to prevent children from getting diarrhea? (DO NOT read options; check all that apply)	1. Pray to spirits/ancestors 2. Cook food properly/eat soon after cooking 3. Be careful about what kind of food I usually feed to my children 4. Boil drinking water 5. Wash vegetables with clean water 6. Make formula with clean water 7. Wash hands with soap after defecation 8. Wash hands with soap before preparing/eating food 9. Wash hands with soap after cleaning a child's	

		buttock 10. Clean cooking and eating utensils 11. Other (specify) _____	
320	What hygiene/health advice have you heard before? (DO NOT read options; check all that apply)	1. None 2. Use a latrine 3. Drink safe water 4. Store water safely 5. Wash hands 6. Wash hands with soap 7. Good food hygiene 8. Waste water/stagnant water management 9. Safe disposal of babies' feces 10. Other (specify)-----	<b>If I, go to 322</b>
321	From which sources have you heard hygiene advice in the past year? (DO NOT read options; check all that apply)	1. Community meeting 2. Health professionals 3. Neighbors 4. Relatives 5. School 6. Radio 7. Poster/picture 8. Billboard advertisement 9. Television advertisement 10. NGO/agency worker 11. Government representative 12. Other (specify)-----	
322	Why do you treat your water before drinking it? (DO NOT read options; check all that apply)	1. Contaminated with dirt 2. Contaminated with feces/human/animal waste 3. Contaminated with germs, bacteria, viruses 4. Good for health/appearance 5. Animals use the water 6. Smells bad 7. Looks bad 8. Insects in it 9. So I don't get sick 10. Other (specify)-----	
323	Do you think that diarrhea is a	1. Yes	

	serious problem in your community? (circle only one)	2. No 3. Don't know	
324	How is diarrhea spread? (DO NOT read options; check all that apply)	1. Dirty water 2. Contaminated food 3. Eating too much 4. Eating with dirty/unwashed hands 5. When flies land on food 6. Dirty clothes 7. Dirty nose 8. Dirty and long fingernails 9. Playing in the sunshine 10. Eating unwashed fruits 11. Eating hot/bitter fruits 12. Air 13. Other (specify)-----	
325	How can prevent yourself or family members from getting diarrhea? (DO NOT read options; check all that apply)	1. Outside our control 2. Protect environment 3. Protect food 4. Balanced diet 5. Prevent germs 6. Keeping hygiene 7. Proper washing vegetables 8. Mothers' milk 9. Eating raw food 10. Other (specify)-----	
326	What do you do if a child gets diarrhea? (DO NOT read options; check all that apply)	1. Nothing 2. Consult health facility 3. Consult health professionals 4. ORS 5. Consult peer 6. Keep home 7. Traditional healer 8. Other (specify)-----	
327	What is the treatment for diarrhea? (DO NOT read options; check all that apply)	1. Homemade ORS 2. Medical ORS 3. Medicine 4. Fluids 5. Starve 6. Other (specify)-----	

**Part IV. Attitude of households on sanitation and waste management (circle only one response)**

No.	Question	Not at all	A little	Moderately	Mostly	Completely
401	Do you worry about access to latrine?	1	2	3	4	5
402	Are you satisfied with your current defecation place?	1	2	3	4	5
403	Are you satisfied with latrine utilization in your neighborhood?	1	2	3	4	5
404	Do you feel bad when someone urinates in the open field?	1	2	3	4	5
405	Do you feel bad when someone and defecates in the open field?	1	2	3	4	5
406	Do you worry about access to solid waste primary and/or secondary collection service?	1	2	3	4	5
407	Do you worry about access to liquid waste management service?	1	2	3	4	5
408	Do you think your neighbors dispose waste properly?	1	2	3	4	5
409	Are you satisfied with municipal solid waste containers availability in your neighborhood?	1	2	3	4	5
410	Are you satisfied with municipal solid waste containers utilization in your neighborhood?	1	2	3	4	5
411	Do you feel bad when someone disposes waste in the open field?	1	2	3	4	5
412	How satisfied are you with your current solid waste disposal place?	1	2	3	4	5
413	How satisfied are you with liquid waste disposal using open ditch?	1	2	3	4	5
414	Are you satisfied with general cleanness of your living neighborhood?	1	2	3	4	5
415	Do you feel bad when someone looks unhygienic?	1	2	3	4	5
416	Do you value the benefits of proper waste management?	1	2	3	4	5
417	Are you willing to pay for a latrine service?	1	2	3	4	5
418	Are you willing to pay for solid waste collection and disposal service?	1	2	3	4	5
419	Are you willing to pay for liquid waste collection and disposal service?	1	2	3	4	5

420	Do you think that waste has a value?	1	2	3	4	5
421	How important is spending money for a good latrine to your family's health?	1	2	3	4	5
422	How important is spending money for solid waste collection to your family's health?	1	2	3	4	5
423	How satisfied are you with your drinking water quality?	1	2	3	4	5
424	How satisfied are you with your drinking water quantity?	1	2	3	4	5
425	How important to you is treating water for drinking?	1	2	3	4	5
426	Do you believe that urban health extension professionals are important for your family's health?	1	2	3	4	5
427	Do you believe that private solid waste collectors association contributed for proper waste management?	1	2	3	4	5
428	Do you think that pit emptying service providers are important for your latrine proper management?	1	2	3	4	5

## Part V. Practice of households on waste management

No.	Questions	Code	Skip
501	Does the household own latrine?	1. Yes 2. No	<b>If no, go to 526</b>
502	What kind of latrine facility do members of your household usually use? (Observe and check the response)	1. Flush/pour flush to septic tank/pit latrine/sewer line 2. Pit latrine with cemented slab 3. Ventilated improved pit latrine 4. Composting toilet 5. Pit latrine without cemented slab/open pit 6. Bucket 7. Open space 8. Others (specify) -----	<b>If 2-8, go to 504</b>
503	If response is 1, do you get enough water to flush your latrine in dry season?	1. Yes 2. No	
504	If it is a pit latrine, what is the distance from the water source you	Well water presence: 1) Yes 2) No	

	drink?	If yes: /-----/meter	
505	What is the number of latrine/toilet facility in the house?	/-----/	
506	Is the latrine functional now? (Circle one that applies)	1. Yes 2. No	<b>If yes go to 508</b>
507	If the latrine is not functional, why not?	1. I can't afford to maintain 2. Others use it, so I don't care 3. I have no time 4. No material to maintain 5. Other (specify) _____	
508	What kind of arrangement is the latrine? (observe and indicate the arrangement)	1. Private latrine/inside the living house 2. Private latrine/outside the living house 3. Shared with other households /communal 4. Shared with the public 5. Other (specify) _____	<b>If 1 or 2, go to 510</b>
509	If the latrine is in a compound, the distance from home	_____ meters	
510	Does your household properly utilize the latrine? (Do not ask, observe presence of feces around the house and functioning of the latrine)	1. Yes 2. No	
511	Who uses the latrine in the house? (circle all that apply)	1. Adults- men 2. Adults-women 3. Under-five children 4. Anybody in the neighborhood 5. Anybody in the household 6. Other (specify) _____	
512	Is your latrine connected to municipal sewerage system?	1. Yes 2. No	<b>If yes go to 514</b>
513	If not connected with the sewerage, how did you manage when the latrine is full?	1. Use empathizing service 2. Let it drain open field 3. Connect to a septic tank 4. Connect to a seepage pit 5. Drain to my yard and use as a compost 6. Do nothing 7. Others (specify)-----	
514	In your household, how are babies' faces usually disposed of? (Circle only one that is very often)	1. No baby 2. Put into latrine using popo 3. Put into drain/ditch 4. Thrown in garbage 5. Buried 6. Left open	

		7. Other (specify) _____	
515	Does your latrine have handwashing facilities available in/by latrine facility? (observe functionality)	1. Yes/functional 2. Yes/not functional 3. No	<b>If no go to 520</b>
516	What is the type of available handwashing facility?	1. Standard handwashing basin with running water 2. Jug and water recipient set 3. Bottled water container 4. Container made of pot 5. Other (specify) _____	
517	Is there soap in the handwashing facility? (Observe and check the response)	1. Yes 2. No	<b>If no go to 519</b>
518	Is the handwashing facility with washing soap/ash in a designated place after defecation? (observe and check the response)	1. Yes 2. No	
519	If no, why?	1. Soap is expensive 2. Not important 3. Prefer ash 4. No water 5. Other (specify) _____	
520	If no handwashing facility in the latrine, why?	1. Soap is expensive 2. Not important 3. Prefer ash 4. No water 5. Other (specify) _____	
521	Have you ever emptied your pit latrine? (circle one that applies)	1. Yes 2. No	<b>If no go to 525</b>
522	If yes, how much did you pay for the service? (indicate amount of money the respondent pay at once)	/ _____ / Birr	
523	Who provided you the service? (circle only one that is very often)	1. Municipality 2. Private organization 3. Daily laborers 4. Other (specify) _____	
524	If yes, how is the modality payment? (circle only one that is very often)	1. In cash 2. In credit 3. Other (specify) _____	

525	If you have not ever emptied the latrine, why?	<ol style="list-style-type: none"> <li>1. Can't afford</li> <li>2. No service provider</li> <li>3. Full with no time</li> <li>4. Not important</li> <li>5. Other (specify) _____</li> </ol>	
526	If you did not have latrine to use, where do you go to defecate? (Don't read options, check one that applies)	<ol style="list-style-type: none"> <li>1. Public latrine</li> <li>2. Neighbor's latrine</li> <li>3. Relative's latrine</li> <li>4. Open field</li> <li>5. Other (specify) _____</li> </ol>	
527	What is your reason for not having a latrine?	<ol style="list-style-type: none"> <li>1. No place to construct</li> <li>2. I can't afford to construct</li> <li>3. No permission to construct</li> <li>4. Other (specify) _____</li> </ol>	
528	The type of solid waste generated in the household (multiple answer possible)	<ol style="list-style-type: none"> <li>1. Ash</li> <li>2. Sweeping (Yebet Tiragia)</li> <li>3. Paper</li> <li>4. Food left over</li> <li>5. Metal</li> <li>6. Plastic/bottles</li> <li>7. Other (specify) _____</li> </ol>	
529	How often do you get rid of the solid waste? (circle only one that is very often)	<ol style="list-style-type: none"> <li>1. Every day</li> <li>2. Once a week</li> <li>3. Twice a week</li> <li>4. Other (specify) _____ -</li> </ol>	
530	Where is the solid waste collected outside the house? (circle only one that is very often)	<ol style="list-style-type: none"> <li>1. Dumping outside</li> <li>2. Door to door</li> <li>3. Block collection</li> <li>4. Backyard</li> <li>5. Municipal container</li> <li>6. Other (specify) _____</li> </ol>	
531	What type material do you use to store solid waste in the house? (circle only one that is very often)	<ol style="list-style-type: none"> <li>1. Metal bin</li> <li>2. Plastic bin</li> <li>3. Plastic bag</li> <li>4. Sack/madaberia</li> <li>5. Other (specify) _____</li> </ol>	
532	How do you dispose solid waste to outside household? (observe and check one)	<ol style="list-style-type: none"> <li>1. Metal bin</li> <li>2. Plastic bin</li> <li>3. Plastic bag</li> <li>4. Sack/ madaberia</li> <li>5. Others (specify) _____</li> </ol>	

533	Where do you dispose your solid waste to outside the house? (circle only one that is very often)	1. Open dump outside the yard 2. Open spaces such as open ditch, river, road side 3. Municipal container 4. Open burning 5. Use as compost 6. Other (specify) _____ -	<b>If 3-6, go to 535</b>
534	If you dispose open field, why? (check the main reason)	1. I can't afford 2. No municipal service 3. No private service 4. Other (specify) _____	
535	Do micro-enterprises provide you with sold waste collection service?	1. Yes 2. No	<b>If no go to 537</b>
536	If yes, how much do you pay per month?	In cash: /_____/Birr Water bill: _____ Birr	
537	If no, what is your reason?	1. There is no service 2. I don't like the service 3. No one is responsible 4. Other (specify) -----	
538	Where do you dispose liquid waste other than human excreta?	1. Open ditch/open field 2. Latrine 3. Open ditch 4. Soak away pit 5. Sewer line 6. Other (specify) _____	<b>If 2-6, go to 540</b>
539	If you dispose your liquid waste in open field, why do you do so? (check the main reason)	1. There is no service 2. I do not like the service 3. No one is responsible 4. Other (specify) .....	
540	Do you participate in the sanitation campaign in your environment?	1. Yes 2. No	
541	If no, why don't you participate?	1. I don't have time 2. I don't like it 3. No one is responsible 4. Other (specify)-----	
542	Who is responsible for solid waste sweeping and storage in the household?	1. Husband/partner 2. Wife 3. House maid 4. Under five 5. Children 6. Other (specify) -----	
543	Do you reuse/recycle wastes in the house?	1. Yes 2. No	<b>If no go to 545</b>

544	If yes, specify the type of waste reuse/recycle?	-----	
545	What did you use for handwashing yesterday after latrine?	1. Soap 2. Ash 3. Nothing 4. Other (specify) -----	
546	What is the usual/main source of drinking water for your household? (circle only that is very often)	1. Piped into dwelling 2. Piped to yard/plot 3. Public tap/standpipe 4. Protected well 5. Unprotected piped water 6. Rain water 7. Bottled water 8. Unprotected well water 9. Unprotected spring 10. Tanker truck/cart with small tank 11. River 12. Other (specify) -----	
547	Where is that water source located?	1. In own dwelling 2. In own yard/plot 3. Outside home/dwelling 4. Elsewhere: _____	
548	Do you treat water in any way to make it safer to drink?	1. Yes 2. No	<b>If no go to 551</b>
549	How often do you treat your water before drinking?	1. Always 2. Usually 3. Sometimes	
550	How do you treat your water? (Read all options, check all that apply)	1. Boil 2. Wuha agar, Beshangari 3. Strain it through a cloth 4. Ceramic waste filter 5. Sand filter 6. Solar disinfection 7. Let it stand and settle 8. Other (specify _____)	
551	Who usually collects water for the household? (DO NOT read options. Check one only)	1. Woman 2. Man 3. Children 4. Other (specify)-----	
552	How do you store drinking water? (observe the storage)	1. Clay pot 2. Jerry-can 3. Barrel 4. Pail	

		5. Plastic bottle 6. Other (specify)-----	
553	Is the latrine has together shower facility	1. Yes 2. No	
554	Has anyone in the family been ill with diarrhea in the last two weeks?	1. Yes 2. No	
555	If yes, how many?	1. Male _____ 2. Female _____	

**Thank you!**

# Addis Continental Institute of Public Health

## Addis Ababa, Ethiopia

### FGD for urban community

Situational Analysis of Urban Sanitation and Waste Management: *The Political, Structural, Socio-Economic, Institutional, Organizational, Environmental, Behavioral, Cultural, Socio-demographic Dimensions” in Ethiopia*

#### A. Consent form

Information to study participants

#### Greeting

Good morning/afternoon, and thank you for giving your time for this interview. My name is \_\_\_\_\_ . We are here on the behalf of FMOH, JSI/SEUHP, and ACIPH. The main purpose of this study is to review and analyze urban sanitation and waste management situation: *The Structural, Socio-Economic, Institutional, Organizational, Environmental, Behavioral, Cultural, Socio-demographic Dimensions” in Ethiopia* at the national, regional and local levels in Ethiopia. We wish to find out ways by which we can improve USWM situations in the country. Whatever information you would provide will be kept confidential. We will not record your name on the questionnaire. As part of the study, you may be requested to give provide some relevant documents for the study. You have full right to withdraw from this study at any time without a need to mention the reason why you wanted to withdraw. We value your input to make this study a successful one. If you have questions about the research please contact Dr. Abera Kumie at the ACIPH, at +251-0911-882912; or Sr. Haregewoin Cherinet, who is chairperson of Research Ethics Committee of ACIPH at +251-0911214408) or Professor Yeamane Berhane, who is the advisor of the project at +251-0911-219785/+251-118963494. At this time , do you want to ask me anything about the purpose or content of this interview?

Do I have your permission to continue?

1. If yes, continue to the next page

2. If no, skip to the next participant

- Name of data collector \_\_\_\_\_ Signature: \_\_\_\_\_
- Name of supervisor \_\_\_\_\_ Signature: \_\_\_\_\_
- Date: \_\_\_\_\_

**Part I: General Information**

I01: Date of the interview: / \_\_\_\_ / \_\_\_\_ / \_\_\_\_ /

I02: Region: Name \_\_\_\_\_ code no \_\_\_\_\_

I03: City/town: Name \_\_\_\_\_ code no \_\_\_\_\_

I04: Category of the interview: **Household respondents (Imawura, 15-49 yrs age)****Part II: Socio-demographic characteristics respondents**

No	Questions	Response	Remark
I01	Number of the respondent (Indicate the number)	_____	
I02	Age of the respondent (record each age)	_____ years	
I03	Profession (record each profession)	_____	

**Part III: Focus group interview guide on the sanitation and waste management service on KAP of the SEUHP targeted cities/towns and identifying the key issues/challenges, current needs and good practices**

No	Question	Remark
I.1	Would you tell us about the sanitation and waste management situation in your town/city? <b>Probe: Solid waste management, liquid waste management, latrine construction, utilization and management, etc..)</b>	
I.2	<b>How are you involved in the urban health extension program</b> <b>Probe:</b> <ul style="list-style-type: none"> <li>• What is Urban Health Extension Program?</li> <li>• What do you know about urban health extension professionals?</li> <li>• How are urban health extension packages implemented in your community?</li> <li>• How are HHs selected?</li> <li>• What sanitation packages do you know?</li> <li>• What are they?</li> <li>• How and when trained?</li> <li>• Who provides Urban Health Extension packages?</li> <li>• Frequency of visit by urban health extension professional?</li> <li>• Do you like the service?</li> </ul>	
I.3	<b>What are the related problems/challenges in urban health extension program particularly sanitation and hygiene packages that need improvement?</b>	

2.1	<p><b>What do you understand by solid waste management?</b></p> <p><b>Probe:</b></p> <ul style="list-style-type: none"> <li>• What are the categories of solid waste in a HH?</li> <li>• How is a solid waste stored in the house on what container?</li> <li>• How is solid waste collected: micro-enterprise, frequency of collection, using a municipal container?</li> <li>• How locally disposed (burning, burial)?</li> <li>• Do you use municipal refuse containers?</li> <li>• Do you like how is the municipal container handled?</li> <li>• Why some people dispose waste on open field? Why does the community allow the individuals to do so?</li> <li>• Do you recycle/ reuse any of these? Why?</li> <li>• Are these harmful or not? If yes Why?</li> <li>• Have you ever used a refuse truck? Do you like it? Why?</li> <li>• Do you pay for a solid waste service? How much per service or month? How paid?</li> <li>• How much are you willing to pay?</li> <li>• Do you think poor solid management has health related risks? Why? What type of health related risks? How do you manage?</li> </ul>	
2.2	<p><b>What related problems/challenges in solid waste management service need improvement?</b></p>	
3.1	<p><b>Do you have a latrine?</b></p> <p><b>Probe:</b></p> <ul style="list-style-type: none"> <li>• What is the benefit of having a latrine?</li> <li>• The type of latrine having (pit latrine, flush type)</li> <li>• Quality of latrines mostly used in your kebele?</li> <li>• Safety and hygienic condition of the latrines available your kebele</li> <li>• Which type of latrine do you prefer? Why</li> <li>• Who uses a latrine among HH members (infants, children)</li> <li>• How are feces of children disposed?</li> <li>• Are feces of children harmful?</li> <li>• Why do some people in the community use open defecation?</li> <li>• What do you do when you see someone defecating on the open place?</li> <li>• What do you do when the latrine is full?</li> </ul>	
3.2	<p><b>What are the related problems/challenges in latrine use you want to see improved?</b></p>	
4.1	<p><b>Liquid waste (other than human) handling at household level</b></p> <p><b>Probe:</b></p> <ul style="list-style-type: none"> <li>• What are the categories of liquid waste produced?</li> <li>• How liquid waste is stored? (baldi, sahn, bermil)</li> </ul>	

	<ul style="list-style-type: none"> <li>• Where is a HH liquid waste disposed? (soak-away pit, latrine, ditch)</li> <li>• Are you happy if someone disposes liquid waste on the street? Why?</li> <li>• Is a liquid waste harmful? Why?</li> <li>• What do you do if the latrine is full?</li> <li>• Have you ever used emptying trucks?</li> <li>• Is it a private or public service?</li> <li>• Who provides emptying pit latrine?</li> <li>• How much did you pay for the emptying? Is it cheap or not? Did you pay in cash or not?</li> <li>• How much are you willing to pay?</li> </ul>	
<b>4.2</b>	<b>What related problems/challenges in liquid waste management need improvement?</b>	
<b>5.1</b>	<b>Household water treatment and safe storage</b> <ul style="list-style-type: none"> <li>• Where do you get water for drinking purpose?</li> <li>• Do you think that source is safe? Why?</li> <li>• What do you do if it is not safe?</li> <li>• Have you ever used WuhaAgar/aqua tab?</li> <li>• Where did you get then the WuhaAgar?</li> <li>• Is WuhaAgar/aqua tab cheap or not?</li> <li>• How is the reliability of the water? For how long is the water usually interrupted?</li> <li>• How do you store water in a HH? Why?</li> <li>• Does it have a cover?</li> <li>• Which is better for storage: containers like Baldi or Jerri-can? Why?</li> </ul>	
<b>5.2</b>	<b>What related problems/challenges in safe water storage and HH level water treatment do you want improved?</b>	
<b>6.1</b>	<b>Hygiene promotion</b> <b>Probe:</b> <ul style="list-style-type: none"> <li>• Where you involved in hygiene promotion?</li> <li>• What were these promotions on? (sanitation campaign, meetings, house-to-house education)</li> <li>• Did you apply the information on HH sanitation? What did you do?</li> <li>• Who provided the hygiene promotion?</li> <li>• Why was the promotion provided?</li> <li>• What were topics covered?</li> <li>• Did you like the hygiene promotion given by the urban health extension professional? Why?</li> </ul>	
<b>6.2</b>	<b>What related problems/challenges in hygiene promotion you want improved?</b>	
<b>7</b>	<b>Any opinions/suggestion you want to discuss before ending the session?</b>	

**Thank and end the session.**

## Focus Group Discussion Guide

Focus group discussion on the sanitation and waste management service profile, current needs, good practices, challenges and recommendations with solid and liquid waste collectors, supervisors and private primary waste collectors

### A. Consent form

Information to study participants

#### Greetings

Good morning/afternoon, and thank you for giving your time for this interview. My name is \_\_\_\_\_ . We are here on behalf of FMOH, JSI/SEUHP and Addis Continental Institute of Public Health. The main purpose of this study is to review and analyze urban sanitation and waste management situation: The Political, Structural, Socio-Economic, Institutional, Organizational, Environmental, Behavioral, Cultural, Socio-demographic Dimension at the national, regional and local levels in Ethiopia. We wish to find out ways by which we can improve urban sanitation and waste management situations in the country. Whatever information you would provide will be kept confidential. We will not record your name on the questionnaire. As part of the study, you may be requested to provide some relevant documents for the study. You have full right to withdraw from this study at any time without a need to mention the reason why you wanted to withdraw. We value your input to make this study a successful one. If you have questions about the research please contact Dr. Abera Kumie at the ACIPH, at +251-0911-882912; or Birhanu Genet at JSI-0911672383 or Sr. Haregewoin Cherinet, chairperson of Research Ethics Committee of ACIPH at +251-0911214408 or Professor Yeamane Berhane, who is the advisor of the project at +251-0911-219785/+251-118963494.

At this time , do you want to ask me anything about the purpose or content of this interview?

- Name of facilitator \_\_\_\_\_ Signature: \_\_\_\_\_
- Name of supervisor \_\_\_\_\_ Signature: \_\_\_\_\_

## General information

Facilitator's name \_\_\_\_\_

Focus group code number \_\_\_\_\_

Total number of discussants \_\_\_\_\_

## Points for discussion

No	Questions	Remark
1	What are the current areas of public-private partnerships supported by the town/city on USWM? What are the different forms of the private sector engagement in waste management In your town/city? What drives/influences your involvement in the effort to address issues of urban waste management?	
2	<p>What is the current status of USWM services you provide?</p> <ul style="list-style-type: none"> <li>• Number of association (SME) currently working on solid waste primary collection</li> <li>• Total number of workers involved in the service (male, female)</li> <li>• Number of private organizations working on pit emptying services</li> <li>• Payment modalities for the services</li> <li>• Average amount of solid waste and liquid waste collected daily</li> <li>• Financial and technical sustainability of the services you provide</li> <li>• Your relation with sector offices such as town/city health office, UHE-ps, etc.</li> </ul>	
3	Does the national and/or regional USWM strategy appreciate promotion of public private partnership (PPP) and any alternative waste Management technologies/approaches? If so are there identified approaches stipulated to promote PPP and have these approaches been effective?	
4	What is the extent of implementation of USWM services related to your duties and responsibilities? What is your role and responsibility in urban sanitation and waste management? Who are the stakeholders working with you? What is their role and responsibility? How do you coordinate? How frequent do you collect wastes from households/customer to skips or disposal sites?	
5	To what extent you are able to conduct your duties and responsibilities?	
6	What are the good practices in discharging your responsibilities?	
7	Is there community assistance or cooperation regarding use proper sanitation facilities, proper storage of household wastes, waste separation, placement of household containers and discipline in the use of public collection points, and source reduction?	
8	How is the equity of USWM services in the city/town? Is there special emphasis to slums and proportion of population living in slum areas?	
9	What are the mechanisms that used to ensure your health and safety?	
	What is the payment modality that you are using to collect the service payments? What is the rate of payment? Is it affordable by most of the community members? Is the community willing to pay? Is there community groups exempted from the payment? If yes who are	

	they?	
10	<p>What type of supports you are getting:</p> <ul style="list-style-type: none"> <li>• What are the enabling conditions for the private sector to be engaged in the effort to manage waste in your town/city?</li> <li>• Which government institution is responsible to promote and support the engagement of the private Sector in urban waste management?</li> <li>• What policies and guidelines exist which would help this institution to better discharge the duties of creating enabling environment for greater engagement of the private sector in urban waste management?</li> <li>• What sectors of the economy tend to be sensitive to waste reduction, re-use, recycling, etc.? How do the formal and informal enterprises within the tourism, transport, construction, and other sectors behave in collaborating for improved waste management? How could they be encouraged to develop greater environmental sensitivity?</li> <li>• How does civil society participate in USWM? What set of incentives would further enhance civil society involvement in environmental cleaning? Do communities take ownership of streets, or other segments of their community? What roles do NGOs play in this regard?</li> </ul>	
11	What are the major challenges/gaps/overlaps in implementing your duties and responsibilities related with USWM?	
12	What recommendations do you suggest to improve these challenges/gaps/overlaps?	

Addis Continental Institute of Public Health  
Addis Ababa, Ethiopia

Focus Group Discussion Guide

Focus group discussion on the sanitation and waste management service profile, current needs good practices, challenges and recommendations with Urban Health Extension professional and Supervisor

**A. Consent form**

Information to study participants

**Greetings**

Good morning/afternoon, and thank you for giving your time for this interview. My name is \_\_\_\_\_ . We are here on behalf of FMOH, JSI/SEUHP and Addis Continental Institute of Public Health. The main purpose of this study is to review and analyze urban sanitation and waste management situation: The political, Structural, Socio-Economic, Institutional, Organizational, Environmental, Behavioral, Cultural, Socio-demographic Dimension at the national, regional and local levels in Ethiopia. We wish to find out ways by which we can improve USWM situations in the country. Whatever information you would provide will be kept confidential. We will not record your name on the questionnaire. As part of the study, you may be requested to provide some relevant documents for the study. You have full right to withdraw from this study at any time without a need to mention the reason why you wanted to withdraw. We value your input to make this study a successful one. If you have questions about the research please contact Dr. Abera Kumie, at the ACIPH, at +251-0911-882912; or Birhanu Genet at JSI-0911672383 or Sr. Haregewoin Cherinet, who is chairperson of Research Ethics Committee of ACIPH at +251-0911214408 or Professor Yeamane Berhane who is the advisor of the project at +251-0911-219785/+251-118963494.

At this time , do you want to ask me anything about the purpose or content of this interview?

- Name of facilitator \_\_\_\_\_ Signature: \_\_\_\_\_
- Name of supervisor \_\_\_\_\_ Signature: \_\_\_\_\_

## General information

Facilitator's name \_\_\_\_\_

Focus group code number \_\_\_\_\_

Total number of discussants \_\_\_\_\_

## Points for discussion

No	Questions	Remark
1	<p>Would you tell us about the most common health problems in your working area?  <b>Probe: health problems, who is mostly affected, etc.</b></p>	
2	<p>How do you explain water and sanitation problem in this kebele/woreda and specific to kebele you are working?  <b>Probe: water-borne diseases, sanitation facility problems, personal hygiene, etc.</b></p>	
3	<p>How do you explain USWM practices in your community (human waste, liquid waste, solid waste, handwashing, and household water treatment and safe storage)?  <b>Probe:</b></p> <ul style="list-style-type: none"> <li>• Latrine construction, utilization and quality of latrine available</li> <li>• Solid onsite handling, collection, transportation and disposal,</li> <li>• Liquid waste management and disposal,</li> <li>• Handwashing facility availability and utilization,</li> <li>• Household water treatment and safe storage, etc.</li> <li>• Major stakeholders working with you? What are their role and responsibility? Referral systems for USWM service providers?</li> </ul>	
4	<p>What is the extent of implementation of USWM part of the health extension services related to your duties and responsible?</p>	
5	<p>To what extent you are able to carry out your duties and responsibilities in relation with urban sanitation and waste management within urban health extension program?            (Probe: best practices, lessons, community responses on the services you are providing, major challenge, etc.)</p>	
6	<p>What are the existing experience on integration, harmonization, alignment, and partnership with other sector actors that have role on USWM?</p>	
7	<p>Are national and regional policies known and available at city/town level?</p>	
8	<p>Are national policies implemented at city/town level?</p>	
9	<p>Is there public assistance or community participation in sanitation and waste management? Which institutions are involved and how are their services perceived?</p>	
10	<p>What are the major challenges/gaps/overlaps in implementing your duties and responsibilities related with USWM?</p>	
11	<p>What recommendations do you suggest to improve these challenges/gaps/overlaps?</p>	

Addis Continental Institute of Public Health  
Addis Ababa, Ethiopia  
Semi Structured Guideline for in-depth interview

Assessing Urban Sanitation and Waste Management Situation: The Political, Structural, Socio-Economic, Institutional, Organizational, Environmental, Behavioral, Cultural, Socio-demographic Dimension at the national, regional and local levels in Ethiopia

**A. Consent form**

Information to study participants

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Do I have your permission to continue?

1. If yes, continue to the next page

2. If no, skip to the next participant

- Name of data collector \_\_\_\_\_ Signature: \_\_\_\_\_
- Name of supervisor \_\_\_\_\_ Signature: \_\_\_\_\_
- Date: \_\_\_\_\_

**Part I: General information**

I01: Date of the interview :/\_\_\_\_/\_\_\_\_/\_\_\_\_/

I02: Region: Name \_\_\_\_\_ code no \_\_\_\_\_

I03: City/town: Name \_\_\_\_\_ code no \_\_\_\_\_

I04: Category of the interview : **City/town health office**

**Part II: Socio-demographic characteristics respondents.**

NO	Questions	Response	Remark
I01	Sex of the respondent	Male.....1 Female.....2	
I02	Age of the respondent	_____ years	
I03	Profession	_____	
I04	Responsibility	_____	
I05	Year of service	_____ in year	

**Part III: In-depth interview on the sanitation and waste management service profile, current needs , good practices, challenges and recommendations**

No	Questions	Remark
1	Would you tell us about the most common health problems in the town you are working? <b>[Probe: health problems by sex (male, female), age group (children, youth, adult), ten top diseases of the town , etc.]</b>	
2	How do you explain USWM practices in the community (human waste, liquid waste, solid waste, handwashing and household water treatment and safe storage)? <b>Probe:</b> <ul style="list-style-type: none"> <li>• Latrine construction, utilization, and latrine quality</li> <li>• Solid onsite handling, collection, transportation and disposal</li> <li>• Liquid waste management and disposal</li> <li>• Handwashing facility availability and utilization</li> <li>• Household water treatment and safe storage, etc.</li> </ul>	
3	<b>What current sanitation and waste management services that the health office is responsible for?</b> <ol style="list-style-type: none"> <li>a. Do they encompass           <ul style="list-style-type: none"> <li>• Service provision and regulatory works</li> <li>• Giving support for capacity building for town small solid waste management</li> </ul> </li> </ol>	

	<p>enterprises?</p> <ul style="list-style-type: none"> <li>• Support in the implementation of projects related to urban sanitation and waste management with municipality?</li> </ul>	
4	<p>To what extent is the health office able to carry out its responsibilities on USWM within urban health extension program?</p> <p><b>Probe:</b></p> <ul style="list-style-type: none"> <li>• What are the good practices in discharging responsibilities?</li> <li>• What is extent of implementation of USWM related activities/services by UHE-ps and the regulatory agency</li> <li>• How well have the UHE-ps and regulatory team are taken this as one of their duties and responsibilities?</li> <li>• How their performance is measured in relation to this?</li> </ul>	
5	<p>What is the current latrine coverage in the town disaggregated with basic latrines, improved latrines, with handwashing facility near the latrines, household water treatment and safe storage, handwashing practices, etc.?</p>	
6	<p>What are the organizational setups in health office for USWM service provision and regulatory works?</p> <ul style="list-style-type: none"> <li>• Structure, resources, financial, material</li> <li>• How functional are these structures?</li> <li>• Any vacant post?</li> <li>• How frequent they recruited?</li> </ul>	
7	<p>What are the best practices in USWM as perceived by the government?</p> <p>a. What the best sanitation and waste management service delivery models are, as understood by government?</p>	
8	<p>Is there public assistance or community participation in sanitation and waste management?</p> <p>a. Which institutions are involved and how are their services perceived?</p>	
9	<p>What is the public's level of cooperation regarding</p> <ul style="list-style-type: none"> <li>• construct and use proper sanitation facilities,</li> <li>• proper storage of household wastes,</li> <li>• waste separation,</li> <li>• placement of household containers and discipline in the use of public collection points, and</li> <li>• waste recycling and reuse?(waste reduction)</li> </ul>	
10	<p>What are major stakeholders working on USWM? What is the existing experience on integration, harmonization, alignment, and partnership with other sector actors that have role on USWM? Existence of urban WASH forum? Involvement of your organization in the urban WASH forum/coordination unit</p>	
11	<p>Which policies, strategies, and plans do city/town level authorities use as implement activities to urban sanitation and waste management?</p>	
12	<p>What are national and regional policies known and available at city/town level?</p>	
13	<p>Which national policies are implemented at city/town level?</p>	

14	Are there any overlaps of USWM that are not covered?	
15	Do city/town authorities periodically assess the implementation of these national level policies at city and town level?	
16	What are the mechanisms/principles for the implementation of USWM that national policies adhere to?	
17	What kind of regional level support do cities/towns receive with regards to USWM? Can you list of them?	
18	What are the main challenges/ gaps/overlaps in USWM relevant to the city/town?	
19	What solutions or recommendations do you suggest to improve these challenges/gaps/overlaps?	

**Part IV: In-depth interview on the existing practices and opportunities for private sector involvement in waste management and urban sanitation**

No	Questions	Proves	Remark
1	<p>What are the current areas of public-private partnerships supported by the government?</p> <p>a. Can public private partnership be extended to areas of urban waste management?</p>		
2	<p>Does the national and/or regional USWM strategy appreciate promotion of public private partnership?</p> <p>a. Are there any alternative waste management technologies/approaches?</p> <p>b. If so are there identified approaches stipulated on how to promote PPP and have these approaches been effective?</p>		
3	<p>What are the different forms of the private sector engagement in waste management in urban areas?</p> <p>a. What drives/influences their involvement in the effort to address issues of urban waste management?</p>		
4	<p>What is the current level of engagement of the formal and informal private sector in waste management and urban sanitation?</p>		
5	<p>What are the challenges/constraints for greater and better involvement of the private sector to support the effort of addressing issues of urban waste management?</p>		
6	<p>What are the enabling conditions for the private sector to be engaged in the effort to manage waste in urban areas?</p>		
7	<p>Which government institution is responsible to promote engagement of the private sector in urban waste management?</p> <p>a. What policies and guidelines exist which would help this institution to better discharge the duties of creating enabling environment for greater engagement of the private sector in urban waste management?</p>		
8	<p>What sectors of the economy tend to be sensitive to waste reduction, re-use, recycling, etc.?</p> <p>a. How do the formal and informal enterprises within the tourism, transport, construction, and other sectors behave in collaborating for improved waste management?</p> <p>b. How could they be encouraged to develop greater environmental sensitivity?</p>		
9	<p>How does civil society participate in USWM? What set of incentives would further enhance civil society involvement in environmental cleaning? Do communities take ownership of streets, or other segments of their communities? What roles</p>		

	do NGOs play in this regard?		
10	What are your best practices regarding public-private partnership in waste management and urban sanitation?		
11	What are your bad practices regarding public-private partnership in waste management and urban sanitation?		

Addis Continental Institute of Public Health  
Addis Ababa, Ethiopia Semi Structured Guideline for in-depth interview

Assessing Urban Sanitation and Waste Management Situation: The Political, Structural, Socio-Economic, Institutional, Organizational, Environmental, Behavioral, Cultural, Socio-demographic Dimension at the national, regional and local levels in Ethiopia

**A. Consent form**

Information to study participants

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Do I have your permission to continue?

1. If yes, continue to the next page                      2. If no, skip to the next participant

- Name of data collector \_\_\_\_\_ Signature: \_\_\_\_\_
- Name of supervisor \_\_\_\_\_ Signature: \_\_\_\_\_
- Date: \_\_\_\_\_

**Part I: General information**

I01: Date of the interview :/\_\_\_\_/\_\_\_\_/\_\_\_\_/

I02: Region: \_\_\_\_\_ code no \_\_\_\_\_

I03: City/town: \_\_\_\_\_ code no \_\_\_\_\_

I04: Category of the interview: Town municipality

**Part II: Socio-demographic characteristics**

NO	Questions	Response	Remark
I01	Sex of the respondent	Male.....1 Female.....2	
I02	Age of the respondent	_____ years	
I03	Profession	_____	
I04	Responsibility	_____	
I05	Year of service	_____ in year	

**Part III: In-depth interview on the USWM service profile, current needs, good practices, challenges, and recommendations**

No	Questions	Remark
1	How do you explain current liquid waste management situation of the town/city you are working?	
2	How do you explain urban liquid waste management practices in the community (specifically on human waste and liquid waste collection, transport, treatment/disposal)?	
3	<p>What are the aspects of USWM services that town municipality/utility is responsible for?</p> <p>b. Do they encompass:</p> <ul style="list-style-type: none"> <li>▪ Construction and management of public latrines</li> <li>▪ Construction and management of sewerage system</li> <li>▪ Construction and management of wastewater treatment plant</li> <li>▪ Provision of pit emptying services</li> <li>▪ Construction and management sludge drying bed</li> <li>▪ Financial management, administrative activities such as routing, scheduling, and record keeping?</li> <li>▪ Staff management and development, and strategic waste management planning, pit latrine and septic tank emptying?</li> </ul>	

	<ul style="list-style-type: none"> <li>▪ Liquid waste disposal site management?</li> <li>▪ Construction and management of the sanitary conditions of drainages and open places availability towns?</li> <li>▪ Promotion of proper liquid waste management?</li> <li>▪ Provision of communal latrines?</li> <li>▪ Mobilizing the community for USWM to keep the town/city clean?</li> <li>▪ Monitoring and evaluation of the services and the quality of latrine available in the town?</li> </ul>	
4	<p>To what extent is the municipality able to carry out its responsibilities?</p> <p>a. What are the good practices in discharging responsibilities?</p>	
5	<p>What are the existing experience on integration, harmonization, alignment, and partnership with other sector actors that have role on USWM? Existence of urban WASH forum? How your organization is involved in the WASH forum? How do you work with urban health extension professions?</p>	
6	<p>What is the current latrine coverage in the study town/city disaggregated with basic latrines, improved latrines, with handwashing facility near the latrines?</p>	
7	<p>What are the organizational/institutional setups in terms of</p> <ul style="list-style-type: none"> <li>• Structure</li> <li>• Human resources</li> <li>• Financial</li> <li>• Material-extent of adequateness for USWM service provision and regulatory works?</li> </ul> <p>a. How functional are these structures?</p> <p>b. Any vacant post?</p> <p>a. How frequent they recruited?</p>	
8	<p>How is domestic/household waste managed?</p> <p>a. What are the common practices in the city town? (primary and secondary collection)</p> <p>b. What is the cost of liquid waste collection, transportation, and disposal?</p>	
9	<p>How is the cost effectiveness and sustainability of waste management services? (collection, transportation of, liquid waste emptying services)</p> <p>a. What is the extent of cost recovery of waste management services? (compare operational costs with generated revenue )</p>	
10	<p>How is the equity in the targeted cities/towns on waste management services?</p> <p>a. Is there special emphasis to slums and proportion of population living in slum areas?</p>	
11	<p>What are the mechanisms to ensure the health and safety of waste collectors, pit emptying service providers, waste disposal site workers, etc.?</p>	
12	<p>What are the best practices/progress (coverage) in USWM as perceived by the government?</p> <p>b. What the best sanitation and waste management service delivery models are,</p>	

	as understood by government?	
13	Is there public assistance or community participation in sanitation and waste management? a. Which institutions are involved and how are their services perceived?	
14	What is the public's level of cooperation regarding <ul style="list-style-type: none"> <li>• construction and proper use of sanitation facilities</li> <li>• proper storage of household waste</li> <li>• waste separation</li> <li>• placement of household containers and discipline in the use of public collection points</li> <li>• waste recycling and reuse (waste reduction )</li> </ul>	
15	Which policies, strategies, and plans do city/town level authorities use as implement activities to USWM?	
16	What are national and regional policies known and available at city/town level?	
17	Which national policies are implemented at city/town level?	
18	Are there any overlaps of USWM that are not covered?	
19	Do city/town authorities periodically assess the implementation of these national level policies at city and town level?	
20	What are the mechanisms/principles for the implementation of USWM that national policies adhere to?	
21	What are the main challenges/gaps/overlaps in USWM relevant to the city/town?	
22	What solutions or recommendations do you suggest to improve these challenges/gaps/overlaps?	

**Part IV: In-depth interview on the existing practices and opportunities for private sector involvement in USWM**

No	Questions	Remark
1	What are the current areas of public-private partnerships supported by the government? b. Can public private partnership be extended to areas of sanitation and waste management?	
2	Does the national and/or regional sanitation and waste management strategy appreciate promotion of public private partnership? a. Is there any alternative sanitation and waste management technologies/approaches? b. If so are there identified approaches stipulated on how to promote public-private partnerships and have these approaches been effective?	
3	What are the different forms of the private sector engagement in sanitation and waste management? a. What drives/influences their involvement in the effort to address issues of sanitation and waste management?	
4	What is the current level of engagement of the formal and informal private	

	sector in sanitation and waste management?	
5	What are the enabling conditions for the private sector to be engaged in the effort to manage sanitation and waste?	
6	Which government institution is responsible to promote engagement of the private sector in sanitation and waste management? a. What policies and guidelines exist which would help this institution to better discharge the duties of creating enabling environment for greater engagement of the private sector in sanitation and waste management?	
7	What sectors of the economy tend to be sensitive to waste reduction, re-use, recycling, etc.? a. How do the formal and informal enterprises within the tourism, transport, construction, and other sectors behave in collaborating for improved sanitation and waste management? b. How could they be encouraged to develop greater environmental sensitivity?	
8	How does civil society participate in sanitation and waste management? What set of incentives would further enhance civil society involvement in environmental cleaning? Do communities take ownership of streets, or other segments of their communities? What roles do NGOs play in this regard?	
9	What are your best practices regarding public-private partnership in sanitation and waste management?	
10	What are the challenges/gaps/overlaps for greater and better involvement of the private sector to support the effort of addressing issues of urban waste management?	
11	What are your bad practices regarding public-private partnership in waste management and urban sanitation?	
12	What solutions or recommend do you suggest to improve these challenges/gaps/overlaps?	

Addis Continental Institute of Public Health

Addis Ababa, Ethiopia

Semi-Structured Guideline for in-depth interview

Assessing Urban Sanitation and Waste Management Situation: The Political, Structural, Socio-Economic, Institutional, Organizational, Environmental, Behavioral, Cultural, Socio-demographic Dimension at the national, regional and local levels in Ethiopia

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- Name of supervisor \_\_\_\_\_ Signature: \_\_\_\_\_
- Date: \_\_\_\_\_

**Part I: General information**

I01: Date of the interview: / \_\_\_\_ / \_\_\_\_ / \_\_\_\_ /

I02: Region: \_\_\_\_\_ code no \_\_\_\_\_

I03: City/town: \_\_\_\_\_ code no \_\_\_\_\_

I04: Category of the interview: Town sanitation and beautification work process

**Part II: Socio-demographic characteristics respondents.**

NO	Questions	Response	Remark
I01	Sex of the respondent	Male.....1 Female.....2	
I02	Age of the respondent	_____ years	
I03	Profession	_____	
I04	Responsibility	_____	
I05	Year of service	_____ in year	

**Part III: In-depth interview on the sanitation and waste management service profile, current needs, good practices, challenges, and recommendations**

No	Questions	Remark
1	How do you explain the solid waste management situation of the town/city you are working?	
2	How do you explain the solid waste management practices in the community (onsite handling, sorting, reusing, recycling, composting and disposal?)	
3	<p>What are the current sanitation and waste management services that urban cleaning and beautification agency is responsible for? Do they encompass:</p> <ul style="list-style-type: none"> <li>▪ Solid waste storage and collection?</li> <li>▪ Solid waste transfer and transport?</li> <li>▪ Availing communal solid waste collection containers and road side dust bins, solid waste disposal, and resource recovery?</li> <li>▪ Financial management, administrative activities such as routing, scheduling, and record keeping?</li> <li>▪ Staff management and development, and strategic waste management planning?</li> <li>▪ Solid and liquid waste disposal site management?</li> <li>▪ Street sweeping and the sanitary conditions of drainages and open</li> </ul>	

	<p>places availability towns?</p> <ul style="list-style-type: none"> <li>▪ Promotion of proper liquid and solid waste management?</li> <li>▪ Provision of public and or communal latrines?</li> <li>▪ Mobilizing the community for USWM to keep the town/ city clean?</li> <li>▪ Monitoring and evaluation of the services</li> <li>▪ Organization, support, and follow up of small enterprise engaged in the collection and disposal of household waste</li> </ul>	
4	To what extent is the urban cleaning and beautification able to conduct its responsibilities? What are the good practices in discharging responsibilities?	
5	<p>What are the organizational/institutional setups for:</p> <ul style="list-style-type: none"> <li>• Structure</li> <li>• Human resources</li> <li>• Financial</li> <li>• Material – extent of adequateness for urban cleaning and beautification service provision and regulatory works?</li> </ul> <p style="margin-left: 40px;">c. How functional are these structures?</p> <p style="margin-left: 40px;">d. Any vacant post?</p> <p style="margin-left: 40px;">e. How frequent they recruited?</p>	
6	<p>What are the existing experience on integration, harmonization, alignment, and partnership with other sector actors that have role on USWM? Existence of WASH forum? Involvement/participation of your organization in the form? the experience of your organization in working with urban health extension professionals</p>	
7	<p>Is there public assistance or community participation in urban the urban cleaning and beautification?</p> <p style="margin-left: 40px;">a. Which institutions are involved and how are their services perceived?</p>	
8	<p>How is the equity in the urban cleaning and beautification services?</p> <p style="margin-left: 40px;">a. Is there special emphasis to slums and proportion of population living in slum areas?</p>	
9	What are the mechanisms to ensure the health and safety of urban cleaning and beautification workers?	
10	<p>What are the main challenges/gaps/overlap in urban cleaning and beautification services provision?</p> <ul style="list-style-type: none"> <li>a. poor coordination</li> <li>b. duplication of efforts</li> <li>c. overlapping of activities</li> <li>d. resources (finance, human, material, etc.)</li> <li>e. policy</li> </ul>	
11	Are national and regional policies known and available at city/town level?	

9	Are national policies implemented at city/town level?	
10	What are the main challenges/ gaps/overlaps in USWM relevant to the city/town?	
11	What solutions or recommend do you suggest to improve these challenges/gaps/overlaps?	

**Part IV: In-depth interview on the existing practices and opportunities for private sector involvement in waste management and urban sanitation**

No	Questions	Remark
1	What are the current areas of public-private partnerships supported by the government? Can public private partnership be extended to areas of urban cleaning and beautification services?	
2	Does the national and/or regional urban cleaning and beautification services strategy appreciate promotion of public private partnership? a. Is there any alternative urban cleaning and beautification technologies/approaches? b. If so are there identified approaches stipulated on how to promote PPP and have these approaches been effective?	
3	What are the different forms of the private sector engagement in urban cleaning and beautification in urban areas? a. What drives/influences their involvement in the effort to address issues of urban cleaning and beautification?	
4	What is the current level of engagement of the formal and informal private sector in urban cleaning and beautification?	
5	What are the enabling conditions for the private sector to be engaged in the effort to manage urban cleaning and beautification in urban areas?	
6	Which government institution is responsible to promote engagement of the private sector in urban cleaning and beautification? a. What policies and guidelines exist which would help this institution to better discharge the duties of creating enabling environment for greater engagement of the private sector in urban cleaning and beautification?	
7	What sectors of the economy tend to be sensitive to urban cleaning and beautification? a. How do the formal and informal enterprises within the tourism, transport, construction, and other sectors behave in collaborating for improved urban cleaning and beautification? b. How could they be encouraged to develop greater environmental sensitivity?	
8	How does civil society participate in urban cleaning and beautification? What set of incentives would further enhance civil society involvement in urban cleaning and beautification? Do communities take ownership of streets, or other segments of their communities? What roles do NGOs	

	play in this regard?	
9	What are your best practices regarding public-private partnership in urban cleaning and beautification?	
10	What are the challenges/gaps/overlaps for greater and better involvement of the private sector to support the effort of addressing issues of urban cleaning and beautification?	
11	What solutions or recommend do you suggest to improve these challenges/gaps/overlaps?	

Addis Continental Institute of Public Health

Addis Ababa, Ethiopia

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Assessing Urban Sanitation and Waste Management Situation: The Political, Structural, Socio-Economic, Institutional, Organizational, Environmental, Behavioral, Cultural, Socio-demographic Dimension at the national, regional and local levels in Ethiopia

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Do I have your permission to continue?

1. If yes, continue to the next page

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- Name of data collector \_\_\_\_\_ Signature: \_\_\_\_\_
- Name of supervisor \_\_\_\_\_ Signature: \_\_\_\_\_
- Date: \_\_\_\_\_

**Part I: General information**

I01: Date of the interview :/\_\_\_\_/\_\_\_\_/\_\_\_\_/

I02: Region: \_\_\_\_\_ code no \_\_\_\_\_

I03: City/town: \_\_\_\_\_ code no \_\_\_\_\_

I04: Category of the interview: Urban development and utility

**Part II: Socio-demographic characteristics respondents.**

No	Questions	Response	Remark
I01	Sex of the respondent	Male.....1 Female.....2	
I02	Age of the respondent	_____ years	
I03	Profession	_____	
I04	Responsibility	_____	
I05	Years of service	_____ in year	

**Part III: In-depth interview on the sanitation and waste management service profile, current needs, good practices and challenges**

No	Questions	Remark
1	How do you explain the solid and liquid waste management situation of the town/city you are working?	
2	How do you explain the solid and liquid waste management practices in the community (onsite handling, sorting, reusing, recycling, composting and disposal?)	
3	What current sanitation and waste management services are urban development, housing, and construction is responsible for?	
4	To what extent is urban development, housing and construction able to carry out its responsibilities? b. What are the good practices in discharging responsibilities?	
5	What are the organizational/institutional setups in terms of <ul style="list-style-type: none"> <li>• Structure</li> <li>• Human resources</li> </ul>	

	<ul style="list-style-type: none"> <li>• Financial</li> <li>• Material-extent of adequateness) for USWM service provision and regulatory works? <ul style="list-style-type: none"> <li>f. How functional are these structures?</li> <li>g. Any vacant post?</li> <li>b. How frequent they recruited?</li> </ul> </li> </ul>	
6	<p>How is the cost effectiveness and sustainability of sanitation and waste management services?</p> <p>a. What is the extent of cost recovery of waste management services?</p>	
7	<p>How is the equity in the targeted cities/towns on waste management services?</p> <p>a. Is there special emphasis to slums and proportion of population living in slum areas?</p>	
8	<p>Is there public assistance or community participation in sanitation and waste management?</p> <p>a. Which institutions are involved and how are their services perceived?</p>	
9	<p>What are the existing experience on integration, harmonization, alignment, and partnership with other sector actors that have role on USWM? Existence of urban WASH forum? Involvement of your organization in the forum? How do you work with urban health extension professionals?</p>	
10	<p>What is the public's level of cooperation regarding construct and use proper sanitation facilities, proper storage of household wastes, waste separation, placement of household containers and discipline in the use of public collection points, and source reduction?</p>	
11	<p>What are the main challenges in urban cleaning and beautification services provision?</p> <ul style="list-style-type: none"> <li>f. poor coordination</li> <li>g. duplication of efforts</li> <li>h. overlapping activities</li> </ul>	
12	<p>Which policies, strategies, and plans do city/town level authorities use as implement activities to USWM?</p>	
13	<p>What are national and regional policies known and available at city/town level?</p>	
14	<p>Which national policies are implemented at city/town level?</p>	
15	<p>Are there any overlaps of USWM that are not covered?</p>	
16	<p>Do city/town authorities periodically assess the implementation of these national level policies at city and town level?</p>	
17	<p>What are the mechanisms/principles for the implementation of USWM that national policies adhere to?</p>	
18	<p>What kind of regional level support do cities/towns receive with regards to urban sanitation and waste management? Can you list them?</p>	
19	<p>What are the main challenges/ gaps/overlaps in urban sanitation and waste management relevant to the city/town?</p>	

20	What solutions or recommend do you suggest to improve these challenges/gaps/overlaps?	
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**Part IV: In-depth interview on the existing practices and opportunities for private sector involvement in waste management and urban sanitation**

No	Questions	Remark
1	Is there any public-private partnership in your organization or the opportunities to start?	
2	If it exists, then what are the different forms of the private sector engagement in waste management in urban areas? a. What drives/influences their involvement in the effort to address issues of urban waste management?	
3	What is their service coverage?	
4	What is PPP institutional capacity in terms of finance and other technical issues?	
5	What are the challenges/constraints for greater and better involvement of the private sector to support the effort of addressing issues of urban waste management?	
6	What are the enabling conditions for the private sector to be engaged in the effort to manage waste in urban areas?	
7	Which government institution is responsible to promote engagement of the private sector in urban waste management? a. What policies and guidelines exist which would help this institution to better discharge the duties of creating enabling environment for greater engagement of the private sector in urban waste management?	
8	What sectors of the economy tend to be sensitive to waste reduction, re-use, recycling, etc.? a. How do the formal and informal enterprises within the tourism, transport, construction, and other sectors behave in collaborating for improved waste management? b. How could they be encouraged to develop greater environmental sensitivity?	
9	How does civil society participate in USWM? a. What set of incentives would further enhance civil society involvement in environmental cleaning? b. Do communities take ownership of streets, or other segments of their communities? c. What roles do NGOs play in this regard?	
10	What are your best practices regarding public-private partnership in sanitation and waste management?	
11	What are the challenges for greater and better involvement of the private sector to support the effort of addressing issues of USWM?	
12	What solutions or recommend do you suggest to improve these challenges/gaps/overlaps?	



Addis Continental Institute of Public Health

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- Name of data collector \_\_\_\_\_ Signature: \_\_\_\_\_
  - Name of supervisor \_\_\_\_\_ Signature: \_\_\_\_\_

**Part I: General information**

I01: Date of the interview: / \_\_\_\_ / \_\_\_\_ / \_\_\_\_ /

I02: Category of the interview: Federal Ministry of Environmental Protection and Forestry (FMOEPF)

**Part II: Demographic information**

NO	Questions	Response	Remark
I01	Sex of the respondent	Male.....1 Female.....2	
I02	Age of the respondent	_____ years	
I03	Profession	_____	
I04	Responsibility	_____	
I05	Years of service	_____ in year	

**Part III: In-depth interview on the sanitation and waste management service:** national policies, national and regional strategies, and town level plans as well as duties and responsibilities to identify strengths and gaps/overlaps in addressing the current needs and problems.

Question	Remark
<p><b>Organizational responsibility</b></p> <ul style="list-style-type: none"> <li>○ Is your organization has roles and responsibilities on USWM?</li> <li>○ What are the roles and responsibilities that your ministry had with regard to USWM?</li> <li>○ Is there any structure in your organization in the region, city/town level that has related for USWM? Can we see the organogram? What are the activities?</li> <li>○ Who is responsible to implement your organization’s roles and responsibilities at the region and town level? Existences of WASH forums? How is your organization involved in the forum?</li> <li>○ Who are the stakeholders for USWM? Can you explain the responsibility, overlap, coordination among them, regular meeting, planning together, sharing of information, etc.?</li> <li>○ How do you see the performance of each stakeholder in coordination and implementing USWM activities? Why?</li> <li>○ Do you feel that your organization undertaking activities of USWM well? How? If not why?</li> </ul>	

<p><b>Existing policies, regulations, strategies</b></p> <ul style="list-style-type: none"> <li>○ Does your organization have any policy, regulation, strategies, guidelines, related to USWM? Can you list them? Do you think all staffs are aware of the policies? How?</li> <li>○ Do the existed policies, regulation, strategies guidelines related to USWM appreciate the promotion of public private partnership (PPP) and any alternative waste management technologies/approaches?</li> <li>○ If so are there identified approaches stipulated on how to promote PPP and have these approaches been effective?</li> <li>○ Which government institution is responsible to promote engagement of the private sector in urban waste management? What guidelines exist which would help this institution to better discharge the duties of creating enabling environment?</li> <li>○ What are the different forms of the private sector engagement in waste management in urban areas? What drives/influences their involvement in the effort to address issues of urban waste management?</li> <li>○ What are the gaps in these national policies and strategies?</li> <li>○ What are the overlaps with other organizations' national policies and strategies?</li> <li>○ What do you suggest?</li> </ul>	
<p><b>Policy implementation planning</b></p> <ul style="list-style-type: none"> <li>○ How do you promote or advocate to implementers /staffs of the organizations for policies regulations, guidelines etc.?</li> <li>○ Does your organization involve in providing policy guidance, technical support, and funding for management of urban sanitation and waste to regions and cities/towns?</li> <li>○ What are the supportive means of the regional and national authorities?</li> <li>○ What kind of support do cities/towns receive from the national with regards to USWM? Can you list?</li> <li>○ How do you manage responsibility overlaps and gaps?</li> </ul>	
<p><b>Policy implementation</b></p> <ul style="list-style-type: none"> <li>○ Which policies/strategies and plans have proven helpful, which ones have not? Why? Why not?</li> <li>○ Which directorate is involved in the implementation of your policy provisions?</li> <li>○ What are the existing experience on integration, harmonization, alignment, and partnership with other sector actors that have role on USWM? How is the involvement of your organization in One WASH program?</li> <li>○ What are the principles of USWM that national policies adhere to?</li> <li>○ Are there any overlaps or gaps/areas that are not covered?</li> </ul>	
<p><b>Monitoring of policy and strategies</b></p> <ul style="list-style-type: none"> <li>○ Is there any systematic review/assessment process in place that measures the outputs associated with national and regional policies to which implementation is assessed?</li> <li>○ How do you monitor the progress of USWM? Can you give examples?</li> <li>○ How do you evaluate USWM?</li> <li>○ What are the challenges of the implementation of USWM?</li> <li>○ What are the solutions for the implementation of USWM?</li> </ul>	
<p><b>Policy implementation problems</b></p>	

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>○ What are the existing overlaps?</li><li>○ What are gaps?</li><li>○ What are the challenges?</li><li>○ What do you suggest?</li></ul> |  |
|--|--|

I would like to thank you for your time and I do appreciate all your opinion and comments.

Name of interviewer: \_\_\_\_\_

Addis Continental Institute of Public Health  
Addis Ababa, Ethiopia  
Semi Structured Guideline for in-depth interview

*Situational Analysis of Urban Sanitation and Waste Management: The Political, Structural, Socio-Economic, Institutional, Organizational, Environmental, Behavioral, Cultural, Socio-demographic Dimensions” in Ethiopia*

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- Name of data collector \_\_\_\_\_ Signature: \_\_\_\_\_
- Name of supervisor \_\_\_\_\_ Signature: \_\_\_\_\_

**Part I: General information**

I01: Date of the interview: /\_\_\_/\_\_\_/\_\_\_/

I04: Category of the interview: Federal Ministry of Health Ethiopia (FMOH)

**Part II: Socio-demographic characteristics respondents.**

NO	Questions	Response	Remark
I01	Sex of the respondent	Male.....1 Female.....2	
I02	Age of the respondent	_____ years	
I03	Profession	_____	
I04	Responsibility	_____	
I05	Years of service	_____ in year	

**Part III: In-depth interview on the sanitation and waste management service**

Question	Remark
<p><b>Organizational responsibility</b></p> <ul style="list-style-type: none"> <li>○ Is your organization has roles and responsibilities on USWM?</li> <li>○ What are the roles and responsibilities that your ministry had with regard to USWM?</li> <li>○ Is there any structure in your organization in the region and city/town level that has related for USWM? What are the activities?</li> <li>○ Who is responsible to implement your organization’s roles and responsibilities at the region and town level?</li> <li>○ Which departments/directorates/process owners are involved in the implementation of sanitation and waste management plans?</li> <li>○ Are there any overlaps or gaps/areas that are not covered?</li> <li>○ Who are the stakeholders for USWM? Responsibility, overlap, coordination among them, regular meeting, planning together, sharing of information, etc.?</li> <li>○ How do you see the performance of each stakeholder departments/directorates/process owners in coordination and implementing USWM activities? Why?</li> <li>○ Do you feel that your organization undertaking activities of USWM well? How?</li> </ul>	
<b>Existing policies, regulations, strategies</b>	

<ul style="list-style-type: none"> <li>○ Does your organization have any policy, regulation, strategies, guidelines, related to USWM? Can you list them? Do you think all staffs are aware of the policies? How?</li> <li>○ Which national documents outline USWM policies and strategies?</li> <li>○ Which policies/strategies and plans have proven helpful, which ones have not? Why? Why not?</li> <li>○ Do the existed policies, regulation, strategies guidelines related to USWM appreciate the promotion of public private partnership (PPP) and any alternative waste management technologies/approaches? If so are there identified approaches stipulated on how to promote PPP and have these approaches been effective? Which government institution is responsible to promote engagement of the private sector in urban waste management? What guidelines exist which would help this institution to better discharge the duties of creating enabling environment?</li> <li>○ What are the different forms of the private sector engagement in waste management in urban areas? What drives/influences their involvement in the effort to address issues of urban waste management?</li> <li>○ What are the gaps in policies/strategies and plans?</li> <li>○ What are the overlaps in policies/strategies and plans?</li> <li>○ What do you suggest?</li> </ul>	
<p><b>Policy implementation planning</b></p> <ul style="list-style-type: none"> <li>○ How do you communicate the policies to staff?</li> <li>○ Do you think all staffs are aware of the policies? How?</li> <li>○ Does your organization involve in providing policy guidance, technical support, and funding for management of urban sanitation and waste to cities/towns?</li> <li>○ What are the supportive means of the regional and national authorities?</li> <li>○ What kind of national level support are given to regions and cities/towns receive with regards to USWM?</li> <li>○ What kind of regional level support are given to cities/towns receive with regards to USWM?</li> <li>○ How do you manage responsibility overlaps?</li> <li>○ What are the challenges of the implementation of USWM?</li> <li>○ What are the solutions for the implementation of USWM?</li> </ul>	
<p><b>Policy implementation</b></p> <ul style="list-style-type: none"> <li>○ What is extent of implementation of USWM related activities/services by UHE-ps and the regulatory agency?</li> <li>○ How well have the UHE-ps and regulatory team are taken this</li> </ul>	

<p>as one of their duties and responsibilities?</p> <ul style="list-style-type: none"> <li>○ How their performance is measured in relation to this?</li> <li>○ What are the major challenges/gaps and lessons as learnt by UHE-ps while implementing their duties and responsibilities related with USWM?</li> <li>○ What are the existing experience on integration, harmonization, alignment, and partnership with other sector actors that have role on USWM?</li> <li>○ What are the principles of USWM that national policies adhere to?</li> </ul>	
<p><b>Monitoring of policy and strategies</b></p> <ul style="list-style-type: none"> <li>○ Is there any systematic review/assessment process in place that measures the outputs associated with national and regional policies to which implementation is assessed?</li> <li>○ How do you monitor the progress of USWM? Can you give examples?</li> <li>○ How do you evaluate USWM?</li> </ul>	
<p><b>Policy implementation problems</b></p> <ul style="list-style-type: none"> <li>○ What are the existing overlaps?</li> <li>○ What are gaps?</li> <li>○ What are the challenges?</li> <li>○ What do you suggest?</li> </ul>	

I would like to thank you for your time and I do appreciate all your opinion and comments.

Name of interviewer: \_\_\_\_\_

Addis Continental Institute of Public Health  
Addis Ababa, Ethiopia  
Semi-Structured Guidelines for in-depth interview

*Situational Analysis of Urban Sanitation and Waste Management: The Political, Structural, Socio-Economic, Institutional, Organizational, Environmental, Behavioral, Cultural, Socio-demographic Dimensions” in Ethiopia*

**A. Consent form**

Information to study participants

**Greetings**

Good morning/afternoon, and thank you for giving your time for this interview. My name is \_\_\_\_\_ . We are here on behalf of FMoH, JSI/ SEUHP, and Addis Continental Institute of Public Health. The main purpose of this study is to review and analyze urban sanitation and waste management: The Political Structural, Socio-Economic, Institutional, Organizational, Environmental, Behavioral, Cultural, Socio-demographic Dimensions” in Ethiopia. We wish to find out ways by which we can improve USWM situations in the country. Whatever information you would provide will be kept confidential. We record your name on the questionnaire. As part of the study, you may be requested some relevant documents for the study. You have full right to withdraw from this study at any time without a need to mention the reason why you wanted to withdraw. We value your input to make this study a successful one. If you have questions about the research please contact Dr. Abera Kumie at the ACIPH, at +251-0911-882912; or Birhanu Genet at JSI-0911672383 or Sr Haregewoin Cherinet, who is chair of research ethics committee of ACIPH at +251-0911214408 or Professor Yeamane Berhane, advisor of the project at +251-0911-219785/+251-118963494. At this time, do you want to ask me anything about the purpose or content of this interview?

Do I have your permission to continue?

1. If yes, continue to the next page \_\_\_\_\_ 2. If no, skip to the next participant
- Name of data collector \_\_\_\_\_ Signature: \_\_\_\_\_
  - Name of supervisor \_\_\_\_\_ Signature: \_\_\_\_\_

## Part I: General information

I01: Date of the interview: / \_\_\_\_ / \_\_\_\_ / \_\_\_\_ /

I02: Category of the interview: Ministry of Urban Development and Construction

## Part II: Socio-demographic characteristics

NO	Questions	Response	Remark
I01	Sex of the respondent	Male.....1 Female.....2	
I02	Age of the respondent	_____ years	
I03	Profession	_____	
I04	Responsibility	_____	
I05	Years of service	_____ in year	

**Part III: In-depth interview on the sanitation and waste management service:** national policies, national and regional strategies, and town level plans as well as duties and responsibilities to identify strengths and gaps/overlaps in addressing the current needs and problems.

Question	Remark
<p><b>Organizational responsibility</b></p> <ul style="list-style-type: none"> <li>○ Does your organization have roles and responsibilities on USWM?</li> <li>○ What are the roles and responsibilities that your ministry had with regard to USWM?</li> <li>○ Is there any structure in your organization in the region, city/town level that has related for USWM? Can we see the organogram? What are the activities?</li> <li>○ Who is responsible for implementing your organization's roles and responsibilities at the region and town levels?</li> <li>○ Who are the stakeholders for USWM? Can you explain the responsibility, overlap, coordination among them, regular meeting, planning together, sharing of information, etc.?</li> <li>○ How do you see the performance of each stakeholder in coordination and implementing USWM activities? Why?</li> <li>○ Do you feel that your organization undertaking activities of USWM well? How?</li> </ul>	
<p><b>Existing policies, regulations, strategies</b></p> <ul style="list-style-type: none"> <li>○ Does your organization have any policy, regulation, strategies, and guidelines related to USWM? Can you list them? Do you think all staffs are aware of the policies? How?</li> <li>○ Do the existed policies, regulation, strategies guidelines related to USWM appreciate the promotion of public private partnership (PPP) and any alternative waste management technologies/approaches? If so are there identified approaches stipulated on how to promote PPP and have these approaches been effective? Which government institution is responsible to promote engagement of the private sector in urban waste management?</li> </ul>	

<p>What guidelines exist which would help this institution to better discharge the duties of creating enabling environment?</p> <ul style="list-style-type: none"> <li>○ What are the different forms of the private sector engagement in waste management in urban areas? What drives/influences their involvement in the effort to address issues of urban waste management?</li> <li>○ What are the gaps in these national policies and strategies?</li> <li>○ What are the overlaps in thus national policies and strategies?</li> <li>○ What do you suggest?</li> </ul>	
<p><b>Policy implementation planning</b></p> <ul style="list-style-type: none"> <li>○ How do you promote or advocate to implementers /staffs of the organizations for policies regulations, guidelines etc.?</li> <li>○ Does your organization involve in providing policy guidance, technical support, and funding for management of urban sanitation and waste to cities/towns?</li> <li>○ What are the supportive means of the regional and national authorities?</li> <li>○ What kind of support do cities/towns receive from the national with regards to USWM? Can you list?</li> <li>○ How do you manage responsibility overlaps and gaps?</li> </ul>	
<p><b>Policy Implementation</b></p> <ul style="list-style-type: none"> <li>○ Which policies/strategies and plans have proven helpful, which ones have not? Why?</li> <li>○ Which directorate is involved in the implementation of your policy provisions?</li> <li>○ What are the existing experience on integration, harmonization, alignment, and partnership with other sector actors that have role on USWM? Existence of WASH forum? How do your organization involve in the WASH forum?</li> <li>○ What are the principles of USWM that national policies adhere to?</li> <li>○ Are there any overlaps or gaps/areas that are not covered?</li> </ul>	
<p><b>Monitoring of policy and strategies</b></p> <ul style="list-style-type: none"> <li>○ Is there any systematic review/assessment process in place that measures the outputs associated with national and regional policies to which implementation is assessed?</li> <li>○ How do you monitor the progress of USWM? Can you give examples?</li> <li>○ How do you evaluate USWM?</li> <li>○ What are the challenges of the implementation of USWM?</li> <li>○ What are the solutions for the implementation of USWM?</li> </ul>	
<p><b>Policy implementation problems</b></p> <ul style="list-style-type: none"> <li>○ What are the existing overlaps?</li> <li>○ What are gaps?</li> <li>○ What are the challenges?</li> <li>○ What do you suggest?</li> </ul>	

Thank you for your time. I appreciate your opinions and comments.

Name of interviewer: \_\_\_\_\_

Addis Continental Institute of Public Health

Addis Ababa, Ethiopia

Semi-Structured Guideline for in-depth interview

Situational Analysis of Urban Sanitation and Waste Management: *The Political, Structural, Socio-Economic, Institutional, Organizational, Environmental, Behavioral, Cultural, Socio-demographic Dimensions*” in Ethiopia

**A. Consent form**

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**Greetings**

Good morning/afternoon, and thank you for giving your time for this interview. My name is \_\_\_\_\_ . We are here on behalf of FMOH, JSI/ SEUHP, and Addis Continental Institute of Public Health. The main purpose of this study is to review and analyze urban sanitation and waste management: The Political, Structural, Socio-Economic, Institutional, Organizational, Environmental, Behavioral, Cultural, Socio-demographic Dimensions” in Ethiopia. We wish to find out ways by which we can improve USWM situations in the country. Whatever information you would provide will be kept confidential. We record your name on the questionnaire. As part of the study, you may be requested some relevant documents for the study. You have full right to withdraw from this study at any time without a need to mention the reason why you wanted to withdraw. We value your input to make this study a successful one. If you have questions about the research please contact Dr. Abera Kumie at the ACIPH, at +251-0911-882912; Birhanu Genet at JSI-0911672383, Sr Haregewoin Cherinet, chair of research ethics committee of ACIPH at +251-0911214408, or Professor Yeamane Berhane advisor of the project at +251-0911-219785/+251-118963494. At this time, do you want to ask me anything about the purpose or content of this interview?

Do I have your permission to continue?

1. If yes, continue to the next page \_\_\_\_\_ 2. If no, skip to the next participant

- Name of data collector \_\_\_\_\_ Signature: \_\_\_\_\_
- Name of supervisor \_\_\_\_\_ Signature: \_\_\_\_\_

**Part I: General information**

I01: Date of the interview: / \_\_\_\_ / \_\_\_\_ / \_\_\_\_ /

I02: Category of the interview: Ministry of Water, Irrigation, and Energy

**Part II: Socio-demographic characteristics**

NO	Questions	Response	Remark
I01	Sex of the respondent	Male.....1 Female.....2	
I02	Age of the respondent	_____ years	
I03	Profession	_____	
I04	Responsibility	_____	
I05	Years of service	_____ in year	

**Part III: In-depth interview on the sanitation and waste management service:** national policies, national and regional strategies, and town level plans as well as duties and responsibilities to identify strengths and gaps/overlaps in addressing the current needs and problems.

Question	Remark
<p><b>Organizational responsibility</b></p> <ul style="list-style-type: none"> <li>○ Does your organization have roles and responsibilities on USWM?</li> <li>○ What are the roles and responsibilities that your ministry had with regard to USWM?</li> <li>○ Is there any structure in your organization in the region, city/town level that has related for USWM? Can we see the organogram? What are the activities?</li> <li>○ Who is responsible to implement your organization’s roles and responsibilities at the region and town level?</li> <li>○ Who are the stakeholders for USWM? Can you explain the responsibility, overlap, coordination among them, regular meetings, planning, sharing of information, etc.?</li> <li>○ How do you see the performance of each stakeholder in coordination and implementing USWM activities? Why?</li> <li>○ Do you feel that your organization undertaking activities of USWM well? How?</li> </ul>	

<p><b>Existing policies, regulations, strategies</b></p> <ul style="list-style-type: none"> <li>○ Does your organization have any policy, regulation, strategies, or guidelines related to USWM? Can you list them? Do you think all staffs are aware of the policies? How?</li> <li>○ Do the existed policies, regulation, strategies guidelines related to USWM appreciate the promotion of public private partnership (PPP) and any alternative waste management technologies/approaches? If so are there identified approaches stipulated on how to promote PPP and have these approaches been effective? Which government institution is responsible to promote engagement of the private sector in urban waste management? What guidelines exist which would help this institution to better discharge the duties of creating enabling environment?</li> <li>○ What are the different forms of the private sector engagement in waste management in urban areas? What drives/influences their involvement in the effort to address issues of urban waste management?</li> <li>○ What are the gaps in these national policies and strategies?</li> <li>○ What are the overlaps in national policies and strategies?</li> <li>○ What do you suggest?</li> </ul>	
<p><b>Policy implementation planning</b></p> <ul style="list-style-type: none"> <li>○ How do you promote or advocate to implementers /staffs of the organizations for policies regulations, guidelines etc.?</li> <li>○ Does your organization involve in providing policy guidance, technical support, and funding for management of urban sanitation and waste to cities/towns?</li> <li>○ What are the supportive means of the regional and national authorities?</li> <li>○ What kind of support do cities/towns receive from the national with regards to USWM? Can you list?</li> <li>○ How do you manage overlaps and gaps?</li> </ul>	
<p><b>Policy implementation</b></p> <ul style="list-style-type: none"> <li>○ Which policies/strategies and plans have proven helpful, which ones have not? Why?</li> <li>○ Which directorate is involved in the implementation of your policy provisions?</li> <li>○ What are the existing experience on integration, harmonization, alignment, and partnership with other sector that have role on USWM? Existence of urban WASH forum? How is your organization involved in the forum?</li> <li>○ What principles of USWM do national policies adhere to?</li> <li>○ Are there any overlaps or gaps/areas that are not covered?</li> </ul>	
<p><b>Monitoring of policy and strategies</b></p> <ul style="list-style-type: none"> <li>○ Is there any systematic review/assessment process in place that measures the outputs associated with national and regional policies to which implementation is assessed?</li> <li>○ How do you monitor the progress of USWM? Can you give examples?</li> <li>○ How do you evaluate USWM?</li> <li>○ What are the challenges of the implementation of USWM?</li> <li>○ What are the solutions for the implementation of USWM?</li> </ul>	
<p><b>Policy implementation problems</b></p> <ul style="list-style-type: none"> <li>○ What are the existing overlaps?</li> <li>○ What are gaps?</li> </ul>	

<ul style="list-style-type: none"><li>○ What are the challenges?</li><li>○ What do you suggest?</li></ul>	
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Thank you for your time. I appreciate all your opinions and comments.

Name of interviewer: \_\_\_\_\_

## Data abstraction tool for systematic literature review

### Search strategy

#### 1. Key words

- Ethiopia; publications < 5 years: 2009, 2010, 2011, 2012, 2013, 2014
- Type of household: Household waste composition, Type of household solid waste
- Household solid waste generation rate: solid waste management; municipal waste management; solid waste generation rate; solid waste collection, solid waste disposal; refuse waste generation, informal collection/ors, recycling, reuse of waste,
- Household gray water collection, generation

#### 2. The review should focus on the following areas

- Average rate of solid waste generation from households per capita per day.
- Composition/characteristics of solid waste generated at the household level.
- The average amount of solid waste collected daily, transported and disposed.
- The average amount of grey water generated and composition.
- If there are segments of the population engaged in informal collection reusing/recycling as a principal means of income.
- Is there are any social groups that are consistently left out of the municipal solid waste service (for example, groups living in slum areas, or urban periphery)?

Data abstraction form (systematic review)

S N	Title	Author	Study year	Place of study	Study design	Sample size	Outcome	HH level	Individual level	Key finding

## Annex III: Operational definitions of knowledge, attitude and practice, Urban Sanitation and Waste Management, Ethiopia, July 2014

### A. Overall weighted score

**Overall knowledge towards urban sanitation, water and hygiene:** 18 different attitude questions with (Yes/No) responses were aggregated. A composite score above the mean or median is labeled as good, else poor.

**Overall attitude toward urban sanitation, water, and hygiene:** 27 different attitude questions with (Yes/No) responses were aggregated. A composite score above the mean or median is labeled as good, else poor.

**Overall current practice on urban sanitation, water, and hygiene:** 23 different practice questions with (Yes/No) responses were aggregated. A composite score above the mean or median is labeled as good, else poor.

### B. Knowledge composite scores

**Knowledge of urban communities on the components of health extension packages:** Ten different questions (Yes and No) on disease transmission and prevention, types and purpose of latrines were asked. A composite score above the mean or median is labeled as good, else poor (see Table 7 for results).

**Knowledge of urban communities on human waste management:** 10 different questions (Yes/No) on disease transmission and prevention, types and purpose of latrines were asked. A composite score above the mean or median is labeled as good, else poor (see Table 8 for results).

**Knowledge of urban communities on solid waste management:** Two main questions with 16 questions requiring multiple responses (Yes/No) were probed. A composite score above the mean or median is labeled as good, else poor (see Table 9 for results).

**Current knowledge of urban communities on hand hygiene:** Five main questions with 42 questions requiring multiple responses (Yes/No) were probed. A composite score above the mean or median is labeled as good, else poor (see Table 10 for results).

**Current knowledge on handling of safe drinking water:** One main question with 10 questions requiring multiple responses (Yes/No) were probed. A composite score above the mean or median is labeled as good, else poor (see Table 11 for results).

**Current knowledge of urban communities on prevention of diarrheal diseases:** Four main questions with 35 questions requiring multiple responses (Yes/No) were probed. A composite score above the mean or median is labeled as good, else poor (see Table 12 for results).

### C. Attitude composite scores

**Current attitude of urban communities on urban sanitation:** Six questions with Likert scale (1 to 5) were probed. A composite score above the mean or median is labeled as good, else poor (see Table 13 for results).

**Current attitude urban waste management practice:** Seven questions with Likert scale (1 to 5) were probed. A composite score above the mean or median is labeled as good, else poor (see Table 14 for results).

**Current attitude and water quality and quantity and service provision:** Three questions with Likert scale (1 to 5) were probed. A composite score above the mean or median is labeled as good, else poor (see Table 15 for results).

**Current attitudes of urban communities toward current USWM service:** Six questions with Likert scale (1 to 5) were probed. A composite score above the mean or median is labeled as good, else poor (see Table 16 for results).

**Current attitudes of urban communities toward to willingness to pay:** Five questions with Likert scale (1 to 5) were probed. A composite score above the mean or median is labeled as good, else poor (see Table 17 for results).

#### **D. Practice composite scores**

**Current practice on urban sanitation:** Seven different practice questions with (Yes/No) responses were aggregated. A composite score above the mean or median is labeled as good, else poor (see questions Q501, Q502, Q506, Q508, Q510, Q514, and Q520).

**Current practice on urban solid waste management:** Six different practice questions with (Yes/No) responses were aggregated. A composite score above the mean or median is labeled as good, else poor (see questions Q5219, Q530, Q535, Q538, Q540, Q543).

**Current practice on urban hygiene:** Five different practice questions with (Yes/No) responses were aggregated. A composite score above the mean or median is labeled as good, else poor (Refer questions in the Questionnaire Q515, Q517, Q518, Q545, Q553).

**Current practice on urban water source and household treatment:** three different practice questions with (Yes/No) responses were aggregated. A composite score above the mean or median is labeled as good, else poor (Refer questions in the Questionnaire Q546, Q548, Q552).

**Current practice on urban USWM services:** two different practice questions with (Yes/No) responses were aggregated. A composite score above the mean or median is labeled as good, else poor (Refer questions in the Questionnaire Q521, Q533).

#### Annex IV: Number of study participants participated by region

Region	Number	Percent
Addis Ababa	322	21.9
Amhara	291	19.8
Dire Dawa	64	4.3
Harar	64	4.3
Oromia	351	23.8
SNNPR	215	14.6
Tigray	165	11.2
Total	1472	100.0

## Annex V: Number of study participants by cities/towns

City	Number	Percent
Adama	96	6.5
Akaki kality	96	6.5
Arada	99	6.7
Asella	33	2.2
Axum	33	2.2
Bahir Dar	99	6.7
Bishoftu	66	4.5
Debre Birhan	31	2.1
Debre Markos	33	2.2
Dessie	32	2.2
Dilla	30	2.0
Dire Dawa	64	4.3
Gonder	96	6.5
Harar	64	4.3
Hawassa	123	8.4
Jimma	60	4.1
Mekelle	99	6.7
Nekemet	31	2.1
Sebeta	32	2.2
Shashemene	33	2.2
Shire	33	2.2
Wolayta	32	2.2
Wolkite	30	2.0
Yeka	127	8.6
Total	1472	100.0

## Annex VI: Review of solid waste generation rates of households in urban areas of Ethiopia

SN	Author	Study year	Place of study	Type of publication	Study design	Sample size	Total HH waste generation	Average rate of SW generation from HH kg/capita/day	% of waste collected/disp osed
1	Tyagi V, et al	2014	Debre Berhan City	Peer-reviewed journal	Cross-sectional survey & FGD	252 HH		0.55	
2	ANRS, EPLAU	2010	Bahir dar City		7 days waste measurement and Cross-sectional survey	.		0.24685	
3	Cheru, S.	2011	Dessie town	Thesis	Cross-sectional survey	36 HH	42,272 Kg/day	0.231	
4	Shimelis, B.	2011	Aweday town	Peer-reviewed journal	7 days waste measurement on and Cross-sectional survey	85 HH	57,039 Kg/day	0.85	
5	Regassa, N., S et al	2011	Addis Ababa	Peer-reviewed Journal	HH survey and qualitative information	120 HH	851,540 Kg/day	0.252	65%
6	Getahun T., et al	2012	Jimma town	Peer-reviewed journal			88,000 Kg/day	0.55 ± 0.17	
7	Mary, T. et al	2013	Mekele town	Thesis			3781 tones	0.30	
9	addesse, T.,	2014	Debre Birhan	Thesis	7 days of measurement	117 HHs	965.72 Kg/day	1.20 kg/HH (0.27kg/c/day)	
11	Escalante, N., et al	2010							
12	Tiwari, GPG. et al	2012	Debre Markos	Peer-reviewed journal					
13	Daniel, D., et al	2010	Addis Ababa	Peer-reviewed journal			2,297m <sup>3</sup>	0.252	65
14	Aydamo, A., et al	2012	Hosa'ina	Peer-reviewed journal		130HH	12.96 tons, 90.7 Tones for LI, 388.7 tons for MI and 4729.56 tons for HI		
<b>Average generation</b>								<b>0.49(0.25-1.20)</b>	

## Annex VII: Review of solid waste composition and characterization of households in urban areas of Ethiopia

SN	Author	Study year	Place of study	Type of publication	Study design	Sample size	Composition of SW generated	Characteristics of SW generated
1	Tyagi V, et al	2014	Debre Berhan City	Peer-reviewed journal	Cross-sectional survey & FGD	252 HH	- 33% Food waste (vegetable peelings and leftover food )	-80% degradable
2	ANRS, EPLAU	2010	Bahir Dar City		Cross-sectional survey and 7 days waste measurement			
3	Cheru, S.	2011	Dessie town	Thesis	Cross-sectional survey	36 HH	75.6% biodegradable waste (dust, 44.5%, and food waste 31.1%)	
4	Shimelis, B.	2011	Aweday town	Peer-reviewed journal	Cross-sectional survey and 7 days waste measurement on	85 HH	76% biodegradable waste	
5	Regass, N., et al	2011	Addis Ababa	Peer-reviewed journal	HH survey and qualitative information	120 HH	76 % HH waste. More than 95 % of it is biodegradable waste	
6	Getahun T., et al	2012	Jimma town	Peer-reviewed journal			87% of the waste is from HHs	
7	Mary, T., Tahir, H.,	2013	Mekele town	Thesis				
9	Taddesse, T.,	2014	Debre Berhan	Thesis	7 days waste measurement	117 HHs	43.65% food waste	78.11% biodegradable households
10	Escalante, N., et al	2010						
11	Tiwari, GPG. and Tiwari, SC.	2012	Debre Markos	Peer-reviewed journal				
12	Daniel, D., et al	2010	Addis Ababa	Peer-reviewed journal				
13	Aydamo, A., et al							Food waste, 36.7%



## Annex VIII: Composite scoring for practice in USWM, July 2014

Category	Variables	Question Number	Coding
Human waste (7)	Access to latrine	Q501:	Yes=1; No=0
	Latrine utilization	Q510	Yes=1; No=0
	Type of latrine	Q502	Yes improved=1 No unimproved=0
	Latrine functionality	Q506	Yes=1; No=0
	Latrine ownership	Q508	Yes private=1 No private=0
	Babies faeces handling	Q514	Yes into latrine=1 No Otherwise=0
	Solid waste recycling	Q543	Yes=1; No=0
Hand hygiene (5)	Handwashing facility availability in/close	Q515	Yes functional=1 Not functional =0
	Presence of soap	Q517	Yes=1; No=0
	HW facility proper place	Q518	Yes=1; No=0
	Hand washed with soap	Q545	Yes soap/ash=1 N0=0
	Shower in/close the latrine	Q553	Yes=1; No=0
Solid waste management (6)	Frequency of collection	Q529	Yes: 1_every week + twice a week No otherwise
	SW storage	Q530	Yes: 1_door to door, block, municipal No=0_otherwiser
	SW disposal outside house	Q533	Yes=1_municipal container compost No_0_otherwise
	Liquid waste disposal primary level	Q538	Yes=1_latrine, soakage pit, sewer line
	Sanitation campaign participation	Q540	Yes=1; No=0
	Waste recycling practice	Q543	Yes=1; No=0
Drinking water (4)	Source of drinking water	Q546	Yes=1_improved No=0_Not improved
	Drinking water storage	Q552	Yes=1_Narrow mouthed No=0_otherwise
	HH water treatment practice	Q548	Yes=1; No=0
Urban waste mgmt service provision (2)	Emptying service	Q521	Yes=1; No=0
	Microenterprises service for primary collection	Q535	Yes=1; No=0
Overall Practice		All 23 variables	0=Poor; 1=Good practice

## Annex IX: Assessment of existing practices and opportunities for private sector involvement in waste management and urban sanitation

Themes	Health office (promotion of hygiene and sanitation)	Beautification (solid waste )	Municipality/town administration (solid & liquid)	Urban development and construction (solid & liquid)
current areas of public-private partnerships supported by the government	<ul style="list-style-type: none"> <li>Investing in the production of communal container</li> <li>Investing in public latrine construction</li> <li>waste collection and transportation services</li> <li>On awareness creation</li> <li>Primary waste collection</li> </ul>	<ul style="list-style-type: none"> <li>primary waste collector enterprise</li> <li>involvement in parking and green area</li> <li>solid waste collection</li> <li>solid waste segregation/ separation</li> <li>Waste transportation services</li> <li>buying donkeys for waste transportation,</li> <li>providing cleaning materials,</li> <li>providing working cloths (apron)</li> <li>Paying of salaries for the workers for microenterprises.</li> </ul>	<ul style="list-style-type: none"> <li>Investing in waste disposal material like vacuum truck and skipping loaders</li> <li>Investing in the production of communal container</li> <li>Road cleaning is planned to outsource to private sector</li> </ul>	<p>The structure varies region to region. But in some region it is under town administration Construction of solid and liquid waste services.</p>
Strategy and promotion of public private partnership national and/or regional USWM	<ul style="list-style-type: none"> <li>Promotion of new technology, implement sanitary land fill</li> </ul>	<ul style="list-style-type: none"> <li>sanitation as enterprise like beautification, green area and parking , waste transportation</li> </ul>	<ul style="list-style-type: none"> <li>liquid waste disposal vacuum trucks</li> </ul>	<ul style="list-style-type: none"> <li>The wastes are used as a input for a locally available factories are some of the reasons for</li> </ul>

Themes	Health office (promotion of hygiene and sanitation)	Beautification (solid waste )	Municipality/town administration (solid & liquid)	Urban development and construction (solid & liquid)
				the appreciation of PPP strategies
Forms of the private sector engagement in waste management in urban areas	<ul style="list-style-type: none"> <li>• Personal protective equipment production</li> </ul>	<ul style="list-style-type: none"> <li>• Green area and parking</li> </ul>	<ul style="list-style-type: none"> <li>• collection of liquid waste using vacuum trucks</li> <li>• collection of solid waste at household level by formally organized micro enterprises'</li> <li>• Private owned factories established to recycle solid wastes like metals, plastics</li> </ul>	<ul style="list-style-type: none"> <li>• the construction of urban waste management like: side dish construction, prevention of flooding, household solid and liquid waste pit</li> </ul>
Level of engagement of the formal and informal private sector in waste management and urban sanitation	<p><b>Formal:</b> poor in this area</p> <p><b>Informal:</b> engaged on 20 meter radius cleaning activities but not involved in liquid waste management.</p>	<p><b>Formal:</b> most private sector in enterprise waste collection and transport , beautification</p> <p><b>Informal :</b> in many cities poor</p>	<p><b>Formal:</b> most private sector in enterprise , participate in liquid waste ,solid waste collection and transport</p> <p><b>Informal :</b> in many cities poor</p>	<p><b>Formal:</b> most private sector in enterprise, in associations for construction</p> <p><b>Informal :</b> in many cities poor</p>
Challenges/constraints for greater and better involvement of the private sector to support the effort of addressing issues of urban waste management	<ul style="list-style-type: none"> <li>• Lack of the structure for investors</li> <li>• Lack of sanitary landfill at the city level</li> <li>• Lack of awareness the cost benefit of the program</li> </ul>	<ul style="list-style-type: none"> <li>• The community complaining about the service bills collected by the private sector service providers including associations.</li> <li>• low capacity of the private sector</li> </ul>	<ul style="list-style-type: none"> <li>• Absence of enabling environment</li> <li>• Lack of awareness the cost benefit of the program</li> <li>• lack of final treatment plant for solid and liquid waste management of</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of support from the town/city administration.</li> <li>• Fear of administrative an expensive fee which could be unaffordable by the community</li> <li>• Autonomy overlaps in the control of</li> </ul>

Themes	Health office (promotion of hygiene and sanitation)	Beautification (solid waste )	Municipality/town administration (solid & liquid)	Urban development and construction (solid & liquid)
		<ul style="list-style-type: none"> <li>• There was no plan that guides the participation of private sectors.</li> <li>• Absence of clear policy and strategy to invite/involve private partners</li> <li>• The cost effectiveness of the service is not encouraging</li> <li>• Low community capacity to pay for the service like poor awareness,</li> <li>• Budget constraint of the sector for USWM</li> <li>• Lack of training for workers</li> <li>• Land ownership</li> </ul>	<p>the city</p> <ul style="list-style-type: none"> <li>• The private sector is suspicious about the profitability of the business</li> <li>• The lack of coordination with the woredas sectors and agency</li> <li>• The inappropriate littering of waste in the community</li> <li>• Wrong attitude about urban waste management.</li> </ul>	<p>organizations.</p> <ul style="list-style-type: none"> <li>• Unavailability of appropriate professionals</li> <li>• The waste collection and transportation sector requires very huge capital investment</li> <li>• The management may not also give priority to waste management system</li> </ul>
Enabling conditions for the private sector to be engaged in the effort to manage waste in urban areas	<ul style="list-style-type: none"> <li>• The availability of cheap human labor</li> <li>• They had good market and income and they were freely use final disposing site</li> <li>• Good investment policy</li> </ul>	<ul style="list-style-type: none"> <li>• The government allows tax free cars for urban sanitation services</li> <li>• Free of tax for the service like cleaners</li> </ul>	<ul style="list-style-type: none"> <li>• provision of land for factories</li> <li>• Availability of necessary waste for recycling and the fact that</li> <li>• engagement in sanitation and waste management is cost effective.</li> </ul>	<ul style="list-style-type: none"> <li>• Wastes can be recycled and reused</li> <li>• The presence of micro-enterprises is also encouraging</li> </ul>

Themes	Health office (promotion of hygiene and sanitation)	Beautification (solid waste )	Municipality/town administration (solid & liquid)	Urban development and construction (solid & liquid)
			<ul style="list-style-type: none"> <li>• providing loan</li> <li>• providing free land for the formal groups</li> <li>• The existing waste collector associations are not paying taxes to the government because it is considered as public service.</li> </ul>	
Government institution responsible to promote engagement of the private sector in urban waste management	<ul style="list-style-type: none"> <li>• Health office(MoH)</li> </ul>	<ul style="list-style-type: none"> <li>• The municipality</li> <li>• Urban cleaning and beautification office</li> <li>• trade and tourism minister</li> </ul>	<ul style="list-style-type: none"> <li>• City/town administration</li> <li>• Chamber of trade</li> <li>• trade and tourism minister</li> <li>• Water and sewerage authority</li> </ul>	<ul style="list-style-type: none"> <li>• Construction office</li> <li>• land management and investment office</li> </ul>
Sectors of the economy tend to be sensitive to waste reduction, re-use, recycling	<ul style="list-style-type: none"> <li>• Health office</li> <li>• NGO</li> <li>• Universities</li> <li>• Hotels</li> <li>• The community itself</li> </ul>	<ul style="list-style-type: none"> <li>• Beautification and sanitation office</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental protection office</li> <li>• Land management and construction sectors</li> <li>• Private Enterprise</li> <li>• Municipality</li> </ul>	<ul style="list-style-type: none"> <li>• Tourism,</li> <li>• construction</li> <li>• mineral and energy bureau</li> <li>• Schools</li> <li>• Custom office</li> <li>• commercial sectors</li> </ul>

Themes	Health office (promotion of hygiene and sanitation)	Beautification (solid waste )	Municipality/town administration (solid & liquid)	Urban development and construction (solid & liquid)
Encouraged to develop greater environmental sensitivity	<ul style="list-style-type: none"> <li>Encouraging the sectors to be environmentally sensitive through rendering awareness</li> </ul>	<ul style="list-style-type: none"> <li>working together as a sector to create awareness</li> </ul>	<ul style="list-style-type: none"> <li>Rewarding those industries who are working in accordance with environmental friendly principles.</li> </ul>	Certifying sectors and institutions like register for ISO certification
Civil society participation in USWM	<ul style="list-style-type: none"> <li>forming networking privately for sanitation 1 to 5</li> </ul>	<ul style="list-style-type: none"> <li>can participate in mass campaign, collaboration in greenery</li> <li>sanitation</li> <li>financial contribution</li> </ul>	<ul style="list-style-type: none"> <li>Sanitation campaign</li> </ul>	<ul style="list-style-type: none"> <li>In some cities as an example condominium houses residents associations (Edirs) are involved in greening the compounds.</li> </ul>
Incentives that enhance civil society involvement in environmental cleaning	<ul style="list-style-type: none"> <li>Rewards are powerful to motivate civil societies for further involvement in environmental cleaning like thank you and Certificate</li> <li>Through publicizing their effort by Mass-medias( TV, Radio)</li> </ul>	<ul style="list-style-type: none"> <li>Through participation on related meetings and campaigns</li> <li>Solving the problem of the civil society are sets of incentives that further enhance civil society involvement in urban cleaning and beautification.</li> </ul>	<ul style="list-style-type: none"> <li>Following up constructed facilities on functionality</li> <li>Awareness creation using different public gatherings</li> <li>Rewards for better performance</li> </ul>	<ul style="list-style-type: none"> <li>Creating competition among localities on environmental sanitation</li> <li>Giving a service for civil society transparently</li> </ul>
Communities that take ownership of streets, or other segments of their communities.	Good ownership is created by UHEWs and local NGO's	“one-to-five” creates communities ownership	<ul style="list-style-type: none"> <li>Community now participated in these activities through money and human resources.</li> </ul>	Business owners take ownerships of streets and open spaces to develop and make them green and clean

Themes	Health office (promotion of hygiene and sanitation)	Beautification (solid waste )	Municipality/town administration (solid & liquid)	Urban development and construction (solid & liquid)
Roles of NGOs that play involvement of civil societies and community	<ul style="list-style-type: none"> <li>• Support in terms of finance and technique</li> <li>• Providing public award and promotion</li> </ul>	<ul style="list-style-type: none"> <li>• Increasing awareness and value of community for the employee involve in the waste management area</li> </ul>	<ul style="list-style-type: none"> <li>• Creating competing environment one individual and Keble to other by giving award, certificate, and public acknowledgement.</li> <li>• Strong advocacy and promotion activity through material that used for waste management and safety material.</li> </ul>	<ul style="list-style-type: none"> <li>• Bringing new Knowledge, skill and technology are some of the responses of the key informants towards the motivation of civil society's involvement.</li> </ul>
Best practices regarding public-private partnership in waste management and urban sanitation	<ul style="list-style-type: none"> <li>• Involvement of local NGO on promotion, public award , material award for those keble and individual</li> </ul>	<ul style="list-style-type: none"> <li>• Micro enterprises collecting household solid waste.</li> <li>• Invite private sector to participate in sanitation and waste management activities</li> </ul>	<ul style="list-style-type: none"> <li>• Provide support for factories and organizations involved in collecting and recycling solid waste.</li> <li>• Implementation of two waste plastic recycling factories</li> </ul>	<ul style="list-style-type: none"> <li>• The construction of latrines, ditches and other sanitary facilities by private companies.</li> </ul>
Bad practices regarding public-private partnership in waste management and urban sanitation	<ul style="list-style-type: none"> <li>• Private organizations dispose waste illegally</li> <li>• Private organizations joined the septic tank with the drainage</li> <li>• Improper disposal of wastes on open places and ditches</li> </ul>	<ul style="list-style-type: none"> <li>• The public micro enterprises weren't reaching all of households</li> <li>• Need capacity building for waste and sanitation</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of commitment from municipality led to loss of private investors, e.g., Indian plastic industry</li> <li>• Lack of regulation, coordination to implement and work with private sector on</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of sufficient cars for waste collectors</li> <li>• Shortage of machineries in solid waste disposal sites</li> </ul>

Themes	Health office (promotion of hygiene and sanitation)	Beautification (solid waste )	Municipality/town administration (solid & liquid)	Urban development and construction (solid & liquid)
			sanitation and waste management <ul style="list-style-type: none"> <li>• Low service price pushed out private sector</li> <li>• Payment to private sector for emptying of latrine facilities is not possible for low socio-economic community members</li> </ul>	
Solutions recommend for PPP on USWM	<ul style="list-style-type: none"> <li>• It needs an advocacy works at national and regional level to create awareness on the importance of involving the private sector on urban sanitation and waste.</li> </ul>	<ul style="list-style-type: none"> <li>• Promote existing gap and demanding area for investors</li> </ul>	<ul style="list-style-type: none"> <li>• Strengthen the involvement of higher officials in environmental issues</li> <li>• Strengthen intersectoral collaboration among responsible sectors.</li> </ul>	<ul style="list-style-type: none"> <li>• Allocation reasonable budget and financing system</li> <li>• providing free land for the formal groups</li> </ul>

## **ANNEX X: Review and analysis of USWM national policies, proclamations, regulations, strategies**

### Contents

1. Introduction
2. Methodology (document mapping)
3. Type of searched documents
4. Criteria used to identify the document
5. Objectives
6. Review and analysis
  - Health Policy 1993
  - Food, Medicine and Health Care Administration and Control Proclamation 661/2009
  - Food, Medicine and Health Care Administration and Control Regulation Number 299/2013
  - National Sanitation and Hygiene Strategic Action Plan (2011 – 2015)
  - Health Sector development program IV (HSDP IV) 2010/11 – 2014/15
  - Ministry of Environmental Protection and Forestry (Environmental Policy)
    - Proclamation 300/2002, Environmental Pollution Control
  - Solid Waste Management Proclamation No. 513/2013
  - Ministry of Urban Development and Construction (FMoUDC)
    - Urban Development Policy
  - Ministry of Water, Irrigation and Energy Water Supply and Sanitation Policy 2001
  - Urban Sanitation Universal Access plan [part IV]
  - Urban Waste Management and Green and Beautification Draft Strategy
  - Opportunities
  - Recommendations

## Introduction

The environmental problems faced by the world today are so complex and widespread that solution requires a holistic approach. At the beginning of human settlement in villages and towns the waste generated by humans was not exaggerated because of low population density. The extent of industrial development, agriculture and population explosion is resulting high quantity of waste in complex environmental pollution problem.

Rapid growing urban centers are a particular challenge for environmental health. The world's urban population will double by 2050. Most of this urban growth will occur in low- and middle-income cities. If ignored, these conditions will cause more environmental damage, and could lead to informal settlements and slum expansion, resulting in a more vulnerable population. Africa is the fastest urbanizing continent globally where growth rate of 3.4 percent is expected. Already, almost 40 percent of Africa's people are living in urban areas and is projected that by 2050, 60 percent of all Africans will be living in urban areas.

In Ethiopia there are about 935 urban settlements throughout the country. The geographical distribution of towns, size of population, infrastructure development, and revenue of the towns is widely different. In Ethiopia the urban population has been growing at an average rate of 5.84 percent for the last fifty years<sup>1</sup>. The growth is, however, estimated to slow down to 3.57% for the period of 2010 to 2015<sup>2</sup>. With the current growth rate the urban share will reach 35% by 2030<sup>3</sup> and the urban population will double within only 13-15 years. Sixty % of the urban populations in Ethiopia are living in about 68 towns.

According to Ministry of Urban development the urbanized settlements in Ethiopia are classified as big medium towns with a population of between 50000 and 200000, lower medium towns with a population between 20000 and 49000 and small towns with a population of less than 20000 and above 50000

Urbanization is usually associated with the development of a more productive economy and it can bring major benefits to health and the environment. The crisis in the urban environment is producing more immediate change on health than would be expected from the current changes in the loss of forests, pollution of water in lakes, and rivers, acid rain and the loss of animal and plant species. As population size and density increases- from village to market town, small town and to major city so too do the scale and complexity of the environmental management needed to ensure a healthy environment. The problem of waste from household s, industries and commercial sources will continue to be a problem particularly in the absence of government and local community action to ensure that the infrastructure and services are in place and pollution controlled.

The present conditions in towns and cities in Ethiopia are alarming to some extent especially when viewed against the availability of any pragmatic intervention. We see and observe the accumulation of waste- solid and liquid, openly defecated human waste, hazardous and toxic, biodegradable and non-biodegradable in public areas, ditches and water ways. If this condition continues to persist it may even be a cause of great damage to the air we breathe, the water we drink, the earth we till and play and

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<sup>1</sup>World Bank development Indicators , 2012

<sup>2</sup> <http://www.indexmundi.com/ethiopia/demographics/profile.html>

<sup>3</sup>Antonio Golini, Urbanization and urban population in Ethiopia based on UN, Department of Economic and Social Affairs, Population Division database

deteriorate quality of buildings and historical sites. The end result of all this environmental disaster is the onset of disease burdens from filth, poisoning, allergic reactions, global warming and pollution of the natural resources.

When society congregates together there is always a rise in social, economic and environmental problems basically because such society is Heterogeneous with different background of education, culture, economy etc. In such situations the burden on the living and working environment will get complex and challenging for city administration and the government. The situation in the old big cities such as Addis Ababa, all zonal towns and the emerging new rural or woreda towns have now complex problems of settlement (emerging slum areas), poor liquid and solid waste disposal resulting in poor living and working environment hence exposing people to adverse health problems.

## **METHODOLOGY USED IN PREPARING THIS REVIEW**

### **The methodology:**

**Document Mapping:** Mapping and collection of all available materials and information that related to the USWM is done. The methods involve the use of secondary data retrieved from reports of Ministries, publications from internet sources, tec. Also documents searching were done through physical communication with source persons and Ministries and Authorities like Ministry of Environment and Forestry, Food, Medicine and Health Care Administration and Control Authority, Ministry of Urban Development and Construction, Ministry of Health, Ministry of Water, Irrigation and Energy.

## Type of Searched Documents:

The Federal Government policies, Proclamations, Regulations, Strategies, Institutional Frameworks guidelines, Regional legislative, procedures, standards, etc. has also been reviewed. The searched documents are:

- Health Policy 1993;
- Food, Medicine and Health Care Administration and Control proclamation 661/2009;
- Food, Medicine and Health Care Administration and Control Regulation Number 299/2013,
- National Sanitation and Hygiene Strategic Action plan (2011 – 2015);
- Health Sector development program IV (HSDP IV) 2010/11 – 2014/15;
- Ministry of Environmental protection and Forestry ( Environmental Policy);
- Proclamation 300/2002, Environmental Pollution Control;
- Solid Waste Management Proclamation No. 513/2013;
- Ministry of Urban Development and Construction (FMoUDC)  
Urban Development Policy
- Ministry of Water, Irrigation and Energy Water Supply and sanitation policy 2001;
- Urban Sanitation Universal Access plan [part IV];
- Urban Waste Management and Green and Beautification Draft Strategy

**Criteria used to identify the Document:** The main criteria use to identify the documents is that document has to comprise clearly the issues of USWM in general. The evaluation of the documents is done through intensive reading and understanding the mandate of the institution and legal frameworks

## Objectives

- Review, analyze and evaluate all policies, proclamations, regulations, and strategies issued relevant to urban sanitation and hygiene,
- Identify objective, implementation, major ideas indicated, overlaps, gaps, and challenges of policies, proclamations, regulations and strategies.
- Give recommendations on the issued policies, proclamations, regulations and strategies,
- Compile the findings and prepare the finals consolidated report,

## I. Federal Ministry of Health

### I.1 Health Policy 1993

**Policy issue date and objective:** The health policy is issued shortly after the fall of the Military regime, on September, 1993, during the Transitional Government. The government developed the health policy to address the major health problem of the community .i.e. it gives strong emphases to the fulfillment of the needs of the less privileged rural population

constitutes about 83.6% of the total population in the country. The policy outlines; Democratization and decentralization of the health system; Development of the preventive and promotive components of the health system. **Implementation structure:** The implementation is done Back Office level (Federal Ministry, Regional health Bureaus, Woreda and Kebele level and front Office (Tertiary, secondary and Primary Health Care Units like Health Centers and health posts; Regional and Referral Hospital are entitled and obliged to implement what is stated in the policy. At health center and health post level almost all environmental sanitation activities are implemented.

**How is the implementation?** In order to implement the policy proclamations, regulations, strategies are derived from it and implemented hierarchically by all staffs assigned at all level of the structure.

**Major idea indicated in the policy:** Priority of the policy is control of communicable diseases, epidemic and diseases related to malnutrition and poor living conditions. The policy general strategy in article 3 states developing of human waste, household, agricultural and industrial wastes and encouragement of recycling. The policy in general gives emphases for human waste, household, agricultural and industrial wastes.

**Gaps:** The policy in particular does not emphasize clearly urban waste management and discharged waste from commercial area and institutions. This contributes to the health system to give delayed and less attention for urban sanitation problem. However, scant effort is made by city/town municipalities to handle urban sanitation problems with no or minimal budget, human and material resource allocation. In some cities and towns, in urban settings, urban sanitation problems are cross-sector, which exasperates the ever-increasing urban problem.

**Challenges:**

- The health policy was issued more than two decade ago without giving clear direction on urban sanitation. Urban sanitation activities are not implemented at full scale and appropriate emphases are not given by regional, woreda health offices as equal to rural sanitation.
- National policy on waste management is not translated into action at local level.

## **I.2. Food, Medicine and Health Care Administration and Control**

### **Proclamation Number 661/2009**

**Issue date and objective:** Proclamation 661/2009 issues 13<sup>th</sup> January 2010 with objective of averting health problem due to environmental health and communicable diseases.

**Implementation structure:** The proclamation can be implemented in all Health strictures back Office (Federal Ministry, Regional Health Bureaus, Zone Health Departments, Woreda and kebele and front office like Health Center and Health Posts)

**How is the implementation?:**The proclamation can be implemented by Food, medicine and Health Care Administration and Control Authority (FMHCA) which is regulatory agency established in all Health Structure (Health Bureaus, Woreda Health Office, and (kebele) trained inspectors are assigned to execute the proclamation as per the given provisions with support of local police force and prosecuting attorney at regular court. it a proclamation, enforcement is not limited to that specific Ministry or authority. Other government agencies are responsible to enforce when it is necessary. The inspector has the following power and duties example: enter and inspect any premises or building at working hour with sufficient reason the existing situation endangering the health of the public.

The Proclamation is applicable in respect of food, medicine, environmental health, health professionals, health and controllable health related institutions in the country..

**Major ideas indicated in the proclamation:** In part II general definition number 28 indicates waste as liquid, solid or other wastes generated from industries, agriculture, institutions, school residential or commercial areas, health and research institutions, toilets and other institutions which can affect the health of the human beings or animals. Also, definition number 29, poor environmental sanitation means all factors in human physical environment which may cause deleterious effect of the physical development. health survival of human being. Also in Part II define power and duties of the executive organ, Number 18 discuss ensure the handling and disposal of trans-regional solid and liquid wastes from different institutions are not harmful to public health.

Also, part VI Article 30 sub article 1, 2 and 3 indicate waste handling and disposal. Sub article 1 indicate the prohibition of person to collect or dispose solid, liquid or other wastes in a manner contaminating the environment harmful to health.. Sub article 2 discusses on special care handling and disposal of wastes generated from health or research institutions. Sub article 3 prohibited the discharge of untreated waste generated from septic tanks, seepage pits, and industries into the environment, water bodies or water convergences. Also, part VI Article 31, sub article 1 & 2 discuss the availability of clean and adequate toilet facilities and any city administration is responsible in providing public toilet and ensure its cleanliness. Any person who violates this article (31) shall be punished with a fine of not less than Birr 3,000 and not exceeding Birr 5,000.

**Gaps:** proclamation does not clearly indicate the management of urban sanitation related to human waste, solid and liquid wastes management.

**Challenges:**

- The proclamation does not clear give emphases on urban sanitation. Therefore, attention was not given by urban/city Administrations or municipalities in allocating resources (budget, manpower and materials)
- National proclamation on waste management not translated into action at local level

### **I.3 Food, Medicine and Health Care Administration and Control Regulation Number 299/2013**

**Issue date and objective:** This regulation is issued on 24<sup>th</sup> of January, 2014 to regulate any matters which harm the general population arise from counterfeit food, medicine and mal-health care administration.

**Implementation structure;** The Regulation can be implemented in all Health structures back-Office (Federal Ministry, RHB, zone health departments, Woreda and kebele and front-offices like health centers and posts).

**How the implementation is:** The Regulation can be implemented by Food, Medicine and Health Care Administration and Control Authority (FMHCA) established in all Health Structure (Health bureaus, Woreda health office, and kebele) through authorized inspectors of the regulatory. The Proclamation is applicable in respect of food, medicine, environmental health, health professionals, health and controllable health related institutions in the country. The regulation comes to effect by the inspector and the inspector has the following power and duties example: enter and inspect any premises or building which he has sufficient reasons to believe that a situation endangering public health exists.

**Major ideas discussed in the Regulation:** In part 4 article 39 Subarticles 1 and 2, prohibit to burn or dispose, recycling of poisonous or contagious waste. In sub article 4 prohibits the discharge of untreated waste prior treatment in accordance with the set standards. Article 42 discusses on any toilet or public facility shall fulfill the requirements set by the Authority.

#### **Gaps:**

- The regulation does not clearly indicate the management of urban sanitation.
- Penalty is not indicated for those who failed to comply on article 39 waste handling and article 42 toilet of public facility.
- The absence of emphases on urban sanitation could reduce the attention that has to be given by urban/city administration or municipalities in allocating budget, manpower and material resources.

#### **Challenges:**

- National regulation on waste management not translated into action at local level because of weak to enforce due to lack of adequate and skilled manpower
- Legal offices/inspectors in the Authority is also weak to enforce the regulation
- Low awareness on the presence/practice of the regulation

### **I.4 National Sanitation and Hygiene Strategic Action plan (2011 – 2015)**

**Issue date and objective:** The sanitation and Hygiene strategic Action plan 12 June, 2011 with objective to contribute to the improvement of the health and the living conditions of the entire population of the country by ensuring the accessibility of improved sanitation & hygiene facilities as well as safe management of water in the household.

**Implementation structure:** The strategic action plan was issued to be implemented in all health structures Regions, zones, Woredas, and kebeles by all health professionals assigned in health institutions in particular by environmental health professionals and health Extension Worekes and by all WASH sector government agencies and by Non- governmental organizations

**How the implementation is:** The implementation carried out by all environmental health and other paramedical staffs assigned in all health institutions. Moreover, all health extension workers assigned at rural and urban areas are the frontline implementer. Also, Development Partners and Non Governmental Organizations implement in collaboration with health workers.

**Major ideas indicated in the strategic action plan** Major ideas discussed in the strategic action plan focusing on rural, urban and institutional “on site sanitation”, handwashing and safe drinking water handling in the home. Note that the urban aspects of the strategic action plan address only peri-urban and small town, whereby ‘on site’ sanitation can be applied.

**Gaps:**

- The strategy focuses on hygiene and sanitation that has to be implemented only on peri urban and small towns. It does not treat large and medium towns as well as solid and liquid wastes handling on these towns.

**Challenges:**

- It took years to review and bring to higher officials for endorsement.
- It is not officially printed or distributed to regional health bureau development partners and NGOs to be used as a strategic action plan and this attributed to steady improvement of the sanitation sector,
- The strategic action plan only focus on peri-urban and small towns sanitation, because of this urban sanitation activities in cities, large and medium towns are neglected,
- Because of the above problems desired fund could not be mobilized from partners

### **1.5 Health Sector development program IV (HSDP IV) 2010/11 – 2014/15**

**Issue date and objective:** The Health Sector Development Program IV (HSDP IV) is a policy implementation strategic document that guides the development of sub national plans and set the rule of engagement in the health sector. Its objective is to improve accessibility of health service in order to ensure utilization. Area addressed are to improve the health of

mothers, neonatal, children etc and improve hygiene and environmental health. On this development program the objective of hygiene and environmental health is to increase coverage and services to both rural and urban population.

**Implementation structure:** The Health Sector Development Program IV is designed to be implemented in all health administration structures (regions to kebele) as well as all levels of health service facilities (referral and regional hospitals; and primary health care units (primary hospitals, health centers, and health posts).

**How it is implemented** The Health Sector Development Program is implemented in all health service structure as a strategy to execute the plan activities. The progress or the achievements are reviewed by annual review meeting (ARM); through integrated supportive supervision (ISS) held at each quarter; and through health management information system (HMIS).

**Gaps:** Hygiene and sanitation, access to toilet facility was planned to reach 100% but according WASH inventory (2003 EFY) result is 66% and also according JMP 2014 report, improved and shared facilities 47%, unimproved facilities 19% and open defecation is 34%. Regarding open defecation-free (ODF) kebele, the plan was to reach 15% to 80%, but the achievement is 19% 2013. The result on coordination of WASH sector government offices and fund mobilization from development partners is not as it was desired.

Urban sanitation is not clearly set in the strategy as an entity. In all structure of the health system, urban sanitation is not seen in annuals plan of action, Stakeholders with different interests makes difficult to achieve what is planned to accomplish. The Federal Ministry of Health deployed 4,084 urban health extension workers (HEWs) to look after urban sanitation activities along with other package initiatives, but the results are not this much attracting as it is desired.

#### **Challenges:**

- Lack of coordination among WASH sector government and non-governmental organizations
- High turnover of staff

## **2. Ministry of Environmental Protection and Forestry**

### **2.1 Environmental Policy**

**Issue date and objective:** The Constitutional provisions, appropriate policies, institutions and legislation put in place are clearly articulated in protecting the environment. The Federal Environmental Protection Authority (now named as the Ministry of Environment and Forestry) is the main agency responsible for environmental management. It was established in 1995 under Proclamation 9/1995 The Environmental Policy of Ethiopia (1997) is the overarching policy for the environment and natural resource management in Ethiopia. It was

developed to address an identified gap in the policy framework. The importance of sustainable development was recognized in national policy and laws. The Environmental Policy addresses this by setting out specific policy directives for different sectors concerning the environment and natural resource management.

The overall environmental policy objective is to improve and enhance the health and quality of life of all national and to promote sustainable social and economic development and to mitigate the pollution of land, air, water in the most cost-effective way.

**Implementation structure:** The policy is implemented at Federal and Regional level offices. Other sectors like MOH, Ministry of Urban Development and construction with their Regional Bureaus are main government agencies take part in the implement of the proclamation and regulation.

**How the is implementation?** The Ministry of Environment and Forestry implement the policy in providing guideline like Environmental impact Assessment Guideline, Proclamations like Environmental Pollution Control proclamation and Solid Waste Management Proclamations, conducting monitoring work on implementation policy and capacity building work through workshops; supporting the development of various guidelines, standards appropriate to sector; undertake awareness creation in other Federal government agencies for the implementation of policy and proclamations;

The Ministry of Environment and Forestry has delegated its authority to the Ministry of Industry to ensure the enforcement and implementation of the EIA laws in the industry sector and to undertake EIA review and approval works. This delegation has been communicated to the Ministry of Industry through an official letter sent by the former Federal EPA and a memorandum of understanding is signed between the two institutions. Also Ministry of Urban Development and Construction delegated to execute Solid Waste Management Proclamation 300/2002.

**Major ideas indicate in the policy:** On the policy section 1.2 on urban environment discuss on urban housing as an insufficient and of poor quality demonstrating 31%. Addis Ababa households not having sanitation facilities while in other urban areas the proportion is about 48 per cent with serious deviancies in sanitation services and inadequacy of sewerage infrastructure and random defecation creating unsafe health and environmental problems. Moreover, privacy is impractical as many toilets are communal among many people with absence of doors.

In Section 2.3 key guiding principle discuss human settlement, environment and environmental health ensuring improved environmental sanitation be placed highest on the Federal and Regional agendas for achieving sustainable urban development. It also give emphases ensuring the construction of shared VIP and family latrines in the low income and very high density housing areas towns with frequent emptying by tankers to be implemented as component of broader urban environmental upgrading program including promotion of

the development of sewerage system, sewerage treatment facilities and storm water drainage in urban centers to extent possible to recycle liquid and solid water from homesteads and establishments for energy production.

In section 3.8, control of hazardous materials and pollution from industrial wastes discuss minimization and prevention of discharges s from industrial plans, persons, commercial appliance and establishing safe limits for the location of sanitary landfill sites; reviewing and developing guidelines for waste disposal.

**Gaps:**

- There was no overall comprehensive policy formulation to address the cross-sectoral and sectoral issues that concern the urban sanitation clearly,
- Even though there are very few points stressed about liquid waste in the environmental policy, there is no as such urban liquid waste management strategy, proclamation, regulation, guidelines, manuals, and standards.

**Challenges:**

- Limited public awareness and commitments on the policy implementation.
- Low commitment of regional and local environmental affiliated government agencies like health and urban development and construction.
- Manufacturing industries across the country are found to be the major problems associated with the environmental pollution issues of the country.

## 2.2 Proclamation 300/2002, Environmental Pollution Control

**Issue date and objective:** The Environmental Pollution Control Proclamation No.300/2002 was issued on 3<sup>rd</sup> December 2002 with objective for the protection of the environment to safeguard human health and wellbeing through mitigating pollution as an undesirable consequence on social and economic development activates.

**Implementation structure:** The Proclamation is implemented at Federal and Regional level offices. Other sectors like Ministry of health, Ministry of Urban Development and construction with their Regional Bureaus Regulatory agencies, work processes or sections take part in the implement of the proclamation.

**Major ideas indicated in the proclamation:** Major ideas indicated in the Proclamation in regard to waste management is all urban administrations to ensure the collection, transportation as appropriate, the recycling, treatment or safe disposal of municipal waste through integrated waste management system. On Part Two, Section 5. To monitor and evaluate the adequacy of handling this municipal waste, the authority works in collaboration with relevant environmental agency. Moreover, it discusses the responsibility of persons to create and ensure the public access to toilet for the disposal of waste.

On part thee, article 6 environmental standards, discuss on the authority to formulate environmental standards. In subarticle (1.a and e) discuss on waste management standard is

required for the discharge of effluent into water bodies and sewerage system and waste management standards levels and methods to be used in the generation

**Overlaps:** There is an overlap between Federal Ministry of Health, Food, Medicine and Health Care Administration and Control Proclamation Number 661/2009 and Solid Waste Management Proclamation No. 513/2013 of Ministry of Environmental Protection and Forestry. Both Ministries have the mandate to draft and execute proclamations when it is ratified by Council of Ministers and Parliament. Legal experts in both Ministries would have taken corrective measures on coordinated manner before forwarded to higher officials for ratification.

**Gaps:**

- The proclamation does not clearly confer on wastes management and urban sanitation at large.

**Challenges:**

- The enforcement mechanism would have been involved. Stakeholders like police or kebele administration to bring all persons who failed to comply according the proclamation.
- Weak coordination among sector ministries (Ministry of Health (FMHACA), Ministry of urban Development and construction, Ministry of Environmental Protection and Forestry) entitled to execute the proclamation
- Insufficient and lack of experienced legal professionals in the authority weak to enforce the proclamation

### 2.3 Solid Waste Management Proclamation No. 513/2013

**Issue date and objective:** Solid waste management Proclamation No. 513/2013 was issued on 12<sup>th</sup> February 2007 with objective to enhance at all levels capacities and promote community participation to prevent adverse effects of solid waste creating economically and socially beneficial assets out of solid waste in designing solid waste plan to be implemented at lowest administrative unit of urban administration.

**Implementation structure:** The Proclamation is implemented at Federal and Regional level offices. Other sectors like Ministry of Health, Ministry of Environmental Protection and Forestry entitled to execute the proclamation. Ministry of Urban Development and construction with their Regional Bureau regulatory agencies, work processes or sections take part in the implement of the proclamation.

**How implemented:** Trained inspectors are assigned to execute the proclamation as per the given provisions with support of local police force and prosecuting attorney at regular court. The enforcement is not limited to that specific Ministry or authority. Other government agencies FMHACA, MoUD& C are responsible to enforce when it is necessary.

**Major ideas indicated in the proclamation:** Major ideas discussed in the proclamation part two, article 4, sub articles 1 and 2 are obligations of urban administration in creating enabling conditions to promote investment on the provision of solid waste management services; the obligation of obtaining permit from urban administration prior to engagement in the collection, transportation use or disposal of solid waste.

In Article 5, Solid Waste Management Planning sub-article 1, 2,4 discuss urban administration ensure participation of the lowest administrative levels and local communities in designing and implementing their respective solid waste management plan, urban administration to set their own schedule and prepare its solid waste management plan and report, and the urban administrations transfer responsibilities to lowest administration units to formulate and implement action plans on solid waste management, installation of waste bins on streets and public places, ensuring the collection solid waste, planning and conducting public awareness activities, taking measures to prevent pollution arising from mishandling of solid wastes.

Article 6 subarticle 3 discuss transportation of solid waste from one regional state or urban administration to another regional state or urban administration if the recipient Regional or urban administration notified the sender the capacity to recycle or dispose.

Part two, Article 11 Management of Household Wastes discuss household solid waste wastes in sub-article 1,2,3, and 4 It deals the segregation of recyclable household wastes, from those destined for final disposal; ensure adequate household solid waste collection facilities are in place; the prohibiting of disposal of litters on streets, waterways, park, bus stops, train stations, sport fields, water bodies in urban areas; and urban administrations to delineate residential areas for the compulsory application of the provisions.

Part Two Article 12 Construction debris and demolition wastes sub article 1 discusses urban administration enter to agreement with construction enterprises to refill solid waste disposal sites or quarry pits with pebbles or gravel from demolished buildings or with excavated earth. In sub –article 3 discuss before commencement any construction of residential houses has to ensure the availability of adequate facility for solid waste management.

#### **Part Four Article 14 Constructions of Solid Waste Sites**

Sub article 1, 2 and 3 discuss each urban administration ensure solid waste disposal sites are constructed and properly used, solid waste disposal sites under construction or constructed prior or undergoing any modification is subjected to environmental auditing and impact assessment.

**Overlaps:** There is an overlap between Ministry of Environmental protection and Forestry Proclamation 513/2013 and Food, Medicine and Health Care Administration and Control Regulation Number 299/2013 on waste management.

**Gaps:** The proclamation does not clearly confer on wastes management and urban sanitation at large. It discuss on general safety of the environment which encompass proper handling of all wastes harmful to the environment. In particular, to address the issue of solid waste in particular, solid waste management proclamation 513/2007 is issued.

- This proclamation overlaps with Food, Medicine and Health Care Administration and Control Regulation Number 299/2013.
- Except Addis Ababa city and other very few towns, no other city/town has liquid waste management proclamation and regulation.
- In Addis Ababa, almost 50% of industries are located and majority of them do not have their own liquid waste treatment plant or do not have access to city's sewer line.
- In Addis Ababa where proclamation and regulation are available, but there are problems during implementation.
- Provision of Insufficient training for executive bodies in the interpretations of proclamation and regulation.
- Lack of coordination between bodies that developed the standards and enforce.

**Challenges:**

- The enforcement mechanism would have been involved the stakeholders like police to bring all persons who failed to comply according the proclamation/
- Legal offices established in the authority is also weak to enforce the proclamation
- Weak coordination among sector ministries (Ministry of Health (FMHACA), Ministry of urban Development and construction, Ministry of Environmental Protection and Forestry) entitled to execute the proclamation.
- Insufficient experienced legal professionals in the authority.

### **3. Ministry of Water, Irrigation and Energy**

#### **3.1 Water Supply and sanitation Policy 2001**

**Issue date and objective:** Objective of Sanitation policy is to creating sustainable capacity building in terms of the enabling environment, including institutions, human resources development, legislation and regulatory framework for water supply and sanitation, Carry out operation and maintenance of all water supply and sanitation services, enhancing the well being and productivity of the people by creating conducive environment for the promotion of appropriate sanitation services.

**Implementation structure:** It can be implemented by the Ministry as well as by Regional Health Bureaus and sector agencies relevant to execute or enforce the proclamation

**Major ideas indicated in the policy:** Implement acceptable minimum sanitation urban and rural facilities; develop a collaborative and cooperative framework for the development of sanitation systems; develop and promote guidelines, rules, and regulations for the study, design, operation, and maintenance of efficient, appropriate, and sustainable sanitation services;

promote involvement of NGOs, external support agencies and the private sector in sustainable sanitation program; manage import of wastewater treatment technologies; build capacity for engineering, design, construction, operations, and maintenance of sanitation systems.

**Overlap:** sanitation issues are indicated in both water and health sector policies. Ministry of health indicates in its general policy strategy; on inter-sectoral collaboration part emphasized particularly developing safe disposal of human and household wastes. In the Water Sector policy and strategy, specifically, Sanitation policy: develop standards for different types and levels of sanitation system including both onsite and offsite sanitation facilities; manage the import of waste water treatment technologies. As per Water, Irrigation and Energy Ministry, Sanitation Policy document the definition of sanitation is issue related to water resource management including both onsite and offsite water-dependent system which indicates Water Ministry is responsible on water dependent sanitation facilities. But the ministry of health is responsible onsite sanitation with water dependent or non water dependent. This indicates a sectarian outlook which fragments the promotion of sanitation services as whole in urban communities

**Gaps:**

- The Health and Water and Sanitation policies were issued long ago (1993 and 2001). Progress on sanitation did not meet expectations.
- Policy issue on sanitation are not properly treated or implemented by either ministry.

**Challenges:**

- Funds allocated for onsite and offsite sanitation facilities construction were insufficient.
- Fragmented promotion on sanitation services as whole in urban communities.

### 3.2. Urban Sanitation Universal Access plan [part IV]

**Issue date and objective:** The urban sanitation universal access plan was issued in 2011 to improve the county's urban sanitation conditions in relation to liquid and solid waste management, availing latrine facilities.

**Implementation structure:** The access plan was planned to be implemented in bigger regional towns/city administrations to improve urban sanitation situations

**How is the implementation?** Even though, the implementation is going on, still there is shortcoming in achieving the planned activities. For example, in the plan, 100% access to latrine, solid waste disposal and availing de-sludging facilities. But latrine coverage, solid waste disposal and de-sludging service are not in.

Good track

**Major ideas indicated in the Universal Access plan.**

The plan discusses on national urban sanitation and hygiene including urban drainage. A total of 203,250,078 USD required for achieving 100% access to latrine, solid waste

disposal, and dislodging facilities by the year 2015. The plan includes sewerage expansion, onsite sanitation, and seepage collection and disposal as an alternative to sewage in all towns in the country.

**Gaps:** The required amount of fund was not mobilized as it was desired. The coordination of sector offices was insufficient.

### **Challenges**

1. To achieve the planned activities, it needs more resources. which will be out of the countries capacity
2. Even if the resources are available, there is still a shortcoming of staff.
3. Institutional arrangement one problem during implementation

## **4. Ministry of Urban Development and Construction (FMoUDC)**

### **5.1 Urban Development Policy**

#### **Issue date and objective**

Urban Development Policy was issued on August 1991 with objective to make urban the center of development to enable to contribute and support to economic development of rural areas.

#### **Implementation structure**

The policy can be implemented at Federal level and established Regional Urban Development and Construction Bureaus as well as by City and Town Municipalities or Administrations.

**How is the implementation?** The policy is implemented through proclamations, regulations and guidelines derived out of to practically implement objectives of the policy

**Major ideas indicated in the policy:** Indicated in Part I (urban problems and the need for urban development policy) section I.I, article I.I.I. D: To contain the existing urban solid and liquid waste management problem arise from informal and slum settlements in an organized system. Also, it indicates the need to establish disease prevention mechanisms in applying personal and environmental sanction activities through urban health extension program. It also indicates the need to mobilize the dweller and strengthen public and private partnership to manage urban solid and liquid waste and to recycle waste to prevent pollution problems.

**Challenges:** National policy on waste management is not translated into action at local level.

## **4.1 Urban Waste Management and Green and Beautification Draft Strategy**

### **Issue date and objective**

The draft strategy was developed in April 1991. The objectives the draft strategy are:

- Keep sustainable urban solid waste management system.
- Build urban cities/towns capacity as per the legislative stipulated in the environmental policy.
- Mobilize community, public, and private sector to work together to benefit from waste management service.
- Keep urban towns/cities free from solid waste pollution.
- Create conducive environment for small scale enterprises to give solid waste management service.
- Create community and stakeholder devotion to solid waste management.

### **Implementation structure**

The strategy can be implemented at federal level and established regional urban development and construction bureaus as well as by city and town Municipalities or administrations.

### **How is the implementation?**

The strategy is implemented through guidelines annual action plans. Moreover, it has to be introduced to all implementing staffs through workshops, distributing the printed strategy documents, monitoring the plan of actions if they are derived from the strategy, through supportive supervision and evaluation the effectiveness of the implementation can be observed

**Major ideas indicated in the strategy:** are regarding urban solid waste management, establish coordinated solid waste disposal system; solid waste containers placement, transport and landfill site arrangement and how to implement the strategy. In terms of liquid waste management: type and source of solid waste, urban liquid waste collection and disposal; existing situation of liquid waste management from legal point of view.

### **Gaps:**

- Important stakeholders are not participated in the strategy development process and problem seen in taking collective ownership.

### **Challenges:**

- It took long time to implement the strategy.
- New integrated urban sanitation and hygiene strategy is development underway by Federal Ministry of Health coordination.

## **5. Opportunities**

- Availability of policies, proclamations, regulations.
- Decentralized management and decision making.

- Community mobilization and engagement approach.
- Technology options and experience of other countries.
- Fast growing economy and infrastructure development,
- Partner interest.

## 6. General Recommendations

- Health policy was issued in the transition period of 1993 and does not provide clear emphases on liquid waste management urban sanitation. Therefore, the policy needs updating.
- The Food, Medicine and Health Care Administration and Control Regulation Number 299/2013 should include provisions for urban sanitation and liquid waste management. Therefore, the proclamation and regulation has to be revisited or amended,
- The role and responsibility on waste management is divided among different line ministries (FMoH- FMAHCA, Ministry of Environmental protection and Forestry and Ministry of Urban Development and Construction). This indicates that waste management in urban areas is poorly coordinated and regulated. Therefore, overlap and unclear roles of these stakeholders should be solved to improve urban sanitation in general and waste management services in particular.
- The sanitation and hygiene strategic action plan focuses only on peri-urban and small towns. The forthcoming strategic action plan must focus on large and medium town sanitation as well as solid and liquid waste management.
- HSDP V must focus on large and medium towns as well as solid and liquid wastes management to strengthening urban sanitation services.
- The Implementation Manual for Urban Health Extension Program needs revision to strengthen and intensify the urban sanitation services.
- Ministry of Urban Development and Construction must emphasize coordination of Regional Bureaus of Urban Development and Construction and Municipalities/Town Administrations to strengthen and sustain strong USWM services.
- National policies, proclamations, and regulations should be translated into action at regional and woreda levels.
- Stakeholders must participate in planning, coordination, monitoring and evaluation of urban waste management programs.
- Develop MOU documents to be signed by sector ministries and agencies that will delineate the duties and responsibilities.
- Develop urban sanitation strategy.