SCOPING PAPER

FAECAL SLUDGE MANAGEMENT IN ETHIOPIA

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1. About the study

1.1. Introduction

This scoping paper aims to assess the current state of faecal sludge management in Ethiopia and identify the gaps, challenges, and opportunities when it comes to Centre for Science and Environment's (CSE) engagement in promoting sustainable and inclusive sanitation practices in the country. It provides an overview of the current sanitation status of Ethiopia and includes a review of existing literature, research, policy and regulatory context, as well as stakeholder analysis.

The Ministry of Water and Energy in Ethiopia has a mission to improve societal welfare through equitable, sustainable, and integrated development and management of water and energy resources. The ministry is responsible for water supply and sanitation, integrated water resource management, and renewable energy development.

The Centre for Science and Environment (CSE) is an independent research and advocacy organization based in New Delhi, India. The organization is dedicated to advocating for sustainable urbanization, water and sanitation, public health, river pollution abatement, low-carbon development, natural resource management, and livelihood security.

Recognizing their shared goals and priorities, the Ministry of Water and Energy in Ethiopia and CSE have agreed to enter into a three-year collaboration (2023–2026). This collaboration will establish a need-based knowledge partnership, focusing on collaborative research, knowledge exchange and dissemination, capacity-building for state and non-state actors, advocacy strengthening, campaign support, demonstration programs, and training that is suitable for the context of countries in the Global South.

The priority areas for joint working will include capacity development, research and advocacy in specific focus areas:

1. Climate Change and Water Security: emphasizing source sustainability, groundwater recharge, and water quality.

2. Water-sensitive cities: addressing water, sanitation, stormwater, and wastewater management, particularly in unplanned and informal settlements.

3. Decentralized and non-sewered sanitation systems: focusing on faecal sludge management.

4. Restoration of water bodies, rivers, and lakes: rejuvenating and preserving water resources.

Through this collaboration, the Ministry of Water and Energy in Ethiopia and CSE aim to contribute to sustainable and inclusive water and sanitation practices, technology and treatment solutions, and jointly advance research and policies appropriate for the Global South context.

1.2. Methodology

The study used a mixed-methods approach, including a literature review available online, reports published in Ethiopia regarding sanitation, case studies available, and stakeholder consultations such as consultation with ministry officials, partners working in Ethiopia, and online interviews of academicians and professionals working in the sanitation sector Ethiopia.

Table 1: Sources of data used to understand the state of sanitation in Ethiopia

The data source used in the study	year	URL
National Hygiene and Sanitation Strategy	2005	https://documents1.worldbank.org/curated/en/216221468023104331/pdf/463600WSP0Box31SanitationStrategyAF.pdf
Ethiopia's Urban Health Extension Program	2009	https://publications.jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=22119&lid=3
Demographic and Health Survey, Central Statistical Agency	2016	https://dhsprogram.com/pubs/pdf/FR328/FR328.pdf
Improve Urban and Small Towns Sanitation Services Delivery in Ethiopia World Bank Group	2017	https://www.eawag.ch/fileadmin/Domain1/Abteilungen/sandec/schwerpunkte/sesp/ConCad/resource_package_new/04_institutional_arrangements/urban_sanitation_services_ethiopia.pdf
USAID- Ethiopia Water for the World Country Plan	Sept 2017	https://www.globalwaters.org/sites/default/files/wfw_ethiopia_country_plan.pdf
SFD report of Hawassa	2018	https://www.susana.org/en/knowledge-hub/resources-and-publications/library/details/2590
Definition of Powers and Duties of the Executive Organs Proclamation No. 1263-2021	2022	http://www.efda.gov.et/wp-content/uploads/2023/06/Definition-of-Powers-and-Duties-of-the-Executive-Organs-Proclamation-No.-1263-2021.pdf
WHO/UNICEF JMP 2023 Progress on household drinking water, sanitation and hygiene 2000–2022: special focus on gender	2023	https://data.unicef.org/country/eth/#sanitation

The data source used in the study	year	URL
U N Water SFD 6 Data Ethiopia	2023	https://www.sdg6data.org/en/country-or-area/Ethiopia#anchor_6.1.1
Integrated Urban Sanitation And Hygiene Strategy IUSHS-2023	2023	
Integrated Urban Sanitation And Hygiene Strategy Urban Sanitation Action Planning	2023	

1.3. Key points

The study will address the following points:

1. The current situation of sanitation in Ethiopia
2. The status of various components of the sanitation value chain and associated guidelines in Ethiopia
3. The existing policies and programs in promoting access to sanitation in Ethiopia
4. Improving sanitation in Ethiopia—challenges and opportunities
5. Conclusion: Inclusive, climate-resilient, urban water and sanitation challenges

2. Background and introduction of Ethiopia

Ethiopia, officially the Federal Democratic Republic of Ethiopia, is a landlocked country located in the Horn of Africa. It shares borders with Eritrea to the north, Djibouti to the northeast, Somalia to the east and northeast, Kenya to the south, South Sudan to the west, and Sudan to the northwest. Ethiopia has a total area of 1,100,000 square kilometres (420,000 square miles). As of 2022, it is home to around 123.4 million inhabitants (JMP Report, 2023), making it the 13th most populous country in the world, the second most populous in Africa after Nigeria, and the most populated landlocked country on Earth. The national capital and largest city, Addis Ababa, lies several kilometres west of the East African Rift that splits the country into the African and Somali tectonic plates.

Ethiopia is an ecologically diverse country, ranging from the deserts along the eastern border to the tropical forests in the south to extensive Afromontane[1] in the northern and southwestern parts. Lake Tana in the north is the source of the Blue Nile.

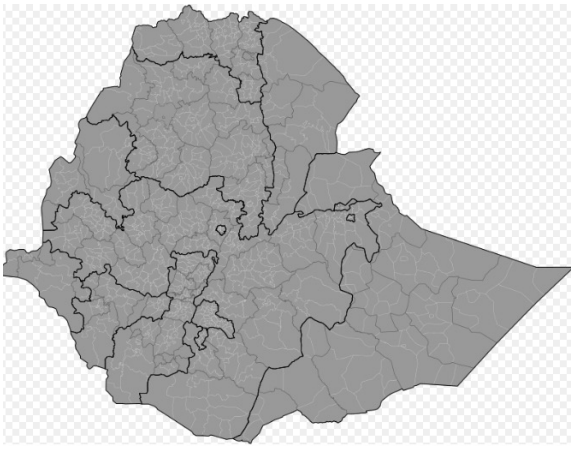
Figure 1: Location of Ethiopia

Location • Geographical region: sub-Saharan Africa, Africa • SDG region: SDG sub-Saharan Africa • Least developed countries, landlocked developing countries
Land • Land area: 1,128,571 km2 (2020) • Land use by sector: 34% agriculture, 15% forest and 51% other (2018–2020)
People • Total population: 123,379,924 people (2022) • Population density: 102 people per km2 (2020) • Urbanization: 20% lives in urban areas and 73% lives in rural areas (2020)
Economy • Total GDP: 264,051,501,936 USD per year (2020) • GDP per capita: 2,140 USD per year (2020) • Value added by sector: 38% from agriculture, 37% from services and 23% from industry (2020)
Source: https://www.sdg6data.org/en/country-or-area/ethiopia

Map 1: Map of Ethiopia—regions and capital cities

2.1. Administrative divisions

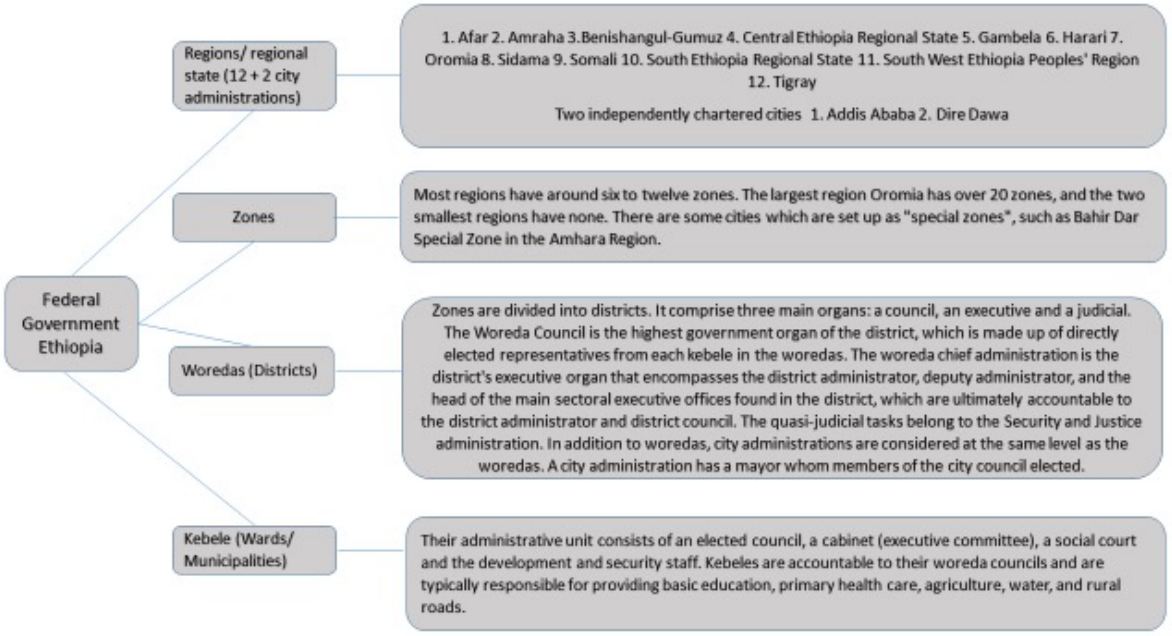
Map 2: Subdivisions and regions of Ethiopia



Subdivisions of Ethiopia. The darkest lines indicate regions, the lighter lines zones, and the white lines, districts.

Regions and chartered cities

Figure 2: Government framework in Ethiopia



3. Current state of sanitation in Ethiopia

The sanitation status in Ethiopia is a significant challenge. As Africa's second-most populous country, Ethiopia exhibited an estimated growth of 6.4 per cent in the fiscal year 2021–22.[2] In terms of water and sanitation, 64 million citizens now have easier access to basic drinking water, and the practice of open defecation has significantly declined.

Despite these strides, approximately 60 million Ethiopians still lack access to safe drinking water, contributing to seven per cent of the global water crisis, and over 112 million (93 per cent) are without basic sanitation facilities, with 22 million (18 per cent) continuing open defecation.[3] Poor sanitation is a major cause of waterborne diseases, such as diarrhoea, which is a leading cause of death among children under the age of five in Ethiopia (JMP, 2022). (*see* Figure 4 and 5)

Ethiopia's rapid urbanization is putting stress on the already inadequate water supply and sanitation (WSS) system in urban areas. The capacity of urban centres to adequately dispose of wastewater is low, exposing natural resources to pollution, and posing a risk to human health. Out of the estimated 3,98,985 m3/day of wastewater produced in Addis Ababa, Addis Ababa Water and Sewerage Authority (AAWSA) only has the capacity to properly dispose 1,727m3/day or

Figure 3: Status of SDG 6 in Ethiopia

Source: (https://www.sdg6data.org/en/country-or-area/Ethiopia#anchor_6.1.1.)

0.43 per cent of wastewater. The situation is even worse in other secondary cities including, Mekelle (0.35 per cent), Bahirdar and Hawassa (0.22 per cent), Gondar (0.07 per cent), Dire Dawa (0.05 per cent), and Adama 0.41 (per cent) (World Bank, 2017).

The lack of access to sanitation facilities in Ethiopia is due to several factors, including limited infrastructure, inadequate funding, and a lack of awareness about proper sanitation practices. The rural areas in Ethiopia are particularly affected, with many households lacking access to basic sanitation facilities, such as toilets and handwashing stations.

To address this issue, the Ethiopian government has launched various initiatives and programs aimed at promoting sanitation and hygiene in the country. For instance, the government's "One WASH National Program" aims to provide access to safe water supply and sanitation facilities in 307 Woredas in Ethiopia by 2030. The program focuses on increasing access to sanitation facilities, promoting proper hygiene practices, and improving the management of sanitation infrastructure.

International organizations, such as the World Health Organization (WHO) and UNICEF, as well as the World Bank-funded **Second Urban Water Supply and Sanitation Project** for 22 towns in Ethiopia, are working with the Ethiopian government to improve access to sanitation facilities and promote proper hygiene practices. For instance, the WHO has developed guidelines for improving sanitation and hygiene in healthcare facilities in Ethiopia, while UNICEF has been working towards improving access to water and sanitation facilities in schools.

In Ethiopia, there are few faecal sludge treatment plants (FSTPs) in operation, and most of them are located in urban areas. According to the Ethiopian Ministry of Water, Irrigation, and Energy, as of 2019, there were only five functional FSTPs in the country. These FSTPs are located in Addis Ababa, the capital city, and in other major urban areas such as Bahir Dar, Mekele, and Adama. Except for the one in Addis Ababa, the other FSTPs are not functional due to various reasons.

The FSTPs in Ethiopia use various technologies for treating faecal sludge, including anaerobic digestion, drying beds, and constructed wetlands. However, the capacity of these FSTPs is limited, and they are unable to meet the demand for faecal sludge treatment in the country.

The lack of FSTPs in Ethiopia is a significant challenge, as it contributes to the poor sanitation situation in the country. Most households and institutions in Ethiopia

60 million lack access to safe drinking water (64 million has access to safely managed and basic service)
112 million lack access to basic sanitation facilities
22 million practice open defaecation
65 per cent of households have access to improved water sources

Source: JMP Report, 2023

Sanitation ladder

- Safely managed

Use of improved facilities that are not shared with other households and where excreta is safely disposed of in-situ or removed and treated offsite.

- Basic

Use of improved facilities that are not shared with other households

- Limited

Use of improved facilities shared between two or more households

- Unimproved

Use of pit latrines without a slab or platform, hanging latrines or bucket latrines

- Open defecation

Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches and other open spaces or with solid waste

Note: Improved sanitation facilities are those designed to hygienically separate excreta from human contact, and include: flush/pour flush toilets connected to piped sewer systems, septic tanks or pit latrines; pit latrines with slabs (including ventilated pit latrines), and composting toilets

Source: JMP Report, 2023

use on-site sanitation systems, such as pit latrines, septic tanks, and pour-flush toilets, which generate faecal sludge that needs to be safely treated and disposed of.

To address this issue, the Ethiopian government and international organizations have been working towards increasing the number of FSTPs in the country. For instance, the World Bank is supporting the construction of new FSTPs in all 23 towns including, Addis Ababa, the capital city of Ethiopia, which is expected to serve as a model for other cities in Ethiopia.

Additionally, the Ethiopian government has launched various initiatives and programs aimed at promoting the safe treatment and disposal of faecal sludge.

For instance, the government's 'One WASH National Program,' includes plans to increase access to FSTPs in the country and promote the sustainable management of sanitation infrastructure. Other programs such as Second Urban Water Supply and Sanitation Project, CR-WASH and TSEDU-Ethiopia Program aim to improve water supply and sanitation in the Country.

3.1. State of sanitation in urban areas of Ethiopia

The present urban and small-town sanitation conditions in Ethiopia are alarming; from the viewpoints of both poor management and poor urban planning. According to Beyene et.al, 70 per cent of urban residents in Ethiopia live in slums, 60 per cent do not own the home they live in and over 50 per cent use a toilet they share with other households.

According to the WHO/UNICEF Joint Monitoring Programme (JMP) report of 2022, the estimated coverage for urban sanitation in 2022 were as follows—improved or safely-managed (17 per cent), limited (29 per cent), basic (five per cent) and unimproved facilities (46 per cent). Open Defecation (OD) in urban areas is reported at three per cent. (see Figures 4, 5 and Graph 3)

Sanitation coverage in urban slums, which covers most of the urban areas, is not as good as the coverage in the total urban area. Urban slums contain 80 per cent of the population of the urban areas, yet have poorer provisions of sanitation facilities.

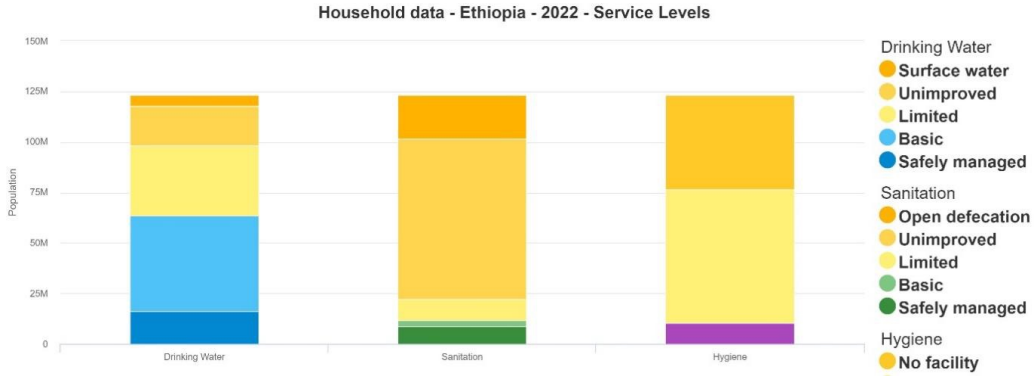
Figure 4: Sanitation facilities in rural and urban areas

COUNTRY, AREA OR TERRITORY	Year	Population (thousands)	% urban	RURAL						URBAN						TOTAL					
				At least basic	Limited (shared)	Unimproved	Open defecation	Annual rate of change in at least basic	Annual rate of change in open defecation	At least basic	Limited (shared)	Unimproved	Open defecation	Annual rate of change in at least basic	Annual rate of change in open defecation	At least basic	Limited (shared)	Unimproved	Open defecation	Annual rate of change in at least basic	Annual rate of change in open defecation
Ethiopia	2015	102 472	19	4	2	54	40	0.22	-2.86	20	28	43	9	0.33	-0.85	7	7	52	34	0.30	-2.63
	2022	123 380	23	6	3	70	22			22	29	46	3			9	8	65	18		

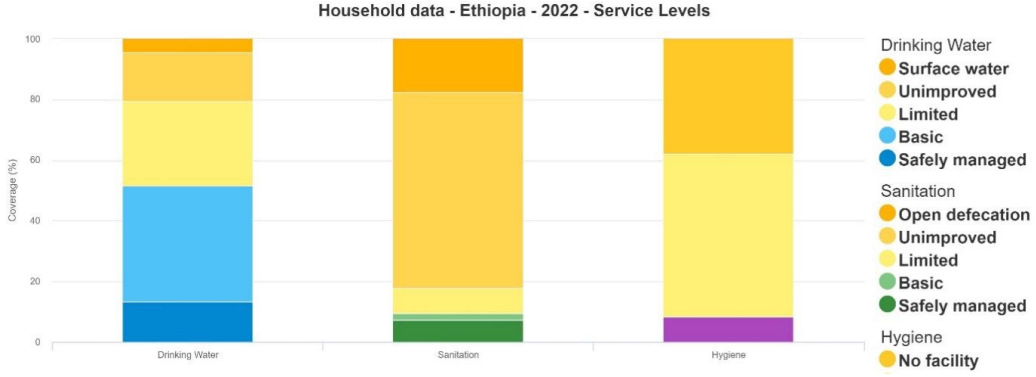
Figure 5: Improved sanitation facilities in rural and urban areas

COUNTRY, AREA OR TERRITORY	Year	RURAL							URBAN							TOTAL						
		Proportion of population using improved sanitation facilities (excluding shared)				Proportion of population using improved sanitation facilities (including shared)			Proportion of population using improved sanitation facilities (excluding shared)				Proportion of population using improved sanitation facilities (including shared)			Proportion of population using improved sanitation facilities (excluding shared)				Proportion of population using improved sanitation facilities (including shared)		
		Safely managed	Disposed in situ	Emptied and treated	Wastewater treated	Latrines and other	Septic tanks	Sewer connections	Safely managed	Disposed in situ	Emptied and treated	Wastewater treated	Latrines and other	Septic tanks	Sewer connections	Safely managed	Disposed in situ	Emptied and treated	Wastewater treated	Latrines and other	Septic tanks	Sewer connections
Ethiopia	2015	3	3	<1	<1	6	<1	<1	16	15	<1	<1	38	7	3	6	6	<1	<1	12	2	<1
	2022	4	4	<1	<1	8	<1	<1	17	17	<1	<1	40	9	2	7	7	<1	<1	15	2	<1

Graph 1: Household population in different service levels



Graph 2: Percentage coverage of service levels



3.2. State of sanitation in rural areas

The current conditions of sanitation in rural Ethiopia is also alarming. The JMP data shows the disaggregated data for rural and urban sanitation; the estimated coverage for 2022 for rural sanitation indicated were as follows—improved or safely-managed (four per cent), limited (three per cent), basic (1.3 per cent) and unimproved facilities (70 per cent) have reached in 2020. Open Defecation (OD) in rural areas has been reported at 22 per cent. The data shown in the table 2 shows the huge disparity in the provisioning of sanitation facilities between rural and urban areas.

Ethiopia, a predominantly rural country, has focused much of its sanitation efforts on rural sanitation in the past two decades, with urban sanitation only recently prioritized with the IUSHS and OWNP Phase II. As a result, progress in urban sanitation has been slow in comparison to rural sanitation. For example, the percentage of the rural population using safely managed facilities increased by 3 per cent between 2000 and 2017, while the percentage of the urban population using safely-managed facilities did not increase (see Figure 4, 5 and Graph 3).

Graph 3: Percentage of service-level coverage in rural and urban areas

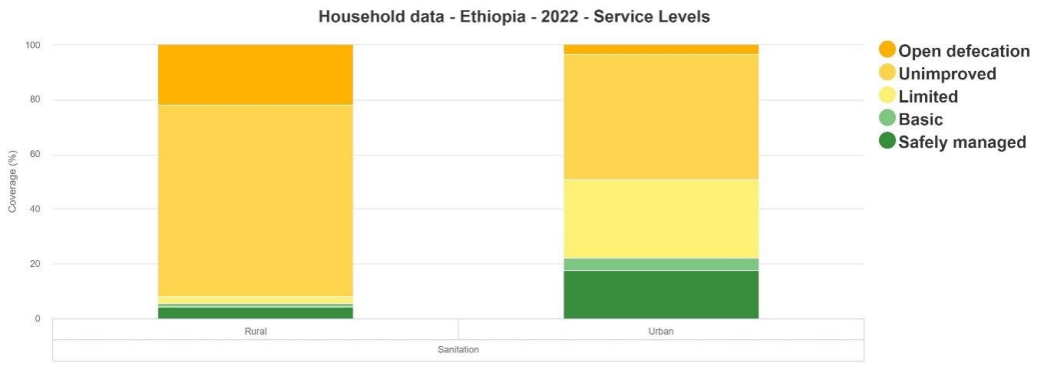


Table 2: Coverage and population in rural and urban for service-level

	Urban		Rural	
Service level	Coverage	Population	Coverage	Population
Basic service	4.8	1349090	1.3	1262140
Limited service	28.5	7978369	2.6	2493828
Open defecation	3.3	917420	21.8	20840820
Safely managed service	17.4	4877078	4.2	4030708
Unimproved	45.9	12837169	70.0	66793303

4. Status of various components of sanitation value chain in Ethiopia

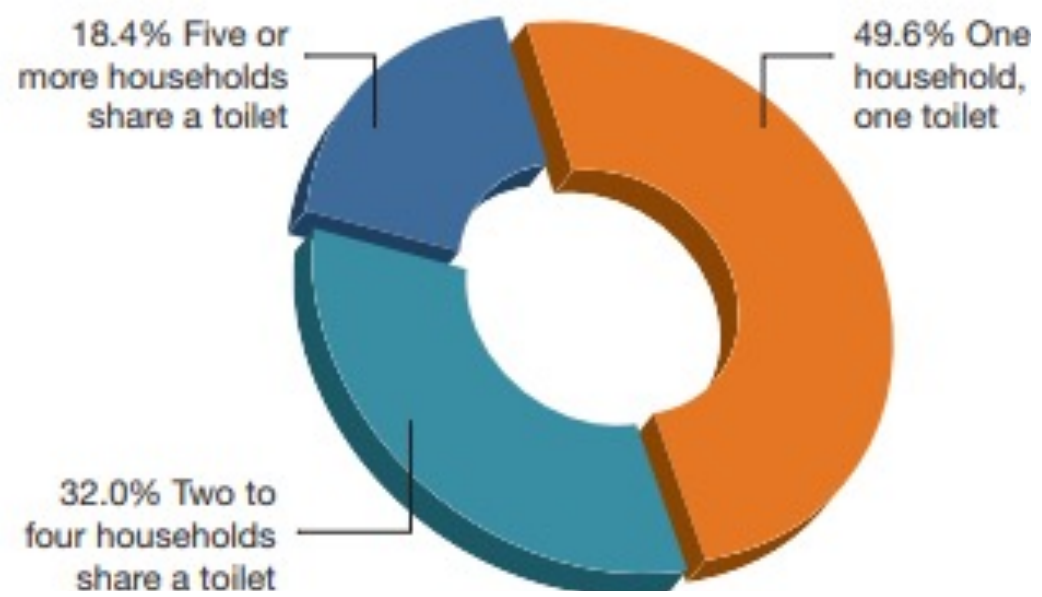
4.1. Containment

Nationally, 97 per cent of urban residents rely on on-site sanitation (toilets and latrines not connected to a sewer system) and over 80 per cent of the urban population relies on dry pit latrines (CSA, 2016). Open defecation is widespread. There is extensive sharing of toilets, and very inadequate downstream services to support the safe management of faecal sludge that is removed from pits and cesspools when they fill up. Data from a representative sample of households across 10 sample towns surveyed by the World Bank[4] illustrates that three quarters of all households were using a dry toilet, and more than half of these households used a dry toilet that was shared by several families. Most people use a toilet that was located outdoors, and the top-structures are built predominantly from *chika* (wood and mud) or concrete blocks, with a corrugated iron roof. 18.4 per cent of the population shared a toilet between five households; 32.0 per cent of the population shared a toilet between two to four households; and 49.6 per cent of the households had one toilet to their household (Heymans et al., 2017) (see Graph 3: Survey of shared toilets in 10 cities of Ethiopia).

Figue 12 shows the variations in the types of toilets used in the 10 towns, and the data shows significant variation. In Welkite, only four per cent of the population use flush-or-pour flush toilet, compared to the 68 per cent in Gondar who do so. Households with a flush toilet have containment systems as a simple receiving chamber, better described as a cesspool or leach pit. 16 per cent of condominium residents use dry pit latrines because their indoor flush toilets were dysfunctional. This was not confined to just one town, but was noted in Batu, Gondar, Nekemte, and Sebeta. The problems were related to poor quality plumbing installations, badly constructed or undersized septic tanks, and low water pressure (Chris Heymans, 2017).

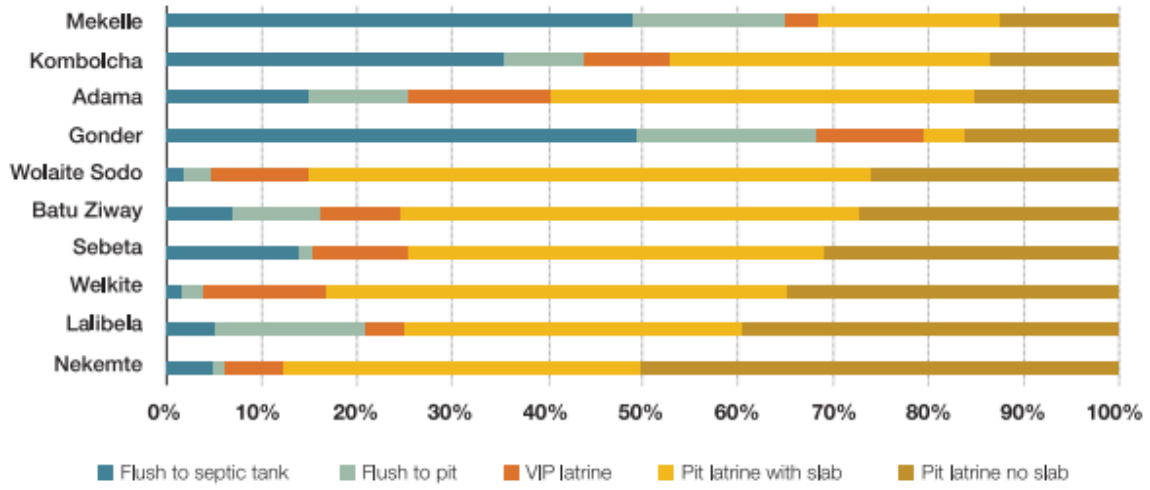
One of the mitigating ways by which small, medium, and large towns in Ethiopia alleviate the shortage of private latrines and the problem of open defecation is by constructing public and communal toilets. However, a study conducted on 335 public toilets in major towns and cities in Ethiopia (Kebede Worku, 2016) found

Graph 3: Survey of shared toilets in 10 cities of Ethiopia



Source: (Heymans et al., 2017)

Graph 4: Survey of containment types in 10 cities of Ethiopia



Source: (Heymans et al., 2017)

that 37 per cent of the latrines are poor, another 37 per cent are fair or poor, and only 15 per cent are in very good condition. Although the facilities are available, the user levels are not commensurate with the need in urban areas.

Addis Ababa: Addis Ababa is one of the largest cities in Africa, with more than three million residents out of which 80 per cent live in urban slums. Its people have been facing serious sanitation problems. According to a study (Abebe Beyene, 2015) conducted to access the sanitation coverage in the urban slums of Addis Ababa, only 11.4 per cent of urban slum residents have access to improved sanitation. The majority of sanitation facilities were dry toilets in the urban slums of Addis Ababa, and Ethiopia in general. For instance, dry toilet facilities accounted for 90.8 per cent for urban slums and 74 per cent among the total urban population of Addis Ababa. Among the cleaning materials, hard paper is the most commonly used.

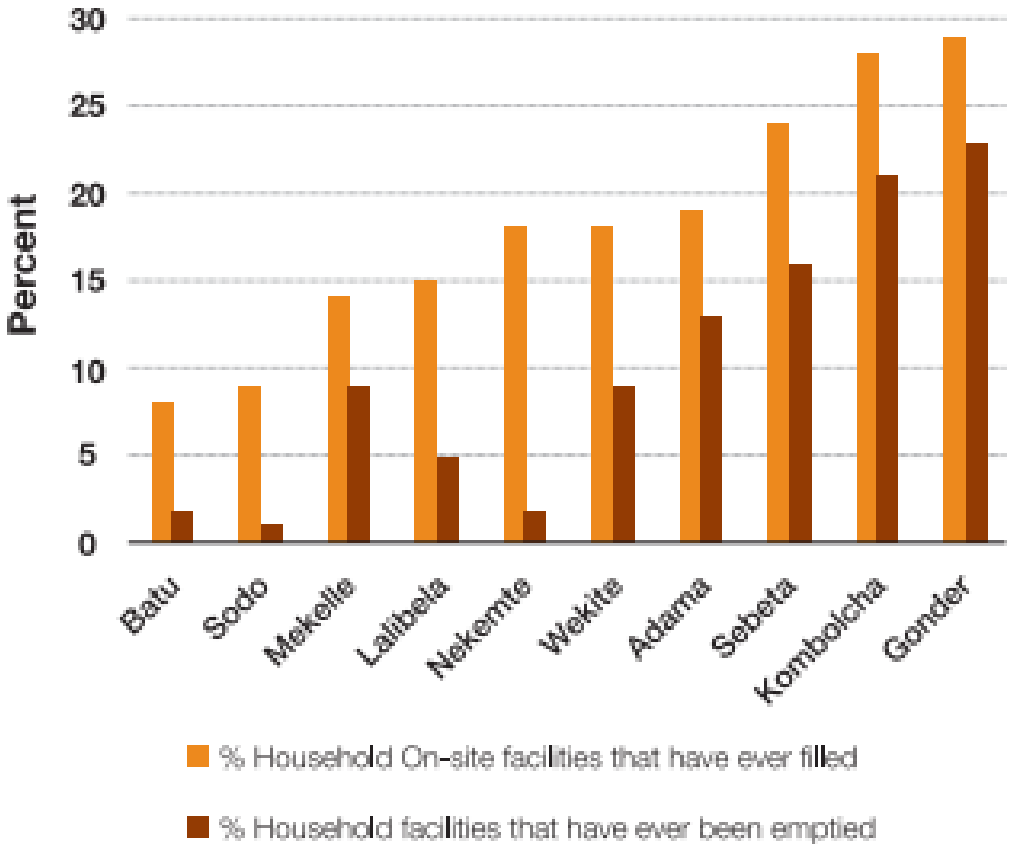
Hawassa City: The containment systems in Hawassa were septic tanks. Effluent goes in the on-site soak pits, or steady leaching from the tank into the soil where tanks are not fully lined. A World Bank study (Chris Heymans, 2017) noted that many tanks and pits never (or very infrequently) fill up in Hawassa which may be due to the infiltration of groundwater during the rainy season. During the drier season, the groundwater drops. The filling of pits from groundwater rising above the base of the pit is thought to result in the pit contents 'fluidising' on a regular basis, with the content being 'washed-out' into the highly porous sub-soils. The study also reveals that 62 per cent of households reported using a shared facility, 49 per cent shared an improved facility and 13 per cent shared an unimproved facility. This makes the use of shared facilities a significant element of sanitation provision in the city (SFD report, Hawassa).

4.2. Emptying

Households that are traditionally close erect a cover over a full latrine pit and build a new one, but due to space unavailability, the need is emerging for safe and affordable pit emptying services. The report on 10 towns of Ethiopia (Chris Heymans, 2017) show that more than half (58 percent) of the households with latrine pits have used emptying services, compared to the 42 per cent who said they had covered over full pits.

The report indicated that about one in five urban household have septic tanks and latrine pits that have ever been filled, and about one in 10 has ever been emptied. In line with the predominance of dry pit latrines, the type of household toilet that is emptied most commonly is a dry pit latrine with a slab and some degree of pit lining, and only 11 per cent of that type of toilets have been emptied (*see* Graph 5: Household facilities that have been filled/emptied).

Graph 5: Household facilities that have been filled/ emptied



(Heymans et al., 2017)

Emptying services are not adequately available and have a long waiting time and high-desludging fees. To avoid the build-up of the volume of faecal sludge, it is being discharged illegally directly into local drainage channels. Accessibility of the households is also a big issue due to limited road access, steep slopes, and the length of hose required to reach some sites. Vacuum tankers technology is also not sufficient to remove dense sludge from pit latrines which also contains a lot of solid waste.

Addis Ababa: 88 per cent of the households in urban slums have toilet facilities (Abebe Beyene, 2015) and used municipal emptying services whereas only eight per cent connected of the population had their toilet facilities near rivers. There was no manual pit emptying practices in the study area.

Hawassa City: Hawassa has no sewerage system. Faecal sludge management in Hawassa is the responsibility of the HTWSSSE. HTWSSSE is responsible for the

emptying of septic tanks and latrine pits. They operate two vacuum tankers and supervise approximately 12 vacuum tankers owned by private operators. The World Bank study (Chris Heymans, 2017) found that 92 per cent of the households reported that their containments never filled up or required emptying. This is thought to be due to the waste leaching into the highly permeable soil and due to 'fluidising' of the pit contents during the rainy season, resulting in the content being 'washed-out' into the highly porous sub-soils. Conversely, nine per cent of their respondents stated that their pit or tank had ever been filled. The frequency of reported filling ranged from below one year to above 10 years. (SFD Report, Hawassa)

4.3. Transportation

Government and private desludgers both exist in Ethiopia. The private service engaged in vacuum truck operation charge much more than the public service and their market with the household is limited and focus largely on institutions and industries. In small towns, customers rely on a municipal tanker service, where it is available, or they hire a vacuum tanker from a neighbouring town. Hiring a tanker from another town raises the cost substantially, and puts the service out of the reach of most households. Privately operated vacuum tankers are generally not found in small towns, as there is not enough demand to make emptying commercially viable. There is no well-established system to make sanitation a business opportunity; although Market Based Sanitation (Sanitation Marketing) has been promoted recently in the urban areas (Federal Democratic Republic of Ethiopia, 2023).

Desludging fee is also a big issue. Municipal vacuum tanker tariffs are generally subsidized by the local authority and are substantially lower than those of commercial service providers. Private vacuum tanker services generally ranges from Birr 400 to 1000 per tanker load. Municipalities generally charge from Birr 300 to 600 for households, and from Birr 400 to 800 for institutional and commercial customers.

Addis Ababa- In Addis Ababa, there is a huge difference in the charges of public and private emptiers. Three per cent of households used manual emptying methods, although evidence from beyond the 10 towns' assessment suggests the incidence could be far higher. Among the households that uses either municipal or private pit emptying services were not satisfied due to high waiting time and high cost for municipal and private pit emptying services respectively. The average price for municipal pit emptying per toilet is about US$ 9.3 and US$ 36.0 for private pit emptying. The average pit emptying frequency was twice a year. As the result of the severe constraints of pit emptying services, most toilet facilities (about 50%) were full. (Abebe Beyene, 2015)

Hawassa City: According to the SFD report of Hawassa city, there are both public and private emptiers in the city. The municipality owns two vacuum tankers that carry out up to six trips per day. There are five privately owned vacuum tankers registered with the HTWSSSE. An additional four or five privately owned vacuum tankers provide emptying services exclusively for hotels, resorts and restaurants in the city. Householders predominately use private providers for emptying services as they are able to respond faster, although they are reported to charge a higher tariff compared to the municipal services. The approved charge rates (applicable only to the HTWSSSE services) given by the General Manager of Hawassa and HTWSSSE are shown in Table 3 below, together with various official and unofficial charges for services provided by private operators and those provided by the municipality. Over 90 per cent of respondents to the World Bank household survey (Chris Heymans, 2017) reported paying a flat rate for emptying services, regardless of the volume of pit, tank or tanker capacity. The specific tanker capacities are not known, but in general are known to vary between those used by the private and municipal operators. It is likely that the capacity in the range of private tankers is larger (between 10-15m⁂), while those of the municipality are in the order of 5-8m⁂. (SFD Report Hawassa , 2016)

It was found that, on average, tanker drivers undertook four trips per day in the dry season and double this number during the rainy season. This is due to pits and tanks being unlined and filling more quickly, either by filling from below as the groundwater table rises, or the inflow of surface runoff. No manual emptying services were identified in Hawassa during the World Bank study and interviews conducted by the consultants confirmed that manual emptying is virtually non-existent in the city.

Table 3: Range of identified emptying charges; private and municipal services

Source of data	Charge (USD) Private provider	Charge (USD) Municipality
Household survey (average cost)	$86 (n=14)	$70 (n=6)
FGD: residents in central Hawassa, using emptying services (mostly in the rainy season)	$77	$30
WSE: approved tariff for private institutions	n/a	$36
WSE: proposed new tariff (to be approved)	n/a	$77
Private provider: more typical charge	$72	n/a

4.4. Treatment

In Ethiopia, wastes from pit latrines, septic tanks or cesspools are sometimes sold to farmers or dumped at secluded location by vacuum truck operators. (Federal Democratic Republic of Ethiopia, 2023). There are few faecal sludge treatment plants (FSTPs) in operation, and most of them are located in urban areas. According to the Ethiopian Ministry of Water, Irrigation, and Energy, as of 2019, there were only five FSTPs in the country. These FSTPs are located in Addis Ababa, the capital city, and in other major urban areas such as Bahir Dar, Mekele, and Adama but except the FSTP in Addis Ababa, rest of the FSTPs are non-functional.

The FSTPs in Ethiopia use various technologies for treating faecal sludge, including anaerobic digestion, drying beds, and constructed wetlands. However, the capacity of these FSTPs is limited, and they are unable to meet the demand for faecal sludge treatment in the country.

The lack of FSTPs in Ethiopia is a significant challenge, as it contributes to the poor sanitation situation in the country. Most households and institutions in Ethiopia use on-site sanitation systems, such as pit latrines, septic tanks, and pour-flush toilets, which generate faecal sludge that needs to be safely treated and disposed of.

Besides it Ethiopia's rapid urbanization has stressed the water supply and sanitation (WSS) system in urban areas. The capacity of urban centers to adequately dispose of wastewater is low, exposing natural resources to pollution and posing a risk to human health. Out of the estimated 398,985 m3 /day of wastewater produced in Addis Ababa, Addis Ababa Water and Sewerage Authority (AAWSA) only has the capacity to properly dispose of 1,727m3/day or 0.43 per cent of wastewater. The situation is even worse in other secondary cities including Mekelle 0.35 per cent, Bahirdar and Hawassa 0.22 per cent, Gondar 0.07 per cent, Dire Dawa 0.05 per cent and Adama 0.41 per cent. (World Bank, 2017)

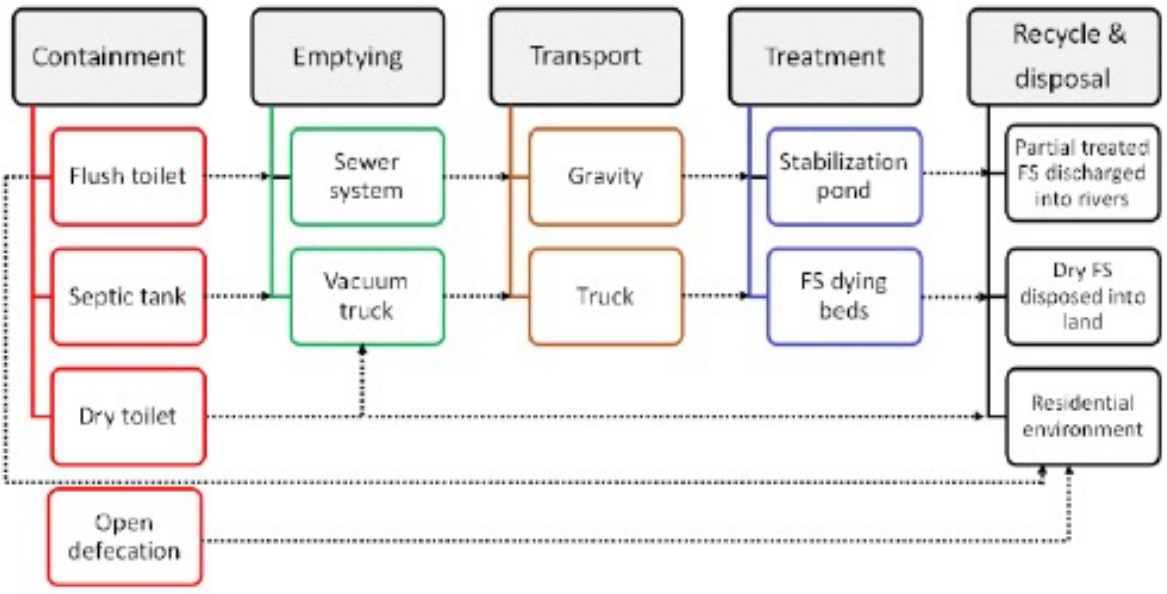
In light of these challenges, the second phase of the Urban Water Supply and Sanitation Project (UWSSP) is primarily intended to improve urban sanitation holistically and equitably in the urban space and provide assistance to improve operational efficiency in 22 Ethiopian cities named as Dire Dawa, Mekelle, Adama, Bahirdar, Hawassa, Jimma, Gonder, Sodo, Adigrate, Harar, Jigjiga, Gode, Gambella, Assosa, Semera Bishoftu, Dessie, Shashemene, Nekemte, Asela, Arbaminch, and Debrebirehan. The overall objective of the project is to improve and increase access to improve sanitary conditions through constructing Public

A private operator discharges sludge at Kotebe works

Drying bed for faecal sludge in Kality

and Communal toilet (PCTs), Sewer Line Networking, Wastewater treatment plant (WWTP), and Faecal Sludge Treatment Plant (FSTP) to ensure a sustainable waste management system. Other objectives include improving the hygiene and public health conditions and reducing the deterioration of the quality of the environment and water resources. Under this project the FSTPs in these cities are under construction.

Figure 6: The chain of faecal sludge management in Addis Ababa



Source: (Abebe Beyene, 2015)

Addis Ababa: The treatment of faecal sludge in Addis Ababa is not complete and safe. (Abebe Beyene, 2015) suggests that FS from dry toilets is either partially treated with sludge drying beds to be disposed in agricultural land or directly connected to the rivers (Figure 16). The sludge drying bed also has no liner system that can result surface and ground water contamination. The stabilization pond treatment for flush toilets with sewer connection system is also partial and end up to rivers. Moreover, few toilet facilities were directly connected to the rivers. Resource recovery oriented FSM system was completely absent.

Hawassa City: As per the SFD report of Hawassa City, the HTWSSS operates a faecal sludge treatment plant located approximately 18km from the city centre, on top of a hill in a location known as Alamura. The treatment system is made up of eight drying beds, each with a surface area of approximately 300m⁂. The treatment process consists of dewatering the faecal sludge by percolation of liquid through the sand beds and evaporation. A maximum of 12 tankers (10 private and 2 municipal) operate throughout the year. The condition of the beds was also found to be poor, with damage to retaining walls around the drying beds and excessive plant growth on the sludge. This indicates that the treatment plant is not being effectively managed and its condition is deteriorating. Once dried, faecal sludge

is manually removed from the beds and the sand layer levelled to take further discharges of faecal sludge. Recent interviews indicates that currently this plant is not functional.

4.5. Reuse

The means of disposal and reuse of the dried faecal sludge is neither clear nor documented. Faecal sludge is currently thought to be disposed of in open spaces around the plant. It may be further utilised by local farmers on an informal basis, but there was no evidence of this established.

Reuse of sanitation/ wastewater as a resource

5. Existing policies and programmes in promoting access to sanitation in Ethiopia

5.1. Institutional framework

There are five divisions in terms of governance and administration of the WASH sector in Ethiopia (Girma et al., 2013):

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

Figure 7: Implementation of WASH program through MoU

*A Memorandum of Understanding was signed in 2006, and revised in 2012 between MoWIE, MoH, MoE and MoFED to have a legally binding agreement to implement WASH programs[13].
**Government levels: Federal, Regions, Zones, Woredas, Town/City, Kebele/Community

MINISTRY OF WATER AND ENERGY OF ETHIOPIA

The Ministry of Water and Energy of Ethiopia (MoWE) is a federal organization established to undertake the management of water and energy resources of Ethiopia. This involves development, planning and management of water and energy resources, development of policies, strategies and programmes, develop and implement water and energy sector laws and regulations, conduct study and research activities, provide technical support to regional water and energy bureaus and offices, and sign international agreements.

FEDERAL- The development of towns is supported both by the federal and regional state. The Federal Government prepares policies, strategies and development plans in consultation with regional counterparts. At federal level, the MOUI, MOH, MOWE, MOE and EPA are the key institutions involved in urban sanitation policy setting, strategy formulation and developing national guidelines.

The institution in charge of monitoring sanitation and hygiene interventions in Ethiopia is the MoH with more than 38,000 health extension workers. They work at community and household levels to promote the use of improved sanitation facilities and eradicate open defecation (Jones, 2005). The MoWE is responsible for water policy, coordination and monitoring. The Ministry of Finance and Economic Development (MoFED) is responsible for budgeting and managing economic resources in both federal and regional governments. The MoWIE and MoFED collaborate on monitoring and reporting the status of WASH in the country.

Regional: A range of regional bureaus and offices, constituted under the Regional Government, guide the development of towns and rural areas. They support towns in implementing policies and strategies in line with development plans and programs they are committed to deliver. The support is often in the form of capacity building, procurement or technical assistance. In 2002, decentralisation of powers from federal to local government was undertaken. This was seen as a major step towards the development of WASH infrastructures.

City Administration (CA): City Administration (CA) is the highest executive body mandated to oversee the delivery of all municipal services. The Head of the CA is the Mayor, under whom sit three main structures: **the CA Executive Body, Municipality Services and sub-city Administrations.** The CA Executive Body directly oversees activities of the different sectorial departments, authorities and offices established to deliver services. The Municipality Services Manager and Deputy Manager have executive roles to deliver services including Sanitation,

Beautification & Park Development Services, Plan Preparation & Monitoring Services, each led by a coordinator. The Town Water Supply and Sewerage Services Enterprise (TWSSSE) is the department responsible for faecal sludge management (FSM) services in a city. The Municipal Enterprise Development Office is tasked to support the development of small and micro enterprises, but this has not been strongly developed for FSM services. Private emptying service providers operate in a somewhat uncoordinated manner and at present are not strongly regulated by the city administration. NGOs and other non-state providers limit their role to providing communal or public latrines in low-income areas. They do not offer support for the operation, maintenance and servicing of these facilities.

Table 4: Summary of stakeholders and their roles in this sector

CATEGORIES	STAKEHOLDER	ASSIGNED ROLES
Federal Government	Ministry of Health; Ministry of Water and Energy; Ministry of Education; Ministry of Urban and Infrastructure and EPA	WASH Policy - Joint WASH MOU
	Ethiopian Environmental Protection Agency	Environmental regulation and monitoring - Develops environmental strategic plans - Formulates environmental laws and standards - Provides support for environmental regulatory bodies and implementers - Undertakes monitoring and effectiveness evaluation of environmental systems
Regional Water Bureaus	Water, Irrigation and Electricity	Deliver potable water supply and sewerage services - Responsible for liquid waste management - Town water utilities are charged to deliver sewerage services.
	Health	Health promotion and regulation on food, health care and medicine control - Oversees urban health extension packages, of which seven relate to hygiene promotion and waste management
	Urban Development and Housing	Support improvement of solid waste management - Strengthens capacity of the municipal agencies to implement solid waste management
	Environmental Protection and Climate Change	Protection of the environment and nature - Develops standards, regulations and guidelines on elements adversely affecting the environment
	Justice	Ensuring implementation of all regulations - Advises or takes legal action against those releasing or dumping waste from their compound

CATEGORIES	STAKEHOLDER	ASSIGNED ROLES
Local government	City Council	Ensure sanitation provision - Sets laws and regulations on socio-economic matters - Monitors appropriate enforcement
	City Administration	Water supply, sanitation and solid waste services - Delivers municipal services to city inhabitants
	Town Water Supply and Sewerage Services Enterprise	Sanitation Services - Oversees and coordinates activities undertaken in sub-city Municipalities
	City Natural Resources and Environmental Protection Agency	Ensuring well-managed natural resources and environment - Uses Liquid and Solid Waste Proclamations as basis of ensuring proper disposal for industry, hotels and businesses
	City Design and Construction Supervision Department	Approves building plans - Supervises construction of houses, including standards of sanitation infrastructure
	City Health Department	Education and behaviour change affecting sanitation and hygiene - Motivates households and supports institutions to improve access to improved latrine - Urban Health Extension Workers – officially assigned staff in charge of organising the Health Development Army (see below) - Health Development Army – voluntary teams of 6 workers covering up to 30 households in a neighbourhood (5 households per worker)
	City Finance and Economic Development Department	Developing services - Engages the private sector
	Enterprise Development Office	Engaging private sector providers - Enables business ventures by private sector providers, especially young graduates, with sanitation seen as a key area for development
Private sector & NGOs	Private vacuum truck operators	Emptying services - Runs private collection services to empty septic tanks and latrine pits – on invitation from households or institutions
	Community Development Organisation	Support to communities - Provision of communal toilets in low-income kebeles

5.2. Policy and regulations in Ethiopia

Ethiopia does not have a stand-alone sanitation policy, but sanitation development strategies are captured in the health, environment, water, and urban development sector policies.

Constitution

The Constitution of the Federal Democratic Republic of Ethiopia (FDRE, 1995), provides the overriding principles and legal provisions for all legislative frameworks

in the country. The Constitution addresses the concept of sustainable development and emphasizes the environmental rights of the people. These key principles are articulated in Articles 43 and 44 of the Constitution. Articles 43 and 44 highlight several important rights, including the right to development, the right to reside in a clean and healthy environment, and the right to receive monetary or alternative forms of compensation. Article 92 (1) also states that government shall endeavour to ensure that all Ethiopians live in a clean and healthy environment". Any form of environmental damage that may arise from the design and implementation of programs and development projects is also prohibited by Article 92 (2). Article 3 of the Constitution also makes both the government and citizens responsible for protecting the environment. Several policies and guidelines have been produced to guide the implementation of national policies regarding water and sanitation (WASH), the main ones are listed below:

Proclamations

- **Proclamation 513/2007-** Solid Waste containment, transport, disposal of domestic, construction, municipal waste etc.

- **Proclamation 300/2002-** Environmental Pollution control stress on the need of solid waste management and recycling process

- **Proclamation No. 4/1995**- A proclamation to provide for the definition of powers and duties of the executive organs of the federal democratic republic of Ethiopia

- **Proclamation No. 200/2000-** The Public Health Proclamation

- Ethiopia Water Resources Management Proclamation

- **Proclamation No 574/2008**- A proclamation to provide for urban plans

- **Proclamation no. 295/2002-** A proclamation provided for the establishment of environmental protection organs- Ethiopian Environmental Protection Authority (EPA)

- **Proclamation No-1263/ 2021**

- **Proclamation No. 661/2009**- A proclamation to provide for food, medicine and health care administration and control- to address waste handling and disposal and the availability of toilet facilities in articles 30 and 31, respectively.

Policies

- The Health Policy of 1987 and 1993
- Ethiopian Water Resources Management Policy (1999)
- Environmental Policy 1997- The Environmental Policy of Ethiopia (1997) aims to enhance all Ethiopians' overall health and quality of life.

Strategies, Directives, Programs

- The National Hygiene and Sanitation Strategy (NHSS 2005, Ministry of Health)

- Universal Access Plan for Water and Sanitation (2005).

- The National Hygiene and "On-Site" Sanitation Protocol (June 2006)- This protocol was designed to follow the national strategy for hygiene and sanitation improvement with its focus on universal access (100 per cent hygienic and sanitised households) in primarily rural or peri-urban environments.

- Needs Assessment to Achieve Universal Access to Improved Hygiene and Sanitation by 2012 (2007).

- Urban Health Extension Program (UHEP, 2009) - The Ministry of Health's (MoH) Urban Health Extension Program is engaging residents in town-level health awareness programs, including sanitation and hygiene promotion. Currently, UHEP is run from Health Centres as point of departure forming family health teams to render health services moving house to house.

- Urban Sanitation Universal Access Plan (2011).

- School Health and Nutrition Strategy (2012)- to promote the provision of safe and sanitary school environments which includes clean and potable water that is well maintained and with gender-segregated hygiene and sanitation facilities

- One WASH National Program (OWNP, 2013) - A seven year program (2013-2020) under the name of One WASH National Program (OWNP) and the WASH Implementation Framework has been developed. This program is the main tool to achieve the targets for sanitation and hygiene proposed in the Universal Access Plan. The program aimed to improve access to water supply, sanitation and hygiene services in rural and urban areas. The program's main

objectives were to increase access to basic water supply and sanitation services, to reduce open defecation and to improve hygiene practices. To achieve these objectives, the program adopted a community-led total sanitation approach, which involved community mobilization and behavior change communication activities. The program has made significant progress towards achieving its objectives. Between 2013 and 2019, the program provided access to improved water supply and sanitation facilities to over 9 million people. The program also reduced open defecation by 17 percent and improved hygiene practices in households and schools. The program also focuses on improving hygiene practices, particularly in schools and health facilities. The program provides handwashing stations and soap to schools and health facilities and promotes handwashing education and awareness campaigns.

- The One WASH National Program consolidates donor efforts under the leadership of the Ministry of Water and Energy (MOWE) and is the main instrument for increasing access to water supply and sanitation services. It is driving urban sanitation improvement through health extension programs and infrastructure investments in public toilets and sludge drying beds and is gearing up to support large scale investment in wastewater and fecal sludge management infrastructure. The OWNP Phase 1 document concentrates on delivery of WASH through a basket funding (CWA) guided by a project implementation manual (POM) whereas the OWNP Phase 2 document broadens delivery of WASH in a more holistic way including Climate Resilient WASH (CR-WASH)(World Bank, 2018).

- Health National Adaptation Plan to Climate Change (HNAP, 2016)

- National Integrated Urban Sanitation and Hygiene Strategy (IUSHS) and Strategy Action Plan SAP (2016)- The IUSHS and this SAP are built on the foundation of Ethiopia's One WASH National Programme (OWNP). However, the SAP does emphasize the need for a municipal level bottom-up approach alongside the One WASH federal, regional, zonal, woreda, city/town management structure that was designed to cover both rural and urban.

- Second Urban Water and Sanitation Services Program (2nd UWSSP, 2016) - The new World Bank backed project will support investments in sanitation and water, together with substantial institutional strengthening. The development objective of the Second Urban Water Supply and Sanitation Project for Ethiopia is to increase access to improved sanitation facilities and improve efficiency in water supply service delivery in Addis Ababa and selected secondary cities.

- The Growth and Transformation Plan (GTP II, 2016)- The Second Growth and Transformation Plan (GTP II) for 2015/16 to 2019/20 flagged sanitation improvement as a key component of urban development, and committed Ethiopia to increasing improved sanitation coverage and reducing open defecation. Unlike that of GTP I, it included sanitation and hygiene targets

- Urban Wastewater Management Strategy (2017) - Ministry of Water Irrigation and Electricity released this policy to address the prevailing environmental and social Change in the Water and Sanitation Sector National wide.

- National School WASH Strategy and Strategic Action Plan (SWASH), 2017-SWASH serve as a strategic approach to provide equitable and inclusive, safe drinking water, improved sanitation facilities and hygiene promotion encouraging the development and wellbeing of students.

- TSEDU (Total Sanitation to End open Defecation and Urination) Ethiopia Initiative (2019)- campaign aims to make Ethiopia open defecation free (ODF) by 2024.

- National Integrated Urban Sanitation and Hygiene Strategy (IUSHS) and Strategy Action Plan SAP (2023)- updated 2016 IUSHS

Manual/guidelines

- Draft Guidelines for Social, Environmental and Ecological Impact Assessment and Environmental Hygiene Impact Assessment and Environmental Hygiene in Settlement Areas (2004)

- Water, Sanitation, and Hygiene (WASH) Implementation Framework (2011) - This Wash Implementation Framework (WIF), prepared to achieve the targets of the Growth & Transformation Plan, represents the collective efforts of the Ethiopian Wash sector and act as the guiding document for all Wash implementation.

- National Sanitation and Hygiene Implementation Guideline (2011).

- Design and construction manual for WASH facilities in Health Institutions, 2012.

- National Sanitation Marketing Guidelines (2014).

National Hygiene and Sanitation Strategy 2005
(Federal Democratic Republic of Ethiopia & Ministry of Health, 2019)

The Sanitation Vision for Ethiopia

100% adoption of improved (household and institutional) sanitation and hygiene by each community which will contribute to better health, a safer, cleaner environment, and the socio-economic development of the country.

Conditions for Success

- Getting consensus that the current limited and inappropriate access to sanitation and hygiene is a problem.
- Ensuring dedicated political commitment, support and action.
- Achieving accountability through 'minimum' performance contractual agreements at all levels.
- Gaining intersectoral collaboration using convincing promotion of the benefits while emphasising the risks.
- Allowing for minimum contact time of health extension workers (guidance and health education) with households.
- Realizing community empowerment and responsibility through using viable local solutions.
- Implementing effective supportive supervision and monitoring processes which are linked to performance contractual agreements.

The Three Strategic Pillars for Improved Sanitation and Hygiene

Pillar 1

An enabling framework to support and facilitate an accelerated scaling-up through policy consensus, legislation, political commitment, intersectoral co-operation, partnership, capacity building linked to performance contractual agreements, supportive supervision, research and monitoring.

Pillar 2

Sanitation and hygiene promotion through participatory learning, advocacy, communication, social marketing, incentives or sanctions to create demand and forge behavior change.

Pillar 3

Improved access to strengthen the supply of sanitation through appropriate technology solutions, product and project development, and support to local producers and artisans.

- Climate Change Resilience Water Safety Plan (CR-WSP) Strategic framework (2015)

- National Hygiene and Environmental Health Communication Guideline (2016) - Advocacy, social mobilization, behaviour change communication

Standards

According to Ethiopian Environmental Protection Authority, there are national standards regarding the maximum concentration of several chemicals that can be discharged into the receiving waters from several industries, but there are no quality standards set for wastewater or sludge disposal. However, the draft "Guidelines for Social, Environmental and Ecological Impact Assessment and Environmental Hygiene Impact Assessment and Environmental Hygiene in Settlement Areas" 2004, states that "latrines should be connected to digesters to produce both biogas and slurry as organic fertiliser. As a minimum, they should be connected to a compost pit and the human waste should be used to produce compost".

5.3. Sanitation funding

Ethiopia has made good progress placing the enabling environment for sanitation and hygiene budgets, significantly more than other countries in the region. The MoFED is one of the four key ministries of the OWNP, and has developed a budget and financial reporting system for the program. Furthermore, Ethiopia is the only country in East Africa that reported having an investment plan for sanitation and hygiene aligned to the sanitation-related SDG targets. Another significant milestone was the establishment of the Consolidated WASH Account (CWA) to align WASH activities, simplify financial and procurement procedures, and ensure government and community ownership. However, financing at the national level and budget/expenditure at the sub-national level remains a bottleneck for urban and rural sanitation. Key challenges include both low available funds and low capacity to spend funds. In terms of the budget, although it is increasing, it has not yet reached 0.5 per cent of GDP. Furthermore, there is a 43 per cent funding gap to reach the OWNP Phase II targets, and sanitation represents a significantly small portion of the budget compared to water. (USAID 2020 Sanitation Profile Ethiopia, n.d.)

The GoE created a Consolidated WASH Account (CWA) for major donors to deposit funds into one bank account. The objective of the Account is to align WASH activities, simplify financial and procurement procedures, and ensure government and community ownership. The Account is implemented by MoFED, while NWSC and Development partners provide governance and Guidance.

The top 5 development partners in terms of WASH are World Bank, Foreign, Commonwealth and Development Office (FCDO - UK), African Development Bank (AfDB), UNICEF and Government of Finland.

Others: WaterAid, UNDP, WHO, PSI, Water and Sanitation for the Urban Poor (WSUP), IRC

DEVELOPMENT PARTNERS WORKING IN ETHIOPIA—PROJECTS AND PROGRAMMES RELATED TO SANITATION IN ETHIOPIA

1. Towards Brown Gold Project: Re-imagining off-grid sanitation in rapidly urbanizing areas in Asia and Africa

Funded through the GCRF Off-Grid Cities and Sustainable Energy call, 'Towards Brown Gold' seeks to address the challenges of marginality, sanitation and wastewater management in five growing towns in Ethiopia, Ghana, India and Nepal.

The project identifies FSM challenges and works towards how these challenges can also be an opportunity to rethink and reimagine off-grid towns as a fertile ground for innovations that are people-centred, inclusive, sustainable, equitable and also contribute to economic growth. Faecal sludge is rich in water, nutrients, and organic compounds.

2. Providing Ethiopia with Sanitation Technical Assistance- Athena Infonomics

The CWIS TA Hub, hosted by Cabinet EDE International and funded by the Bill & Melinda Gates Foundation awarded the work to Athena Infonomics, along with consortium partners Demewoz Consultancy and JaRco Consulting, to work with Ethiopia's National Ministry of Water and Energy (MoWE) and 11 participating cities, providing technical assistance aimed at strengthening city systems in the delivery of safe, equitable, and sustainable sanitation services. This work will be carried out through four key components: 1) a qualitative baseline assessment of CWIS functions and outcomes for the city of Hawassa and ten additional cities; 2) the development of a detailed CWIS plan for Hawassa; 3) technical support and facilitated learning for the 11 participating cities on key CWIS concepts, data frameworks, and planning processes, using Hawassa as an example; and 4) technical assistance to strengthen national-level oversight and support for city-led planning, driven by MoWE in coordination with other national institutions.

3. UWASH—Athena Infonomics

The purpose of the five-year USAID-funded Urban Water, Sanitation, and Hygiene (UWASH) Activity is to support accelerated access to safe, adequate, inclusive, and resilient WASH services targeting urban and peri-urban areas. This will be achieved through four complementary objectives:

- Enable and professionalize WASH service providers
- Foster markets for pro-poor and inclusive WASH services
- Strengthen WASH planning, budgeting and service delivery oversight
- Strengthen accountability among urban WASH sector actors

Athena Infonomics is a part of the UWASH team, led by Chemonics, with major subcontractor Population Services International (PSI) and complemented by JG Afrika. Under UWASH, Athena Infonomics will focus on strengthening the data ecosystem to improve WASH services across all regions, cities, and peri-urban areas of implementation.

4. A citywide approach for sustainable sanitation in Ethiopia- UNICEF and IRC WASH- (IRC, 2023)

UNICEF and IRC Ethiopia are transforming sanitation in four towns with the innovative City-Wide Inclusive Sanitation method, backed by the Bill & Melinda Gates Foundation. UNICEF and IRC Ethiopia (with financial support from the Bill & Melinda Gates Foundation) collaborated towards changing this poor sanitation situation in Ethiopia through piloting the City-Wide Inclusive Sanitation (CWIS) method in four small towns: Sheno and Welenchiti in Oromia region, Maksegnit in Amhara region and Kebridehar in Somali Region. Implementing CWIS is relatively new for Ethiopia. Using the CWIS approach, the four towns identified opportunities and challenges and ways to overcome the challenges that lead to the development of a costed CWIS master plan. The master plan has been finalised and validated by the key stakeholders and will be implemented till 2030. The initiative also created an opportunity for the town stakeholders to have a coordination mechanism through this roadmap and in terms of setting (or renewing) a very bold vision, mission and realistic long-, middle- and short-term targets as well as core activities with an indicative budget. Now, towns know where they are and where they are heading as well as the strategic directions for both sanitation services and solid waste management services. The town stakeholders have finalised and endorsed the CWIS master plan and have started its implementation by linking their annual plan with the overall vision and targets. Generally, master plan implementation involves short-, medium- and long-term planning cycles, and each of these phases consist of detailed planning of activities, outputs and quantifying needed resources within the broader strategic directions. The town institutions will establish core groups and meet up on a quarterly basis to review the implementation progress, develop and agree on annual plans every year as well as keep track of the master plan by reviewing the inputs, activities, outputs, outcomes, and expenditures.

5. 20 town capacity development programmes - WaterAid funded by Yorkshire Water (UK)

WaterAid Ethiopia (WAE) has been implementing a Yorkshire Water (UK) funded capacity development project in twenty towns across the country since 2014. These towns were selected as they had previously received infrastructure investments from the Government or Development Partners, but such investments did not include capacity strengthening components. The twenty-town project, which is implemented in partnership with the Ministry of Water Irrigation and Electricity is due to run until 2019, and is around half-way through its timeframe.

6. URBAN WATER SUPPLY and SANITATION PROJECT PHASE II- World Bank

The objective of the Project is "to increase access to improved sanitation facilities and improve efficiency in water supply service delivery in Addis Ababa and other 22 other secondary cities". The following indicators will be used to measure progress towards achieving the project delivery outcomes:

i. Number of people in urban areas whose excreta are safely managed under the project;
ii. Number of people in urban areas with access to improved water supply services under the project;
iii. Proportion of operation cost as percent of utility revenue of participating utilities (percent);

iv. Savings from NRW interventions under the project (m3/day);
v. Direct project beneficiaries, of which female beneficiaries (core).

Project description and component

The objective of the Project is "to increase access to improved sanitation facilities and improve efficiency in water supply service delivery in Addis Ababa and other 22 other secondary cities1". The following indicators will be used to measure progress towards achieving the PDO:

i. Number of people in urban areas whose excreta are safely managed under the project;
ii. Number of people in urban areas with access to improved water supply services under the project;
iii. Proportion of operation cost as percent of utility revenue of participating utilities (percent);
iv. Savings from NRW interventions under the project (m3/day);
v. Direct project beneficiaries, of which female beneficiaries (core).

Project components

The UWSSP has three components; namely Addis Ababa Sanitation and Water Supply Services Improvements, Sanitation and water supply services improvement in secondary cities and towns and Institutional Strengthening and Project Management. A total of 7.9 million people reside in Addis Ababa and those residing in the other 22 secondary cities would benefit directly from the project. The total cost allocated for the project is US$ 505 million ($445million from IDA financing and $60million from borrower), which is expected to finance interventions in twenty-two towns including Addis Ababa.

Component 1: Addis Ababa Sanitation and Water Supply Services Improvements: (US$ 260 million)

Component 2: Sanitation and water supply services improvement in secondary cities and towns: (US$ 241 million).

Component 3: Project management & institutional strengthening (Federal & Regional level): (US$ 4 million)

For more details refer to the detail document-
https://ewsdata.rightsindevelopment.org/files/documents/33/WB-P156433_gdrnTJl.pdf

According to (Chris Heymans, 2017), sanitation funding for the capital projects is sourced mainly from federal development initiatives, such as the Urban Local Government Development Program that is funded by federal government loans, or local projects funded directly by donor partners. Local authorities rely heavily for funding on block grants transferred from regional government, and most of that income is spent on salaries. Cities invest for the landfill developments and to sustain the cost of operations and maintenance of the FSTPs is also a big challenge. Sanitation tax is very nominal part of the annual property tax. Service users pay service providers directly for desludging services, and in most towns and cities, SMEs collect user payments for primary collection directly. In each town, the municipal Sanitation Office lacks a line item in the city budget for SWM and street sweeping, and funding is allocated from general revenue, sometimes ad hoc

6. Improving sanitation in Ethiopia—challenges and opportunities

According to Federal Ministry of Health, Ethiopia has set ambitious targets for water, sanitation, and hygiene (WASH). Launched in 2019, the 'Total Sanitation to End Open Defecation and Urination' (TSEDU) campaign aims to make Ethiopia open defecation-free (ODF) by 2024. Ethiopia also wants to meet the Sustainable Development Goal (SDG) 6.2 for sanitation. This includes 100 per cent access to 'safely managed' sanitation by 2030 (currently the access is only 7 per cent according to the World Bank), with an interim target of providing 60 per cent of the population with basic sanitation by 2025.

Between 2000 and 2020, Ethiopia reduced open defecation from around 80 to 20 per cent. However, much of this progress involved the installation of unimproved household toilets. As a result, diarrheal diseases are still the second-leading cause of under-five illness and death in Ethiopia, after pneumonia (Negesse et al., 2021).

Government and partners together have played fundamental roles in changing conditions through strategy designing, capacity building and knowledge sharing. As per the Integrated Urban Sanitation and Hygiene Strategy (IUSHS), 2023, one of the reasons for failing to achieve sustained behavioural change is the fact that programs were not community-led and addressed only one part of the problem without addressing the whole chain. Besides it, the main challenges in the sanitation are as follows:

1. **Open defecation:** Open defecation is still prevalent in many parts of Ethiopia, particularly in rural areas. This practice pollutes water sources and leads to the spread of waterborne diseases. Although Ethiopia has improved on the ODF status, the types of toilets constructed do not meet the standard of safe sanitation. This has led to an increase in public diseases.

2. **Inadequate infrastructure**: Proper infrastructure in terms of public and private toilets, emptying services, treatment services is widely lacking. Only a few cities have adequate infrastructure to manage faecal sludge.

3. **Limited financial resources:** Ethiopia is a low-income country, and the government has limited financial resources to invest in the WASH sector. Finances for the faecal sludge management is either through federal government, through partners funding, or partly, through sanitation tax. More concrete ways of financing sanitation infrastructure is required.

4. **Rapid population growth**: Ethiopia has one of the highest population growth rates in the world, putting a strain on the country's resources and infrastructure.

5. **Limited coordination between government and non-governmental organizations**: Many partners and multilateral organizations are working in Ethiopia in the WASH sector. There is need to have coordinated action between them as well as the government to maximize the output and reduce the duplicity of efforts.

6. **Policies and strategies need to be reviewed.** National-and regional-level sanitation policies in Ethiopia are required to accelerate the sanitation momentum in Ethiopia.

8. **Defined roles and responsibilities and institutional arrangements:** The recent restructuring of the Ministry of Water and Energy is a positive step. The staff capacity in ministries of all sectors—from federal to grassroot-level structures—should be strengthened to help. There is also a need for defined roles and responsibilities at various levels of administration.

9. **Lack of data for planning, monitoring:** Lack of actual data in sanitation is a challenge.

10. **Capacity development:** The capacities of human resources working in the sanitation sector is a challenge and need to be built up for planning and designing faecal sludge management.

What has worked in Ethiopia?

1. **Improved sanitation:** According to the Joint Monitoring Programme, the percentage of the population with access to improved drinking water sources increased from 25 per cent in 1990 to 60 per cent in 2017. Similarly, the percentage of the population with access to improved sanitation facilities increased from three per cent in 1990 to 28 per cent in 2017.

The Ethiopian government has made significant efforts to address the WASH challenges in the country. In 1991, the government established a National WASH Task Force to coordinate efforts and develop policies for improving WASH. In 2003, the government adopted a pro-poor WASH policy that aimed to increase access to WASH services for the poorest and most vulnerable populations.

Construction of new sanitation facilities, such as public toilets and handwashing stations, has improved the hygiene and sanitation practices of Ethiopians. According to the World Health Organization, the percentage of the Ethiopian population practicing open defecation has decreased from 92 per cent in 2000 to 27 per cent in 2017.

2. **Private-public partnerships, alliances, and collaborations** have significant implications on a country's water, sanitation, and hygiene (WASH) sector. These partnerships bring together the strengths of both the public and private sectors, leading to effective service delivery, innovation, and sustainability. For instance, the government partnered with Water.org and PepsiCo Foundation to provide safe water and sanitation facilities to over 400,000 people in Amhara, Oromia, and Southern Nations, Nationalities, and Peoples' regions. Similarly, Coca-Cola Africa Foundation and USAID partnere**d with the government to expand access to safe water in the Rift Valley and Southern Ethiopia.** In addition, alliances and collaborations have been essential in improving the quality and sustainability of WASH services in Ethiopia. The government has collaborated with development partners such as UNICEF, WHO, and USAID to strengthen its WASH policies, strategies, and programs. For example, the government, UNICEF, and WHO collaborated to develop a national strategy for water safety planning, which aimed to reduce waterborne diseases and increase access to safe drinking water. Similarly, the government and USAID collaborated to strengthen the capacity of WASH institutions, including the Water Resource Development Fund and the National WASH Coordination Office, to improve service delivery. These partnerships have led to significant improvements in the WASH sector in Ethiopia. Private-public partnerships, alliances, and collaborations have also led to the development of innovative solutions, such as mobile water treatment units and community-managed water systems, which have increased access to safe water and sanitation in rural areas.

3. **Community-led total sanitation (CLTS)**: CLTS is a methodology that focuses on empowering communities to improve their own sanitation and hygiene practices. In Ethiopia, this approach has been implemented since 2006, and as of 2018, over 31,000 villages had been declared open defecation-free (ODF), meaning that all households have access to improved sanitation facilities.

4. **Rural water supply and sanitation program:** The Rural Water Supply and Sanitation Program (RWSSP) is a government-led initiative that aims to improve access to safe water and sanitation in rural areas. The program has been implemented since 2003, and as of 2021, over 47,000 rural water supply schemes and over 26,000 sanitation facilities had been constructed or rehabilitated under the program.

5. **Sanitation marketing:** Sanitation marketing involves promoting the sale and distribution of sanitation products, such as latrines and handwashing stations, to households and communities. In Ethiopia, the government has implemented sanitation marketing programs to promote the uptake of improved sanitation facilities, particularly in rural areas.

7. Conclusions: inclusive and climate-resilient water, sanitation challenges and priorities

While Ethiopia has made significant progress, challenges such as inadequate financing, lack of capacity and technical expertise, and inadequate monitoring and evaluation systems, till remain in the sector. To ensure sustainable progress, continued efforts are needed to address these challenges and build on the achievements made so far.

FSM in India has evolved from infrastructure creation to service delivery and then inclusivity. Building on the India experience, the following prioriites can be taken up.

1. Defining and prioritizing national-level and municipal-level plans for achieving full coverage of sanitation facilities and also making it inclusive.

2. Developing a clear understanding of FSM as non-sewered systems. Defining its linkages with public health.

3. **Developing long-term municipal-level plans and priority actions for inclusive sanitation:** This includes sanitation infrastructure as well as service provision, with a long-term perspective of 20 years. This entails prioritizing actions within this framework that can then be submitted to any donor who wishes to support the Government of Ethiopia.

4. **Incorporating inclusion in sanitation systems thinking:** Addressing affordability of sanitations services such as desludging of FSM, and developing a CWIS strategy. Complementing the same with a financial plan and budgetary estimates, and appropriate norms and bye-laws.

6. **Developing capacities:** In order to address the strategic and operational management gaps and develop citywide sanitation improvement strategies, plan sanitation investments, manage large-scale projects, and operate new technologies, it is crucial to implement comprehensive training initiatives.

These initiatives should aim to build the necessary competencies among sanitation professionals.

Sustaining progress in rural and urban sanitation: ODF and FSM

i. Achieving sustainable progress in both rural and urban sanitation requires a holistic approach that addresses all components of the sanitation service chain. Taking a piecemeal approach will not suffice in maintaining the efforts made.

ii. While Ethiopia has made significant progress towards Open Defecation Free (ODF) status, continuous efforts are needed to sustain this achievement. Regular Information, Education, and Communication (IEC) campaigns, active community participation, and the establishment of enabling bye-laws are necessary to ensure the ongoing success of sanitation initiatives.

iii. Despite the availability of national-level data, there is still a significant challenge in obtaining baseline data at the city level for all components of the sanitation service chain. Mapping each aspect of the service chain is essential to assess existing facilities and services, understand process linkages, identify priorities, and determine intervention strategies. Clear strategies are needed for each component of the sanitation chain in every town to drive improvements and strengthen connections with other elements. Data regarding containment system types, sizes, accessibility, and quality are crucial for effective faecal sludge management planning. Similarly, information pertaining to emptying services, the number of tankers, desludging fees, and treatment or disposal methods is vital for planning purposes.

iv. Addressing the issues related to each component of the sanitation service chain should start with containment systems. Standard containment systems must be defined and incorporated into municipal bylaws. Non-compliant systems can be retrofitted, while new facilities should adhere to the new standards. Technology and tanker sizes should be estimated and utilized accordingly.

v. Drawing from Indian experience, it is evident that high desludging fees hinder the emptying of containment systems. To overcome this obstacle, the city administration should determine the desludging fee for both public and private desludgers, and desludgers should be licensed by the municipality.

vi. Based on faecal sludge quality and site parameters, the most suitable treatment options, whether nature-based or hybrid, should be identified. Reuse options also need to be evaluated.

vii. To ensure sustained faecal sludge management, a funding mechanism at the city level is necessary. This can be achieved through increased sanitation taxes or dedicated funding from the city.

viii. Establishing a city-level sanitation task force can help coordinate desludging services and other sanitation-related tasks at the city level.

ix. City-level information, education, and communication (IEC) campaigns are crucial in raising awareness about sanitation and its importance.

x. Developing city-level bye-laws and norms is essential for ensuring smooth service delivery in sanitation initiatives.

xi. At the town and regional levels, role and responsibilities of water and sewerage enterprise pertaining to faecal sludge treatment and oversight of desludging services, and providing guidance on sanitation upgrading etc should be defined.

Developing enabling norms and advisories

The norms and advisories play a vital role in guiding the planning, implementation, and monitoring of faecal sludge management systems across the country. A national-level sanitation policy, and regional-level policies defining roles and responsibilities, norms and standards, technologies, monitoring mechanism etc will be helpful to accelerate the momentum.

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