



Federal Democratic Republic of Ethiopia

IUSHS



INTEGRATED URBAN SANITATION AND HYGIENE STRATEGY



APRIL, 2017
Addis Ababa

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This Integrated Urban Sanitation and Hygiene Strategy is a result of collective effort of different institutions and professionals. The key institutions to be acknowledged are the Ministry of Health, the Ministry of Urban Development and Housing, the Ministry of Water, Irrigation and Electricity, the Ministry of Environment, Forestry and Climate Change, the Ministry of Culture and Tourism, Ethiopian Institute of Water Resources, and the Food, Health Care Medicine Control Agency which have contributed to bring this document to this level.

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Last but not least, we acknowledge the input of the Consortium of the Consultants led by Water and Sanitation for the Urban Poor (WSUP), for the vital role they played in the process of the development of the Strategy.

The Government of Federal Democratic Republic of Ethiopia, Statement of Commitment by Integrated Urban Sanitation and Hygiene Lead Sector Ministries

In recognition of the constitution of the country that has clear commitment towards protecting our environment as clean as possible on one hand and the obligation set onto everyone to keep the environment clean;

In recognition of the attribution that different provisions sited under the Health Policy, Water Sector Policy and Strategy, Urban Development Policy and different related strategies, Environmental Policy and the Strategic Action Plans, and Tourism Policy have towards keeping our environment clean;

In recognition of the different global and regional initiatives that the Government of Ethiopia has agreed to take forward;

Taking note of the vision of the Government of The Federal Democratic Republic of Ethiopia to take the development of the country towards the lowest middle income countries group by 2025 through adopting clean and green economy development and the dedication vested by all sectors towards achieving this target;

Cognizant to the demand from residents of the towns towards modern service and living style on one hand, and the issue linked to affordability and willingness on the other;

Taking note of the roles, responsibilities, efforts made by each of the sector institutions and the complicated challenges existing on the ground;

Bestowing high priority to the negative impact that poor sanitation and hygiene practices has on urban and national economy, social development and image building at town and national level;

Taking note of the importance of coordination to address the issue of urban sanitation and hygiene practice, we committee in availing administrative support, putting in place a follow up and monitoring mechanism, securing funds and other available resources;

Furthermore we agreed and commit to;

1. Enhance sector coordination and collaboration through use of the existing policies, proclamations; and directives that eventually lead towards establishing fully responsible institution, which aim to provide efficient, effective and equitable services.
2. Establish integrated data bases management system related to the services and regulatory functions that we provide through our different interventions and share information that will help for planning, monitoring and evaluation at each level,
3. Set up a system that helps to raise the demand, and engagement of the community in accessing equitable improved sustainable services.
4. Increase the portfolio of urban sanitation as one of the

important interventions that would bring changes in the process of image building, health of the nation and climate change, economic development and dignity,

5. Promote Private Public Partnership, as well as entrepreneurs; and extended support to the Micro and small enterprises with special consideration of job creation.

We all agree and put hereunder our signatures and seal of our Ministries to assure that this is a jointly agreed Integrated Urban Sanitation and Hygiene Strategy that we present to all stakeholders to be used as a guide to implementation.

This MoU shall serve as a framework of partnership for the period starting April 3, 2017 and can be revised, amended upon request of any signatory Party.

This MoU may be ceased /revoked / when only all signatory parties agree to do so.

IN WITNESS WHEREOF, the Executive Heads of the Parties have signed and sealed below.

<p>① Dr Kebede Worku State Minister of Health</p> <p>Signature..... Date..... 30/07/2017 Stamp.....</p> <p>KEBEDE WORKU (MD) STATE MINISTER</p>	<p>② Ato Demissie Shitoe State Minister of Urban Development and Housing</p> <p>Signature..... Date..... Stamp.....</p> <p>DEMISE SHITO State Minister.</p>
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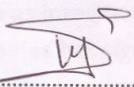
W/ro. Frenesh Mekuriya

State Minister of Water Irrigation & Electricity

Signature.....

Date.....

Stamp.....



Frenesh Mekuria
State Minister



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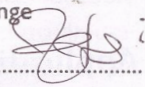
Ato. Kare Chewicha

State Minister of Environment, Forestry and Climate Change

Signature.....

Date.....

Stamp.....



Kare Chewicha
State Minister,
Environment & Climate Change



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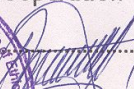
Ato Admassu Nebebe

State Minister of Finance and Economic Cooperation

Signature.....

Date.....

Stamp.....



ADMASU NEBEBE
State Minister



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W/ro Meaza G/Medhin

State Minister of Culture and Tourism

Signature.....

Date.....

Stamp.....



MEAZA G/MEDHIN
State Minister



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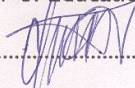
Dr. Tilaye Gete

State Minister of Education

Signature.....

Date.....

Stamp.....



Tilaye Gete Ambaye (PhD)
State Minister



Acronyms

BOFED	Bureau of Finance and Economic Development
CAPEX	Capital Expenditure
CGD	Child, Gender and Differently-abled
CBE	Community Based Enterprise
CLTSH	Community Led Total Sanitation and Hygiene
CSO	Civil Society Organisation
CU	Commercial utility
DHIS	Demographic Health Information System
DMM	Delegated Management Model
DSMC	Delegated Service Management Contract
EMP	Environmental Management Plan
FSM	Faecal Sludge Management
GTP I	Growth and Transformation Plan I
GTP II	Growth and Transformation Plan II
GoE	Government of Ethiopia
HDA	Health Development Army
HEP	Health Extension Programme
HSC	Health Science College
HSTP	Health Sector Transformation Plan

ICWA	Integrated City Wide Approach
IFI	International Financial Institution
ISWM	Integrated Solid Waste Management
IUSHS	Integrated Urban Sanitation and Hygiene Strategy
IUSHSAP	Integrated Urban Sanitation and Hygiene Strategic Action Plan
JMP	Joint Monitoring Program
KPI	Key Performance Indicator
KWCC	Kebele WASH Coordination Committee
LIG	Local Investment Grant
LWM	Liquid Waste Management
M&E	Monitoring & Evaluation
MDG	Millennium Development Goals
MHM	Menstrual Hygiene management
MoEFCC	Ministry of Environment Forestry and Climate Change
MoFED	Ministry of Finance and Economic Development
MoH	Ministry of Health
MoU	Memorandum of Understanding
MoUDH	Ministry of Urban Development and Housing
MoWIE	Ministry of Water, Irrigation and Electricity
NSHTF	National Sanitation and Hygiene Task Force

O&M	Operation and Maintenance
OWNP	ONE WASH National Programme
OPEX	Operational Expenditure
PHCU	Primary Health Care Unit
PPE	Personal Protective Equipment
RRR	Reduce, Reuse, Recycle
RWCC	Region WASH Coordination Committees
SAP	Strategic Action Plan
SDG	Sustainable Development Goals
SME	Small and Medium Enterprises
SMC	Service Management Contract
SMME	Small, Medium and Micro Enterprises
SWM	Solid Waste Management
TVETC	Technical Vocational Education and Training College
TWCC	Town WASH Coordination Committees
TWG	Technical Working Group
TWSC	Town WASH Coordination Committee
UAP	Universal Access Pan
UHEP	Urban Health Extension Programme
UNICEF	United Nations Children's Fund
U-WASH	Urban Water, Sanitation and Hygiene

WASH	Water, Sanitation and Hygiene
WDA	Women Development Army
WRDF	Water Resources Development Fund
WSUP	Water and Sanitation for the Urban Poor

Definitions

<p>Advocacy</p>	<p>It is the promotion of strategies, approaches and activities that increase the willingness of concerned parties to produce policies mobilize resources and create an environment that supports increased access to safe water and improved sanitation, as well as improved hygiene-related practices.</p>
<p>Behavioural Change Communication (BCC)</p>	<p>It is an interactive process with individuals or communities, based on communication strategies that promote positive sanitation and hygiene behaviours that are appropriate to their settings.</p>
<p>Basic Sanitation</p>	<p>Basic sanitation is the lowest cost option for securing sustainable access to safe, hygienic and convenient facilities and services for excreta and sludge disposal that provide privacy and dignity while at the same time ensuring a clean and healthful living environment both at home and neighbourhood.</p>
<p>Community-Based Approach (CBA)</p>	<p>CBA is an approach that confers responsibility and decision-making authority in community members with a view towards enhancing stakeholder ability to independently undertake actions that improve the quality of life and are sustainable.</p>
<p>Communal toilet</p>	<p>Latrine/toilet facilities used by more than one family with maintenance responsibility shared between users or provided by the property owner on behalf of renters.</p>

<p>Domestic waste water (DWW)</p>	<p>DWW is a liquid waste generated in residential areas which is mainly the spent water originating from all aspects of human sanitary water usage. It typically constitutes a combination of flows from the kitchen, bathroom and laundry, toilets, baths, kitchen sinks, dishwashers and washing machines.</p>
<p>Enabling Environment (EE)</p>	<p>EE is a broad set of conditions that support the achievement of a particular goal, objective or activity, including those related to political, institutional, social, economic, environmental and other interests.</p>
<p>Grey water</p>	<p>Grey water is a liquid waste captured from sinks, showers, baths, cloth washing machines, and laundry tubs.</p>
<p>Household/ private toilet</p>	<p>Latrine/toilet facility used primarily by members of a family for the disposal of human urine and faeces.</p>
<p>Hygiene</p>	<p>Hygiene is practices or behaviours that support the maintenance of good health by blocking the transmission of diseases that are water, sanitation and hygiene related.</p>
<p>Hygiene Promotion</p>	<p>It is a process of improving the awareness, understanding and control of individuals or groups over factors that influence their individual and collective health.</p>
<p>Improved Sanitation Facility</p>	<p>Improved sanitation includes ventilated improved pit latrines, composting toilets (eco-san), as well as pour-flush and full-flush toilets that may be connected to a public sewer, septic tank or cesspool.</p>

<p>Industrial waste water (IWW)</p>	<p>IWW is a liquid waste generated from industry and commerce during manufacture and processing. It usually carries a variety of chemical compounds.</p>
<p>Institutional toilet</p>	<p>Latrine/toilet facilities used in institutions such as schools, health facilities, prisons, public service offices, commercial institutions, etc.</p>
<p>Integrated Solid Waste Management (ISWM)</p>	<p>The comprehensive management of generation, storage, collection, transfer and transport, processing, and disposal of all types of solid waste in accordance with the best principles of public health, economics, engineering, conservation and response to public attitudes.</p>
<p>Open Defecation (OD)</p>	<p>Open Defecation (OD) means indiscriminate defecation in the open and leaving the faeces exposed.</p>
<p>Open Defecation Free (ODF)</p>	<p>Open Defecation Free refers to a situation where people have ceased to defecate in the open and have opted to use latrine facilities.</p>
<p>Public toilet</p>	<p>Latrine/toilet facilities that are open for public use that have custodians and where those intending to use the toilets are mostly required to pay fees. Public toilets require water, hand washing facilities, light, accessible to differently abled people, and be clearly delineated to address gender discrimination.</p>

<p>Runoff</p>	<p>Runoff is storm water or flood water and is simply rainwater that collects on the ground and runs off into drainage channels, ditches and rivers.</p>
<p>Sanitation</p>	<p>Sanitation refers to a process whereby people demand, effect and sustain a hygienic and healthy environment for themselves through prevention of human contact with the hazards of human excreta as well as the treatment and proper disposal of solid and liquid (sewage or grey water) wastes.</p>
<p>Stakeholders</p>	<p>Institutions, groups or individuals that are affected by specific actions and, as such, should have a role in how such actions are designed or undertaken.</p>
<p>Total Sanitation (TS)</p>	<p>Total Sanitation refers to a condition where open defecation is fully discouraged, proper liquid and solid waste disposal is maintained and drainage systems properly managed to reduce the social, economic, environment and health impact of residents.</p>
<p>Urban Sanitation</p>	<p>Urban sanitation embraces IWW, ISWM and TS and includes the collection, storage/treatment, transportation, re-use or disposal of excreta, liquid and solid waste in ways that improve or sustain human health and decrease negative impacts on the environment.</p>

Executive Summary

The pace, scale and density of Ethiopia's urban growth calls for an urgent paradigm shift in sanitation management. The success of new directions for, and corresponding investment in, urban sanitation will be measured by the way in which they offer Ethiopia's urban people – at home and at work – cleaner, more attractive cities, with better services they can afford and are willing to pay for. This calls for a mind-shift in the way Ethiopia tackles urban sanitation improvement.

This Strategy is a start because it makes it clear that sanitation improvement in urban areas needs to go beyond the approaches that have served rural sanitation well. Promotion of hygiene awareness, behaviour change and household investment in toilets are necessary, but need to be integrated with a robust chain of services to support improved household sanitation, with effective systems to collect and deliver liquid and solid wastes for safe management, disposal and possible re-use.

A structured approach, considering, wherever possible, decentralized systems, is therefore needed for town and city administrations to build such a comprehensive service chain, with a range of collection, transport and treatment options suited to different areas and circumstances, and safe disposal or re-use without health or environmental hazards.

The Strategy also outlines the scope to engage SMMEs and private sector role-players in sanitation improvement, with significant job creation within and beyond government. In taking the approach further, regulatory systems must be stepped up to control and ensure quality of services, to facilitate optimal use of the private sector, and harmonized to manage public health and environmental risks systematically.

Improved management of water supply, liquid waste, solid waste

and drainage as well as awareness promotion and behaviour change are interdependent. An integrated approach is therefore of utmost importance to generate the desired impacts, as well as better decision making in terms of planning and management of resources and mobilization of funds. Federal and regional co-ordination is essential, but urban sanitation improvement must be driven and led at town and city level. This will require bold leadership, effective champions and strong management to drive new ways of working and addressing cross-cutting issues such as equity, gender and environment.

A strong monitoring and evaluation system needs also to be in place to track progress and support planning and sector investments.

I. Introduction

The Integrated Urban Sanitation and Hygiene Strategy (IUSHS) has been developed following a comprehensive Situation Analysis and is complemented by a Strategic Action Plan (SAP). Both of these documents are provided separately.

The Situation Analysis document is based on an extensive literature search, consultations with the Urban Sanitation Task Force, as well as rapid assessments, conducted in December 2014 by the consultant, of 11 towns across 6 regions in Ethiopia.

The development of the SAP is based on the agreed principles and key elements of the Strategy and it aims to define a detailed implementation schedule, together with institutional, financial, regulatory, promotional, technological and operational options, to assure the development of the Sanitation and Hygiene sector in Ethiopian towns.

I.1 Background: Summary of the Situation Analysis

The Situation Analysis, developed from literature review, consultations with key stakeholders at federal and regional levels and assessments in 11 towns in 6 different regions of the country (Gondar, Bahir Dar, Maksegnit, Mekele, Wukro, Hawassa, Alaba, Gewane, Adama, Bishoftu and Addis Ababa) paints a stark picture of the current urban sanitation provision in Ethiopia, but at the same time provides the essential groundwork upon which to design a Strategy to address the urgent needs and to draft a realistic and sustainable Action Plan that takes account of all stakeholders from the most vulnerable beneficiary to the industrial and commercial developers wishing to take their place in urban society. The following represents a summary of the major findings of the Situation Analysis document, which can be consulted for reference and more information.

Overview of Urban Sanitation in Ethiopia

The Government of Ethiopia (GoE), through the Growth and Transformation Plan II (GTP II) (2016-2020), in line with the Sustainable Development Goals (SDGs), set out motivated intentions to transition the country from a rural economy, led by the agricultural sector, to an urban economy, led by industrialization. In tandem with this development path, the GoE formally adopted a long-term development agenda for achieving a middle-income status by 2025. Meeting this objective depends in turn on the ability of Ethiopia's cities and towns in becoming competitive to attract business, productive to attract skills and well-functioning to meet the liveability standards desired by its residents. Sanitation and hygiene are vital components in the provision of adequate urban living standards.

In the light of this, the need for provision and funding of sanitation, from basic latrines to final waste disposal, from solid waste generation to the application of the 3Rs principle, and the development of integrated systems for delivery of adequate and sustainable services, requires full commitment from policy makers and awareness in consumers.

Ethiopia is the second most populous country in Africa with over 92 million people (July 2014 estimate), out of which about 18 percent are urban residents. The share of urban population is among the lowest in the continent but the actual figure has recently passed 17million, which is higher than the size of some African nations. The urban population has been growing at an average rate of 5.84 percent for last fifty years (1961-2013), which is equivalent to 756 additional people to the urban centres daily. The growth did however slow to 4.11 percent between 2000 and 2013. The growth rate from 2000 to 2030 is expected to reach 4.7 percent. With the current growth rate

¹World Bank development Indicators , 2012

the urban share will reach 35% by 2030.² The urban population is expected to double within only 13-15 years, which is shorter than the African average by seven years.³ There are about 935 urban settlements⁴ throughout the country. The geographical distribution of towns and the size of population widely vary. The capital city Addis Ababa is extremely big by any terms and could be more than five times larger than the second largest urban centre, Dire Dawa, in terms of population, availability of facilities and in the magnitude of challenges. Almost 60% of the urban population is living in about 68 towns. 850 of the towns have a population of less than 20,000 and out of which 507 of the towns have a population of less than 5,000. The Ministry of Urban Development and Housing (MoUDH) has grouped the towns into five clusters based on the size of the population, administrative centre and area of the town.⁵

The urban centres play important role in stimulating the socio economic development of the country. The urban centres are contributing about 60 percent of the growth in GDP.⁶ Fast growing infrastructure development, such as hotels, trade, and industrialization within and around the towns and cities are important socio-economic development stimulants.

The current situation in Ethiopian towns is characterized by an insufficient level of services, inadequate knowledge on how to treat wastes and often inappropriate hygiene practices. Waste streams from unplanned industrialization; polluted land, air and surface and ground waters; inadequate and unsustainable solid and liquid waste collection and disposal systems have resulted in serious environmental, health,

²Antonio Golini, Urbanization and urban population in Ethiopia based on UN, Department of Economic and Social Affairs, Population Division database

³ Ibid.

⁴ Urban setting as per the definition given by MoUDH and adopted by CSA is a settlement area with 2000 people.

⁵ Ministry of Urban Development and Housing (MoUDH), guideline for towns clustering and classification

⁶ Alen Etherington, Yemarshef Yemane, & Dr Ayele Belachew, for WaterAid Ethiopia, A review on the Urban WASH Context, Draft, July 19, 2009

financial impacts, often affecting the most vulnerable groups. Available health and quality of life indicators reveal that in most major cities in Ethiopia, waterborne diseases resulting from poor sanitation conditions are causing serious threats to life, particularly diarrhoea.

According to the WHO/UNICEF Joint Monitoring Programme (JMP) (2014) the estimated coverage of urban sanitation indicated as improved, shared and other unimproved facilities have reached 27%, 40% and 26% respectively in 2015 compared to 20%, 30% and 12% respectively in 1990. Open Defecation (OD) in urban areas is reported as having reduced from 39% in 1990 to an estimated 6% by 2015.

Enabling Environment and *Institutional Arrangements*

The National Constitution of the Federal Democratic Republic of Ethiopia articles 43, 44, 90, and 92 set the direction and commitment of government related to urban sanitation management. These articles give basis for the development of this Strategy. The GoE has made different proclamations supporting the implementation and enforcement of the above articles. Proclamation 197/2000 (Water Resources Management), Proclamation 200/2000 (Public Health), Proclamation 300/2002 (Environmental Pollution Control), Proclamation 661/2009 (Establishment of EFMHACA), Proclamation 692/2010 and Regulations 173/2009 and 299/2013 are the concrete foundations for the implementation of this Strategy. Different Sector Development Programs including the Health Sector Transformation Plan (HSTP), the Water Sector Development Program and the Education Sector Development Program have been put into action, under the overall umbrella of GTP II. The Urban Development and Environmental Protection sectors have also been involved in policies, standards, codes, legal frameworks and development programs.

The Ministry of Urban Development and Housing (MoUDH) has

prepared a manual and a strategy, both issued in 2014, related to solid waste management standards. The documents divides Ethiopian towns into five categories and aim to promote community-led solid waste management that also makes use of micro-enterprises. MoUDH is also in the process of preparing a code of practice for building construction. The Water sector is developing a standard for waste water management.

Some of the most relevant supportive policy documents that deal with the issue of sanitation and hygiene and that are analysed in the Situation Analysis are listed below:

- Growth and Transformation Plan⁷
- One WASH National Program (OWNP)
- The Urban Health Extension Programme (UHEP)⁸
- Health Sector Transformation Plan (HSTP)

In particular the Health Extension Program (HEP) was introduced in 2003-04 GC with the central philosophy that if the right knowledge and skills are transferred, households can take responsibility for improving and maintaining their own health. The Urban Health Extension Program, operational since around 2010, follows the procedures developed for the Rural HEP and comprises 15 preventive health packages of which four are dedicated to hygiene and sanitation, namely:

- Solid and Liquid Waste Management
- Personal and Compound Hygiene including Healthy Housing
- Food Hygiene and Water Safety/Quality
- Latrine Construction, Operation and Use

⁷ Growth and Transformation Plan (GTP), MoFED, 2010/11-2014/15

⁸ Health Sector Development Program, III Annual Performance Report, EFY, 2002 (2009/10)

The promotional activities of the UHEP aim at creating an environment conducive to healthy living by improving equitable access to basic preventative health services at Kebele and household level. The UHEP is currently under review and expected to be changed to address the shortcomings.

The promotional work of the UHEP, as well as for its Rural component, is supported by the Health/Women Development Army which is formed at the household level and uses a “network of 1 to 5” approach.

There are different sector institutions and ministries engaged in urban sanitation and hygiene, and whilst this is extremely encouraging, it carries its own risks since mandates and roles are not fully coordinated. There are considerable gaps and overlaps in institutional roles and responsibilities at the national, regional, city and towns levels. This has resulted in numerous competing and possibly conflicting initiatives, policies, strategies, programs, plans and guidelines. There is a clear implementation gap in regulation and enforcement despite the availability of regulation, guidelines and manuals.

The two key regulatory bodies in relation to urban sanitation are the Environmental Protection Agency (through Proclamation No. 513/2007), which now falls under the Ministry of Environment, Forestry and Climate Change, and the Food, Medicine and Health Care Administration and Control Authority (through Proclamation No. 661/2004), which is independent but accountable to the Ministry of Health. Although regulations do exist, their enforcement is very low and they often do not support each other with consequent duplication of effort. The institutions that have the mandate to enforce the regulations also undergo different institutional reforms without detailed analysis of their effectiveness with the result that overlap in roles and responsibilities occur.

The One WASH National Program (OWNP) represents a milestone

in the sector development and a recent effort to bring together WASH actors. The OWNP is articulated over four main pillars: i) Rural and pastoral WASH, ii) Urban WASH, iii) Institutional WASH and iv) Sector Capacity development. The OWNP was prepared and launched in 2013 based on the 2012 Universal Action Plan (UAP) and the GTP I targets.

In view of the revised GTP II targets and the need of meeting the demanding requirements of the Urban Sanitation and Hygiene sector, as well as the need to integrate solid waste service delivery, the IUSHS is placed as the key strategic document to enhance multi-sector coordination and efficiency.

Low Priority of Urban Sanitation

Urban sanitation and hygiene have been given inadequate attention in urban development planning. Although towns are allocating resources and have tried to make sanitation part of their master plans, this has not been broadly adopted as a country-wide approach. The awareness creation and Behavior Change Communication (BCC) mechanisms are not well prepared in line with the city wide approach. Sanitation is often considered to be a household responsibility and outside the public domain. The importance of adequate service delivery systems is often overlooked and not appreciated through a comprehensive analysis of the full chain (containment to final disposal). At the decentralized level, sanitation is not always given the highest priority by the town administration and urban dwellers due to other competing needs and awareness on the impact of sanitation to health and overall urban development is extremely low. As a result sanitation is given low priority at all levels: master planning is there but its implementation is not fully addressed and, as consequence, limited resources are allocated to the sector.

Advocacy, Behavioural change communication and promotion

International experience, such as in Zambia on the development of collaborative urban sanitation businesses or in Rwanda where strong political commitment has pushed towards impressive result in improving service delivery for solid and liquid waste, should be also used as benchmarks and models to be replicated, wherever feasible. Ethiopia has also done a tremendous amount of work in terms of promotional activities through the existing Health Extension Programme under the MoH. This approach has demonstrated appreciable impact in rural areas, however, the Urban Health Extension Programme (UHEP) has not been running for as long and needs to be better supported and possibly re-designed to suit the specific urban circumstances.

Service Delivery

Ethiopia has made impressive progress over the past 10 years in reducing poverty and ensuring urban development by upgrading slum areas, constructing condominium houses with WASH packages, involving micro and small enterprises in waste management and increasing access to WASH services. Towns are growing horizontally and vertically and rural villages are also being clustered with small towns faster than ever before. Exemplary interventions towards more efficient service delivery systems have been taking place in recent years in Ethiopian towns. Towns like Addis Ababa, Bahir Dar, Mekele, Gondar, Wukro and Hawassa, for instance, have set up partnerships with small, medium and micro enterprises (SMMEs) for solid waste management. The management of public latrines in Mekele, separating and processing the organic fraction of solid waste in Bahir Dar and elsewhere, introduction of biogas in Addis Ababa, the investment started to generate energy from solid waste dumping site at Repi in Addis Ababa and the replacement of a dumping site in Hawassa are some of the positive learnings that may offer potential for scale up.

However, there are also some negative examples that we must learn from and address at the earliest possible opportunity. The coverage of efficient, safe and affordable service delivery is lacking in most urban areas, as the Situation Analysis reveals. Obstacles include unavailability of garbage collection vehicles, vacuum trucks and other mechanized facilities in most of the towns; mismanagement of communal and public toilets; indiscriminate solid waste disposal; indiscriminate release of untreated industrial liquid effluent to streams; unavailability of land to build public or private toilet facilities; low participation of the private sector; limited technology options for the safe collection, transportation and disposal of solid and liquid waste.

Although municipalities are in charge of managing solid waste services, most of them lack the required financial, technical (e.g. for transport, disposal and treatment of waste) and human resources. Some municipalities do not have any formal waste management system at all, while others are able to cover only few kebeles and collect only a limited proportion of the total waste produced. Overall, solid waste is collected irregularly, sometimes weekly or monthly. The lack of waste disposal facilities forces households to dump their waste indiscriminately or to burn the waste.

City waste streams are becoming sources of income for both the informal and formal sectors and there are abundant human resources and many job opportunities which can be created within the sector. Efforts are being made to train professionals about waste water in vocational training schools and increasing priority is being given to green economic development. Despite this, liquid wastes from a large proportion of urban household and institutional water flushed latrines are often discharged into nearby streams and open spaces due to lack of available sewerage and/or tankering services. There is no proper faecal sludge management (FSM) in most of the towns due to lack of capacity, equipment, financial resources and infrastructure. On-site

sanitation systems (septic tanks and pit latrines) predominate in urban areas but current practices include deficiencies in construction, lack of proper sludge disposal/treatment facilities and also significant problems with access to septic tank/pits. Faecal sludge from on-site sanitation is often managed informally, with limited public infrastructures and limited public control.

Addis Ababa and Gondar are examples of cities that have conventional sewerage systems, but covering only a limited portion of the populations. Due to the water scarcity condition affecting most of the towns and for reasons of cost and land scarcity (for pond treatment systems) the construction or expansion of conventional sewerage systems in Ethiopian urban areas may not be feasible.

The increasing impact of industrial waste, as the country moves from an agricultural-led to industrial-led economy, is becoming a serious concern. Health and environmental problems are now becoming a top priority, particularly in highly industrialized areas, such as Addis Ababa and its surroundings, where rivers like Akaki, Dukem and Modjo, ultimately flowing into the Awash River (main source for irrigation water in the area), are becoming the recipients of uncontrolled disposal of hazardous solid and liquid wastes. The lakes near to towns and rivers crossing towns, and also lakes and rivers situated near to industries and mechanized farms, are at high risk of receiving uncontrolled effluents.

Drainage in the majority of the towns is limited to highway road sides. In towns with undulating landscape, most cities use streams as drains. The drains do not only carry rain water but also sewage/grey water from septic tanks, as can clearly be observed in Addis Ababa and other large cities, as well as from overflowing pit latrines. The community is then exposed to health risks as a direct result of poor infrastructure/equipment, inadequate financing and planning, as well as lack of appropriate technology and skilled personnel.

Institutional Sanitation

Public investment is also limited in institutional sanitation, especially in schools and health facilities in urban areas. Sanitation is often not adequately considered in the construction planning of the different institutions. Inadequate sanitation for the sick and elderly and lack of Menstrual Hygiene Management (MHM) facilities in secondary schools results in significant impacts on health, economic activity and education.

Sector Capacities and Private Sector

Collaboration with universities also represents a key stimulant for innovative research around new technologies and improved services. Gondar University, for example, has recently developed a proposal looking at biogas technology to address pit latrine waste disposal.

On the other hand, lack of capacity (technical/skills, materials and systems) in planning, implementing, monitoring and evaluation as well as management of the available resources are critical issues in all the towns. The private sector role is mainly limited to the development of infrastructure and is not engaged in service delivery. Sporadic interventions by the private sector are not regulated and informal arrangements often prevail. The informal sector plays a significant role in sanitation (for instance waste recycling) but is unregulated and generally not taken into account in sector assessments.

Financing Sanitation

The issue of financing urban sanitation and setting a proper tariff system has had a significant impact on the delivery of services. The major challenges include: insignificant budget allocation for sanitation; poor service delivery despite customer willingness to pay; poorly managed revenue collection; lack of clear guidelines to support and finance micro-enterprises; “polluter pays” principle is not rigidly

applied; and low water tariffs that do not allow cross subsidy for sanitation services.

Overall, finance for sanitation is very low and the sector has shown an inability to use the limited funds available. Existing funding structures such as the donor funding mechanism and the disparate institutional arrangements have been shown to be bottlenecks to progress. The growing formalisation of the economy is contributing to increasing variation in access to water and sanitation services, widening inequality between poor and non-poor households. Furthermore the widening informal employment in urban areas needs to be taken into consideration when considering pricing strategies for sanitation tariffs targeted at households whose earnings are erratic.

Technical innovation, research and development

Although, as mentioned earlier, Universities in Ethiopia are promoter of important and innovative researches for the sector, the country lacks adaptable and appropriate sanitation and hygiene technologies (e.g. for latrines, re-using or recycling waste, desludging), as well as sets of tools and materials which could be chosen and used in different contexts. Most technologies and approaches are often implemented without detailed analysis of the social and cultural context of the country and towns. Ongoing research programmes, undertaken by different Universities, are generally not fully supported and results are not duly disseminated.

Monitoring and evaluation

There is no clear separate monitoring and evaluation system for urban sanitation and hygiene. Latrine coverage is monitored to some extent but not solid and liquid waste collection and treatment. This creates difficulties in implementing evidence-based planning. There is lack of baseline information regarding technical installations, management

arrangements and the financial situation around sanitation facilities and service delivery.

1.2 Rationale

The implementation of the Strategy will be expected to have a positive impact upon the economy of the country, upon the natural environment and upon the health and wellbeing of all urban dwellers, including the most vulnerable.

The issues around urban sanitation are complicated due to cross sector interventions, difference between towns in terms of population size, geographic location, income sources of the residents, revenue sources, management capacity, etc. It is vital to bring about the changes required that will put in place a system that is responsive to the rapid urban development that is taking place across the country. The IUSHS has been developed to include guidance on future interventions, to be further articulated through the SAP, that give due attention to the institutional, financial, regulatory, promotional, technological and operational approaches that should be adopted.

Successful implementation of the IUSHS through the SAP is dependent on the effectiveness of the institutions created to manage urban sanitation in different towns and to follow up the implementation of the program in an integrated manner. The strategy encourages all sanitation related interventions to be based on city and town development plans, taking advantage of economies of scale, sharing of best practices within the country and involvement of the private sector and Community Based Enterprises (CBEs). Financing sanitation is complicated and also needs to be looked as an integral part of planning at city and town level. Capacity building of town and city administrations will be needed to carry this out.

A vital part of roll out of the Strategy through the SAP will be to

monitor performance of service delivery, uptake of services and measurement of impacts.

1.3 Scope

This is strategic document for the delivery of the Urban Sanitation and Hygiene program in all Ethiopian cities and towns classified as per the guidelines prepared by the MoUDH.

The key areas covered by the Strategy include:

- Liquid waste service delivery: including safe disposal of human excreta, liquid waste generated by human activities (domestic, industrial and commercial waste), institutional waste and safe management of drainage
- Solid waste service delivery: including solid waste generated by human activities (domestic, industrial, commercial and institutional waste) and safe management of drainage
- Promotional and behaviour change: including correct hygiene practices, use and management of latrines, uptake of and payment for services, eradication of open defecation, MHM, solid waste management (reduce, reuse, recycle) as well as other interventions.

While in this Strategy document these key areas are identified and relevant targets and approaches are analysed, the SAP deals in detail with:

- Implementation modalities – how services can be better delivered, public-private partnerships and contractual arrangements
- Minimum service packages – for each category of towns, an approach to packaging services and technologies is

defined for municipalities to, firstly, start-up, and then expand sanitation services, and

- Guidelines for cost and financial analysis – to define the financial feasibility (in terms of capital investments and operational costs) of the proposed technologies and to set sustainable service levels appropriate to each category of town.

2. Guiding principles of the IUSHS

The following are the guiding principles throughout the implementation of the IUSHS:

- **Equity:** The management of urban sanitation is characterised by a wide range of disparity in terms of economic status, gender, age, disability, geographic location, and so forth. The planning, implementation and service delivery systems of the IUSHS will therefore give fair and justifiable attention to all community groups and geographic areas, especially with the allocation of resources. The strategy will strive to address the issue of equity and inclusion at all levels and aspects.
- **Partnership:** Successful implementation of this strategy is subject to the active engagement of mandated government institutions, the private sector, community-based organizations (CBOs), civil society organisations (CSOs) and development partners. The Strategy calls for partnerships between different actors that currently have roles at different levels and with different levels of dedication towards urban sanitation management. The strategy is therefore fostering strong partnerships between different actors horizontally and vertically.

- **Integration:** Integration between different sectors involved in urban sanitation, particularly water, health, urban development, environment, finance, culture and tourism and others is a key principle that will be adopted throughout the implementation of this Strategy. The development of towns to modern living standards and high rise buildings increases the demand for water carried/flush conventional toilets which in turn creates demand for more water supply. To address the issue of urban sanitation, the quantity and quality of water supply has to be given due attention.
- **Alignment:** Alignment is one of the basic principles that this strategy follows. Urban development is guided by different macro and micro level policies, strategies, short, medium and long term targets, implementation approaches and methodologies. Master plans, local level master plans and development plans are expected to make the issue of sanitation an integral part of development. It is impossible to bring an effective and sound change to sanitation management without alignment to different systems and approaches that are in operation or may be introduced. To enhance the quality of service delivery and efficiency, the strategy will align with the overall urban development programs and other relevant sector policies and strategies.
- **Coordination/Harmonization:** The major gap that has been identified as a key challenge at all levels is the lack of coordination among the different actors. The nature of urban sanitation is not efficiently addressed under one institution. It falls across the mandate of different institutions, especially, urban development, health, water, environmental protection, finance and others. The ideal solution to address the issue is through creating a strong and functional coordination

mechanism. The coordination mechanism that shall be in place must bring different public and private sector actors and communities together through creating a sound coordination mechanism.

- **Community engagement and ownership:** Urban Sanitation is practically impossible without deep-rooted community engagement and ownership starting from planning to evaluation of the adopted system. The issue of household sanitation, management of communal and public latrines, showers, solid waste containers, transfer stations, proper implementation of hygiene practices, management of drainage systems and others are not possible without meaningful participation of the community and full ownership for the actions that have to be taken to effectively implement the strategy.
- **Efficient use of resources:** Urban sanitation requires efficient mechanisms and procedures to handle the huge investments needed. The value it has been given previously is not also to the standard that it deserves. The means by which needs are assessed and allocation of resources are made are a key part of the Strategy.
- **Innovation and use of technology:** Ethiopian urban settings are characterized by diversity of topography, varying endowment of resources, sensitive ecologies, physical set up, economic and social activity, religion and culture. All these have an impact on the type and size of waste generated and type and size of facilities needed throughout the sanitation chain. The issue of willingness to pay, affordability and viability of existing technologies, are further challenges to be addressed. The IUSHS promotes innovation, creativity, research and working towards linking findings and results with development. Universities and

research institutions are encouraged to closely work with regulatory and implementing institutions.

- **Integrated City Wide Approach (ICWA):** The ICWA is a tool that helps to understand the existing gap in a sanitation services delivery system across the whole town. In order to bring about the required change, there should be a comprehensive assessment of the existing situation in terms of the service delivery systems for liquid and solid wastes in each town or cluster of towns. Understanding of the socio-economic situation is an essential starting point to synchronize overall demand for towns development. All relevant stakeholders have to be consulted to make clear and sustainable investment plans and institutional changes. The city and town authorities have to champion the changes that the town residents deserve. The ICWA will be the guiding principle throughout the implementation of the IUSHS.
- **Stepped planning approach:** Planning at city and town level needs to be comprehensive so as to include all aspects of sanitation and hygiene. However, the changes cannot be achieved overnight and resources may be limited. Hence implementation plans will need to be phased, with priority being focused on key issues. Such key issues might include improved containment at household level, collection using low technology equipment, participation of communities and SMME's, decentralised treatment systems, transportation, etc.
- **Sustainability:** In both the planning and implementation phases of urban sanitation services, the issue of sustainability will be given high priority. All interventions will be subject to financial, technical, institutional, social and environmental analysis to ensure sustainability. It is expected that the financial analyses will assist determination of affordable levels of

sanitation service and the subsidies needed.

3. Vision

To see all cities/towns enjoying safer and cleaner man-made and natural environments that contributes to the achievement of a healthy, productive and prosperous nation.

4. Goal

The overall goal of this strategy is to mitigate the negative impacts of poor urban sanitation on health, environment, society, education and the economy by implementing full sanitation systems (from containment through to disposal) for liquid and solid waste through the introduction of sustainable service delivery systems, ensuring uptake of services, intensifying behavioural change communication, strengthening sector integration, and institutional capacities and enforcing regulations.

5. Strategic Objectives

The following strategic objectives are set over short, medium and long term deadlines according to the envisaged path of the IUSHS and SAP implementation. Periodic reviews will support the revision of set targets.

- To bring sustained behavioural change for better hygienic practices, installation of facilities and delivery and uptake of sanitation services by 2020.
- To ensure open defecation free cities and towns by 2020 from current average of 6% to zero percent open defecation.

- To ensure that 100% of urban households in any given town or city have access to improved latrines or toilets by 2020.
- To increase the faecal sludge management systems capable of safely removing, treating and recycling faecal matter to 70% coverage by 2025 (interim targets of 30% by 2020).
- To install 1,000 decentralised waste water treatment systems capable of treating liquid and faecal matter to a standard that can be directly and safely used in the immediate environment or following further conditioning in localised facilities by 2025 (interim target of 200 by 2020).
- To Reduce, Recycle or Reuse 50% of all solid waste generated in medium and large towns and cities by 2025 (interim target of 20% by 2020).
- To dispose of 100% of the remaining solid waste in controlled tipping and sanitary landfill sites that fully comply with 2014 Guidelines by 2030 (interim target of 50% by 2020).
- To ensure safe disposal of 100% health care waste from all health care facilities by 2025 (interim target of 95% by 2020).
- To enforce safe treatment, reuse or disposal of industrial liquid and solid wastes to ensure ecosystem, agricultural and human protection from all industries by 2035 (interim target of 30% of all industries by 2020).
- To strengthen sector performance through formation of a "coordination body" that will be managed and financed so as to direct capacity building efforts towards participating individual or clustered municipalities, utilities and contractors. Such coordination body to be fully established by 2020 (interim coordination mechanism 2016).

- To leverage and increase effective utilization of resources for accelerated and cost-effective implementation of the IUSHSAP.
- To establish an effective and reliable monitoring system and sanitation data base by 2016.

Urban sanitation is currently managed under different public sectors that have been mandated to look after the different components and issues. The institutions at federal and regional level have more or less similar arrangements, depending on the arrangement of the regional Bureaus. However, the Ministry of Urban Development and Housing, the Ministry of Health, the Ministry of Water, Irrigation and Electricity, and the Ministry of Environment, Forestry and Climate Change are the ones playing major roles in supporting regions in soliciting resources, capacity building and construction of facilities. The roles and responsibilities of all parts of sanitation at town level are fully under the jurisdiction of the municipalities.

6. The IUSHS Strategic Components

The following are the ten key strategic components constituting the backbone of the IUSHS:

- Advocacy, Raising Sanitation and Hygiene Profile, Behavioural Change Communication and Promotion of Service Delivery
- Service Delivery for Solid Wastes, Faecal Sludge, Liquid Wastes and Industrial Wastes
- Institutional Sanitation
- Emergency in Urban Sanitation
- Capacity Building

- Technical Innovation, Research and Development
- Cross Cutting Issues
- Sanitation Financing and Tariffs
- Institutional Arrangements
- Regulation Enforcement
- Monitoring and Evaluation

6.1 Advocacy, Raising Sanitation & Hygiene Profile, Behavioural Change Communication and Promotion of Service Delivery

Designing effective Information, Education and Communication (IEC) plans and conducting Behavioural Change Communication (BCC) and promotion of improved sanitation and hygiene services is the responsibility of the sector actors, including ministries, municipalities and service providers.

While various tested sanitation and hygiene behavioural change promotion approaches are available in Ethiopia, the focus of these approaches has been mainly to rural areas. In order to take commercial and social advantage of the improved levels of service that will be offered under the IUSHSAP, these services need to be promoted to customers. The best promoters of any service will be the service providers themselves. These providers include the utilities, the asset owning municipalities, contractors, delegated community-based enterprises and private micro-enterprises.

Enabling hygiene and sanitation improvements involves:

- Municipal authorities and utilities being encouraged and assisted to provide and manage sustainable services, and

- Urban communities and households being encouraged and led to invest in provision and proper use of improved sanitation and hygiene facilities such as latrines, septic tanks, drainage, sewerage systems, solid waste collection, etc.

Such measures serve as barriers to the transmission of sanitation and hygiene borne disease and improve the natural environment. In addition to substantially improved health conditions, such systems and the behaviours that sustain them have a very positive impact on the dignity, status and well-being of all.

As a result of this, the development of properly designed communication and service promotion approaches is key to this Strategy.

An evidence-based advocacy package will be developed, including fact sheets, human interest stories and documentaries on relevant sanitation and hygiene issues. The package will be used for one to one meetings and Focus Group Discussions (FGDs) with policy makers and community representatives in order to get their leadership and support in the implementation of hygiene and sanitation issues. The advocacy and influencing should be based on a range of tactics and target stakeholders at different levels (Federal, Regional and Towns). Specific packages will also be developed to create consumer demand for better quality services.

Formative research will be carried out to provide a platform for IEC approaches to reverse the low priority given to sanitation and to promote uptake of services. It is expected that specialist national and international agents will be contracted to assist with formulation of communication plans and creative concepts. Communication plans are likely to include at least the following tools:

Mass media: Mass media is expected to provide a key role to channel information. In Ethiopia there are many FM radios and regional TV

programs that can reach urban residences and play an important role in promotion and awareness creation. Outdoor media such as wall paintings, bill boards and traditional gatherings/events will be used. Further tools such as theatre, common and successful in many African countries, may also be trialed. Other mass media tools to be considered are:

- **Mobile SMS:** through a partnership with Ethio-Telecom a campaign of text messages can be developed in order to forward key messages on urban sanitation and hygiene issues to all residents. The messages may be interactive by giving options to the mobile phone user.
- **Social media:** social networking tools can also be used to target different segments of the population, particularly the youth, in promoting campaigns and generating awareness.
- **Print communication:** Press releases and newspapers can be also used as communication tools.
- **The FMOH call center:** the FMOH free call center number 952 can also be used as a communication tool with the public.

Mass media will be also used to support the development and effectiveness of the UHEP.

Communication among stakeholders: Conducting meetings, dialogues and panel discussion at all level based on the IUSH Situation Analysis and the Strategy concepts.

Targeted Schools and Community Programmes: Included here are mascots, logos, customising sanitation and hygiene promotion approaches for different urban areas that may be piloted in different parts of the country

Sanitation Marketing: Employing innovative business models in sanitation service delivery.

Public service announcements: Appeals, including some with national celebrities, will be formulated in different regional languages and taking advantage of some of the developed mass media tools.

Celebrity spokesperson: A celebrity spokesperson of national stature can be identified to be ambassador on urban sanitation and hygiene. The spokesperson will talk about the issue at appropriate forums and will be available for the different campaigns organized to promote sanitation and hygiene.

Reward: The best method of sustaining change is to regularly collect formal data and informal information and feedback, and make it public so that there is pressure created equally on the public agencies, private service providers, as well as households and communities, to keep to sustained practices. Rewards can serve as triggers for sustained impact and improvements that will earn credit to the city, town or groups of municipalities. For instance, promise of technical assistance and funding for sanitation projects (and complementary essential water projects) can very effectively act as the “reward” for overcoming any blocks to voluntary clustering of towns and utilities; such clustering being intended to improve service delivery both through sharing of limited resources and through economies of scale.

Because of the successful HEP and the more recently introduced Urban Health Extension Program (UHEP), the Ministry of Health and associated decentralized structures have a very special role to play in the development and monitoring of social and behavioural change communication and service promotion activities. As part of the key community level program interventions, the UHEP, in collaboration with relevant sectors and stockholders, is committed to promoting household water treatment and safe storage, improved sanitation and

hygiene facilities in urban households and communities.

The following is a list of UHEP approaches, either currently used or proposed to be used as part of the IUSHS:

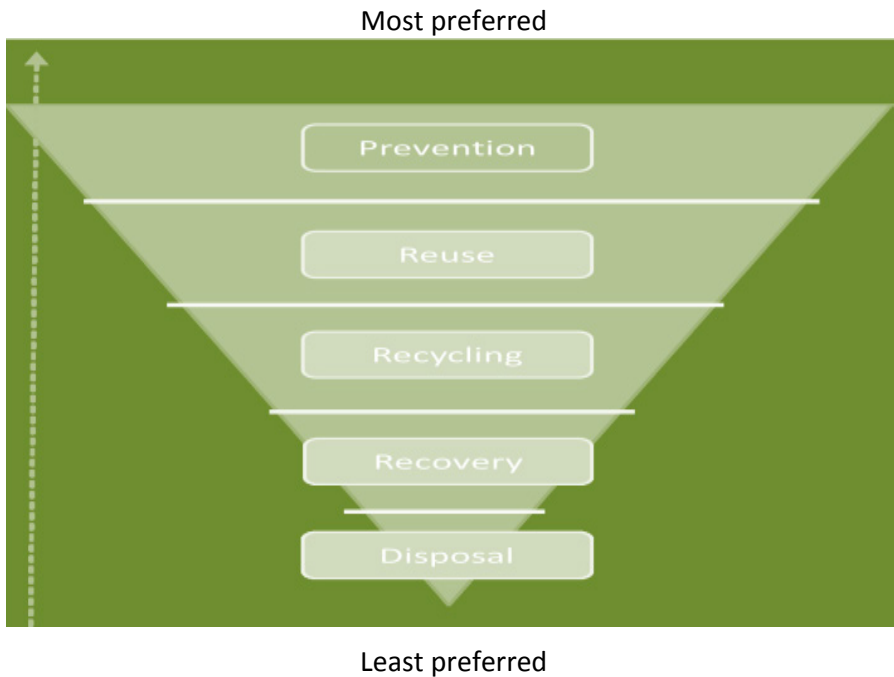
- Strengthening UHEP, Health Development Army (HDA) and restructuring of PHCUs are among the top priorities for the health sector to tackle health problems of the urban population, including improving sanitation facilities and hygiene practices, especially for the urban poor.
- Organizing campaigns to raise the profile of sanitation at the national level and promotion of services. There is a need for weekly activities to promote hygiene practices and better use of available sanitation facilities
- Advocate/create awareness on the commercial and social advantages of the improved levels of service that exist or will be introduced. These services need to be promoted to decision-makers at all level of the government and customers. Use can be made of some or all behaviour change and promotion tools as listed above.
- Current platforms that may be further exploited or adapted for the IUSHS, and related to the UHEP, include;
 - Community Led Urban Environmental Sanitation (CLUES),
 - Community Led Total Sanitation and Hygiene (CLTSH)
 - School Led Total Sanitation and Hygiene (SLTSH)
 - Institutional Led Total Sanitation (ILTS)

- Community conversation (CC)
- Coffee Ceremony
- Health Clubs
- Clean and Safe Health facilities (CASH)

6.2 Service delivery for Solid Wastes, Faecal Sludge, Liquid Wastes and Industrial Wastes

6.2.1 Solid waste management

Implementing Integrated Solid Waste Management (ISWM) requires comprehensive data on present and anticipated waste generation rates and characterizations, supportive policy frameworks, knowledge and capacity to develop plans/systems, proper use of environmentally sound technologies and appropriate financial instruments to support its implementation. ISWM implementation is based on the waste hierarchy presented below:



ISWM is an integrated approach such that waste constituents are reduced, recycled and reused to the maximum possible extent. ISWM consists of the following main elements:

- **Determination of waste generation rates and characterization:** In order to have proper planning and implementation, the source identification, quantification and characterization of different types of waste (including industrial, municipal, commercial, agricultural and special wastes such as medical waste), should be conducted in each town, including projections for future waste generation.
- **Promotion:** Continuous awareness creation and capacity building activities, such as those undertaken by the UHEP, and

promotion by the service providers themselves (municipalities and associated utilities and agents) can be carried out.

- **Onsite storage:** Proper storage and segregation of waste should be started at source. Producers should separate at least organic and inorganic wastes using two different storage containers. This will be achieved through provision of the necessary equipment by the public and private sector service providers. It can be scaled up after piloting in concentrated areas and selected households. The method used to store waste should be safe, hygienic, tidy and cost effective.
- **Primary collection:** In most of the towns primary collection (from household to common collection bin or waste collector trucks) has been done by small, medium and micro enterprises (SMMEs). However, the work is largely carried out without contractual arrangements such that the management is not accountable and cost recovery is extremely low. In order to address this situation use of SMMEs may be continued but various measures need to be put in place:
 - Clear demarcation and agreements to improve the efficiency and cost recovery and to increase accountability;
 - Briefing on the nature of the work and the contractual conditions around the business;
 - Training on health and safety;
 - Provision of appropriate tools and personal protective equipment (PPE);
 - Payments based on weight or volume of waste collected. This last measure will encourage the MSMEs

to collect more waste from the designated area instead of concentrating on those households that pay more;

- It may be appropriate and cost effective to use pushcarts, donkey carts and Bajaj for short hauls to collect the waste from households to transfer stations but the equipment may need to be improved to increase efficiency and to avoid accidents;
 - Motorized collection equipment may be more appropriate and cost effective for longer hauls and for collection from commercial areas;
 - While there may be a case for subsidy towards the cost of collection from low income residents, commercial areas waste collection should be done on a full cost recovery basis.
- **Reuse and recycling:** In Ethiopia the reuse of waste has been done by the informal sector literally called “Korkoro Yalew”. This should be supported by providing appropriate market places and training. Recently recycling of metals, plastics, glass and paper has been done in some of the towns. This practice should be strengthened and expanded by training, technical and financial support to the primary collectors as well as by linking the collectors to recycling companies. Since studies show that a significant portion of the waste produced in Ethiopian cities and towns is organic, composting should be promoted at household, SMEs and municipality levels. Both the local economy and the country as a whole can benefit by reducing the amount of chemical fertilizers imported. However, composting should be standardized and technology should be improved. Waste sorting should be at household level while

temporary storage may be provided at the transfer station. Composting of waste can be promoted in line with urban beautification and local agriculture activities (including flower farms) that can provide markets for the products. Waste conversion to energy may be commercially viable in mega cities or clustered towns.

- **Secondary collection/transportation:** The secondary collection should be done by small scale enterprises, by private contractors or by the municipalities themselves. The secondary collection should be done from designated and properly equipped transfer stations with clear scheduling for both primary and secondary collectors, such that the local environment around the station is not impacted and such that there is no loss of efficiency due to waiting times. It is expected that haul distances from transfer stations to final disposal will be such as to require a fleet of well-equipped and road worthy vehicles. As for primary collection, efficiency, safety environmental impact and cost recovery need to be improved. It is expected that both haulage and final disposal will benefit from economy of scale through provision of services based on clustering of nearby large and small towns. The equipment used for collection/transportation should be arranged based on town categories:
 - **Small towns (category 5)** - In these towns the amount of waste generated is low and the disposal area may not be far. It may be appropriate and cost effective to use collection technologies such as donkey/horse/mule carts. It may not be necessary to have transfer stations and common collection bins may not be easy to manage and it makes separation at source more

difficult, so that collection from household direct to final disposal may be appropriate and cost effective. In these towns the collection and final disposal may be handled by SMMEs but under clear contractual agreements and with charges that that maximize cost recovery. Training and business planning and health and safety, described above, should not be compromised just because it is a small town. So also safety, health and environmental impact at the final disposal site should not be compromised. With these conditions and constraints the arguments for economies of scale kick in and the advantages for services based in clustered large and small towns become clear.

- **Medium (category 4) and large (category 3) towns** - In these towns the amount of waste generated will be higher and the disposal site may be far away. Use of motorized vehicles for secondary transport will be required. As for all towns, clear contractual agreements and with charges that that maximize cost recovery will need to be in place. Again, training and business planning and health and safety, described above, should not be compromised. So also safety, health and environmental impact at the final disposal site should be strictly enforced. As is the case of small towns, the arguments for economies of scale and the advantages for services based in clustered large and small towns become clear.
- **Mega (category 2) and Metropolitan (category 1) towns** - In these cities and towns the amount of waste collected is high and the disposal area may be far. It will therefore be essential to use efficient transport

systems such as lifter trucks or properly designed collection trucks. Using of communal collection bins, with strict control on separation of waste streams, may be options since most of the towns have coble stone roads that enable access for motorized transport.

- **Street sweeping:** Street sweeping should be done either by the municipality or by SMMEs with clear contractual arrangements and with waste being collected using properly designed enclosed push carts. As for house to house waste collection, training, business planning and use of PPE will be required. It may also be appropriate for street sweeping to be handled by the SMMEs doing house to house collection in the same area.
- **Final disposal:** As further described below, arguments for economies of scale through clustering of services between large and small towns may be strong. In general, the principle is:
 - **Small (category 5) and medium towns (category 4)**
 - It is often difficult to change from open dumping to sanitary landfilling in one step. In many cases it is more appropriate to gradually upgrade disposal operations. The first step is controlling a dumpsite by fencing and construction of access roads. Covering the waste with soil (possibly with light and easily to manage machines) will help to reduce the pollution and improve the appearance of the site. Designing composting sites near the disposal area can be useful to reduce the amount of waste disposed and prolong the life of the controlled dumping site.
 - **Mega Secondary (category 2) and Metropolitan (category 1) towns** - In these towns the amount of waste collected is high and the disposal area may be

some distance away. So, it is better to have sanitary landfill that can be managed either by municipality or franchised to SMMEs. Before constructing the land fill it is better to plan the operation properly, since sanitary land fill needs daily operations carried with maximum efficiency in terms of plant and labour use. The objective of sanitary landfilling is to dispose of solid waste in a way that causes minimum impact on the environment, and at minimum cost. In order make the operations economical, the site must be well managed so that the maximum amount of waste can be placed on the site.

The four stages of sanitary landfilling are site selection, site preparation, operation and post-closure management:

- 1. Site selection** – The site for landfill should be selected carefully, taking into account topography, geology and water resources, land use, distance from the centers of waste generation, transport routes linking the site to those centers, and distance from housing and airports.
- 2. Preparing the site** – There are many factors to be considered when designing and constructing a landfill site, but the primary issues are water and environmental pollution, health and safety and operational efficiency. Polluted water from the waste is prevented from reaching water resources by an impermeable layer which may be a natural clay bed below the site, or an artificial barrier constructed using imported clay, plastic sheeting, bitumen, or soil mixed with bentonite. The discharge or *leachate* that is trapped by the impermeable barrier should be collected by a drain system and treated, so that only relatively clean water is discharged to the environment. As much as possible, surface runoff is prevented from reaching the waste, for instance using uphill cutoff ditches, in order to minimize the quantity of water

that becomes polluted.

- 3. Operations** – Continuous compaction of the wastes in the landfill makes the best use of the void space and promotes decomposition. Compaction and daily covering of the wastes controls smells, insects and rats. A high standard of management is required with strict control of the types of wastes reaching the landfill. Bulldozers, compactors, excavators and loaders are some of the equipment used to operate the landfill. The routine operation includes spreading the waste materials; compacting and leveling and covering the compacted waste every day with a thin layer of soil.
- 4. Post closure management** – When the site is closed to further incoming loads of waste, it must be restored to a natural appearance. The waste will continue to decompose and settle for some years, generating methane and leachate, so it must be monitored and any necessary corrective action should be taken.

Applying the 3Rs

Paramount to a solid waste management (SWM) strategy is inclusion of the “3Rs” (Reduce, Reuse, and Recycle). To apply the 3Rs at scale it will be necessary, among other things, to:

- Cluster operations so as to better utilize skills and limited resources and encourage economies of scale through bulk materials handling
- Raise the status and business skills of SMMEs to make the 3Rs financially viable
- Provide incentives and assistance to formal and informal enterprises and to large scale recycling (such as furniture and clothing made from recycled plastics)

- Facilitate agreements between producers and users of recycled materials

Hazardous/Industrial SWM

- Hazardous waste that includes health care waste, e-waste and industrial waste will be handled separately from municipal waste so as to reduce the risk of irreversible pollution from heavy metals, hazardous health care waste, etc.
- **Regulations will be enforced;** and financial penalties and high disposal charges will be implemented to encourage in-factory processing and recycling of industrial wastes
- In the management of these wastes it is better to implement fully the polluter pays principle as practiced in other countries. The industries should take responsibility for the collection and disposal of the wastes by contracting with the municipality or small scale enterprises. They should also cover all the costs encountered in the management of these wastes.

6.2.2 Faecal Sludge Management (FSM)

Although the cost of construction of latrines is the responsibility of households, it is still essential to promote, standardize and enforce hygienic latrines which effectively break the cycle of disease transmission. There is no universal design of a hygienic latrine that could be effectively used under all socio-economic and hydrologic conditions. It is therefore important that a wide range of latrine technologies are available to suit different conditions.

However, all the technologies should separate the waste from the environment, effectively block the pathways for flies and other insects as well as be odour free, so as to encourage continued use of latrines. Improved latrine technologies can be promoted through sanitation

marketing and enforced through building regulations where new properties are to be constructed. Subsidies may be considered to assist with latrine construction for poor households so as to eliminate open defecation practices.

All urban dwellers should have access to and use safe and hygienic sanitation facilities and arrangements so that no one defecates in open places. In order to achieve this goal, construction of communal and public latrines will be required. The aim is that one communal latrine should not be used by more than five households.

On the other hand public latrines should be constructed in public places. These public latrines should be connected with income generating activities to properly manage their utilization. They can also be operated together with public showers. Public latrines may be dry (pit) toilets or they may be flush or pour flush connected to septic tanks or cesspits. Similarly individual households may be connected to septic tanks or cesspits.

Pit latrines need to be emptied on a regular basis dependent on the number of users so as to avoid overflow which may drive users to open defecation or illegal dumping of pit contents. Septic tanks (baffled tank with soakaway) need to have solids removed on a regular basis dependent on the number of users. Cesspits are enclosed tanks where all solids and liquids have to be removed on a weekly or monthly basis dependent on the number of users. In practice, household cesspits are likely to be (illegally) constructed as “leaky” so as to reduce prohibitive costs of tankering all liquids along with the solids.

Recent construction of medium rise buildings in large towns and cities has seen large cesspits installed to service individual or clusters of such buildings. Emptying these tanks may be difficult due to low availability of vacuum trucks and high cost.

FSM is the process by which faecal sludge and associated liquids are removed, transported and safely processed. Little is known about how this is achieved for household pit latrines in Ethiopia, since (a) access for mechanical equipment such as vacuum trucks is too difficult and costs for many households will be prohibitive and (b) there is little or no information on how the informal sector is involved (such as transport of faecal sludge to, and use on, farms)

FSM has many similarities with SWM described above. Primary SMEs may be contracted to take faecal sludge to decentralized transfer stations where primary treatment, such as bio-digestion may take place. Secondary treatments, such as drying beds designed to kill pathogens and render the sludge suitable for safe land application, should ideally also be located locally within the town to reduce costs. The equipment needed for FSM, whether manual or mechanical, should be developed for the specific conditions in the towns and should be based on a business case supported by financial analysis. Long haulage to remote treatment centres may not be financially sustainable and also removes liquid and solids from potential markets for nutrients and soil conditioners required for beautification of municipal open spaces.

6.2.3 Liquid Waste Management

The sanitation challenges are largely similar in all Ethiopian urban areas. It is only Addis Ababa that has a major sewerage system serving a significant part of the city. Other towns, such as Gondar may also be partly sewered. All towns and cities have a mixture of pit latrines, septic tanks and cesspits. The approach to addressing the challenges related to these service delivery systems will vary from town to town depending on size, geographical and socio-economic factors. As such, it is useful to list the range of services and that might be most appropriate for each of five urban categories.

- **Small towns (category 5)** - In these towns properly designed latrines and septic tanks should be enforced through the building code. Use of vacuum trucks may not be applicable and, as described under FSM above, a range of financially sustainable business options for sludge collection, treatment and re-use need to be evaluated. The liquid waste portion from septic tanks will be treated on-site in a soak-away although this method will not be suitable for areas with impermeable soils or a high groundwater table. Treatment of liquid wastes from the FSM processes will be evaporation, infiltration and also through safe municipal and horticultural use. Treatment and disposal areas should be properly fenced to avoid entry of animals and human contact. Using raw faecal waste for agriculture should be discouraged.
- **Medium (category 4) and large (category 3) towns** - In these towns properly designed latrines and septic tanks should be enforced through the building code. Use of small vacuum trucks may be feasible. The service can be provided either directly by the water and sewerage utilities or by delegated community based SMMEs and private entrepreneurs. The wastes should be collected and treated in a way that maximizes financial sustainability, re-uses and meets environmental and health and safety criteria and in alignment with municipal planning. The principles described above for FSM will be applicable as general guidance for collection and treatment of faecal sludge in all urban settings. Treatment and disposal areas should be properly fenced to avoid entry of animals and human contact. Using of the raw waste for agriculture should be discouraged.
- **Mega/secondary (category 2) and Metropolitan (category 1) towns** - In these towns properly designed latrines and septic tanks should be enforced through the building code. Use of sewerage and sewage treatment systems such as conventional

high energy biological plants and, where land permits, low energy waste stabilization ponds is limited to areas where high volumes of flushing water are both available and affordable. Use of large vacuum trucks may be feasible for septic tank and cesspit emptying with the waste collected being treated in digesters, oxidation ponds and the like and with final treatment in a high efficiency drying beds before land application. Where water is limited and, based on financial analysis, use of decentralized waste treatment systems (DEWATS), with safe re-use of the solid and liquid products, can be considered as a business option. Since the treatment plants will be adjacent to buildings (medium rise clusters and institutions) within the town, then the technology and re-use paths will need to be fully evaluated in terms of financial sustainability, community acceptance, health and safety, operations, inter-department cooperation (for instance, between the operator of the plant and users of treated products) and economic value. Again, the principles described above for FSM will be applicable as general guidance for collection and treatment of faecal sludge in the urban setting. Treatment and disposal areas should be properly fenced to avoid entry of animals and human contact.

6.2.4 Clustering of solid and liquid waste management services

Solid and liquid waste management will benefit from clustering of services, whereby economies of scale are achieved, for instance, through (a) having one fleet of secondary collection vehicles able to serve many towns and (b) having one well run disposal site including resource recovery at scale. This should be regulated through clear contractual arrangements (Service Management Contracts, SMC) including key performance indicators (KPIs). This applies as much to current/ future publically owned operators as to private operators (should they be considered as being able to provide better service).

Generally large private operators should only be considered once systems have been fully installed and financial sustainability has been clearly demonstrated, since private operators are not able to receive International Financial Institution (IFI) grant money and since private companies will be risk averse and likely to pass risk to customers in increased charges.

Initially, it is envisaged that the clustered sanitation operator would be publically owned and operated under a SMC with an Association of Municipalities (AoM) (the owners of the assets/responsible bodies for delivery of services). In this way, charges can be controlled to ensure affordability but at the same time minimising outside subsidy for both CAPEX and OPEX. SMCs will be signed between the asset owners, which under this Strategy are proposed to be a clustering of municipalities (herein termed an “Association of Municipalities”) and the “mandated operators” charged with delivery of services.

It is considered that clustering can best be achieved on a voluntary basis with incentives offered in terms of assistance to put in place the required arrangements, funding proposals and implementation of service delivery. In principle, clustering should be done considering the proximity of different municipalities and based on sound feasibility and socio-economic assessments.

There are many advantages for the large operators to delegate some of their services to financially and physically ring-fenced delegated operators which will be responsible either for a specific geographical area (where accountability and efficient service delivery to customers may be greatly improved) or for specialist technical activities (such as operation of a solid waste disposal site). In this case the mandated operators will sign a Delegated Service Management Contract (DSMC) with the delegated operators.

The main advantage of a DSMC relates to the physical and financial

ring-fencing of services and establishing a clear profit motive in order to both promote and deliver services. It will be advantageous to include employee incentive schemes in both SMCs and DSMCs to drive efficiency and improved levels of service. For instance, staff might receive a monetary bonus or other incentive for achieving high KPI scores in water and sanitation provision.

- **Principle for clustering:-** clustering will be done on voluntary basis with incentives offered in terms of technical assistance to put in place required arrangements, help to prepare proposals for funding bids and fast tracking project implementation and uptake of services. In principle, clustering should be done considering the proximity of different municipalities based on sound technical, financial, and socio-economic feasibility assessments.

6.2.5 Drainage

Drainage in the majority of the towns is limited to highway road sides. In towns with undulating landscapes, local streams are often used as drains. The drains do not only carry rain water but also sewage/ grey water from septic tanks and overflowing cesspits, as can clearly be observed in Addis Ababa and other large cities, as well as from overflowing pit latrines. This represents one of the biggest challenges as drains are often conveying wastes from different sources mixed up with rainwater. Regulatory agencies should devote particular attention to this issue and ensure proper management of drains.

Drainage is therefore recommended to be part of the urban infrastructure development strategy that would comprise roads and related infrastructures. However, the management especially cleaning from solid waste should be done by either the municipality or small scale enterprises engaged in street sweeping.

6.2.6 Linkage between Water Supply and Sanitation

Complimentary to promoting and selling sanitation services is the increased promotion and selling of reliable safe treated water. There is a clear link between adequate safe water supply, improved sanitation and hygiene, and behaviour change in bringing health improvements. Thus, water supply and sanitation are inseparable and should be dealt with in an integrated manner. There is generally greater consumer willingness to pay for a good water supply than for sanitation services. This gives the potential for fertile technical and economic benefits of linking water supply with the sewerage management.

However, most towns in Ethiopia have scarce water supplies, either through lack of water resources or through lack of installed capacity, or both. Sustainable exploitation of available water resources (supported by hydro geological capacity building), use of water saving facilities within buildings coupled with local delegation of service delivery are all considered to be key complementary activities to achieve adequate, affordable and universal sanitation access and good hygiene practices.

6.3 Institutional sanitation

The condition of sanitation and hygiene in institutions such as government offices, schools and health facilities varies from town to town, but is generally poor. Responsibility needs to be re-defined and resources allocated in order to fully address the challenges. For instance, school sanitation would be expected to fall under the Ministry of Education at regional level, health centre sanitation under the Ministry of Health at regional level and local government offices under local government structures. It is the responsibility of these bodies to access funding, possibly through coordination with clustered municipal planning and funding applications, and to ensure compliance with guidelines and with environmental and health and safety regulations.

The Strategy addresses the technical and social issues in several ways as listed below. The following are expected standards of sanitation and hygiene facilities and/or services and improved hygiene behaviour standards.

- All institutions should be gender and differently-abled friendly, have clean, hygienic toilets with hand washing facilities with soap stations and have proper waste management facilities
- All schools must have Child, Gender and Differently-abled (CGD) friendly water, toilet and hand washing (with soap station) facilities including Menstrual Hygiene Management (MHM) areas. Properly established communication platforms and channels should be provided to raise awareness, particularly to adolescents of MHM issues. The schools must have waste pit facilities for compostable and non-compostable wastes within the school premises
- All institutions, including religious places, markets, bus stations, prisons should keep their premises in a clean and hygienic condition

6.3.1 Health Institutions

- Install, reinstate or rebuild non-functional facilities such as placenta pits, incinerators, ash pits, toilets, showers, hand wash basins, etc.
- Ensure safe and adequate water supply for all health facilities (health posts, health centres and hospitals)
- Provide safe and adequate water, sanitation and hygiene facilities for the differently-abled
- Construct adequate additional facilities to meet total needs of

safe water, sanitation and hygiene services

- Implement Clean and Safe Health facilities (CASH)
- Incorporate urban sanitation and hygiene indicator tracking system with HMIS and CHIS

6.3.2 Schools and government offices

- Install, reinstate or rebuild non-functional facilities such as toilets, hand washing facilities, ash pits etc.
- Provide safe and adequate water, sanitation and hygiene facilities for differently-abled users
- Provide MHM facilities for girls and women
- Ensure access to safe and adequate water supply facilities for all schools
- Construct adequate additional facilities to meet total needs of the school community in accessing safe water, sanitation and hygiene services
- Implement sanitation and hygiene promotion works in schools, such as the school curriculum to incorporate sanitation and hygiene in the day to day teaching learning system
- Incorporate sanitation and hygiene indicator tracking systems into education M&E system

6.3.3 Food and drink establishments

All food and drink catering establishments should be regulated to confirm the availability and proper maintenance of sanitation and hygiene facilities prior to starting to provide services. The strategy to be followed will be:

- Ensure the adequacy of sanitation and hygiene facilities prior to giving licenses for new food and drink catering establishments. This will be undertaken by Ministry of Health in collaboration with Trade and Tourism
- Apply strict regulatory measures and regular inspections on all establishments will be undertaken with a team of experts/ inspectors assigned in the public institutions such as Ministry of Health, Trade and Tourism, and municipalities

Similarly, other institutions such as **prisons, military barracks, camps**, etc. will be monitored for adherence to sanitation and hygiene requirements.

6.4 Emergency urban sanitation

UNHCR latest guidelines should be used but some detailed guidance is included below.

The three top priorities in emergency response are the provision of sufficient quantities of safe water, arrangement of basic sanitation and promotion of good hygiene behaviors. Response programs range from rapid and limited interventions in acute emergencies to comprehensive long-term interventions in complex emergencies.

I. Safe human excreta disposal

Safe excreta disposal is a major priority and in most emergency situations should be addressed with as much speed and effort as the provision of a safe water supply. The provision of appropriate facilities for defecation is one of a number of emergency responses essential for people's dignity, safety, health and well-being. Safe excreta disposal aims to keep the environment free from uncontrolled and scattered human faeces. Immediately after a disaster and while an excreta disposal management plan is put in place, consider implementing an

initial clean-up campaign, demarcating and cordoning off of defecation areas, and siting and building communal toilets. In urban disasters where there could be damage to existing sewerage systems, assess the situation and consider installing portable toilets or use septic and/or containment tanks that can be regularly desludged. Due consideration should be given to desludging, handling, transportation and final disposal of the sludge.

The following actions should be taken:

- Implement appropriate excreta containment measures immediately
- Carry out rapid consultation with the affected population on safe excreta disposal and hygienic practices
- Carry out concerted hygiene promotion campaigns on safe excreta disposal and use of appropriate facilities
- Consult and secure the approval of all users (especially women and people with limited mobility) on the siting, design and appropriateness of sanitation facilities
- Provide the affected people with the means, tools and materials to construct, maintain and clean their toilet facilities
- Provide an adequate supply of water for hand washing and for toilets with flush and/or hygienic seal mechanisms, and appropriate anal cleansing material for use in conventional pit latrines
- Separate, internally lockable toilets for women and men are available in public places, such as markets, distribution centres, health centres, schools, etc.
- Use of toilets is arranged by household(s) and/or segregated by sex

	Safe excreta disposal type	Application remarks
1	Demarcated defecation area (e.g. with sheeted-off segments)	First phase: the first two to three days when a huge number of people need immediate facilities
2	Trench latrines	First phase: up to two months
3	Simple pit latrines	Plan from the start through to long-term use
4	Ventilated improved pit (VIP) latrines	Context-based for middle- to long-term response
5	Ecological sanitation (Ecosan) with urine diversion	Context-based: in response to high water table and flood situations, right from the start or middle to long term
6	Septic tanks	Middle- to long-term phase

II. Solid waste management

The following should be undertaken in solid waste management:

- Involve the affected population in the design and implementation of the solid waste disposal programme
- Organize periodic solid waste clean-up campaigns
- Consider the potential for small-scale business opportunities or supplementary income from waste recycling
- In conjunction with the affected population, organize a system to ensure that household waste is put in containers for regular collection to be burned or buried in specified refuse pits and that clinical and other hazardous wastes are kept separate throughout the disposal chain

- ❑ Remove refuse from the settlement before it becomes a health risk or a nuisance
- ❑ Provide additional waste storage and collection facilities for host families, reflecting the additional waste accumulation in disaster situations
- ❑ Provide clearly marked and appropriately fenced refuse pits, bins or specified area pits at public places, such as markets and fish processing and slaughtering areas
- ❑ Ensure there is a regular refuse collection system in place
- ❑ Provide personnel who deal with the collection and disposal of solid waste material and those involved in material collection for recycling with appropriate protective clothing and immunization against tetanus and hepatitis B
- ❑ In the event that the appropriate and dignified disposal of dead bodies is a priority need, coordinate with responsible agencies and authorities

III. Drainage

The following should be undertaken in drainage management:

- ❑ Provide appropriate drainage facilities so that dwelling areas and water distribution points are kept free of standing wastewater and that storm water drains are kept clear
- ❑ Seek an agreement with the affected population on how to deal with the drainage problem and provide sufficient numbers of appropriate tools for small drainage works and maintenance where necessary
- ❑ Ensure that all water points and hand washing facilities have

effective drainage to prevent muddy conditions

IV. Hygiene promotion

Hygiene promotion should be done as integral part of WASH in emergency situations. The following should be undertaken:

- Systematically provide information on hygiene-related risks and preventive actions using appropriate channels of mass communication
- Identify specific social, cultural or religious factors that will motivate different social groups in the community and use them as the basis for a hygiene promotion communication strategy
- Use interactive hygiene communication methods wherever feasible in order to ensure ongoing dialogue and discussions with those affected

In partnership with the affected communities, regularly monitor key hygiene practices and the use of facilities provided.

6.5 Capacity building

Capacity building is a holistic approach that addresses the gap in planning, implementation, monitoring, at the federal, regional, zonal (if required) and town levels. The capacity gap will be checked in a comprehensive way to address the service delivery for liquid and solid waste, promotion, regulation and enforcement. Capacity building shall include system development, financial analysis, procurement of facilities, operations, training of staff and development of leadership programs.

The strategy that will be adopted to create and increase capacity will include:

- Comprehensive assessment of the capacity of mandated institutions to deliver services and priorities identified.
- Comprehensive plans for short, medium and long term capacity building needs at town or clustered town and city levels. The plans should be endorsed by the city and town administrations as part of a comprehensive development plan for the mandated service providers.
- National fora for sharing of best practice can also be exploited for promotion of capacity building methods that work best in Ethiopia.
- All responsible institutions are expected to allocate budgets for capacity building. Those towns having a shortage of resources should make plans to mobilize funding, linked either with the capital or operational planning.
- Extra resources required for such capacity building, outside of regional or municipal budgets, might be included as requests from clustered municipalities for technical assistance under competition for central and international funding.
- To harness the benefit from economies of scale, such things as institutional development, sharing of resources and expertise and procurement of equipment and facilities could be centered in clustering of towns and capacity building further orientated around this concept.
- Private consultants can support towns, regions and the federal governments to carry out capacity gap assessment, prepare capacity development plans, conduct training, develop engineering plans, and establish new operational systems.
- Short term training sessions and workshops will be used as

a means of capacity building to disseminate new approaches, fix specific capacity gaps, introduce approaches, orient newly joined staff and experience sharing. Federal and regional institutions will support towns in organizing multi-regional and multi-town training sessions and workshops.

- Basic training/orientation has to be organized at town level for all operational staff such as those engaged in collection of waste, construction of facilities, transportation and so on. Training/orientation materials on health and safety, handling of waste, segregation of waste, adoption of technology and basics of regulation and enforcement should be developed at the federal level or by regional responsible institutions.
- Specialized training for micro and small-scale enterprises and others would be best organized in consultation with relevant institutions.
- Medium and short-term training aimed at generating technical and professional staffs and leadership will be organized with different educational institutions. Technical and vocational training institutions are expected to play an important role in addressing the technical gaps while universities could help in organizing tailored training for sub professionals and professionals. The national steering committee should identify universities to be “centers of excellence” on different aspects of sanitation management and link with regions and towns. The national steering committee should develop operational modality of the training and a possible financing mechanism.

6.6 Technical innovation, Research and Development

The task of achieving total WASH services in general and sanitation in particular requires active research and injection of innovative ideas

to cope with emerging issues. This requires close collaboration with universities and research institutes in the country.

At the front end of the liquid and sludge sanitation chain are the toilets used by all members of society. Sanitation facilities have not been provided for a significant minority, the differently-abled. Similarly, there has been little attention given to gender needs, specifically MHM. There is a need to explore, and evaluate low cost options for sanitation facilities located within private, public, communal, commercial and institutional buildings to cater for gender and vulnerability requirements.

Ethiopian cities and towns are all “water stressed”, for one reason or another, and there is rarely enough water to operate conventional sewerage which relies on a very high water to solids ratio. This calls for the use of cost effective decentralized waste water treatment systems based on research and replication and through a bottom up demonstration approach.

Development of decentralized waste water treatment plants, with the associated ambition to provide safe products for re-use, is just one link in the sanitation chain. Other parts of the sanitation chain require equal, if not more attention. An immediate and obvious task is how to convey treated liquid effluent from point of production within built up areas to the intended point of use, which will be in green spaces and parks also located within or between built up areas. This throws up some significant technical and land allocation issues related to pumping, pipelines, open conduits, co-use of storm drains, storage, etc. It will also need agreements to be in place, based on unambiguous contractual arrangements, for the sharing of costs and benefits between stakeholders.

Finding cost effective ways of emptying pit latrines (used by the majority of urban residents) and small household (usually leaky) cesspools is an

important part of the strategy. Other African countries have pioneered and are seriously looking to scale up manual pit emptying models. The major challenge to the introduction of manual pit emptying in Ethiopia will not be technical but will be more related to attitude, based on unfamiliarity. Raising the sanitation profile, implementing demonstration projects, organising exchange visits to other countries and undertaking marketing campaigns will all be necessary. It is also good to test small scale motorised desludging equipment like Bajaj that will overcome the social issues in manual pit emptying.

As regards solid waste management, the technologies for the operation of large waste disposal sites are well documented. However, development work aimed at specific Ethiopian conditions still needs to be carried out to ensure (a) avoidance of leachate getting into surface and groundwater, (b) regular covering of “cells” with an impermeable layer to reduce infiltration and discourage disease vectors (birds, rats, dog, insects, etc.) and (c) health and safety measures are in place for all formal and informal workers.

Professional expertise such as hydrogeological, hydro-chemical, civil engineering, environmental health, mechanical engineering and project management inputs and, of course, capital for initial construction and mechanical equipment and a revenue stream to pay for the sustainable maintenance and operations costs will be required. Capacity building and business planning will be essential development components.

Technical innovation is also required in primary labour intensive collection, transport and temporary storage of solid waste, building on current best practices demonstrated by existing entrepreneurial micro-enterprises. Good examples of SWM best practices include SMMEs handling solid waste collection from households to transfer stations in Addis, Bahir Dar, Mekele, Gondar, Wukro, Hawassa and other towns.

6.7 Strategy on crosscutting Issues

6.7.1 Equity

In order to achieve universal coverage, the IUSHS takes into consideration the situation and needs of un served members of the society who often live in congested inner city slum areas and outskirts of towns. In the Ethiopian context this includes women, children, differently-abled people, elderly people, people with chronic illness, including HIV/AIDS and people living in remote and/or peripheral areas, and people living on the street. People living in low quality rented houses, shelters provided by towns and religious orders, even prisons, may also be inaccessible to quality sanitation services. The IUSHS will adopt the following strategies to address the issue of equity:

- The IUSH program shall address exclusion from urban sanitation and hygiene and promote universal access to services. Nobody will be left behind.
- All urban sanitation and hygiene related studies, communications and development programs shall give due attention to addressing the problem of differently-abled people. Standards have to be developed for different types of facilities at different functions to give access to everyone including those identified as differently-abled, women/girls, elders and so forth.
- All public facilities including public toilets, showers, and access that are either under operation or under construction should be checked for safety for differently-abled users. Country-wide standards for facilities in the public domain and services to institutions such as hotels, bars, schools and health facilities should be applied and enforced by municipalities. The standards should take note of safety for everyone but with special emphasis on people with disabilities.

- The Strategy shall address women's needs as well as access to sanitation facilities for people living with HIV-AIDS. In addition the IUSH SAP shall consider:
 - Ways to increase the continuity of the supply of water (quantity or facilities or both) in all public, community, health, school and institutional facilities
 - Avoidance of physical infrastructure such as steps, narrow entrances, slippery floors for water and sanitation services
 - Setting up of responsible institutions which could handle policy/strategy provisions for the differently-abled, knowledge, skills, information, appropriate designs and consultation mechanisms and
 - Preparation of legal provisions and the social environment that protect prejudice, pity, isolation, overprotection, stigma, misinformation and shame of the family
- All public recreations sites, schools, religious establishments, open areas where elders gather and children play should be maintained clean and accessible.
- Towns should have a special basket fund that is dedicated to creating access to improved sanitation facilities that may include liquid and solid waste containment facilities for residents living in extreme poverty. Such municipal funding can be directed to the mandated service providers to extend services to the poor through clear contractual arrangements and through onward delegation of services to locally-based SMEs.
- Sanitation management systems should be used as a source of income to the able poor and those who can participate in one way or another through job creation.

6.7.2 Gender

The IUSHS recognizes the important value that is linked with gender, sanitation and hygiene in general. With active and enhanced involvement of the UHEP and the Health/Women Development Armies the IUSHS aims to:

- Increase the involvement of women in designing urban sanitation programs; which, in turn, helps empowerment and local ownership and capacity
- Increase the focus on the needs of women and girls by integrating urban sanitation and hygiene programs such as separate sanitation facilities and menstrual hygiene management
- Empower and capacitate women in economically viable management of urban sanitation and hygiene facilities
- Increase opportunities for women and girls in developmental activities related to prevention of sanitation and hygiene related diseases
- Use model women as change agents in addressing urban sanitation and hygiene related issues
- Increase engagement of women associations, forums and stakeholders working on gender
- Encourage creation of job opportunities for unemployed women, female school-leavers and youth through construction work, through business management roles, through engagement within SMEs in primary solid waste collection, waste reuse and recycling, public toilet service provision and faecal sludge management.

6.7.3 Environment

Effective urban sanitation and hygiene is important for human health and for economic and social benefit, but is also essential for preservation of sensitive ecosystems. It is necessary to reverse the damage that has been caused through water, soil and air pollution.

The serious deficiencies in sanitation services, the inadequacy of sewerage infrastructure, random defecation in urban areas and poor control of industrial and commercial wastes have created dangerous environmental health problems.

Rivers and streams in the vicinity of both big cities and small towns have become open sewers and are one of the main sources of infections resulting in diarrhoea and other diseases. They also damage aquatic ecosystems thereby compromising their ability to filter, cleanse, aerate and mitigate polluted water.

In this Strategy, the following interventions are given due attention in order to reduce the impact of poor urban sanitation and industrial and commercial activities on the environment:

- Ensure that Environmental Impact Assessments are carried out strictly and implemented accordingly for all new urban domestic, institutional, commercial and industrial activities as per existing proclamations
- Ensure that adequate resources are included for Environmental Impact Assessments and mitigation measures in all development programs
- Conduct continuous environmental monitoring of effluent treatment, drainage systems, water bodies, ecosystems and open areas, and identify sources of possible pollution sources

- Ensure that environmental protection requirements are fully enforced for all new and existing domestic, institutional, commercial and industrial premises
- Encourage residents to reduce waste at sources, and to sort out the waste into classifications aimed at possible reuse and recycling
- Follow optimum standards in disposing of effluents and other wastes

Particular attention should be given to climate change. Erratic and extreme meteorological events are likely to undermine the development of urban areas, the state of the environment and will have health impacts. It is of utmost importance that the systems and the facilities that will be developed through the IUSHS are conceived in order to i) limit the impact in the terms of greenhouses emissions and therefore limit the impact on the environment and the climate and ii) ensure an increased resilience to the communities/towns served against the effect of climate change.

6.7.4 Health and Safety

The Strategy will make the maximum effort possible to reduce and eventually eliminate all accidents, injuries and occupational illnesses of those involved in urban sanitation and hygiene service provision. Continuous efforts to identify and eliminate or manage safety risks associated with the activities will be given due attention by implementing the following interventions:

- Those engaged in urban sanitation service provision will get training on health and safety as well as risks associated with service delivery
- Provision of PPE and enforcement of use

- Establish systems to respond quickly, effectively and with care to emergencies or accidents that result from operational activities
- All operators are required to establish and monitor low accident tolerance zones with full investigation and reporting procedures. The expense related to risk mitigation will be covered partly by operators through inclusion in tariffs and partly it will be covered through a subsidy from the town administration

6.7.5 Private sector engagement

There is some scope for private sector participation in sanitation services installation and management. The engagement of the private sector is mainly limited to consultancy, construction and supervision of facilities, solid and liquid waste collection, manufacturing and supply of sanitation facilities. These are expected to continue while efforts are also made to create a financially viable business environment to attract further involvement of the private sector in sanitation service delivery. The lead Federal institutions will play a critical role in creating the enabling environment for the increased engagement of the private sector.

The Strategy will address the stepping stones for including private sector provision within a contracting, supply chain and delegated management framework. It will be necessary to ensure that health and safety measures are put into place to protect workers and that both the public and the environment are protected. At the same time it will be necessary to ensure that private operators are able to run viable businesses within an enabling regulatory framework. This can be achieved through clear contractual arrangements (SMCs and DSMCs) that impose and monitor KPIs.

It is envisaged that the private sector could be viably and advantageously

engaged in most parts of the sanitation and hygiene supply chains, including:

- Formative research and IEC strategy, including creative concepts for behaviour change at both consumer and institutional levels
- Research and development
- Provide consultancy services in a wide area including institutional reform, financial analysis and business planning, master planning, feasibility studies, design and contract supervision
- Capacity building in terms of system development and implementation, organizing tailor-made short-term training
- Primary solid waste collection
- Secondary solid waste storage, sorting and transport
- Solid waste disposal site operation
- Recycling industries
- Pit latrine, cesspit and septic tank manual and mechanized emptying services
- FSM treatment and product marketing stages
- Production of sanitation marketing products such as pre-fabricated latrine and toilet units

Overall feasibility of business models will be conducted for each intervention to see how the private sector or SMEs can be engaged to deliver services of quality and in an efficient manner.

In order for the private sector to engage and contribute in the chain

of urban sanitation the MoUDH and are expected:

- To review all possible bottlenecks that hinder the engagement of the private sector in the sanitation chain.
- Revise or develop operational guidelines that create a suitable enabling environment for the private sector. Special arrangement will be made in the areas that have not yet been traditional areas of engagement for the private sector
- To ensure business opportunities through clustering or packaging different sanitation service components
- To support the private sector in accessing finance (special loan arrangement to be used for investment), tax relief period, and capacity building of staff

6.7.6 Community engagement and ownership

The success of urban sanitation management is highly dependent on the level of community engagement. The GoE has developed and introduced different arrangements to increase engagement of the community. The current widely adopted arrangements whereby political leaders and local communities are brought together on one platform could be used to discuss the type of services to be provided, set standards, reflect on tariff setting, trigger community mobilization, and monitor performance.

The Health Development Army (HDA) and Health Extension Workers (HEWs) shall continue to serve community members to work hand in hand in promoting urban health extension programs. The main activity supports are a) leading communities to climb up the sanitation ladder, b) construct and arrange their own sanitation facilities, c) agents for integration, coordination and partnership and d) continue to bear the

responsibility of clean green sustainable village and city/towns. The main contribution expected from households within each community for achieving total sanitation will be in terms of on-site sanitation facilities and will involve contributions in labour, cash and materials. The following are the strategies for community engagement;

- Community representation in hygiene and sanitation committees should be made from different segments of society. Mainly representation is expected from women associations, youth associations, elders, private operators, private businesses, public institutions, CBO's, NGO's, and representatives of people with disabilities.
- Communities can play a very important role as “watchdog” consumer groups in monitoring how public and private service providers (water, liquid and solid wastes) and delegated operators perform in relation to their SMCs and DSMCs and associated KPIs. Consumer complaints and willingness to pay can be monitored by such groups and play a vital role in efficient service delivery. Generally, such groups of responsible citizens receive a small monthly allowance to attend meetings, the money being generated from tariffs and collection fees.
- The federal and regional governments are responsible for developing guidelines and checklists on how the community engagement and representation should look and for establishing possible platforms of engagement. They should also monitor and ensure the functionality of the platforms.
- All towns should then create community engagement platforms that are compatible with the expectations set out in the guidelines. Towns are fully mandated to decide and create the enabling ground on how to manage and use community engagement platforms to achieve minimum standards of

sanitation. Towns should note that the success of sanitation management is highly dependent on the level of transparent community engagement.

6.7.7 Sustainability

The need for sustainable service delivery is the key challenge facing urban sanitation development in all Ethiopian towns. Addressing sustainability requires a comprehensive institutional, technological, financial and environmental approach and places users and communities at the center of service development.

Institutional sustainability involves choosing sound service delivery and regulatory mechanisms with full consumer participation while technological sustainability needs full involvement of SMEs to establish appropriate tools and equipment. Financial analysis to determine business viability related to levels of service and affordable tariffs and charges is at the heart of public service sustainability, while environmental sustainability means compliance with environmental management plans (EMPs) based on environmental protection laws and guidelines.

Sustainability has a direct link with the amount of resources allocated for the operation, maintenance and rehabilitation and the financing systems put in place. Though government requires cost recovery on public service delivery, it is clear that, in reality, tariffs and charges for solid waste, sludge and liquid waste collection, treatment and disposal only cover a fraction of the operating costs. Most water utilities struggle to cover their operational costs for water supply. However, demand and willingness to pay for reliable and safe water is higher than for sanitation. Improvements in water service delivery therefore offer the potential for cross subsidy to sanitation. Many Ethiopian utilities are responsible for both water and sanitation so there is the possibility of subsidizing sanitation costs from water revenues at local

level (within clusters of municipalities for instance) once water supply is improved.

Key sustainability strategies include:

- Both financial and environmental sustainability gains will be made by application of the 3Rs (Reduce, Reuse, and Recycle). However, sustainable service delivery will mostly depend on highly efficient but labour intensive methods, short hauls to local treatment and transfer stations located within the communities, low energy treatment, local reuse, clear sub-contract conditions and strict regulation.
- It is expected that sustainable sanitation service delivery will require grants, loans and subsidies in the short to medium term. This means that sustainability will rely on long-term agreement on funding and subsidies from non-sanitation revenue streams to some degree.
- The IUSHS encourages all actors to prioritize sustainability in all studies and implementation of programs.
- Different responsible federal and regional institutions together with the private sector will build the technical and managerial capacity of local government to ensure that sustainability is factored properly with all interventions.
- Adequate budget provision will need to be allocated and all necessary technical measures considered improving services to a level where they exceed minimum agreed standards in all towns. Federal and regional governments can advise towns on how to carry out socio-economic studies and financial analyses so as to set levels of service compatible with consumer ability to pay. At a minimum, operation and maintenance of sanitation facilities should be covered by a combination of revenue and agreed subsidy mechanisms.
- Towns will assign urban sanitation standards that are aligned with

national standards and options. The federal and regional responsible institutions will promote the use of sustainable, affordable and acceptable facilities to towns.

- Subsidies targeted to the destitute and extremely vulnerable groups to sustain proper functioning of facilities can be arranged at local service delivery level. Involvement of local management staff in delegated operations helps to identify individuals and families in the greatest need.
- Creating community ownership by engaging the community members through the whole processes of planning, implementation, monitoring and evaluation of urban hygiene and sanitation issues.

6.8 Sanitation financing and tariff setting

6.8.1 Sanitation financing

Sanitation financing has to be established with certain principles and incentives. Sanitation has social and economic value that impacts both the public and private sectors. Households, institutions, business enterprises, and industries are all sources of waste, although the type varies and the level of contributions to the costs involved are generally inadequate. For instance, the investment that is covered by households, institutions and industries is often limited to just containment and transport.

It is anticipated that efficiency measures, labour intensive appropriate technology and business planning should make operation of the upstream sanitation chain (solid waste door to door collection and pit latrine and cesspool emptying) and local FSM operations financially viable in the short term, provided there are in place appropriate, affordable tariffs and charges, coupled with effective collection and

utilization of funds. However, capital intensive public toilets, SWM transfer stations, secondary long distance transport, proper solid waste disposal, decentralised waste water and faecal sludge treatment, and sewage conveyance and treatment will take longer to achieve full cost recovery.

This strategy gives direction on how to make funds available to cover the life cycle cost of sanitation services. The cost of the entire chain of sanitation may not be covered from a single source rather it may be divided systematically. The following are the strategies to finance urban sanitation:

- In recognition that each party has to play its own role and reduce the volume of waste to be generated, the principle of “polluter pays” shall apply to the whole urban sanitation chain.
- Currently sanitation services are operated at a loss and it is likely that subsidies, particularly for capital costs, will be required for the medium term. Capital costs for sanitation, particularly treatment systems and sanitary landfill facilities will require grants and loans in the same way that these have traditionally been made available for sewerage and sewage treatment.
- Operational costs will likely exceed direct revenue for some time and it is expected that subsidies will be required from other sources, either through covering part of the cost or setting cost sharing mechanisms where there is a willingness to pay.
- Subsidies for building household latrines are, as a general principle, not provided, except in specific situations where village/Kebele leaders identify absolute poverty, extreme physical disability or adverse local ground conditions confirmed

by Health Extension Workers. In such cases, the city council establishes a “discretionary” Improved Hygiene and Sanitation (IHS) fund, with eligibility criteria for receiving subsidies.

- Soft loans and discretionary grants to households and institutions, alongside promotion activities will possibly be required to encourage construction and improvement of household facilities. Micro finance and SMMEs will be linked to play an important role in mobilizing funds and encouraging economically feasible and socially acceptable services.
- Allocation of funds for urban sanitation to single or (preferably voluntarily) clustered towns will be made available from public resources based on competitive tendering that will take into account quality of funding bids and the motivation to implement the necessary management and operational improvements required to achieve sustainable service delivery. The funding bid application, to be competitive, should have a high standard of preparation of programs and projects and the preparation has to have economic, social, financial and tariff studies included. In order to achieve this, the Strategy includes provision of Technical Assistance to assist clustered municipalities.
- All integrated urban sanitation programs are expected to perform financial analyses of all potential options in order to balance service delivery options (each with its own cost) against customer affordability, willingness to pay and expectations around value for money.
- Based on outcomes of the financial analysis, a business plan shall be proposed for individual parts of the sanitation chains that might be carried out by a single mandated operator or group of operators. The business plan will be based on

the least cost option that fulfils the objective of sustainable services, complies with health and environmental target and meets minimum customer expectations.

- The budget to be assigned to urban sanitation will be determined by the Federal Ministry of Finance and Economic Cooperation (MoFEC), BoFECs or city councils based on the plan that is recommended by the Steering Committee for Integrated Urban Sanitation.
- Donors, CSOs/NGOs and other bilateral/multi-lateral donors will be required to contribute an agreed amount of budget to supplement the overall allocation from MoFED/BoFED and city councils. Government shall create a dedicated sanitation budget line that helps to easily track the allocation and expenditure made on Integrated Urban Sanitation expenditure. This is expected to assist public institutions engaged in managing urban programmes.
- The issue of ownership of assets should be confirmed at high level. Generally water and sanitation constructed facilities (fixed assets) are owned by the Municipalities on behalf of the Government, while the mandated public service providers operator those assets on behalf of the owners under contract agreements. The operators normally own moveable assets such as trucks, treatment chemicals, etc..
- The Water Resources Development Fund (WRDF) was established to finance water resources and sanitation projects which are ready to be financed under the “cost recovery” principle. To be eligible for financing, the sanitation project will be expected to be financially viable and economically sound. Whenever possible the WRDF could also be used as a source of funding for urban sanitation. BoFEDs and the private sector

might support (preferably clustered) municipalities and town water utilities with proposal preparation, so that they can qualify for loans from WRDF.

- In order to address the critical backlog on urban sanitation, the government may need to consider establishment of a dedicated “Sanitation Fund office”. The operational modality for such a fund will be further studied in relation with all other funding systems.
- Public private partnerships may be utilised as a means to raise additional resources in an agreed business model that will be developed over a shorter period of time.
- Consult the community through community conversation or using the community platforms for different fund raising options in order to address the problems related to urban sanitation.

6.8.2 Tariff setting for urban sanitation

The following are the basic strategies to be applied in setting the tariff for urban sanitation:

- Tariff setting for urban sanitation has to be site specific. Tariffs for sanitation will be determined by financial analysis, based on affordable levels of service, available and levels of subsidy and consumer willingness to pay (which is related to quality of service).
- The tariff shall consider social, economic and environmental value of the services to be provided. It has to also consider those who cannot afford to pay for the services (for instance, those in the bottom quartile of the “ability to pay” spectrum,

as determined by socio-economic surveys).

- The cost for services that is provided for the poor should be covered either by the community through the tariff or by the municipality through different funding mechanisms.
- The tariff for different types of services has to be different and the collection system must also be explicit to every user. It is common practice and economical for sewerage charges to be based on metered water consumption while pit emptying services are generally charged on volume, distance to transfer station/treatment or disposal site and cost of treatment. The rate for solid waste may also be determined by the volume, type and frequency of collection, whichever is feasible.
- Tariffs for solid waste collection shall be levied directly at the point of collection or may be recouped along with other municipal charges. The tariff should, however, take note of the health and safety of collectors and the cost to be incurred at each step of the value chain.
- Discretionally tariffs may be best managed through delegation of operations to local community based operators who have more intimate knowledge of needs and hardship.
- Tariff changes have to be made in consultation with the representatives of the customers or end users and with the full endorsement of city council or delegated authorities.

6.9 Required Institutional arrangements for the implementation of the IUSHS

The urban sanitation institutional arrangements shall include high level coordination, integration and alignment at the federal, regional and town level. At all levels, the institutional arrangements are expected

to clearly spell out the role and responsibilities of implementers and regulators.

The Ministry of Health, the Ministry of Urban Development and Housing, the Ministry of Water, Irrigation, and Electricity, and the Ministry of Environment, Forestry and Climate Change should play frontline roles in creating the coordination mechanism. However, other sectors such as, Culture and Tourism, Industry, Trade, Women and Youth Affairs will make their own contributions. At all levels of administration, the frontline institutions will form national or regional **Steering Committees** and **Technical Advisory Teams** for decision making on planning, budgeting and implementation.

A federal MoU shall be signed between the parties involved in to order to clearly define mandates and responsibilities. Regulatory and enforcement bodies need to be established at federal, regional and town level in order to ensure quality of services and compliance with set standards.

The National and Regional Steering Committees for the IUSHS are key components for improving the profile of urban sanitation. The coordination mechanism is expected to work closely with the ONWP and other relevant sector fora, such as City Associations, to bring about the changes required at town level. Its detailed roles and responsibilities will be defined within the SAP and the development of the MoU to be signed by key institutions. However, the basic structure is summarized here below:

Chairperson	To be decided during the First Meeting but Health Sector will take the lead to call the initial meeting
Secretary	To be decided at the first meeting of the Committee
Members	Health, Water, Irrigation and Energy, Urban Development and Housing, Environment and Forestry, and Culture and Tourism

Invited participants	Development partners, NGOs, Universities and others
Roles and responsibilities	<ul style="list-style-type: none"> <input type="checkbox"/> Facilitate inter-sectoral and platforms that are involved in urban sanitation and hygiene management <input type="checkbox"/> Review and endorse the national/ regional/ strategic development plan and annual consolidated integrated urban sanitation and hygiene plans and budgets <input type="checkbox"/> Oversee overall performance based agreed actions and set targets <input type="checkbox"/> Ensure the establishment of a functional coordination mechanism at national, regional, town and kebele levels <input type="checkbox"/> Guide the establishment of strong national institutions and systems that improve the service level of urban sanitation management <input type="checkbox"/> Ensure that biannual meetings, discussions and updates are conducted accordingly <input type="checkbox"/> Ensure that the maximum coordination mechanism is in place with other relevant set ups such as the OWNPN and others <input type="checkbox"/> Ensure allocation and utilization of reasonable resources for urban sanitation

Existing sector Technical Working Groups as well as new ones will serve as platforms for information sharing, provide technical support to high level decision makers and for overall coordination purposes.

The major responsibility of urban sanitation rests on the shoulders of the town/city administrations. At town level, the mayor of the town/city administration/or the city manager will take the role of creating

and leading the required platform for coordination and delivery of services. Key functions are depicted in the table below:

Chairperson	Municipality Mayor or representative
Member secretary	Head, Health Office
Members	Heads of Water Utility, Education Office, Finance Office, Urban Development Office, Women's Association, Youth Association and representatives of NGOs, development partners, business community, health facilities representative, micro credit organizations, etc.
Roles and responsibilities	<ul style="list-style-type: none"> • Analysis of sanitation and hygiene issues and development plans to overcome the existing barriers • Prepare a short term and long term detailed plan for launching sanitation and hygiene promotional activities along with budget, joint plan of action and responsibilities based on the framework of this sanitation master plan document • Form a monitoring team for regularly monitoring and providing technical backstopping to the communities, schools, health and other institutions in the town • Organize review meetings and follow up activities for smooth implementation and monitoring • Endorses annual Strategic Plan/ Plan of Action and budgets for total sanitation for approval by the town councils

The institutional arrangements at town level will vary depending on the size of the town and the type of service the town wanted to deliver. However, the federal government and regional state institutions have the responsibility to support towns to develop

	<ul style="list-style-type: none"> • Coordinate with RWCC for sharing of necessary information and decisions. • Do resource mapping and stakeholders analysis for the effectiveness of programs • Organize quarterly meetings for planning programming and appraisal of the performance of sector activities • Innovative and creative activities as appropriate <p><input type="checkbox"/> Additional activities to be proposed by the Regional WaSH coordination office in line with OWNP</p>
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institutional arrangements that fit to the capacity of the town. The regional Technical Working Group may take lead to develop a standard institutional set up for different clusters of towns.

Similar structures need to be replicated at Kebele level according to the following table:

Chairperson	Kebele Chairperson
Member secretary	UHEW assigned to the Kebele Health center
Members	Representatives from Water Utilities, Education Office, Urban solid waste management and greenery office representatives, Health Development Army, Women’s Association, Youth Association, business community, health facilities, micro credit organizations, etc.
Roles and responsibilities	<ul style="list-style-type: none"> • Preparation and updating of the WASH profile of the Kebele

- Analysis of sanitation and hygiene issues and strategies to overcome the existing barriers
 - Prepare a short term and long term plan for launching sanitation and hygiene promotional activities along with budget, joint plan of action and responsibilities based on the framework of this sanitation master plan document
 - Form a monitoring team for regularly monitoring and providing technical backstopping to the communities, schools, health and other institutions in the Kebele
 - Organize review meetings and follow up activities for smooth implementation and monitoring
 - Endorse Strategic Plan/Plan of Action and budgets for total sanitation for approval by the town council;
 - Coordinate with TWCC for sharing of necessary information and decisions
 - Do resource mapping and stakeholders analysis for the effectiveness of programs
 - Organize quarterly meetings for planning programming and appraisal of the performance of sector activities
- Arrange community conversations in order to discuss with the community about hygiene and sanitation facilities in their respective kebele's
- Innovative and creative activities as appropriate
- Additional activities to be proposed by the town WaSH coordination office in line with OWNPN.

It is recommended under the Strategy, for further consideration, that municipalities cluster to include large and small towns on a voluntary basis in order to present coordinated plans for improved sanitation service delivery, possibly including water supply, in order to make best use of available resources and to take advantage of economies of scale in service delivery. The Strategy allows for outside Technical Assistance to help clustered municipalities come up with sustainable projects and management/operational structures of such a quality that will attract Government and IFI grants and eventually more reliable long-term loans.

Any possible institutional options that help improve the management of urban sanitation, such as services management contract or delegated management of private sector, small and micro enterprises and clustering of service providers such as water utilities, will be acceptable and translated into action after a careful analysis. Decisions are to be made by the urban sanitation coordinating body at federal, regional and town level.

The engagement of small scale micro-enterprises and private sector operators in liquid and solid waste management is promoted as part of job creation schemes.

At the regional and town/cities level, for effective and efficient Waste Management systems, solid and liquid waste management should be eventually led by professionally, organizationally, and financially autonomous institutions that are accountable to a Board. To ensure the benefits that can be accrued from economies of scale and sharing human and physical resources, the application of clustering of larger cities/towns with/and adjoining small towns for water, sanitation and solid waste management shall be put into effect in the areas of engineering, procurement, billing, laboratory services, training, human resources, project preparation (further elaboration on the concept of clustering is provided elsewhere in this document).

The main responsibilities for a proper implementation of decentralized service delivery are as follows:

- Liquid waste and faecal sludge management will be managed under the town water utilities. The water utilities are expected to revise their structure and staffing plan to undertake their role. In a metropolitan city, it may be possible to separate both services after a detailed study of the advantages and disadvantages of the different scenarios of institutional arrangements.
- Solid waste management and drainage management will remain the function of municipalities that will have a dedicated Solid Waste Management Agency/unit or process that fits to the level of the town. The institution responsible for SWM is expected to work closely with the water utility and health office. There should be a board that would be led by the town manager or delegated authority where both the urban water supply and sanitation and health office are represented.
- Hygiene promotion and communication shall be the role of the health sector mainly delivered by competent UHEP. To maximize the impact and gradually improve the quality of facilities and services, and identify critical challenges, the health sector UHEP is expected to work closely in the community with local administrations, water utilities and SWM units.
- Regulation and enforcement task will be carried out mainly by the environment and forestry sector and the FMHACA/health sector.

The following table shows the detailed division of roles and responsibilities of existing institutions at different levels:

	Institutions/ Partners	Roles and responsibilities
Federal Level		
1	FMoH	<p>Coordination and monitoring of the implementation of the sanitation and hygiene at country level focusing on:</p> <p>Awareness creation through Urban Health Extension Program</p> <p>Capacity building in terms of human power development, logistics, sanitation facilities equipment, materials, etc.</p> <p>Enhancing the construction of sanitation facilities by households, health and other institutions</p> <p>Development of standards in consultation with other sectors</p> <p>Collect data and monitor the development of public health based on agreed indicators to inform the planning, development and regulation of urban sanitation.</p>
2	MoUDH	<p>Coordination and monitoring of the implementation of the solid waste management at country level</p> <p>Capacity building of human resources, exchange of good experience</p> <p>Development of standard in consultation with other sectors</p>

	Institutions/ Partners	Roles and responsibilities
3	MoWIE	<p>Coordination and monitoring of the implementation of the water supply, waste water and faecal sludge management at country level. Main activities:</p> <p>Hosting the OWNP (until the steering committee suggests an alternative ministry to host and coordinate)</p> <p>Introduce decentralized waste water treatment systems that allows reuse of treated waste water for urban agriculture, construction, car washing etc. along with conventional sewerage, with a view to accelerating waste water coverage</p> <p>Introduce local faecal sludge treatment and engineered sludge drying beds that allow biogas generation and reuse of conditioned dried sludge free of pathogens for soil conditioning</p> <p>Capacity building, including protection of water bodies</p> <p>Proactively participate in the development of standards</p>
4	MoEFCC	<p>Coordination and monitoring of the regulation of environmental standards with respect to sanitation services at country level</p>
5	Ministry of Culture and Tourism	<p>Works in collaboration with MoH in meeting sanitation and hygiene standards by tourist centers</p>

	Institutions/ Partners	Roles and responsibilities
6	Universities and research Institution	<p>Universities will engage and support different institutions that are working on sanitation through;</p> <p>Organized tailored/demand driven training that may take a maximum of three months</p> <p>Coordinate providing technical assistance to the towns where the Universities are located and vicinities</p> <p>Carry out research which is action/solution oriented</p> <p>Support in reviewing studies, designs that are prepared by consultants.</p>
7	Others	<p>Required activities in line with the roles to be identified at the IUSHSAP and signed off by major stakeholders at the sign of MoU.</p>

	Institutions/ Partners	Roles and responsibilities
Regional Level		
8	Water Resources Development Bureau	<p>The bureau helps towns' water utilities through providing systematically designed capacity building for planning, implementation, follow up and monitoring of sanitation services delivery.</p> <p>Introduce new approaches, solicit funds and support implementation.</p> <p>Adopt guidelines, standards related to waste water management, water supply to the context of the region, conduct training in consultation with MoWIE.</p> <p>Support water utilities in analyzing quality of waste water and follow up the changes made from time to time and share the analysis report</p>
9	Health Bureau	<p>Adopt guidelines, and BCC materials to be used by the UHEW in consultation with the FMOH and others.</p> <p>Coordinate relevant regional institutions to develop standards of urban sanitation facilities, services level standards that have to be implemented by the regional towns</p> <p>Organize trainings and capacitate town health office staff to establish data base systems, carry out promotion and follow up through the UHEP, health facilities, WDA, and community-based systems</p> <p>Coordinate biannual meetings that help to review achievements and challenges in promotion and enforcement of community groups to act</p> <p>Coordinate the Regional IUSH Steering Committee</p>

	Institutions/ Partners	Roles and responsibilities
10	Education Bureau	<p>Ensure availability of WASH facilities across the schools in all the regional towns</p> <p>Support Town Education offices in adopting school WASH standards that suit the towns' sanitation management services</p> <p>Establish a system that helps them follow up and support schools in managing and maintaining quality services in schools</p> <p>Establish a data base on school WASH facilities and make it part of the education information management system.</p> <p>Organize training for those working in school sanitation</p> <p>Set system on how each of the schools should get public services such as desludging, solid waste collection and other services</p>
11	Bureau of Trade, Industry and Urban development/ Town Planning,	<p>Coordination and monitoring of the implementation of the solid waste management at regional level</p> <p>Capacity building of human resources, exchange of good experience</p> <p>Development of standards in consultation with other sectors</p> <p>Ensure that waste management is part of the urban development master plan, and local level development plans.</p> <p>Support and follow up towns to establish data bases on sanitation facilities and services</p>

	Institutions/ Partners	Roles and responsibilities
12	Bureau of Environmental protection	<p>Coordination and monitoring of the regulation of environmental standards with respect to sanitation services at the regional level</p> <p>Ensure availability of institutions responsible for regulation, monitoring and follow up of urban sanitation at town level</p> <p>Capacity building in terms of human resources development, system to be adopted at town level and modality of regulation and monitoring that should be adopted at town level</p> <p>Establish working modality with other sectors that are responsible for promotion and implementation</p>
13	Health Science Colleges (HSCs)	Support cascaded training in the field of safe faecal disposal, solid waste & liquid waste management, sanitation technologies, recycling etc.
14	TVETCs	Focus on curricula for urban WASH
15	Development partners/NGOs	<p>Assist the town administration by providing financial support and introducing innovative ideas</p> <p>Assist by providing a revolving fund to the MFIs that could be channeled to the community, women enterprises and youth group through soft loans</p> <p>Create, implement and promote WASH materials that will help the communities manage various types of wastes as described</p> <p>Assist communities to become self-sufficient in all aspects of WASH management</p> <p>Assist in providing training to enterprises, artisans, HEWs, HDA, etc.</p>

	Institutions/ Partners	Roles and responsibilities
16	MFIs	Enhance the community, women enterprises and youth group implementation capacity through savings and soft loan schemes
Town Level		
17	Town Administrations	Coordination and monitoring of the implementation of the Strategy at town level Responsible for urban sanitation service delivery Allocate resources and monitor their efficient use Ensure the availability and functioning of a platform where residents can have the opportunity to engage in and support the development of sanitation.
18	Water Utilities	Improved access to safe and potable water supply, waste water management and desludging service
19	Health offices	Key role in the improvement of access to sanitation and hygiene facilities of institutions and the community at large through the Urban Health Extension Program to bring about behavioral change and to promote sustained use of hygiene and sanitation facilities
20	Education offices	Key role in the improvement of access to sanitation facilities in schools and contribution to behavioral change through the active interaction with communities through school sanitation and hygiene clubs
21	Finance offices	Play an important role in fund soliciting and financial management
22	Urban development Office/ municipality	Translation and updating of town master plans and management of solid waste

	Institutions/ Partners	Roles and responsibilities
23	Community	Communities will construct/improve their own latrines based on the guidance they receive from the urban health extension program, construction permit granted from relevant offices and the sanitation marketing that is available in towns.
24	Institutions	Institutions will construct/improve their own latrines based on the standards to be set by the municipality
25	Micro enterprises Women or Youth Group	Enhance their solid waste collection capacity by securing loans and receiving relevant training Take part in the management of public toilets shower facilities and recycling activities
26	Medium enterprises	Take part in the secondary transportation of solid waste from bins to sanitary landfill sites
27	Others	Required activities in line with the integrated urban sanitation and OWP

6.10 Regulation enforcement

There is limited public awareness and commitments on policy implementation and low commitment of regional and local environmental affiliated government agencies like health and urban development and construction. Good regulation of urban sanitation and hygiene also requires enforcement capacity. Public urban sanitation and hygiene sector actors, especially those at the city/town level need to be aware of the existing regulations, its enforcement and follow up mechanisms.

Despite the fact that manufacturing industries across the country are

found to be a major factor associated with environmental pollution issues in towns in Ethiopia, there is a hesitation on behalf of the government to enforce existing regulation. This has to be addressed through negotiated agreements with individual industries and staged mitigation, applying the polluter pays principle, backed by clear threat of penalty through legal enforcement institutions.

Equally important, but not enforced, are the regulations developed by the Ministry of Health, Ministry of Environment, Forestry and Climate Change, Ministry of Urban Development and Housing, and the Ministry of Water, Irrigation and Electricity indicating that the owners of houses/institutions are required to invest in improved sanitation facilities and/or services and adopting improved hygiene behaviours. To address these and related challenges currently existing, the following actions are required:

- conduct mapping of the existing regulations on urban sanitation and hygiene and take action on the gaps and overlaps within the existing regulations
- agree on enforcement mechanisms and responsible institutions to enforce those regulations at the lower level
- organize awareness creation events for urban sanitation and hygiene sector actors and for the community on the existing regulations and enforcement mechanisms such as the polluter pays principle

6.11 Monitoring and Evaluation (M&E)

Monitoring is a means to track progress and facilitate decisions on possible actions and resources to be assigned to the sector. Monitoring results often serves as a means to leverage additional

resources. Besides long term country and regionally organised efforts, as described below, all projects submitted by voluntary clustered municipalities will be supported by Technical Assistance to include thorough M&E frameworks that will inform both beneficiary organisations and the funding bodies on value and effectiveness of the sanitation interventions.

In recognition of the importance that monitoring and evaluation has and the critical challenge the sanitation sector is suffering from lack of credible and sustainable M&E systems, the following strategies will be adopted:

- Monitoring and evaluation of urban sanitation should be done at all levels starting from the grass roots to the federal level by all relevant institutions. These institutions are expected to create an appropriate unit or section that is responsible for monitoring and evaluation of urban sanitation. The different units are expected to collaborate and share information on agreed indicators, quality and time frames.
- The annual multi-stakeholder forum shall continue to make arrangements for annual tracking and reporting systems in line with most sector-wide review processes. Such high-level meetings are generally informed by sub-sector reviews reporting on annual progress against the SAP milestones to be prepared subsequently in each phase.
- Cascading supportive supervision at all levels in towns, regions and at the federal level is essential to monitor individual staff performance as well as progress against delivery of outputs by all stakeholders and achievement of undertakings and key indicators
- All institutions are expected to assign focal people to be responsible for monitoring and evaluation. Staffs who are assigned

monitoring and reporting should receive the necessary training and should be familiar with what is required at different levels.

- The type of data that are required at each level should be defined in line with the demand for all level users. Data may be summarized to give the best available information at each level.
- Data bases have to be established at town or sub town level. At the start of the implementation of the strategy all towns are encouraged to start establishing data base that helps to monitor future developments. All development partners and government should set aside dedicated resources.
- The critical issues to be addressed are financial, institutional, technical, environmental and social issues (FITES) that the M&E system shall cover via appropriate indicators that give indication on possible progress.
- Guidelines have to be developed and cascaded down to the lowest possible level. The guidelines are expected to detail out the indicators and data collection format starting from containment to reuse and make clear the role and responsibilities vested to each of the institutions.
- The monitoring and evaluation system has to be aligned with the existing systems such as the Health Monitoring System, the National WaSH Inventory, OWNPN M&E platform, national survey and surveillance system, current annual multi stakeholder fora, and sector wide review processes.
- Monitoring and evaluation shall be part and parcel of the development plan and it should have all necessary alignments and adequate resource allocation. The National Steering Committee might assign the National Hygiene and Environmental Health Task Force or establish a dedicated unit at one of the partner

institutions to follow up on the timely updating of data.

- The Central Statistical Agency is mandated to have a comprehensive national data base. The type of national data that could be used as a monitoring indicator should be agreed with the National Steering Committee. More detailed data might be owned and disseminated by regulating federal institutions.
- It is important that the NSHTF follows up updating of WASH inventories to ensure key hygiene and sanitation priority indicators are captured for effective advocacy and planning processes.
- Develop and revise reporting formats for each level of sanitation services in towns.

It is important that the National Hygiene and Environmental Health Task Force, or its delegated contractor, regularly updates the WASH inventory to ensure key hygiene and sanitation priority indicators are captured.

References

1. AAWSA (2002) Wastewater Masterplan. Volume I Executive Summary.
2. Addis Continental Institute of Public Health. (2014). “Situational Analysis of Urban Sanitation and Waste Management”. Commissioned for John Snow, Inc. (JSI)
3. Central Statistical Agency. (2011). “Ethiopia Demographic and Health Survey”, Preliminary Report, Addis Ababa, Ethiopia.
4. Central Statistical Agency. (2011). “Ethiopia Demographic and Health Survey”, ICF International, Claverton, Maryland, USA.
5. Central Statistical Agency [Ethiopia]. 2014. Ethiopia Mini Demographic and Health Survey 2014. Addis Ababa, Ethiopia.
6. Chattisgarth Urban Sanitation Strategy. (2010).
7. Christian Riuji Lohri, Ephraim Joseph Camenzind, Christian Zurbrügg. (???). “Financial sustainability in municipal solid waste management - Costs and revenues in Bahir Dar, Ethiopia”.
8. Cities & Citizens Series. (???). “Urban Inequities Report: Addis Ababa”, Addis Ababa, Ethiopia.
9. CITY GOVERNMENT OF ADDIS ABABA ADDIS ABABA WATER AND SEWERAGE AUTHORITY, (2011). “AAWSA – Business Plan 2011 – 2020”, FINAL REPORT, Addis Ababa.
10. CITY GOVERNMENT OF ADDIS ABABA, Housing Construction Project Office, Bole Bulbula Housing Projects. (2013). “Final Design Report FOR SEWERAGE SYSTEM”.
11. Community Development Research. (2011). “Ethiopia Solid

Waste & Landfill', Country Profile and Action Plan.

12. Council of Ministers pursuant to Article 5 of the Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation No. 691/2010 and Article 55 (1) of the Food, Medicine and Health Care Administration and Control Proclamation No. 661/2009. (2014). "Food, Medicine and Health Care Administration and Control Council of Ministers Regulation No. 299/2013", Federal Negarit Gazeta.
13. EU Water Initiative (November 2006) Financing Strategy for the Water Supply and Sanitation sector, Ethiopia, Executive Report, Final.
14. Federal Democratic Republic of Ethiopia Ministry of Health. (2010). "Health Sector Development Program IV In line with GTP 2010/11 -2014/15".
15. Federal Democratic Republic Of Ethiopia, MINISTRY OF URBAN DEVELOPMENT and HOUSING (2014). "Ethiopian Cities Prosperity Initiative", Building Green, Resilient and Well Governed Cities, 2013/14-2025, Addis Ababa
16. Federal Democratic Republic of Ethiopia. (2011). "Ethiopia's Climate-Resilient Green Economy", Green economy strategy, Addis Ababa, Ethiopia.
17. Federal Democratic Republic of Ethiopia (2013), ONEWASH NATIONAL PROGRAM - A Multi-Sectoral SWAp, Program Document, Final August 2013
18. FMOH. (2013) Sanitation and Hygiene Strategic Action plan (SAP) final edited version

19. FMOH. (2009) , Health and Health Related Indicators
20. FMOH. (2013) , Health and Health Related Indicators
21. FMOH. (2013/14),HSDP IV Woreda Based Health Sector Annual Core Plan
22. FMOH. (2014),Mini Demographic Health Statistics (DHS)
23. Gebre G (2009), Urban water pollution and irrigated vegetable farming in Addis Ababa. 34th WEDC International Conference, Addis Ababa, Ethiopia, 2009.
24. MoFED. 2010b. Ethiopia: 2010 MDGs Report: Trends and Prospects for Meeting MDGs by 2015. Addis Ababa, Ethiopia: Ministry of Finance and Economic Development.
25. MoUDH. 2008. Available: <http://moud.gov.in/nusppolicy>.
26. MOUDH (2014), PPP, Municipal Solid Waste Management Practices and Challenges in Ethiopia
27. MoWIE(2011), National WaSH Inventory (NWI)
28. MoWIE(2011) Universal Access Plan (UAP), parts 2,3 &4
29. MoWIE (2013), One WaSH National Program (OWNP)
30. OWP. 2014. One WaSH National Program: Program Operational Manual for the Consolidated WaSH Accounts. The Federal Democratic Republic of Ethiopia.
31. PLANET Integrated Water Resources Development PLC. (2013). “DESIGN O F EXTERNAL WATER SUPPLY, WASTEWATER COLLECTION AND DISPOSAL SYSTEM AND STORM WATER DESIGN AT KILINTO SITE”, Final Design Report”, Addis Ababa.

32. Population Affairs Coordination Sub process Finance and Economic Development Bureau. (2009). “ADDIS ABABA POPULATION IMAGES”.
33. The Federal Democratic Republic of Ethiopia. (2014). “Program Operational Manual (POM) for the Consolidated WASH Account’s”, Final.
34. The Federal Democratic Republic of Ethiopia Ministry of Health. (2008). “Strategic plan for Ethiopia Health Sector”, HMIS Reform Team.
35. The Federal Democratic Republic of Ethiopia Ministry of Health. (2010). “Health Sector Development Program IV”, 2010/11 – 2014/15, Addis Ababa, Ethiopia.
36. The Federal Democratic Republic of Ethiopia Ministry of Health. (2011). “National Strategic Action Plan for Improved Hygiene and Sanitation”, Final, Ethiopia.
37. The Federal Democratic Republic of Ethiopia Ministry of Industry. (2014). “ESMF for Bole Lemi II and proposed Kilinto Industrial Zones Competitiveness and Job Creation Project”, Draft report. Ethiopia.
38. The Federal Democratic Republic of Ethiopia Ministry of Water and Energy. (2011). “Urban Sanitation Universal Access Plan’, Part IV, Addis Ababa.
39. The Federal Democratic Republic of Ethiopia. (2011). “National WaSH Implementation Framework”, Summary, Ethiopia.
40. The Federal Democratic Republic of Ethiopia Ministry of Water Resources. (2001). “Ethiopia Water Sector Strategy.
41. The Federal Democratic Republic of Ethiopia Ministry of

- Urban Development and Housing. (2014). “Municipal Solid Waste Management Practices and Challenges in Ethiopia”.
42. The Federal Negarit Gazeta of the Federal Democratic Republic of Ethiopia. (2002). “Environmental Protection organs Establishment proclamation No. 295/2002”, Addis Ababa, Ethiopia.
 43. The Federal Negarit Gazeta of the Federal Democratic Republic of Ethiopia. (2002). “Environmental Pollution control Proclamation No. 300/200”, Addis Ababa, Ethiopia.
 44. The Federal Negarit Gazeta of the Federal Democratic Republic of Ethiopia. (2010). “Food, Medicine and Health Care Administration and Control Proclamation No. 661/2009”, Addis Ababa, Ethiopia.
 45. UNEP/GRID-Arendal (2002), Water availability in Africa. UNEP/GRID-Arendal Maps and Graphics Library.
 46. UNICEF Ethiopia. (2013). “DFID One WASH PLUS Proposal”, 2013-2018.
 47. UNICEF. (2013). “The Quarter Million Initiative”, DFID One WASH Proposal.
 48. United Nations Human Settlements Programme (UN-Habitat). (2014). “STRUCTURAL TRANSFORMATION IN ETHIOPIA: THE URBAN DIMENSION”, Building ‘Economically Productive, Socially Inclusive, Environmentally Sustainable & Well Governed’ Cities, Addis Ababa, Ethiopia.
 49. United Nations Human Settlements Programme. (2011). “Gender mainstreaming Impact Study”, Water and Sanitation Trust Fund Impact Study Series, Nairobi, Kenya

50. UN-Habitat (2008). "Ethiopia Urban Profile", pp 1-36.
51. UN-Habitat (2005) Situation Analysis of Informal Settlements in Addis Ababa.
52. United Nations Human Settlements Programme. (2014). "STRUCTURAL TRANSFORMATION IN ETHIOPIA: THE URBAN DIMENSION", Building Economically Productive, Socially Inclusive, Environmentally Sustainable & Well Governed, Cities, Nairobi, KENYA
53. United States Agency for International Development/Ethiopia, Catholic Relief Services/Ethiopia. (2003). "GUIDELINES FOR THE DEVELOPMENT OF SMALL-SCALE