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MINISTRY OF HEALTH-ETHIOPIA
የዜጎች ጤና ለሃገር ብልጽግና!

National WASH and Environmental Health Strategy (2021-2025)

April 19, 2022
Addis Ababa, Ethiopia

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Forward

The government of Ethiopia has taken steps to address social and environmental determinants of health through collaborative multi-sectoral approaches. The Ministry of Health has been engaged in different interventions to improve community awareness and practice towards key WaSH and environmental health areas.

Improving the sanitation and hygiene services of the community was among the major intervention areas in the last five years. The MoH in collaboration with partner organizations has made efforts to strengthen market based sanitation to ensure access to improved sanitation and hygiene products and services. Currently, more than quarter of the woredas have established one or more sanitation marketing centers. In parallel, demand creation and behavior change approaches have been implemented to enhance proper utilization of sanitation and hygiene products and end open defecation practice.

Moreover, the ministry has designed and implemented different social and behavior change communication approaches to increase community awareness and ensure sustainable behavior change. Regular promotion on safe water handling and treatment, food hygiene, waste management, personal hygiene and healthful housing has been conducted through the HEP and other communication channels.

The ministry has also exerted efforts to improve WaSH services in health facilities. WaSH facilities have been Constructed/rehabilitated with the support of OWNP-CWA and other government and non-government supported programs. It has also advocated for improved WaSH services in other institutions including schools, prisons, religious institutions, industries and so on.

In addition to WaSH, the ministry had different multi-sectoral engagement in the prevention and control of other environmental pollution. Evidence based advocacies have been conducted on the areas of air pollution, water pollution, hazardous wastes, chemical handling and climate change.

National and global reports show that there are improvements made in the last five years in the areas of WaSH and Environmental Health. However, we are still far from the global targets. Our community is still suffering from communicable diseases caused by preventable environmental factors. Diarrhea and pneumonia remain to be

the top killers of our children. On top of the communicable disease burden, the NCDs are alarmingly increasing of which most of them are attributed by environmental factors.

This strategy is designed to provide guidance to concerned stakeholders to address the identified gaps and meet the targets set for 2025.

Finally, the Ministry of Health is fully committed to lead the implementation of the strategy and calls upon all relevant stakeholders to take part in realization of the set goals and targets.

H.E Dr Dereje Duguma (MD, MPH)

State Minister, Ministry of Health

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Acronyms

A.A	Addis Ababa
ASPG	African Sanitation Policy Guidelines
CER	Corporate Environmental Responsibility
CLTSH	Community Led Total Sanitation and Hygiene
COVID	Corona Virus
CSA	Central Statistics Agency
CSO	Civil Society Organization
CSR	Corporate Social Responsibility
CWA	Consolidated WASH Account
DALY	Disability Life Year
DFID	Department of Foreign International Development
DHIS	District Health Information System
EDHS	Ethiopian Demographic Health Survey
EH	Environmental Health
GDP	Gross Domestic Product
GHG	Green House Gas
H&HR	Health and Health Related
HCF	Health Care Facility
HEH	Hygiene and Environmental Health
HEP	Health Extension Program
H-NAP	Health-National Adaptation Plan
HSTP	Health Sector Transformation Plan
IEC	Information Education and Communication
IPC	Infection Prevention and Control
JMP	Joint Monitoring Program
JSI	John Hopkins Inc
KAP	Knowledge Attitude and Practice
M&E	Monitoring and Evaluation
MBS	Market Based Sanitation
MHM	Menstrual Hygiene Management

MOH	Ministry of Health
MoLSA	Ministry of Labor and Social Affair
MOU	Memorandum of Understanding
MoWE	Ministry of Water and Energy
MSE	Micro and Small Enterprise
MSP	Multi-Stakeholders Platform
NGO	Non-Governmental Organization
NTD	Neglected Tropical Disease
OD	Open Defecation
ODF	Open Defecation Free
OHS	Occupational Health and Safety
OWNP	One WASH National Program
PHCU	Primary Health Care Unit
Plc	Private Limited Company
PPE	Personal Protection Equipment
PTA	Parent-Teacher Association
SAP	Strategic Action Plan
SARA	Service Availability and Readiness Assessment
SBCC	Sustainable Behavioral Change Communication
SC	Share Company
SDG	Sustainable Development Goal
SNNP	Southern Nations and Nationalities People
SO	Strategic Objective
SOP	Standard Operation Procedure
SS	Sanitary Survey
SSP	Sanitation Safety Plan
TVET	Technical and Vocational Education Training
TWG	Technical Working Group
uHEW	Urban Health Extension Worker
UN	United Nations

UNDP	United Nations Development Program
UNICEF	United Nations Child Fund
USAID	United States Aid for International Development
USD	United States Dollar
WASH	Water, Sanitation and Hygiene
WB	World Bank
WHO	World Health organization
WQM	Water Quality monitoring
WSF	Water and Sanitation Forum

Operational Definition

	Definitions
Basic Water service in HCF	Water is available from an improved source on the premises
Basic sanitation Service in HCF	Improved sanitation facilities are usable, with at least one toilet dedicated for staff, at least one sex-separated toilet with menstrual hygiene facilities, and at least one toilet accessible for people with limited mobility.
Basic waste management service in HCF	Waste is safely segregated into at least three bins, and sharps and infectious waste are treated and disposed of safely
Basic Hygiene Service Menstrual Hygiene Management (MHM) Oral hygiene	is hand Washing facility placed inside or near the toilet with soap Women and adolescent girls using a clean menstrual management material to absorb or collect blood that can be changed in privacy as often as necessary for the duration of the menstruation period, using soap and water for washing the body as required, and having access to facilities to dispose of used menstrual management materials is the practice of keeping one's mouth clean and free of disease and other problems (e.g. bad breath) by regular brushing of the teeth (dental hygiene) and cleaning between the teeth
Basic Sanitation Service	Is improved facilities that are not shared with other households
Basic Water Service	is an improved source; provided either water is on the premises or round-trip collection time is 30 minutes or less
Climate change	Climate change refers to long-term shifts in temperatures and weather patterns.
Climate change Adaptation	Climate change adaptation is the process of adjusting to current or expected effects of climate change
Climate resilient health system	is a health system anticipate climate change related threats, cope with and continued the health delivery system without intruption.
Safe MHM products	Products that are worn externally to the body in the underwear, to absorb menstrual flow and are held in place usually by snaps. They are made from a variety of natural or synthetic materials. Are either reusable or disposable.
Proper face Washing	Washing face with water and soap twice per day, once in the morning and once before bed.

Executive Summary

Since 1991, the government has been exerting efforts to address socioeconomic and environmental challenges. This has been reflected in the health sector development programs (HSDP I to IV), sector transformation plans (HSTP I and II) and various program specific strategies and plans including the hygiene and environmental health strategy.

As a result of the concerted efforts of the government and development partners, access to and utilization of primary health care services has increased, and health status has improved over the last two to three decades. Even if access to and utilization of hygiene and environmental health services are improving, the rate of improvement is very low and demand for the service remains far behind the national target and government commitment to attain sustainable development goals. As a result, diseases attributable to poor sanitation and hygiene and exposure to unsafe environments remain among the ten top leading causes of morbidity.

The Ministry of Health is determined to strategically address environmental and social determinants of health and has developed WaSH and environmental health strategy and action plans (2021-2015). The strategy is built on the identification key challenges through review and analysis of situations including performances of the former hygiene and environmental health strategy (2016-2020), existing policies, strategies, programs, study reports, and legal frameworks of the health and environment sectors, interests and expectations of the key stakeholders and analysis of the internal and external factors that either facilitate or deter implementation of the strategy.

The vision, mission and strategic goals, objectives and initiatives are aligned with the country's Health Sector Transformation Plan-II (2021-2025) and designed to address the prevailing environmental determinant of health. A hygiene and sanitation component of the strategy is also aligned with the framework set in the African Sanitation policy guidelines. In summary, the strategy is determined to address safety of the drinking water, improving household and community satiation services, hygiene services, water supply, sanitation and hygiene (WASH) services in health and other institutions, management of rural and urban solid and liquid wastes, food hygiene and safety, pollution and health, occupational safety and health, rodent and vector control, chemical use and handling climate change and health and WASH in emergencies. It also addresses enabling environments such as coordination, regulation, capacity building, financing, monitoring and evaluation of hygiene and environmental health programs. The strategy sets out implementation arrangements and estimated required budgets to translate strategic initiatives into actions.

The strategy is further decomposed into strategic action plans and set key performance and output indicators expected to be attained at the mid-term and end of plan periods. It

Clearly indicates its implementation will be led by the government at all levels through active engagement of the government, the households, community, formal and informal community leaders, other sector ministries, development partners and the private sector at all levels by integrating into different development programs.

Furthermore, the Ministry of Health has made efforts to establish ownership of the strategy by relevant stakeholders. Regional state health bureaus, sector ministries and key development partners have been engaged in the development of the strategy and strategic action plans.

Therefore, this strategy is a live document and is designed to provide strategic direction for all sector stakeholders. Implementation of the strategy further requires translation of the strategic initiatives into plans by the concerned actors.

1. Introduction

Background information

1.1.1 Country background profile and health status

Ethiopia is the oldest independent and second most populous country in Africa. It has a unique cultural heritage with a diverse population mix of ethnicity and religion. According to UN population projection (2020)[1], 22% of the population is living in urban areas and the remaining 78% are rural residents. Ethiopia is a low-income country with a gross domestic product (GDP) per capita of USD772 in 2018. Main sources of the country's economy are agriculture, industry, and service sectors.

In the past two to three decades, the Government of Ethiopia has invested heavily in health system strengthening guided by its pro-poor policies and strategies resulting in significant gains in improving the health status of Ethiopians. Due to the reduction of morbidity and mortality mainly among under-five children coupled with improvement in social and environmental determinants of health, average life expectancy at birth is improved by 21.93 years from 46·91 years in 1990 to 68·84 years in 2019[2]. Communicable diseases and other social conditions have contributed to setting back healthy life of the citizens, which calls for improvement in the quality of life and to extend life expectancy[3].

The first information to be handed to understand the health condition of a country is to know the most prevalent cases and their priority depending on the magnitude of burden they impose. Ethiopia has been successful in reducing age standardized DALYs related to most communicable, maternal, neonatal, and nutritional deficiency diseases for the last 25 years. This has resulted in a shift in the leading causes of DALYs from communicable disorders to non-communicable diseases between 1990 and 2015. However, Lower respiratory infections, diarrheal diseases, and tuberculosis are still leading causes of premature death and disability despite major reductions.

1.1.2 WASH and EH program intervention areas

To address the social and environmental determinants of health, the Government of Ethiopia has taken steps to strengthen engagement with key local and international sectors and stakeholders. There have been multi-Sectoral collaborative activities and interventions to improve the health status of the community. During Health Sector Transformation (HSTP)-I, beside the health extension program packages implemented at community and household level, the government implemented major strategic initiatives to improve WASH and environmental health, such as- rollout of an urban sanitation strategy, scale up of community-led and school-led total sanitation and hygiene do we have school- led sanitation and hygiene document, sanitation marketing, and actions to build adaptation and resilience to climate change into the health sector. The interventions were aligned from community to federal level with Woreda based

1 UN population projection, 2020

2 Lancet 2022; 399: 1322–35, March 13, 2022 https://doi.org/10.1016/ S0140-6736(21)02868-3

3 World Health Statistics Report, 2019

planning and monitored via routine monitoring system and different studies.

WASH and Environmental Health focuses on addressing environmental and behavioral determinants of health and thereby promoting health, preventing diseases and improving quality of health services. It encompasses implementation of multi-dimensional interventions to ensure access to basic and safe sanitation and hygiene services; safety and quality of drinking water and food, indoor air quality, safe management of solid and liquid wastes, healthful living environment and occupational health and safety. The strategy contributes to building climate resilience of health systems and water supply, sanitation and hygiene (WASH) services. The strategic initiatives are mainly implemented at all levels by integrating into other health programs such as health extension programs, maternal and child health services, quality of care, infrastructure development and disease control interventions. Furthermore, it takes into account active engagement of households, communities, other ministries, private sector actors, development partners, regulatory bodies and sector leadership engagement at all levels.

1.1.3 Environmental Attributable Burden of Diseases

Worldwide, WHO estimated that 25% of the global disease burden and 23% of all deaths were attributed to modifiable environmental factors, including physical, chemical, and biological hazards to human health. Globally in 2016, 1.9 million deaths and 123 million disability-adjusted life-years (DALYs) could have been prevented with adequate WASH services. The disease burden from WASH-attributable cause amounts to 4.6% of global DALYs and 3.3% of global deaths. As one of sub-Saharan developing countries, Ethiopia is not much different from other African countries and may be worse in some aspects. The range of environmental health related diseases and health problems are assumed to be growing in magnitude from time to time.

A sub-national country analysis for the Global Burden of Disease Study 2019 indicate that communicable diseases attributable to lack of access to safe water, sanitation and hand hygiene and exposure to household air pollution from solid fuels and ambient air pollution in urban areas are reported to be among the leading risk factors for high premature mortality and disability rates and health loss across all regions in Ethiopia[1].

For example, review of health and health related indicator from 2015-2019 indicates Acute Respiratory Tract Infection, Acute Febrile Illnesses, Pneumonia and diarrhea are consistently top causes of morbidity in 5 yrs[5]. Whereas Helminthiases, Typhoid and Amoebiasis Increase through years. The same data source confirms that 42% of the top 10 leading causes of morbidity for all ages and 32% of under-five mortality are diseases attributable to poor personal hygiene, unsafe management of solid wastes, wastewater and human excreta; and lack of access to adequate and safe water supply[6] and diarrheal disease remains the third leading causes of under-five mortality in Ethiopia[7]. Additionally, systematic review and analysis of under-five causes of death in Ethiopia between

4 Lancet 2022; 399: 1322–35, March 13, 2022 https://doi.org/10.1016/ S0140-6736(21)02868-3

5 World Health Statistics Report, 2019

1990 and 2016 indicated that, intestinal infection with diarrhea is the 5th cause for neonatal, the 2nd causes for infant and the 6th causes of deaths for children under-five years of age[8].

According to the global burden of disease, the number of deaths and disability adjusted life years (DALYs) in Ethiopia attributed to selected environmental risk factors is significantly high. Total deaths and DALYs from air pollution in 2019 was 77, 020 and 3,988,166 respectively with slight reduction from the past thirty years. Similarly, the cumulative death per year in 2019 from diseases attributed to water, sanitation and hygiene is 59,913 deaths while the DALYs were 3,756,434. Occupational exposure is also one of the attributing factors which are alarmingly increasing through the 30 years study of diseases from this factor. About 8,679 deaths and 793,473 DALYs with an average of 26.8% through years is attributed to hazards associated with occupational risks.

The trend of the prevalence through years clearly indicates the effectiveness of the health policy and strategy of a country. To address the burden of communicable diseases attributable to poor hygiene and environmental health, the government has designed and is implementing various health development strategies, programs and plans including hygiene and environmental health program interventions in collaboration with development partners. However, despite efforts made, the proportion of the population using basic sanitation and hygiene and safely managed water supply services remains very low compared to the set targets. Furthermore, pollution of the environment (soil, water and food) is increasing because of unsafe management of municipal and industrial wastes and uncontrolled use of pesticides. Indoor air pollution is claiming thousands of lives annually and exposure to occupational hazards and associated health risks are remaining challenges.

1.2 Rationale

WASH and environmental health strategy is very important guidance for effective and efficient roadmap for the program implementation and result oriented program direction. There has been a strategy implemented from 2016 -2020 and different results were achieved. In this dynamic environment things are changed fast and a situated strategy with the dynamic environment is needed. The Ministry of health assessed the implementation status of the previous strategy and identified gaps and bottlenecks. Accordingly, the Ministry took the initiative of developing a multi-sectoral national WaSH and environmental health strategy in collaboration with relevant stakeholders.This WaSH & EH strategy and action plan is developed to materialize step-wise constitutional rights of the citizen to live in a clean and healthy environment and policy commitments of the government to ensure equitable access to universal health service coverage. It covers the period between July 2020 and June 2025 and is developed based on an in-depth situational analysis of performance of HEH strategy- I, institutional arrangements, policies, legal frameworks and various

6 MoH, Health and Health Related Indicator, 2019

7 Lancet 2022; 399: 1322–35, March 13, 2022 https://doi.org/10.1016/ S0140-6736(21)02868-3

8 Mekonnen W. et al. Under five causes of death in Ethiopia between 1990 and 2016: Systematic review with meta-analysis. [Ethiop. J. Health Dev. 2020; 34(2):141-160

stakeholders so as to address prevailing WASH and environmental health needs that are not yet adequately addressed. The strategy sets out required technical, financial, infrastructural and organizational capacities required to adequately deliver the services to address health and environmental issues related with growing population, increased urbanization and industrialization. The strategy aligns with the national and global commitments and strategic directions set out in the HSTP-II and it integrated policy recommendations of the ASPG into relevant sections, strategic objectives, SAP and key performance indicators of the strategy. Therefore, this strategy can provide strategic direction for all sector stakeholders to contribute towards attainment of the national and global commitments.

1.3 Scope

The strategy mainly focuses on initiatives and services applicable to organizational mandates of the Ministry of Health and its regional and local governments. It also encompasses other interventions that will be implemented in collaboration with other government sectors and considers active engagement of the private sector and development partners. In general, the strategy addresses various hygiene and environmental health issues related with behavior change, service delivery and enabling environment such as capacity development, financing, human resource, institutional arrangement, regulation, monitoring and evaluation.

1.4 Development Process of the Strategy

Development HEH strategy-II was carried out by lead consultant guided by the technical working group established by Federal Ministry of Health. It passed through a series of reviews and consultations and active engagement of the members of the National HEH technical committee, senior experts from the Ministry of Health, Regional State Health Bureaus and various development partner organizations. In general, the following series of activities were carried out to develop the strategy and action plans;

- ToR was developed and technical working group (TWG) was established Based on ToR/Concept note lead consultant was recruited and the consultant prepared and virtually presented inception report for the TWG
- Based on the Inception report, the consultant prepared a situational analysis followed by stakeholders and instructional analysis report submitted to the Ministry of Health, and presented findings of the analysis to sector stakeholders
- The consultant prepared a draft WaSH & EH strategy and submitted and presented it to the review team formed by the MoH and used comments given to prepare the draft strategy.
- The draft strategy-II was presented to the wider-sector stakeholders and the stakeholders made an in depth review of the draft strategy documents by components and provided written comments to be included into the final draft strategy.
- The final draft strategy is enriched by inputs given by the stakeholders and submitted to the Ministry of Health for validation and endorsement of the document.

2. Summary of HEH Situational Analysis

2.1: Water, Sanitation and Hygiene (WASH)

2.1.1: Water Quality Mon itoring and Safe Water Handling

2.1.1.1: Water Quality Monitoring

Ensuring safety of water for drinking and domestic use from source to point of use is vital to safeguard the health of the citizens. According to WHO/UNICEF JMP WASH report[9], the proportion of the population with access to basic water supply services is 50% (40% rural and 84% Urban). However, the population using safely managed water supplies is as low as 13% (rural 5% and urban 39%), which means that there is contamination of drinking water at any point in the water supply system putting citizens at risk of water borne diseases.

The Ministry of Health has been making efforts to improve water safety and quality monitoring interventions and has developed National Water Quality Monitoring (WQM) Guidelines (2018) in collaboration with different partner organizations. The ministry has been promoting WQM services through regional and sub-regional public health laboratories. Additionally, the MoH has been providing capacity building training to Woreda health offices on testing and analysis of priority microbial and physico-chemical parameters and surveillance, equipped the Woredas with portable water quality testing kits, reagents and standard Operating procedures (SOPs)

Poor microbial and physico-chemical quality status of rural community managed and urban utility managed drinking water supplies and associated health risks has been highlighted in various published study and survey reports carried out in different regions in Ethiopia[10,11] . A rapid water safety risk assessment recently conducted to 12 rural community managed 21 urban utility managed water supplies indicates by the Ministry of Water and Energy, 40% of the Woredas and 52% of town water utilities have no water quality testing instruments, and the remaining lab is not fully operational due to either lack of reagents and/or skilled human resources and are directly distributing raw water to the population. Drinking water quality is not regularly monitored and there is no reporting system between the Ministry, regions, zones, Woredas and the utilities. In general, attention given to ensuring safety of the drinking water is very low as compared to efforts made to increase access to improved water sources.

In general, much effort is required to strengthen the technical and logistic capacity of the water suppliers

9 WHO/UNICEF Progress on household drinking water, sanitation and hygiene 2021 report

10 CSA National Water Quality Survey 2017

11 Cross-sectional water quality studies by EPHI and other institutions in SNNP, A.A, Amhara, Afar in 2017, 2020 and 2021

to consistently monitor and manage water safety risks before distributing to the consumer. Equipping rural Woreda health offices with the necessary equipment and skill for regular WQM of water sources is also crucial.

Strengthening coordination between the key stakeholders and establishing a comprehensive nationwide drinking water quality monitoring and surveillance system are important to generate evidence for policy advocacy works and mobilize domestic and international resources to support government efforts to attain a target set for safely managed supply of drinking water.

2.1.1.2: Promotion of water treatment and safe storage practices

Promotion of household water treatment and safe storage practices is integrated into health extension program interventions. Different CSOs/NGOs are also engaged in promotion of various Household (HH) water treatment technologies in areas with no access to improved water sources and as part of WASH response in emergency affected areas. Besides, the private sector including pharmacies and rural drug vendors are engaged in supply of physical and chemical based point-of use water treatment technologies.

In spite of continuous promotion of safe water chain through health extension program interventions, WASH project baseline study reports in pastoral communities and emergency affected areas show that household water treatment and safe storage practices remains very low mainly due to limited knowledge about use of the treatment products, lack of skills on operation and maintenance of the water filters, inaccessibility and limited ability to buy and expectation for free distribution[13].

2.1.2: Household and community Sanitation

The government of Ethiopia through the health sector, in collaboration with key stakeholders has put forth huge efforts to improve the household and community level sanitation status of the country. This was mainly through different community based social and behavior change communication approaches of which the Community-Led Total Sanitation and Hygiene (CLTSH) has been the most popular and widely implemented one. The CLTSH approach has been implemented nationally since 2006 through the health extension program. Additional awareness creation and behavior change interventions have been delivered through mass media outlets, print media and campaigns.

As part of the collaborative efforts, the One WASH National Program - Consolidated WASH Account (OWNP-CWA) takes remarkable share for the achievements. A total of 1,221,638 Household latrines have been constructed and 3501 Kebeles declared ODF in phase I of the program. Additional 439,513 HH latrines are constructed and 746 Kebeles declared ODF from the initiation of phase II to the second quarter of the third year.

12 GIZ-IFTAR WASH Baseline Survey report, Afar region, 2018

13 WHO/UNICEF Progress on household drinking water, sanitation and hygiene 2021 Report

14 Chare H. et al. Latrine Utilization and Associated Factors in Rural Community of Chencha District, Southern Ethiopia: A Community Based Cross-Sectional Study. American Journal of Public Health Research, 2017, Vol. 5, No. 4, 98-104

The above efforts have brought significant achievements in terms of improving awareness and ownership of the community towards latrine construction and utilization. As a result the coverage of any type of latrine at a household level has dramatically increased from less than 10% at the beginning of CLTSH (2006) to 68% in 2015[13](and then to 83% in 2021[14] Despite the remarkable increment in the coverage of any type of latrine, 63% of them are reported to be unimproved with limited public health importance (JMP, 2021). This is mainly due to lack of access to improved sanitation products and services whereby communities use locally available materials to construct their own latrine. This resulted in utilization rate of unimproved latrines to be between 40% to 60% either due to lack of privacy, bad odor and difficulty to clean [15 16 17].

Accordingly, the Ministry of Health has initiated the Market-Based- Sanitation (MBS) initiative to increase households' access to improved sanitation products and services. During 2016-2020, more than 532 sanitation enterprises were organized in more than 370 Woredas. These enterprises and business partners have produced and distributed more than 120,000 different types of improved sanitation products including concrete and plastic latrine slabs, squat-hole covers and vent pipes. As a result, a large number of households have been enabled to move up the sanitation ladders. Overall, improved sanitation coverage increased from 13.8% in 2015 to 19.5% in 2020 and access to basic sanitation services increased from 7% to 9% during the same period (Figure 1). However, the progress is very slow to achieve the SDG target of 100% in 2030. According to the impact assessment report done (USAID, 2020), unaffordability of products reduces demand of large share of the rural households without improved latrine. Therefore, scaling up the efforts to address the existing challenges through a well-designed national program is required.

Similarly, there is a huge sanitation service gap in urban settings. By the end of 2020, 21% of the urban population have had access to basic sanitation services and the remaining 31% limited access and the remaining 45% use unimproved latrine[18]. Latrines and septic tanks are most prevailing on-site sanitation options in urban areas of Ethiopia. However, Open defecation still is commonly practiced by 3% households living in slum areas, informal settlements and street dwellers in medium and large towns. The government with partner organization has been exerting efforts to expand communal and public latrine to improve the situation. However, equitable access and management of the services remains to be a challenge.

16 Leshargie C. et al. Household latrine utilization and its association with educational status of household heads in Ethiopia: a systematic review and meta-analysis. BMC Public Health (2018) 18:901 https://doi.org/10.1186/s12889-018-5798-6

17 Tamene A. and Afework A. Exploring barriers to the adoption and utilization of improved latrine facilities in rural Ethiopia: An Integrated Behavioral Model for Water, Sanitation and Hygiene (IBM-WASH) approach PLoS ONE 16(1): e0245289. https://doi.org/10.1371/journal. pone.0245289

18 WHO/UNICEF Progress on household drinking water, sanitation and hygiene 2021 Report

In recognition of the need for extraordinary effort towards the SDG targets, the Ministry of Health and Ministry of Water and Energy have jointly designed a Total Sanitation to End Open Defecation and Urination (TSEDU) Ethiopia campaign in 2019. The program aims to ensure universal coverage of basic sanitation services and end open defecation practice within five years.

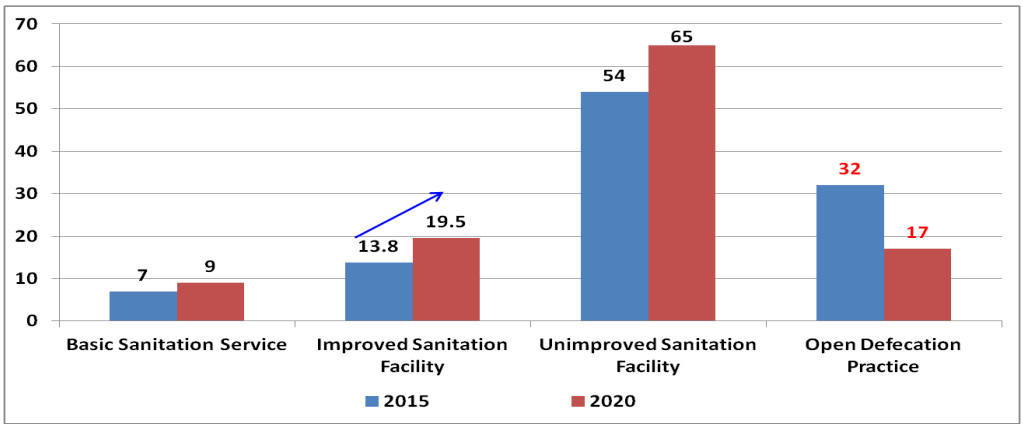


Figure 1: Percentage of households with access to sanitation facilities (WHO/UNICEF JMP 2017 and 2021 reports)

In addition to increasing the basic sanitation coverage, efforts have focused towards establishing Open Defecation Free (ODF) Kebeles. This resulted in increasing coverage of ODF Kebeles. However, sustainability remains to be a challenge. A recent desk review report[19] indicated that about 16% of the communities that have attained ODF status at one point in time have slipped back to open defection practice.

Factors for slipping back to open defecation practices was reported to be improper program implementation, use of poor quality materials for latrine building, lack of post triggering technical support to upgrade the latrine, lack of physical and financial access to improved sanitation products and services and weak leadership commitment at kebele and Woreda level. Slippage due to frequent collapsing of latrines is also commonly prevailing among communities / households living in areas of water logging, flood prone, termites, heavy winds and loose soil formation and due to seasonal population movement.

19 Abebe. A and Terefe G. Open defecation-free slippage and its associated factors in Ethiopia: a systematic review. Systematic Reviews (2020) 9:252 https://doi.org/10.1186/s13643-020-01511-6

2.1.3: Hygiene

2.1.3.1: Hand Hygiene

The health sector has been engaged in different interventions to improve the hand hygiene practice of the population. Hand Washing with soap and critical times of hand Washing has been widely promoted through the health extension, school health and infection prevention programs, media outlets and campaigns. There has also been an effort to expand local production of soap and hand Washing facilities and hand-rubs.

Despite concerted efforts, total coverage at the household level is 54% of which only 8% meet the definition of basic hand hygiene facility[20]. Reports show no change in terms of improving access to basic hand hygiene service during 2016-2020 and remains 8% the same as the baseline (Figure 2)

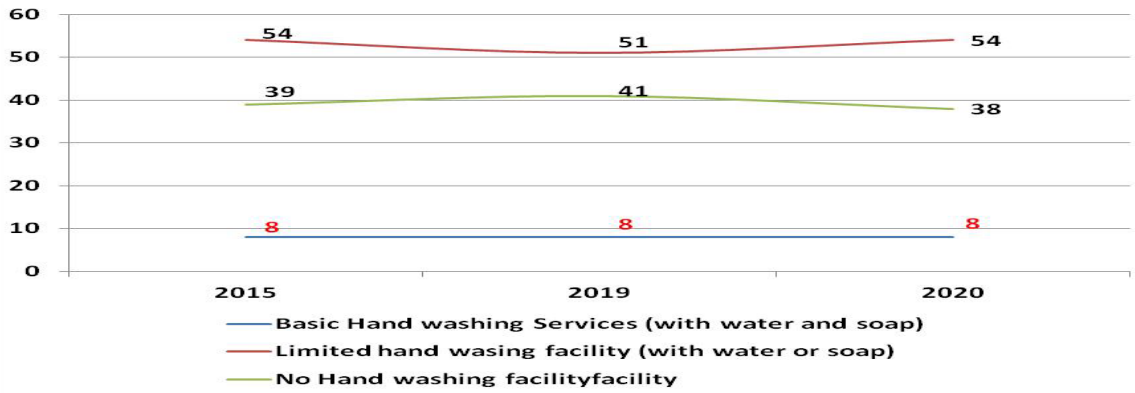


Figure 2: Percentage of households with access to hand washing facility (2015-2020), WHO/UNICEF JMP 2017, 2021 reports

In addition, unpublished WASH project baseline and evaluation study reports conducted in rural areas of the country indicated low community awareness about the importance of hand Washing with soap after cleaning child faces and before handling water storage containers compared to other critical hand Washing moments. According to the report, low progress was related to under reporting of the practice such as use of movable hand washing facilities (which is common in Muslim communities)[21] and/or interruption of hygiene promotion interventions due to recurrent instabilities. In addition, stealing of the plastic hand Washing facility (tippy tap) by the waste collectors (itinerant buyers), lack of interest to install hand washing facilities due to lack of access to water and soap are demoting factors for sustainability of hand Washing practices after latrine visit.

20 WHO/UNICEF Progress on household drinking water, sanitation and hygiene 2019 report

21 UNICEF, KAP Baseline Survey on Water, Sanitation, and Hygiene in Eight Regions of Ethiopia. August 2017, Addis Ababa

On the other hand, the COVID 19 pandemic enhanced the attention given to hand hygiene, the political commitment, stakeholder's engagement and the enabling environment at large. This in turn contributed to increasing awareness of the population on the health importance of hand hygiene and enhanced practice. Taking this opportunity, the Ministry of Health has developed a ten years hand hygiene roadmap towards meeting the SDG target of 100%.

2.1.3.2 Baby WASH

Open defecation practices, unhygienic conditions of household latrines, unsafe disposal of child faeces and indiscriminate disposal of garbage and liquid wastes in the immediate living environment are increasing contamination of the living environment and child playgrounds. This situation increases risks of child exposure to surfaces contaminated with enteric pathogens and infectious intestinal parasites. Furthermore, the majority (66.3%) of households living with under-five children including 48.7% of the households with access to improved latrine[22] are unsafely disposing of child faces in the immediate living environment. This practice was mainly due to lack of awareness about contagiousness (infectiousness) of the child faeces. Additionally, very poor hygiene conditions of the school latrines and absence of functional hand washing facilities together with open defecation practices by the surrounding communities is putting pre-school children at higher risk of exposure to contaminated environment.

A report of the MoH confirms that thousands of under-five age children are affected by environmentally attributable diseases such as diarrhea. Malnutrition remains to be one of the ten top causes of under-five morbidity and mortality. .

In order to address the problem, the MoH has adopted the Baby WASH approach. The approach focuses on promotion of healthy behaviors and environmental interventions that enhance the health and development of children aged less than five years. Accordingly, the ministry developed Baby-WASH implementation guidelines[23], piloted interventions in 10 Woredas and documented lessons and best practices for wide-scale implementation.

2.1.3.3: Menstrual Hygiene and Health

The MoH in collaboration with development partners have put efforts towards increased public awareness and breaking the silence on menstruation. The ministry developed a national Menstrual Hygiene Management (MHM) guideline in 2018 to lead the program in a framed manner. Accordingly, interventions have been initiated by concerned stakeholders targeting mainly on school girls. The collaborative efforts have been targeting both on addressing cultural taboos and ensuring access to facilities and products.

With the coordination role of the health sector, promotion materials on MHM have been developed and distributed for schools to improve the knowledge and attitude of girls and boys towards MHM. In parallel, efforts are continuing to ensure access to proper sanitation facilities which are considerate of girls' needs. Inclusion of MHM rooms in school WASH

22 Ageze M. and Haile D. Factors associated with safe child feces disposal practices in Ethiopia: evidence from demographic and health survey. Archives of Public Health (2015) 73:40 DOI 10.1186/s13690-015-0090-z

23 MoH, Baby WASH Implementation Guidelines, May 2019, Addis Ababa

design by the Ministry of education is the other major milestone achieved during the past five years. Accordingly, some schools established dedicated MHM rooms.

In terms of increasing access to safe MHM products, the health sector with partners has been facilitating the availability of MHM products in established sanitation marketing centers through technical and financial support. The collaborative effort of stakeholders initiated in 2020 for reduction of tax on MHM products is expected to be successful if the Ministry of Finance accepts the request.

An assessment report conducted in 2021 by UNICEF shows that MHM interventions in program schools has enabled the school girls to develop a positive attitude towards menstruation and built their confidence to openly discuss with their close friends, sisters and mothers, and has increased adolescent school girls' access to friendly menstrual hygiene facilities and materials.

In spite of the promising successes, menstruation remains to be an unacceptable topic to openly discuss among majority of family members in rural areas. Feeling of embracement, frightening and missing the school /work days are prevailing psycho-social problems of adolescent girls and women. Hygienic sanitary materials are not affordable for low income girls and women. Lack of access to friendly WASH facilities remains to be a common challenge at schools and workplaces. Hence, more concerted efforts are required to address culturally embedded misconceptions as well as lack of access to MHM facilities and materials in schools and workplaces

2.1.3.4 Oral, Face and Body Hygiene

Regular oral hygiene practice is important measures to prevent dental caries, bad breath and serious health problems associated with massive infections of the oral- facial system. Prevalence of dental caries is as high as 41% in Ethiopia and commonly associated with consumption of sweet foods and with poor tooth cleaning practices[24]. Similarly, regular bathing and face washing practices prevent skin and eye infections. Skin infections such as scabies and trachoma are commonly prevailing diseases related to poor personal hygiene practices. Good oral and body hygiene is promoted through health extension programs.

Furthermore, face washing is one of the key trachoma prevention and control strategies that are also promoted in schools in partnership with different partner organizations. However, more effort is needed to create awareness on oral and body hygiene practices by integrating with other hygiene promotion interventions.

2.1.4. Institutional WASH

2.1.4.1. WASH in Health Care Facilities (HCFs)

Availability of water supply, sanitation, hygiene (WASH) and waste management services in health care facilities is very important to ensure the safety of patients and health care workers and it contributes to improvement of maternal and neonatal health service quality. Improper management of health care wastes is responsible for transmission of a number of blood

24 Zewudu T. et al. Dental caries and associated factors in Ethiopia: systematic review and meta analysis. Environmental Health and Preventive Medicine (2021) 26:21 https://doi.org/10.1186/s12199-021-00943-3

borne pathogens and hence, proper hand Washing, safe management of faeces and health care wastes are very critical preventive measures for interruption of infectious diseases transmission within the health care settings as well as to the community.

The health sectors have been exerting efforts to ensure WASH services in health facilities by integrating basic WASH services into the construction of primary health care facilities, collaborative efforts of different development partners and through the One WASH National Program (OWNP) and other programs. A review of OWNP progress report[25] shows, a total of 1,920 health facilities had access to improved water supply and 3,109 health facilities obtained access to improved sanitation facilities.

In addition, the WASH in HCF global baseline report[26] indicates access coverage of basic WASH and health care waste management services is low in health care facilities in rural areas, government owned facilities and non-hospitals compared to those in urban areas and facilities owned by non-government and hospitals (Figure 3).

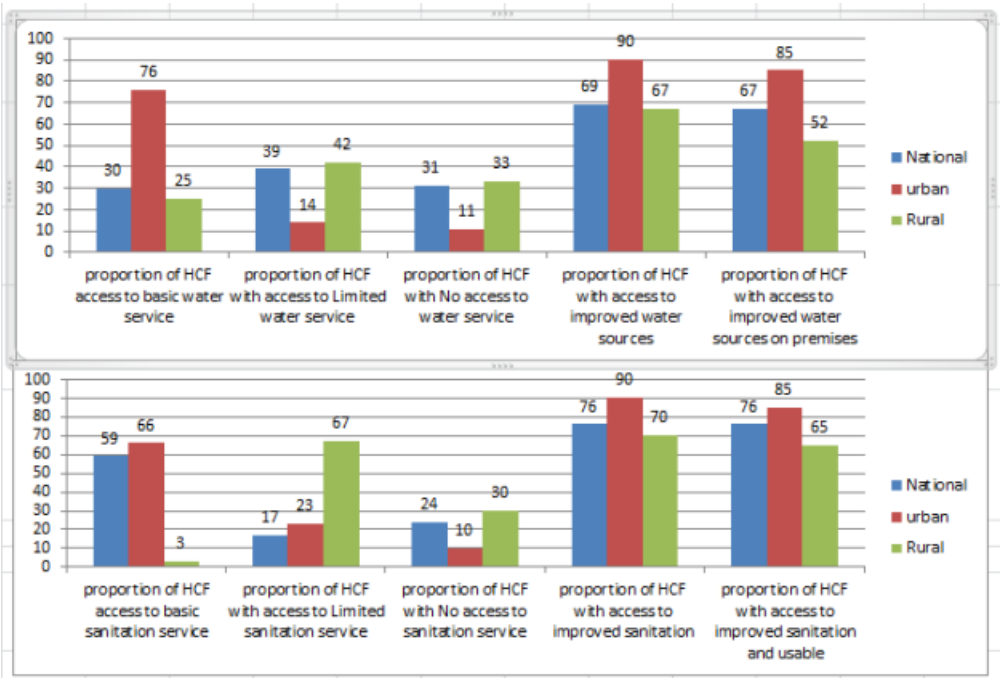


Figure 3: Percentage distribution of HCF with access to WASH services by urban and rural areas (2016-2020)

25 Ministry of Water and Energy, OWNP Annual Progress report, 2019

26 WHO /UNICEF WASH in HCF global baseline report,2019

In collaboration with partner organizations, the MoH has implemented clean and safe health care facility initiatives, engaged in development of cleaning operational standards and incorporation of environmental cleaning into Infection Prevention and Control (IPC) training package and guidelines. Safe segregation of health care wastes at point of generation is practiced by 87% of the health care facilities. However, global progress report on WASH in HCF also indicates that appropriate segregation and storage of sharps and infectious wastes is practiced by less than 30% 20% of the health care facilities, respectively. According to the WASH in HCF global baseline report[27], 89% of the health care facilities had disinfectants available in the outpatient examination room, but no information on whether disinfectants are available at other points of care such as in patient wards, delivery rooms, antenatal and postnatal care units.

In spite of significant improvements during 2016-2020, yet more than one-third of health care facilities have no access to basic water supply, one-quarter of them do not have access to sanitation, more than 35% have no hygiene facilities at point of care and 41% of the sanitation facilities are not gender inclusive. One-third (37%) of the HCFs have no access to basic waste management services and are not treating the waste before the final disposal. In general, there exists wide WASH access coverage disparity between rural and urban, PHCUs and Hospitals and between regions, As well as there are gaps in ensuring consistent use of person protection equipment and disinfectants, limited capacity of workers responsible for cleaning services and inadequate staffing of the health care facilities with environmental health professionals.

27 WHO /UNICEF WASH in HCF global baseline report,2019

2.1.4.2 WASH in Other Institutions

Ensuring WASH access in all institutions including in schools, religious institutions, prisons, industrial parks, market places and public offices is very crucial to protect the public from communicable diseases associated with poor hygiene and sanitation practices and lack of access to water supplies. Accordingly, the health sector has been working with aforementioned interventions mainly development and promotional materials, conducting regular assessment and feedback, availing supporting guidelines and manuals and capacity building interventions are among key efforts (MoH Annual Reports)

However, evidence shows that there is a still huge gap of WASH service in these institutions. According to Education statistics annual abstract (2020), of the total 35,980 primary and 3,481 secondary schools existing throughout the country, only 71.1% of the primary and 72.3% the secondary schools have access to basic water supply services that is available all the times, 37.5 % of primary and 50% secondary schools had access to basic sanitation and 19% of primary and 32% secondary schools had access to basic hygiene services. Hence, much effort is needed to increase access to and proper use WASH facilities and ensure friendliness of the WASH facilities for school girls, small children and for differently able school communities.

The Ministry of Health has also extended its environmental health services and conducted service status assessments in federal prisons, 15 industrial parks, religious institutions, and investment corridors and has conducted consultations with the institutions to improve HEH situations including occupational health and safety of the workers. Furthermore, developed EH guidelines for prisons and provided support on construction of WASH facilities for 16 religious institutions in Amhara, Oromia and Tigray regions. However, much effort is required to generate nation-wide data on the status of EH services in other institutions in general and WASH services in particular, increasing institutional awareness on the national guidelines and strengthening inter-sectoral coordination and collaboration.

2.2. Food Hygiene and Safety

Hygienic preparation and handling of food at households level has been widely promoted through the HEP. However, presence of food borne diseases in lists of top ten diseases and food borne outbreaks in some areas in the country entails that there is a need for more strategic and comprehensive efforts to promote food safety and hygiene interventions. Contamination of vegetables with toxic heavy metals grown using inadequately treated municipal and industrial wastewater is posing health risks to consumers [28,29,30] while there is limited community awareness concerning contamination status of food items with heavy metals. In addition, there is a gap in regular promotion of food hygiene in schools, food and drinking establishments, street food vendors and other relevant institutions.

2.3 Solid and Liquid Waste Management

2.3.1 Rural Waste management

Proper household solid and liquid waste management has been widely promoted through the HEP. In rural communities, as part of creating model households, communities have been provided with the knowledge and skills of managing wastes from collection to final safe disposal. However, according to the HEP assessment[31], proper solid and liquid waste management practice was found to be as low as 11% each.

2.3.2 Urban Waste Management

2.3.2.1 Urban Solid Waste Management

Similarly in urban areas, there is a gap in proper waste segregation practices though there has been ongoing promotion by Urban Extension Workers (UHEWs). The case in urban settings is worse as it needs a well-established collection and disposal/reuse/recycle system. Designated bodies of the municipal local governments and contracted private sectors are making efforts to collect and dispose of solid wastes

28 Woldetsadik D. Heavy metal accumulation and health risk assessment in wastewater-irrigated urban vegetable farming sites of Addis Ababa, Ethiopia. International Journal of Food Contamination (2017) 4:9 DOI 10.1186/s40550-017-0053-y

29 Yeshiwas Y. et al Review on Heavy Metal Contamination in Vegetables Grown in Ethiopia and Its Economic Welfare Implications Journal of Biology, Agriculture and Healthcare Vol.7, No.17, 2017

30 Dejen Gashaye. Wastewater-irrigated urban vegetable farming in Ethiopia: A review on their potential contamination and health effects, Cogent Food & Agriculture, 6:1, 2020

3 1FDRE MoH, National Assessment of the Ethiopian Health Extension Program, 2019

generated from the residential areas, commercial and public service institutions. Yet, a large volume of solid wastes remains uncollected (about 20%) and damped into water bodies creating health and environmental threats. Majority of households living in slum areas and those living in gorges and river bank areas lack access to solid waste collection services due absence of access to roads and lack of capacity to pay for the services. Current urban solid waste management practices is inadequate due to limited capacity of municipal local government /agency to provide solid waste management service in terms of lack of adequate waste collection equipment, poor waste management infrastructure, skills, logistics and operational budget, very weak coordination between the sector actors and weak legal enforcement. Furthermore, solid waste reduction at source, recycling and reuse practices are at infancy stage due to limited advocacy and communication works, poor access to space, technologies and skills[32].

2.3.2.2 Urban Liquid Waste Management

According to Mini EDHS report[33] 41.6% of the urban households use improved 48.7% use unimproved sanitation facilities and the remaining 9.7% of the households are practicing open defecation. Very limited number of households and institutions are connected to centralized sewerage systems in Addis Ababa and the decentralized faecal sludge and decentralized wastewater management is common technology used by condominium residential areas, universities and industrial parks. Emptying and conveyance of the faecal sludge to the treatment facilities is conducted by urban water and sewerage enterprises/authorities and contracted private sectors and waste treatment is entirely managed by the authority/enterprises.

Faecal sludge and municipal wastewater collection, emptying, conveyance and treatment services remain unsatisfactory due to inadequate equipment, poor infrastructure and limited operational capacity of the local government. Due to limited access to services, households and institutions are informally connecting and discharging raw domestic liquid wastes in open ditches and/or water bodies. With exception of government managed industrial parks, the majority of the private industries continue to discharge raw effluents in the surrounding land and water bodies increasing environmental pollution[34,35,36].

Rivers receiving industrial effluent and untreated domestic waste in different areas in the country

32 MoH and John Snow Inc. Situational Analysis of Urban Sanitation and Waste Management, JSI, 2015, Addis Ababa

33 EPHI, Mini DHS report, The DHS Program, ICF Rockville, Maryland, USA May 2021

34 Yohannes H, and Eliiyas E. Contamination of Rivers and Water Reservoirs in and Around Addis Ababa City and Actions to Combat It. Environ Pollut Climate Change 2017, 1:2

35 Gelan E. Municipal Solid Waste Management Practices for Achieving Green Architecture Concepts in Addis Ababa, Ethiopia. Technologies 2021, 9, 48.

36 Terefe F., et al. Physicochemical characterization of effluents from industries in Sabata town of Ethiopia. Heliyon 6 (2020) e04624.

37 Ibid 30

38 Sisay Tamiru Physico-Chemical Studies on the Pollution Level of Stream Bisnit, Gondar, Ethiopia. Journal of Environment and Earth Science Vol.5, No.21,

39 Firdisa B., et al. Assessment of the Status of Industrial Waste Water Effluent for Selected Industries in Addis Ababa, Ethiopia. Journal of Natural Sciences Research Vol.6, No.17, 2016

40 Amare A. Corporate environmental responsibility in Ethiopia: a case study of the Akaki River Basin. a case study of the Akaki River Basin, Ecosystem Health and Sustainability, 5:1, 57-66, DOI: 10.1080/20964129.2019.1573107

are becoming chemically and biologically polluted due to direct release of effluent with little or no pretreatment[37,38,39,40]. For example, findings of physico-chemical quality analysis of effluent sample collected from paint, pharmaceutical, textile, food, tannery, soap, metal and beverage industries in Addis Ababa shows that mean value of all pollutants including biological and chemical oxygen demand, phosphorous, zinc, cadmium, chromium, lead, total suspended solid, total nitrogen, etc was found to be above the maximum permissible limit[41] This is certainly harming the aquatic ecosystem and exposing the surrounding (downstream) communities and consumers of vegetables grown on soil contaminated with toxic chemicals that are proven to cause damage to kidney, brain, liver and skin conditions.

Even if discharging any forms of waste generated from households, institutions and industries to the environment (atmosphere, soil and water bodies) is prohibited by existing public health and environmental laws[42] and regulation[43], yet they are not respected and large volume of uncollected municipal solid wastes and industrial effluents are indiscriminately damped into surrounding water bodies, ditches and open spaces.

In general, the challenge is associated with very low pollution risk perception of the public, inadequate evidence based advocacy and risk communication, limited capacity of the concerned sectors, absence of system for monitoring health effects of toxic heavy metals and weak coordination between the sector stakeholders.

2.4. Air Pollution and Health

In Ethiopia, demand for energy is increasing due to population growth and fast growing number of vehicles, manufacturing, commercial and service industries. Additionally, demand for energy for water pumping is increasing following an increased number of shallow and deep boreholes sources.

2.4.1. Indoor/Household Air Pollution

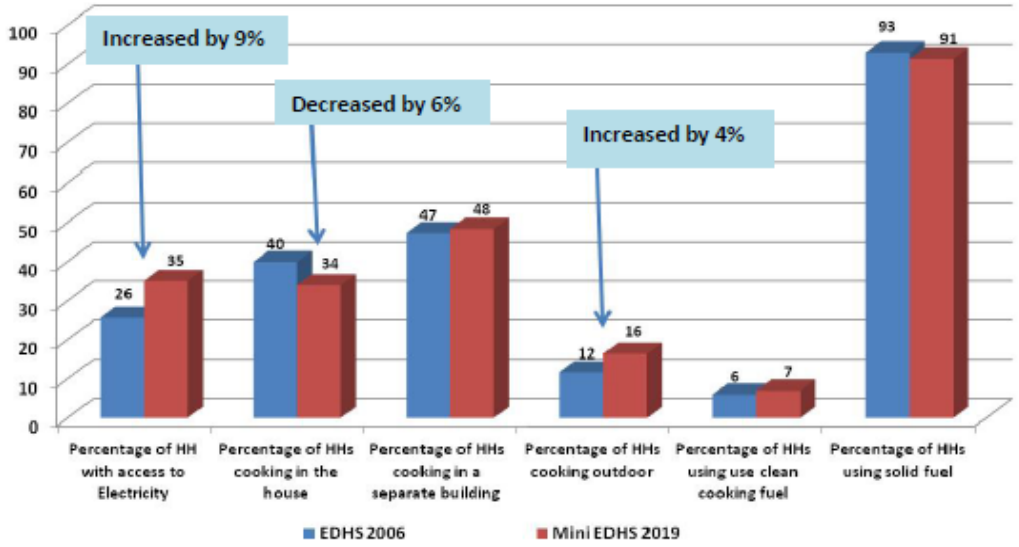
Households' energy demand is mainly for cooking, heating and lighting. A recent National Survey[44] shows that, about one-third (35%) of the households (82.9% of urban and 13.7% of rural) have access to electricity and as a result 91.4% of the households (76.4% urban and 98.1% rural) continue using sold biomass fuel for cooking and lighting purposes and the remaining 7% (20.3% urban and 1% rural) use clean energy sources (Figure 4).

42 Food, Medicine and Health care Control Regulation No. 299/2013

43 Hazardous waste management and disposal control Proclamation No. 1090/2018

44 EPHI, Mini DHS report, The DHS Program, ICF Rockville, Maryland, USA May 2021

Figure 4 Percentage of households adopting indoor house pollution preventive measures (EDHS 2006 and Mini EDHS 2020)



Use of solid biomass fuel for cooking remains a potential health risk including respiratory and eye health problems. This is particularly affecting women, children and elderly population mainly due to engendered roles of women in the households compared to men counterparts and those households using clean energy sources[45,46,47].Furthermore, WHO report (2019) confirms that, in Ethiopia indoor air pollution is responsible for premature deaths of 77000 populations due to respiratory tract infections, chronic obstructive lung diseases and cardiovascular diseases. Age standardized mortality rate attributable to household and ambient air pollution was estimated to be 144.4 per 100,000 populations[48].

The Ministry of Health in collaboration with the energy sector and partner organizations has been implementing various programs to protect citizens from health risks of indoor air pollution. Adoption of indoor pollution preventive behavior of the households is monitored being one of the criteria for creation of model families. The Health extension workers have been creating awareness on health impacts of indoor air pollution and preventive measures including use of smoke-free cooking stoves, changing indoor cooking practices, separation of animal shed from the dwelling, keeping cleanliness of the yard from solid and liquid wastes, promotion of model housing that provides adequate air circulation, lighting and space for family members, etc. Accordingly, about 2.9 million rural households (18%) become a model during the period of 2016 – 2020.

At the same time, since 2011, the MoWE has distributed

45 Faris K. Survey of Indoor Air Pollution Problems in the Rural Communities of Jimma, Southwest Ethiopia. Ethiopian Journal of Health Sciences, Vol. 12 No. 1 (2002)

46 Sanbeta H, et al, 2014 Indoor Air Pollution in Slum Neighborhoods of Addis Ababa, Ethiopia. Atmos Environ, 2014:89:230-4

47 Tefera W., et al Indoor and Outdoor Air Pollution- related Health Problem in Ethiopia: Review of Related Literature. Ethiop J Health Dev. 2016 ; 30(1): 5–16

48 WHO report, 2016

49 MoH HSTP-I review and MoWE 2013

50FDRE MoWE, report on distribution of improved cooking stoves, 2021

51 Ibid 41

more than 16.7 million improved cooking stoves to households with the objective of reducing energy related GreenHouse Gas (GHG) emission. It is also intensively working to increase coverage of rural electrification using renewable energy sources[49]. Furthermore, reports of the National Biogas Program (NBP) shows since 2009 Ministry of Water and Energy is promoting biogas technology to recover energy from organic wastes and about 33,674 rural households have accessed to clean energy for cooking and lighting through installation of bio-digesters[50].

2.4.2: Ambient Air pollution

A total of 32,905 deaths were attributed to ambient air pollution in 2016 mainly secondary to lower respiratory infections followed by ischaemic heart diseases, stroke, and congestive obstructive pulmonary diseases and bronchial and lung cancer[51].

To address the ambient air pollution challenges, the MoH jointly with the relevant sectors, has developed air quality and Health guidelines in 2021 that provides guidance on the minimum acceptable range of pollutants so as to reduce health impacts of air pollution. The ministry also conducted advocacy work and awareness creation activities through printed and mass media, implemented car free days in Addis Ababa and major towns have integrated air pollution control measures into health care waste management guidelines and health extension programs. However, low community awareness on health impacts of air pollution, weak technical and institutional capacity to monitor impacts of air pollution, weak legal enforcement due to lack of standards and inadequate inter-sectoral integration and coordination are remaining challenges.

In spite of ongoing efforts to reduce impacts of air pollution, diseases associated with indoor and outdoor air pollution are still claiming lives of tens of thousands of people. Impact of using energy efficient and clean energy sources on reduction of GHG emission is well documented. However, there is no sufficient data on impacts of these interventions on the health conditions mainly due to absence of an integrated national air pollution prevention and control program, lack of regular air pollution exposure and health hazard monitoring and surveillance system, and weak coordination and partnership working between the health, energy, and environmental protection sectors.

2.5. Vector and Rodent Control

Infestation with Insect-vectors such as lice, fleas, mites, flies and bed bugs is common causes of nuisance and health problems among low income families and individuals living in overcrowded areas like prison, homeless street dwellers and slum areas. Infestation by lice, fleas and mites are mainly associated with poor housing and hygiene conditions. Communicable diseases such as relapsing fever, typhoid fever and scabies infestation are transmitted mechanically by body lice and human mites, respectively. The case of Kality and Awi prison confirms that imprisoned populations are commonly affected by outbreaks of epidemic typhus[52,53]

Scabies is one of the vector borne disease commonly occurring in Ethiopia with an estimated prevalence of 14.5% associated with large family sharing bedding and clothes (Azene et al, 2020) and drought affected population suffering from shortage of water for personal hygiene[54].Outbreak of scabies was reported between 2015 and 2019 in Tenta kebele of Enebssie Sarmidir, Debat, Habru, Borumeda and Danbiya Woredas in Amhara regional state as well as in East Badewacho, Danboya, Kechabira, and Ademe Woredas in Southern region[55] in Ethiopia are an indication of real impacts of vector borne diseases.

Leishmaniasis is also one of commonly prevailing vector borne parasitic infections with a pooled prevalence of 19% in Ethiopia. Annually thousands of cases are reported from all regions of the country among populations with poor housing conditions, suitable places for breeding of sand fly due to urbanization and deforestation[56].

Furthermore, climate sensitive diseases such as cholera outbreak and other communicable diseases are emerging and reemerging in Ethiopia. These diseases are reported to be associated with the creation of favorable weather conditions due to climate change, lack of proper drainage system, poor hygiene and sanitation conditions. In addition, malaria incidence is already increasing among labor workers and surrounding communities[57] and prevalence of schistosomiasis is also likely to emerg [58,59] due to creation of a favorable breeding environment associated with poor operation and management of irrigation infrastructures.

52 Nigusie A. et al. An Outbreak investigation of Epidemic Typhus in Awi zonal prison, Awi, Amhara Regional State, Ethiopia, March 2012

53 Woldemariam M., Gelaw, B., & Assefa, A. Seroprevalence of typhus fever at the Kality Prison, Addis Ababa, Ethiopia. Biomedical Research and Therapy, 2(07), 318-323.

54 Enbiale W. and Ayalew A. Investigation of a Scabies Outbreak in Drought-Affected Areas in Ethiopia. Hindawi Journal of Tropical Medicine Volume 2020, https://doi.org/10.1155/2020/9813743

55 Jarso S. et al, 2018

56 Asefa A. Leishmaniasis in Ethiopia: A systematic review and meta-analysis of prevalence in animals and humans, Heliyon 4 (2018) e00723. doi: 10.1016/j.heliyon.2018.e00723

57 Kibret S. et al. Increased malaria transmission around irrigation schemes in Ethiopia and the potential of canal water management for malaria vector control. Malaria Journal 2014, 13:360 http://www.malariajournal.com/content/13/1/360

58 Jaleta et al. Agro-ecosystems impact malaria prevalence: large-scale irrigation drives vector population in western Ethiopia. Malaria Journal 2013, 12:350 http://www.malariajournal.com/content/12/1/350

59 Cala B. and Torban W. An Epidemiological Trend of Urogenital Schistosomiasis in Ethiopia. Front. Public Health, 05 March 2018 | https://doi.org/10.3389/fpubh.2018.00060

Rats are also commonly prevailing rodents causing health and economic problems in Ethiopia. They spoil foods and damage cloths, non-metallic utensils and furniture and wooden housing structures. Rats eat everything they come across including solid wastes. Improper handling of left-over foods and garbage as well as poorly managed houses/rooms attracts rats to harbor and breed in human dwelling. Rat's activity is high in dark places (at night) and roaming over uncovered food containers, contaminates food and food utensils with their faeces and urine. Households with a problem of rats' infestation are simultaneously facing the problem of fleas. Similarly, cockroaches are common nuisance insects usually infesting kitchen and cooked food storage including refrigerators. Similar to the rats, cockroaches are active at night, craw and feed on human food. Due to their activity and feeding behaviors, rats and cockroaches increase risk of infectious food-borne diseases (such as typhoid, intestinal parasites, etc) and typhus due to exposure to fleas.

2.6. Occupational Safety and Health

The rapidly growing urbanization and economic growth in Ethiopia has stimulated establishment of tens of thousands of formal micro-enterprises, small scale, medium and large scale industries that are engaged in manufacturing, construction, mining, agriculture, and service industries. Additionally, there are a number of informal small businesses engaged in preparation of food (injera) and production of local liqueur.

Even if ensuring safety and health of the workers and protecting the environment from pollution are among other basic prerequisites for establishments to enter and run the industrial businesses activities, these commitments are not fully implemented by industries. Hence, workforces are being exposed to different occupational safety and health hazards. Reviews of different studies and reports showed that exposure to excessive noise and dust of various types in manufacturing and construction industries, chemical exposures in flower farming, injuries in steel and in commercial farming are commonly prevailing occupational safety hazards. While high risk of exposure to dust is most frequently prevailing challenges in medium to large like textile, coffee and grain mills, construction and cement industries, excessive noise, heat, electric shock and vibration are common health hazards in small enterprises. All are putting the workers at risk of different health problems including respiratory tract diseases, skin and eye conditions, hearing losses, physical injuries, poisoning and ergonomic problems such as back pain, muscle sprain and strains. For example, according to WHO/ILO estimates[60], deaths among all ages due to ischaemic heart disease is slightly increasing from 0.8 in 2000 to 0.9 in 2010 and to 1 in 2016 per 100,000 populations in Ethiopia.

Workers in agricultural industries like large scale vegetable and flower farms, small scale farms irrigated with untreated domestic and industrial effluents are suffering with health problems due to their exposure to different organo-phosphate and organo-chlorine

60 WHO/ILO Joint Estimates of the Work-related Burden of Disease and Injury, 2000–2016, Global Monitoring Report, 2021

pesticides. Commonly reported associated health conditions include; skin diseases and respiratory problems, breast cancer in women, poisoning and physical injuries to body parts. Similarly, accidental needle prick and cut by sharp medical equipment and exposure to blood, blood products and body fluids are common work related biological and physical hazards reported in health care facilities.

Existing studies show that work related health hazards are mainly associated with lack of availability of appropriate Personal Protection Equipments (PPE) and/or not consistently using PPE by the workers where it is available, inadequate awareness and poor personal hygiene due to lack of work related basic training upon employment, working extra hours, alcohol consumption and inadequate compliance monitoring by the industry management and the government/regulators. Additionally, poor lighting in the workplaces, absence of physical barriers and written sign boards around fast moving /spinning parts of the machineries, slippery floors, and prostration associated with exposure to excessive heat in textile and metal industries are associated with increased risks of injuries in workplaces.

Furthermore, though the industry managers and regulatory authorities are expected to put in place systems for monitoring of hazard exposure and associated occupational related diseases, these preventive services are nearly absent in the majority of the industries. For example, the majority of the industries are lacking hazard exposure limit monitoring devices/instruments (for dust, chemical, radiation and temperature) and primary health care facilities of the industries are not adequately staffed with expertise capable of monitoring occupational health hazards. An informative discussion with key informants shows that poor record keeping and lack of technical and logistic capacity to conduct occupational diseases surveillance and lack of legal enforcement are major challenges to safeguard health of the workforces.

2.7. Chemical Handling and Use

High public health importance chemicals selected by WHO are heavy metals such as mercury, lead, arsenic, cadmium and persistent organic pollutants such as polychlorinated biphenyl's (PCB), poly aromatic hydrocarbons (PAHC), dioxin & furans pesticides and others such as asbestos, benzene, fluoride are among the main listed.

In Ethiopia most chemicals are imported and very few are formulated locally. The main purposes of chemical use in Ethiopia are agriculture, pest control, vector control, pharmaceuticals, industrial use and laboratory research purposes. 1440 to 4586 tons of pesticides were imported from 2001 to 2013 in Ethiopia for different purposes[61] and about 1500 tons of obsolete chemicals accumulated in Ethiopia since the 1960s, the first chemicals imported. Around 420 tons are disposed of abroad and the rest are in process to be disposed of.

61 Nigatu B. et al. Use of Chemical Pesticides in Ethiopia: A Cross-Sectional Comparative Study on Knowledge, Attitude and Practice of Farmers and Farm Workers in Three Farming Systems. Ann. Occup. Hyg., 2016, Vol. 60, No. 5, 551–566 doi:10.1093/annhyg/mew004

Hazardous chemicals have certain associations with birth defects, cancer, cell mutation and teratogenicity. They are also associated with reproductive development problems on both sexes. There is evidence from experimental studies that numerous pesticides, either in isolation or in combination, act as endocrine disruptors, neurodevelopmental toxicants, immunotoxicants, and carcinogens[62].

Similarly, hospital based studies done in Ethiopia on the health effects of hazardous chemicals show still birth, child development problem and teratogenicity effect. In Ethiopia the prevalence of preterm birth is 10.4% and highly associated with chemical exposure and drug use during pregnancy[63]. In addition, health care workers and waste scavengers are at risk in unregulated chemical industries, e-waste recycling workplaces and scavenging at waste dumping sites due to their exposure to toxicants. However, there are limited studies in Ethiopia showing the health burden of chemicals.

Hazardous chemical registration and tracking in Ethiopia is not done. Obsolete chemical disposal and packaging and container disposal practice is also very limited. Ethiopia has accumulated obsolete pesticide stocks since pesticides were first imported in the 1960s.

62 Kalliora C. et al. Association of pesticide exposure with human congenital abnormalities. Toxicology and Applied Pharmacology Volume 346, 1 May 2018, Pages 58-75

63 Muchie et al. Epidemiology of preterm birth in Ethiopia: systematic review and meta-analysis. BMC Pregnancy and Childbirth (2020) 20:574 https://doi.org/10.1186/s12884-020-03271-6

In addition, regarding KAP, A study done among farmers in Ethiopia show most (92%) farmers reported indiscriminately disposing of empty containers in the field, while 86.7% applied the leftover pesticides to other crops. More than 90% of small-scale farmers did not use any personal protective equipment (PPE) when handling pesticides. About 95% of farmers had poor knowledge regarding pesticides[64].The KAP of educated industry workers towards hazardous chemicals and PPE use was also found to be very low.

The waste management and final disposal of hazardous chemicals are also very poor and haphazard. Children are playing with empty chemical containers; people use them for kitchen, water fetching, and spice storage and for different purposes the pesticide containers and empty cans. These show the wide range of problems in management, administration and disposal of hazardous chemicals in Ethiopia.

2.8. Climate Change and Health

Climate change affects health in a number of ways including damage to health infrastructures, disruption of health and WASH services and contamination of water sources. In addition, impacts are manifested through increasing occurrence and distribution of vector and water borne diseases, and exacerbation of chronic respiratory diseases. For example, cholera outbreak has been reoccurring since 2006, others

64 Mergia M.T. et al, Small-scale Farmer Pesticide Knowledge and Practice and Impacts on the Environment and Human Health in Ethiopia. J Health Pollution 30: (210607) 2021

65 FDRE MoH, National Health Adaptation Plan to Climate Change (2017-2020), Aug. 2017, Addis Ababa, Ethiopia

66 FMoH/WHO, Vulnerability and Adaptation Assessment of Health to Climate Change in Ethiopia, 2015

like yellow fever and dengue are reemerging climate sensitive vector borne diseases.

Ethiopia is experiencing an increasing frequency and intensity of disasters associated with climate change with significant health and social impacts. Flush flooding has occurred in 2020 at 110 Woredas has affected more than 220 thousand households (more than 1.1 million population and displaced more than 340 thousand populations. On the other hand, due to an ongoing drought in the Somali and Oromia regions has disrupted the livelihood of pastoral communities, calming thousands of livestock and has been causing WASH and nutrition emergencies.

In Ethiopia, reviews of different policy documents including climate adaptation plans shows that the most common manifestation of climate change impacts are flooding and drought and commonly associated health impacts are vector and water borne disease outbreaks and malnutrition. Accordingly, MoH has prepared Health- national adaptation plans[FDRE MoH, National Health Adaptation Plan to Climate Change (2017-2020), Aug. 2017, Addis Ababa, Ethiopia] based on the findings of climate vulnerability assessment[66] and is implementing the adaptation plans. In order to strengthen adaptive capacity of the health system to negative impacts of climate change, MoH has been implementing interventions such as development of guideline for Climate Resilient Health System, advocacy and awareness creation, piloting establishment of early warning system for climate sensitive diseases, mainstreaming into HSTP and other health program interventions and capacity building trainings. However, lack of structure responsible for climate and health at sub-national levels, weak inter-sectoral collaboration and lack of evidence to track impacts of climate change on health are remaining major challenges.

2.9 WASH in Emergencies

Emergencies due to natural disasters in Ethiopia are mainly associated with impacts of climate change such as floods, drought and disease outbreaks are challenges that Ethiopia is experiencing over decades. For example, 1965, 1984/85 and several drought events since then[67] as well as flood events in 2006, 2010 and 2020 have resulted in catastrophic impacts on human life and livestock in areas affected by the problem. Similarly, climate change induced flooding in 2006, 2010 and 2020, and the current drought in pastoral communities in Somali and Oromia regions has affected millions of population and hundreds of thousands of livestock. In addition, instabilities in eastern and western as well as northern and southern parts of the country have affected the livelihood of hundreds of thousands of people.

Furthermore, Ethiopia started to host refugees in early 1960s and is the second largest refugee hosting country in Africa and is used to host hundreds of thousands of refugees inflowing mainly from South Sudan, Sudan,

65 FDRE MoH, National Health Adaptation Plan to Climate Change (2017-2020), Aug. 2017, Addis Ababa, Ethiopia

66 FMoH/WHO, Vulnerability and Adaptation Assessment of Health to Climate Change in Ethiopia, 2015

67 Alem M.G. Drought and its impacts in Ethiopia. Weather and Climate Extremes 22 (2018) 24–35

The World Bank, Impact of Refugees on Hosting Communities in Ethiopia: A SOCIAL ANALYSIS, World Bank Group, 1818 H Street, Washington, DC 20433, USA, 2020

D.R. Congo, Somalia and Eritrea and other countries mainly in camps located in Gambella, Benishangul-Gumuz, Somali, Afar and Tigray regions and some in Addis Ababa[68] as well as there are hundreds of thousands of internally displaced population due to natural disasters and conflicts between communities over use of resource.

Whatever the cause, in the absence of preparedness and capacity to respond, all forms of disasters cause short to long-term disruption on livelihood of affected population and hosting communities including pressure on the sources of drinking water supply, sanitation and hygiene services, exacerbate environmental pollution, land and environmental degradation and becomes one of the factors for occurrence and distribution of diarrheal and vector borne disease outbreaks.

Hence, the strategy focuses on strengthening of the WASH sectors' technical, management, logistics and coordination capacities so as to forecast possible climatic and non-climatic hazards, monitor risks, get prepared/ready and proactively respond to any forms of WASH emergency.

2.10. Institutional and Human Resource Capacity

The Ministry of Health has taken policy measures to strengthen coordination of EH programs by strengthening its organizational structures and staffing with the minimum required human resources at all levels so as to enable coordination of EH program interventions. At national Level, it was organized at EH Directorate level which is subdivided into four case teams (Annex 1): namely; Sanitation, Institutional WASH, Climate and Health and Food, Water Safety and Hygiene, to nationally lead and coordinate program efforts and initiative implemented by the government and stakeholders. Similarly, adoption of the coordination structure at regional level is ongoing and currently Dire Dawa town, Oromia and Afar regions have organized EH at directorate, other regions at core process and case team levels. Adoption of the structure is yet not fully materialized in other regions such as Amhara, SNNP, Benishangul-Gumuz, Gambella and Somali regions. As a result, EH programs at regional level continued to be managed either by one, two or three professionals or at majority of the zones, Woredas and primary health care facilities the program is being coordinated by focal points as additional responsibility so that it is lacking accountability

Regarding human resource capacity development, there are universities, colleges and Technical and vocational Education Training (TVETs) that are working on training of diversified health disciplines including Environmental health. On job training and logistics have also been provided by different partners to the health professionals to promote EH. In addition, there is regular Integrated Refresher Training (IRT) provided to HEWs, conducting periodic capacity building training to schools, HCFs, and other institutions.
However, inadequate skilled human resources at frontline service delivery level due to very limited

number of new professionals joining the public sector and increased attrition of existing professionals is a critical challenge for accelerated implementation and sustainability of environmental health program interventions

2.11. EH Coordination

Currently, the EH program is coordinated by the HEH directorate in the Ministry of Health is supported by the Steering and Technical committees. In addition, there are different kinds of coordination mechanisms in Health and Water Sectors. Some of these coordination platforms include; National HEH steering and Technical committees, One WASH National Program (OWNP), Water sector Working Group, , Water and Sanitation Forum (WSF) and Sanitation Marketing Multi-Stakeholder Platform (MSP). With the exception of the OWNP, these coordination platforms are irregular and weak due to the absence of a strong coordination structure supported by a clearly defined accountability framework

2.12. EH Regulation

The government of Ethiopia has promulgated several laws and regulations that facilitate implementation of environmental health programs and safeguarding of the environment. However, an overlapping legal mandate between different sectors, lack of clear role and responsibilities and absence of national standards are weakening enforcement of relevant public and environmental laws and regulations

2.13. Analysis of the stakeholders

Supporting poverty reduction strategies of the government in general and in areas of human development interventions such as health, education, water supply, sanitation and natural resource management is common interest areas of the majority of donors, multilateral and bilateral agencies and of non-governmental organizations.

In order to enhance collaboration between the sector stakeholders, the ministry has involved sector ministries, development partners and the private sectors in the development of EH strategy. Furthermore, the ministry will further look for active engagement of the internal and external stakeholders during implementation in terms of coordination, monitoring, evaluation and financing of the strategy at all levels.

Priority internal and external stakeholders that are interested in development and implementation of different components of the environmental health strategy are mapped simultaneously during reviewing of policies, strategies, programs, Country Partnership Frameworks and Country Development Cooperation Strategies. The stakeholders' interests, influences and expectations as well as pathways through which they could contribute to the EH programs are analyzed and presented in table 1 and 2 below.

Table 1 Stakeholders' analysis in terms of their group, category, description of their interests and impacts

Stakeholders group	Category		Stakeholders Interest in the Hygiene and Environmental Health Strategy	Level of influence on the proposed strategy
	Primary	Secondary		
The Federal Government Ministry of Health, Water and Energy, Education, Environment, Forest and Climate Change, Industry, Labor and Social Affairs, CSA, Ethiopian Standard Agency, Food and Drug Administration, Authority, Public Health Institute, Regional State line bureaus Local Governments (Municipality and Woreda Sector offices) Health, Education, Agriculture Institutions	X		Has a strong interest in improving overall socio-economic status (poverty reduction) and health and wellbeing of the population, deliver their constitutional commitment to ensure citizens' live in safe and healthy environment and right to have access to essential basic services including safe food, water, sanitation, and hygiene services, safe working environment and living environments Responsible for policy coordination, guidance, review of strategies, programs, plans and ensuring that all aspects relevant to achieving Program objectives and for sustaining the improved services to the required level are dealt with at the central, regional and district levels in collaboration with development partners, civil society organizations, private sector and the community Build on the past experiences and partnership working with development partners, private sectors and the community, with strong interest to successfully coordinates implementation of hygiene and environmental health programs in collaboration with other sector ministries, development partners and local governments	High
Donor agencies The World Bank, African Development Bank, Foreign Commonwealth Development Office, and UN Agencies, Bilateral and Multilateral organizations (African Development Bank, UNDP, EU, World Bank, DFID, Canada, Italian Cooperation, German Development Cooperation, and USAID, etc) and foundations		X	Strong interest in assisting the Government of Ethiopia achieve its poverty reduction and sustainable development goals in general, and to support in development and implementation of strategies and programs to increase country's sustainable and equitable integrated economic and social development in line with the countries development aspirations They are interested to provide support in improving access to integrated sustainable basic social services (Health, education, water supply, sanitation, gender, and natural resource management, creating job opportunity, etc) and established development assistance group and frame work through which they can provide support in the preparation, monitoring and evaluation of the country's development strategies	High

Local and International Non-Governmental Organizations	X		Strong interest support the government at all levels manly in improving access to basic social services, facilitation and capacity building of private sector participation in health, water supply, sanitation, hygiene, energy, etc mainly in areas of supply of products and services. Interested in strengthening sector capacity building, coordination and partnership working, research and evidence based policy influencing, knowledge transfer and innovation	Medium
Private Sector (Bill & Melinda Gates Foundation, consultancy firms, manufacturers, enterprises, etc)		X	Strong interest in supply of Hygiene and Environmental health products and services	Medium
Media		X	Strong interest product promotion, awareness creation, community mobilization, advocating best practices	Medium
Community (Users, informal community organizations)	X		Strong interest to participate in the processes of need assessment, preparation, implementation, monitoring and evaluation of Hygiene and Environmental Health Services (either in kind and/or in cash, in managing facilities). High desire to be consulted in all decision making processes and in mobilizing the communities	High

Table 2 Stakeholder's analysis in terms expectations of the MoH from the stakeholders and vice versa, and degree of importance

Stakeholder	Expectation of the MoH from the stakeholders	Services and products expected by the Stakeholder	Likely reaction if expectations are not met	Degree of importance
Ministry of Water and Energy	Technical support on hydro geological studies, monitoring during development of water sources for HCFs Coordination of Joint planning, monitoring and evaluation of OWNP	Regular information on compliance monitoring of the public and institutional drinking water quality Proper operation, maintenance and repair of water supply infrastructure owned by the HCFs	Non-functionality of water supply, sanitation and hygiene infrastructure Poor health service quality low utilization of health care facilities	High
Ministry of Education	Coordination of Joint planning, monitoring and evaluation of OWNP Promotion of safe sanitation and hygiene practices, household water treatment and safe storage practices, and menstrual hygiene management in schools, parents and in the surrounding communities Inclusion of occupational safety and health issues in to the school curriculum	Expertise support during planning and implementation of the school health programs Provision of hygiene promotion materials Training of teachers, students and PTA members Creation of evidence on the health status of school children	Perpetuation of bad hygiene and sanitation behaviors	High

Environmental Protection Agency	Coordination of Joint planning, monitoring and evaluation of control of environmental pollution status Progressive enforcement of environmental laws Evidence based advocacy, communication and awareness creation about sources and prevailing impacts of environmental pollution Development of wastewater and industrial effluent quality standards Development and promotion of guidelines on use of wastewater for agriculture Information on environmental pollution status (air, soil and water bodies)	Evidence based technical support on the actual and future health impacts of soil, water and air pollution associated with agricultural and industrial development interventions in the country Public awareness creation on the current pollution status of soil and water bodies due to indiscriminate disposal of domestic solid and untreated liquid wastes and industrial effluents Public awareness creation on the current chemical and microbial contamination of vegetables grown using polluted wastewater and untreated sewage Provision of empirical evidence and technical support during planning and facilitation of panel discussions and community dialogue on environmental pollution	Accounting law enforcement bodies for not implementing their responsibilities (through council of ministers and parliament)	High
Ministry of Agriculture/ irrigation	Coordination of Joint planning, monitoring and evaluation of good agricultural practices (food safety) and Control of illegal use of pesticides Proper operation and management of irrigation schemes Integration of safe water supply, sanitation and hygiene and vector control interventions in to irrigation/farm projects	Technical advice on safe storage and disposal of obsolete agricultural chemicals and pesticides Evidence on the acute and chronic health impacts of pesticides on the workers and consumers Technical support on control of WASH and vector borne diseases prevention and control and information on the status ground water quality and vector borne diseases	Increased exposure to health hazards and risks and deterioration of the health status of the farm workers, and the community Accounting the ministry of agriculture for not implementing its legal mandates (through council of ministers and parliament)	High
Ministry of Industry	Eliminating discharge/emission of health threatening chemical wastes in to the environment Provide waste quality information to the public and surrounding community Establish internal system for exposure and health risk monitoring and surveillance Safeguarding health of the workers and the surrounding community	Technical advice on health and safety precaution of industrial waste effluents	Increased acute and chronic health problems Accounting the ministry of industry for not implementing its legal mandates (through council of ministers and parliament)	Medium

Ministry of Tourism	Information on tourism destinations where there is high demand for environmental health services	Technical support on monitoring of the quality of hygiene and environmental health services	Dissatisfaction with services by tourists reduction of tourist inflow and income	
Ministry of labor and Social Affairs	Information of safety and health of the labor force and workers Progressive legal enforcement on industries not respecting safety standards	Expertise support on monitoring of occupational hazard and disease surveillance Provision of empirical evidence and technical support during planning and facilitation of panel discussions and dialogue on occupational safety and health	Accounting the ministry of labor and social affairs for not implementing its legal mandates (through council of ministers and parliament)	Medium
Donor Agencies, bilateral and multilateral organizations	Expertise and financial support during development of strategies/programs and plans, implementation and monitoring Strengthening coordination and partnership working between government sectors, non-government organizations and private sector Respecting government policies	Participation during planning, implementation and monitoring/review of the strategies/programs Improvement of in equitable basic service delivery Efficient use of expertise and funds, transparency and accountability Respecting donor policies and human rights	Limited Resource and interruption of development programs	High
International and local non-government organizations and Professional Associations (EEHPA, OHS, etc)	Active community participation, alignment, integration and clear linkage of the project objectives, activities and indicators with local government strategy /programs and plans No duplication of effort by different NGOs in the same intervention areas and similar program activities Transparency on resource use Initiation of new knowledge, approaches and technologies that improve service delivery Strengthening coordination and partnership working at local levels Regular update on project implementation and performance status as per agreed communication structures	Good enabling environment, cooperation and support at all levels Accessibility and availability of documents (strategies, programs/plans and performance indicators) Participation and active involvement of the government (during development, appraisal, implementation, monitoring and evaluation) Formal feedback and recognition of contribution from the government	Interruption of the partnership working	Medium
Private Sector Actors	Formal engagement in the hygiene and environmental health service delivery (management, technical, logistic, labor, etc)	Good enabling environment, cooperation and support at all levels (licensing, tax policy, access to finance, capital, expertise support, market, etc),	Diminished participation and poor service quality	Medium

Community, Institutions and Households	Formal and informal participation in the form of information exchange, labor, material, cash, management, care and owning and using of hygiene and environmental health services	Accessibility and availability of resources (information, skills, service providers, affordable services, technologies, equipment, and financing, etc)	dissatisfaction and discontentment	High
Research/ Teaching Institutions	Demand oriented- problem solving Pre-service and In-service training Generation of empirical evidence for policy actions (development of strategies, program and plans) Development of tested approaches and tools for Hygiene and Environmental Health program implementation and monitoring	Good system for partnership working in identification of training and researchable issues, design and conducting of researches, use of the findings for policy actions (, program and planning) Allocation of budget implementation Budget and required resources	Resource wastage	Medium

2.14. Analysis of Strength, Weaknesses, Opportunities and Threats

2.14.1 Strengths

Government is delivering its policy commitment to eliminate impacts of diseases attributable to inadequate WASH and environmental health service. To mention some,

- Revitalization of the national and regional environmental health coordination mechanisms between the sector stakeholders and partner organizations (including steering committee, technical team, working groups, platforms and forums)
- An ongoing effort to strengthen institutional and human resource capacities at all levels for effective program planning, coordination, implementation and monitoring
- Development and cascading of a number of guidelines, protocols, strategies and manuals
- Mobilization of financial and technical resources from different sector stakeholders for planning and implementation of WASH and environmental health programs
- An ongoing effort to strengthen environmental health programs Monitoring and Evaluation systems
- Revitalization of pre-service environmental health training program by Universities
- Improvement in financial resources absorption capacity

2.14.2 Weaknesses

There are critical areas that need stakeholders" action including

- Very slow rate of basic sanitation and hygiene service improvements
- Shortage of skilled environmental health professionals at service delivery and local government levels due to significant reduction of pre-service Environmental Health training program and high turnover of skilled professionals
- Weak environmental health program management information system
- Very limited attention and commitment for

implementation of non-WASH environmental Health program interventions

- Lack of vertical alignment of Non-WASH EH program interventions with HSTP-II
- Difficulty to get public expenditure on EH program interventions due to lack of consideration of EH service expenditure in to the national health account
- Limited private sector involvement in environmental health service delivery due to unfavorable policy environment,
- Inadequate financing, technical and infrastructure capacities of bodies responsible for management of urban sanitation services
- Weak coordination between government sector stakeholders mainly in areas of drinking water quality monitoring, urban sanitation, and control of environmental pollution
- Very low attention for monitoring of environmental pollution and response by the government due to limited public awareness despite growing health and environmental impacts
- Weak enforcement of laws and regulations related to public health and environment due to overlapping mandates, lack of clarity on roles and responsibilities and lack of standards and implementation guidelines

2.14.3 Opportunities

- The federal constitution, health policy and sector transformation plan are stepping stones and provide legal backing to lobby for WASH and EH services and enforcement of relevant laws and regulations.
- Availability of One WASH National Program (OWNP) and TSEDU Ethiopia Campaign: These initiatives contributes to attainment HEH strategic objectives and targets
- Availability of African Sanitation Policy Guidelines (ASPG):- provides important to improve high level political commitment through creating platform for policy dialogue and framework for alignment of country sanitation and hygiene strategy with the global efforts to increase sanitation service delivery targets
- Availability and active engagement of professional associations in the development, implementation and monitoring of WASH and Environmental Health Services
- Availability of the Water quality and provisional environmental quality standards and guidelines are important vehicles to strengthen compliance monitoring to water supply systems and will persuade the water supply agencies to take remedial /corrective actions and prioritize water safety operational monitoring.
- Consideration of WASH and environmental health being one of the high impact interventions in other programs (nutrition, infection prevention, NTD, vector control, etc) will facilitate partnership working and coordination between other directorates within the ministry (and its lower structures) and to mobilize additional resources for program implementation.
- Increased public awareness on WASH and environmental issues (associated with health extension program, increasing adult literacy rate and media) will increase uptake of environmental health services by the community, enhance support and participation in planning and implementation of program interventions, and ensures program sustainability

- The decentralized government system facilitates sharing of roles and responsibilities and provision of inter-governmental support and monitoring mechanisms between the Federal MoH, Regional Health Bureaus and service delivery institutions.
- Existing inter-sectoral coordination platforms will continue to facilitate partnership between different sector ministries, development partners and private sectors to engage in the implementation of the strategy in terms of technical and financial support, information exchange and joint monitoring and evaluation.
- Strong formal and informal community structures will continue to be important tools to intensify community engagement and create ownership of the program at service delivery level.
- Availability of experienced universities and training institutions in the country will facilitate pre-service environmental health and in-service short-term training programs to urgently deploy skilled human resources mainly at service delivery levels.
- Increased government and development partners' engagement in promotion of program interventions, strengthening coordination, resource mobilization, WASH service improvement at schools, health care facilities and public institutions as part of response to COVID 19 pandemic.

2.14.4 Threats /risks

- Overlapping institutional mandates between Health and other sector ministries: is likely to cause inadequate synergy in terms of developing inconsistent plans, misaligned performance targets, duplication of efforts, loopholes for violation of environmental health laws and regulations and diffuses accountability.
- Inadequate fund due to low budgetary allocation: hampers realization of the mandates and disrupts planned activities and could result in low level of program performances
- Fast population growth and proliferation of urban slums: results in increased demand for hygiene and environmental health services and environmental pollution
- Taxation on sanitation and hygiene infrastructures: keeps low performances of municipal solid and liquid waste and faecal sludge management services, performances of agencies responsible for monitoring and control of environmental hazards and limits participation of the private sector
- Natural and manmade disasters (war, flooding and drought): destructs household and community hygiene and sanitation facilities/ infrastructures, and causing slippage to open defecation practices, increases exposure to environmental hazards and result in disruption of livelihoods
- COVID 19 Pandemic: reduced rate of solid and faecal sludge collection associated with fear of infection (contact with other persons) and continued contamination of the environment by uncollected wastes resulting in diseases associated with poor sanitation and hygiene. Increase volume of solid waste due to use of disposable face masks and plastic bottles. Diversion of resource allocated for other HEH interventions to prevention and control of COVID 19

3: WASH and Environmental Health Strategy

3.1 Vision

To see Healthy, Productive and Prosperous Ethiopians.

3.2 Mission

To ensure the health and wellbeing of the society through providing a comprehensive package of WaSH and Environmental health services of the highest possible quality in an equitable manner

3.3 Strategic Principles

- Responsiveness
- Accountability
- Integration
- Partnership
- Inter and Intra-sectoral Collaboration
- Participation
- Harmonization of approaches
- Vertical and Horizontal Alignment
- Learning

3.4 Strategic Goals

Reduce environmental health risks through stepwise incremental implementation of equitable, affordable and sustainable WASH and environmental health services

3.5 Strategic Objectives and Initiatives

Strategic objectives are stated in comprehensive and continuous terms for each program component with corresponding strategies to attain the desired outcomes (Table 3). Each strategic objective is further translated in to various operational objectives and interventions required to attain specific objectives under strategic action plan (Table 4) under section 4

Table 3 Strategic Objective and Initiatives

Programs Components	Strategic Objectives	Strategic Initiatives
Water Quality Monitoring and Promotion of Safe Water Handling	SO1: Ensure safety and quality of drinking water from point of collection to the point of use	■ Strengthen the capacity of Woreda Health offices on WQM interventions ■ Improve point-of- use water treatment and safe storage practice
Household and community sanitation	SO1: Ensure equitable access to basic sanitation services	■ Strengthen the implementation of market based sanitation system ■ Improve sanitation products and services across the board with a particular emphasis on public and slum areas
	SO2: Ensure sustainable behavior change towards proper utilization of sanitation facilities and ending open defecation practice	■ Strengthen tailored, context specific social and behavior change communication approaches
	SO3: Ensure strong regulation for Household and community sanitation	■ Introduce a regulation system for household and community sanitation facilities, services and practice
Hand Hygiene	SO1: Ensure equitable access to basic hygiene and affordable hand hygiene products and services	■ Enhance supply chain for hand hygiene products, facilities and services
	SO2: Ensure sustainable behavior change towards hand hygiene	■ Strengthen context specific social and behavior change communication for hand hygiene
Menstrual Hygiene Management	SO1: Reduce community misconceptions and cultural taboos towards Menstruation	■ Strengthen social and behavior change communication towards MHM
	SO2: Ensure equitable access to safe sanitary materials to women and girls	■ Enhance availability and affordability of safe sanitary materials
	SO3: Ensure improved knowledge and attitude of school girls and school community towards menstruation	■ Strengthen MHM promotion in schools
	SO4: Enhance access to girls' friendly WASH services and MHM facilities and products in school	■ Strengthen expansion of MHM services in schools
Oral and Body Hygiene	SO1: Ensure enhanced community awareness and sustainable behavior change towards oral and hygiene practices	■ Strengthen oral and body hygiene promotion
Baby WASH	SO1: Ensure enhanced community awareness and sustainable behavior change towards baby WASH practices	■ Strengthen child focused environmental health promotion ■ Ensure integration of baby WASH in other health programs

WASH in HCFs	SO1: Ensure basic WASH Service in HCFs	■ Enhance expansion of equitable access to basic WASH services in health care facilities
	SO2: Ensure adherence to proper use of WASH facilities and services.	■ Strengthen the capacity of HCFs towards proper WASH practices
WASH in Other Institutions	SO1: Improve WASH service and practice in targeted institutions	■ Strengthen the capacity of Other Institutions towards WASH practices
Food Hygiene and Safety	SO1: Ensure enhanced community awareness and sustainable behavior change towards food hygiene practices	■ Strengthen promotion of food hygiene at household and different settings
Solid and Liquid Waste Management	SO 1: Ensure Proper solid and liquid waste management	■ Enhance community awareness and sustainable behavior change towards solid and liquid waste management practices ■ Enhance proper solid and liquid waste management practice in institutions. ■ Enhance strong regulation of urban solid and liquid waste management ■ Advocate for development of affordable technologies for collection/emptying and conveyance of solid and liquid wastes
Air Pollution and Health	SO 1: Reduce health impacts of indoor and ambient air pollution	■ Enhance promotion of healthy housing pertinent to control of indoor air pollution ■ Enhance community awareness and practice towards healthy housing and indoor air pollution preventive practices ■ Awareness creation and advocacy work on health impacts of outdoor air pollution ■ Strengthen implementation of outdoor air pollution preventive interventions
Rodents and Vector Control	SO 1: Reduce health impacts of rodents and vectors	■ Strengthen integrated rodent and vector control programs
Occupational Health and Safety (OHS)	SO1: Ensure OHS in health facilities	■ Strengthen OHS implementation capacity in health facilities
	SO2: Reduce exposure to occupational hazards and health risks in work places	■ Strengthen integrated OHS improvement programs
Chemical Handling and Use	SO1: Reduce exposure to chemical hazards	■ Strengthen safe management and use of chemicals

Climate Change and Health	SO1: Ensure Health adaptation to Climate change	■ Awareness creation and establish climate change risk perception of the health authorities ■ Strengthen climate adaptation and resilience capacity of the health system in drought and flood prone Woredas
WASH in Emergencies	SO1: Establishment of WASH Emergency preparedness and response system	■ Strengthen WASH emergency Monitoring, Preparedness, Response and Recovery management capacity of the health sector at all level
Enabling Environment	SO1: Ensure strong institutional arrangement for EH at all levels SO2: Ensure adequate and skilled human resource for EH program at all levels	■ Strengthen the institutional arrangement for EH at all levels of the health system ■ Enhance human resource capacity for EH program at all levels
	SO1: Ensure strong EH coordination mechanisms at all levels	■ Advocate for establishment of coordination structures and accountability framework for EH
	SO1: Ensure strong regulatory system for EH	■ Strengthen implementation of existing and promulgation of new EH laws and regulations and standards

4. Implementation Arrangement, Monitoring, Evaluation & learning

4.1. Leadership and Governance

Attainment of the SDG goals pertinent to environmental health is by large contingent on the commitment of the leadership to accelerate implementation of the strategy. Country's WASH and environment related performance status is by far behind the expected universal service coverage and environment pollution is becoming a threat to ensure sustainable development. Therefore, commitment of the leadership has to practically demonstrate contribution of the WASH and environmental health program interventions in the overall health status improvement of the citizen.

4.2. Planning and Implementation

This strategy outlines strategic actions that are needed to translate the strategy to practice. These strategic actions must be addressed into all relevant actors' strategic and annual plan development. These plans have to be aligned both horizontally among sectors and partners and virtually with counterparts of all levels. In order to establish ownership and create understanding on the strategy the ministry will organize sensitization platforms at all levels. Regions are expected to adopt the strategy into their local contexts, allocate resources and translate the strategy into operational plans.

4.3. Coordination and Alignment

WASH and environmental health is a broad and complex program that requires coordination of various ministries, private sector, and local and international development partner organizations. Hence, enhancing stakeholders' engagement is vital for successful design and implementation of the program interventions. Therefore, existing coordination and partnership mechanisms at all levels shall further be strengthened to harness their direct and indirect contributions. This action requires mapping of stakeholders and exploration of their interest and scope of their involvement through consultation, development of partnership strategy and joint plan and monitoring.

4.4. Monitoring and Evaluation

Program monitoring is an important tool to inform program managers to timely make informed decisions. Recently developed program/service indicators will be used through DHIS2 for regular monitoring of the program. In addition, regular surveys are needed to monitor indicators which cannot be addressed through DHIS 2. This effort is important undertaking to regularly monitor progress towards attainment of the target set for annual, mid-term and end of the strategic plan period and further track contributions of the program interventions towards reduction of environmental burden of diseases

5. Costing and Financing of the Strategy

Estimation of budget is done for program coordination, service delivery, sustainable behavioral communication, institutional and human resource capacity building, sanitation infrastructure development, and for monitoring and evaluation.

Cost of WASH and EH service components are estimated based on the specific inputs, processes and key activities required to be implemented to attain the desired strategic objectives and targets from the baseline (2020) and inflation rate in February in 2022. Cost for public and communal latrines estimated based on an average unit cost the services from the Second Urban Water and Sanitation Project (MoWE, 2021). Accordingly, in the coming five years a total of 65,710,084,458.20 Ethiopian Birr is required to implement the national hygiene and environmental health interventions at all levels.

Each component of the strategy requires development of a program specific investment plan. mobilization of domestic resources from the service users (through self supply, tax contributions, user fee/tariff, etc) and allocation of budget by the government, corporate social responsibility (CRS) and environmental responsibility (CER) by the private sector and from local and international partner organizations either in the form of direct investment, loan and/or grants will be crucial.

Table 4 Budget estimation by strategic components

S. No	H & EH Initiatives (Component)	Estimated budget in ETB	Remarks
1	WQM and HWTSS Practices	180,100,000.00	
2	Household and Community Sanitation	64,233,510,000.00	
3	Hand Hygiene	10,314,458.20	
4	Menstrual Hygiene and Health	87,200,000.00	
5	Body and Oral Hygiene	76,390,000.00	
6	Baby WASH	75,690,000.00	
7	WASH in Health Care Facilities	2,801,400,000,00	
8	WASH in Other Institutions	77,400,000.00	
9	Food Hygiene and Safety	87,200,000.00	
10	Management of Solid and Liquid Wastes	87,200,000.00	
11	Air Pollution and Health	87,200,000.00	
12	Rodents and Vector Control	87,200,000.00	
13	Occupational Health and Safety	87,200,000.00	
14	Chemical Handling and Use	87,200,000.00	
15	Climate Change and Health	87,200,000.00	
16	WASH in Emergencies	212,690,000.00	
17	Enabling Environment	45,500,000.00	
18	Monitoring and Evaluation (all components)	100,890,000.00	
	Total	65,710,084,458.20	

The Strategic Action Plan

Program Component 1: Water, Sanitation and Hygiene (WASH)				
Sub component: Water quality monitoring				
Strategic Objective 1: Ensure safety of drinking water from point of collection to the point of use				
Strategic Initiative 1.1: Strengthen the capacity of Woreda Health offices on WQM interventions				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2022)	Target by 2025
Assess availability and operational status of the water quality monitoring facility at Woreda, towns and regional levels Build the capacity of Woreda health professionals on water quality monitoring and surveillance Equip Woreda health offices with water quality testing equipments and other required logistics Avail the necessary recording and reporting formats and communication equipment Strengthen integration between the water and health bureaus Advocate WQM and surveillance at all levels	KPI Proportion of water schemes on which WQM and surveillance is conducted	---	20%	30%
	Output indicators Number of health professionals trained on WQM and surveillance No of Woreda health offices with WQM kits No of Woredas regularly conducting WQM and surveillance based on standard formats No of Woredas with dedicated budget for WQM and surveillance activities			
Sub component: Safe Water Handling				
Strategic Objective 1: Ensure safety of drinking water from point of collection to the point of use				
Strategic Initiative 1.2: Improve point-of- use water treatment and safe storage practice				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
Identify existing opportunities and barriers for regular WTSS practices Promote proper WTSS technology options Design and implement social and behavior change communication approaches towards WTSS practices Advocate for expansion of access to affordable water treatment supplies	KPI Proportion of Households practicing proper WTSS	8%	10%	15%
	Output indicators HHWTSS manual developed and disseminated No of promotion tools prepared and disseminated for proper WTSS No of promotion conducted on WTSS technology options			

Sub-component: Household and Community Sanitation				
Strategic Objective 1: Ensure equitable access to basic and safely managed sanitation services				
Strategic Initiative 1.1: Strengthen the implementation of market based sanitation (MBS) system				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
■ Assess the status of MBS implementation and design for corrective measures ■ Expand sanitation marketing centers to more Woredas ■ Build the capacity of the health and other relevant sectors towards successful implementation of MBS ■ Promote sustainable and affordable sanitation technology options ■ Enhance community demand towards improved sanitation products and services ■ Promote use of biogas for safely managed sanitation ■ Introduce different sanitation financing options to ensure affordability ■ Promote sanitation smart subsidy to the most vulnerable and marginalized segment of community.	KPI Number of Woredas and towns with sanitation marketing centers	500	600	800
	Proportion of Households with access to basic sanitation service	2%	18%	25%
	Proportion of Households with access to safely managed sanitation service	7%	20%	35%
	Output indicators ■ No of professionals trained on MBS ■ No of promotion conducted on sanitation technology options ■ Number of improved products produced ■ Number of improved products sold ■ Presence of different sanitation financing options			
Sub-component: Household and community sanitation				

Strategic Objective 1: Ensure equitable access to improved sanitation products and services				
Strategic Initiative 1.2: Improve sanitation service in public and slum areas				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
■ Expand public and communal latrine constructions ■ Promote different public and communal latrine management options ■ Build the capacity of the health and water sectors at all levels and town administrations towards sustainable management of public and communal latrines ■ Advocate for the expansion of Faecal sludge management (FSM) services in cities and towns ■ Advocate integration of relevant actors at all levels ■ Establish learning towns/cities in urban sanitation	**Output indicators** ■ Public and communal latrine design and management manual prepared ■ Number of public and communal latrine constructed ■ Presence of public and communal latrine management system in place ■ Number of professionals trained on public and communal latrine design and management			
Sub-component: Household and Community Sanitation				
Strategic Objective 2: Ensure sustainable behavior change towards proper utilization of sanitation services and ending open defecation practice				

Strategic Initiative 2.1: Ensure tailored, context specific social and behavior change communication approaches				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
Assess existing SBCC approaches and identify success and bottlenecks Conduct behavior analysis in different context and settings Design/modify SBCC strategy based on the assessment and behavior analysis Develop communication tools and materials based on the strategy Monitor sustainability	KPI Proportion of Kebeles declared ODF	40%	55%	80%
	Output indicators SBCC strategy for sanitation developed No of communication tools and materials developed and disseminated on sanitation			
Sub-component: Household and Community Sanitation				
Strategic Objective 3: Ensure strong regulation for Household and community sanitation				
Strategic Initiative 3.1: Introduce a regulation system for household and community sanitation services and practice				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2022)	Target by 2025
■ Identify regulation gaps for household and community sanitation ■ Design regulatory framework ■ Implement regulatory interventions for household and community sanitation	■ Output indicators ■ Regulation for HH and community sanitation in place ■ Analysis on HH and community sanitation regulation conducted ■ Regulatory framework for HH and community sanitation developed			
Sub-component: Hand Hygiene				
Strategic Objective 1: Ensure equitable access to affordable hand hygiene products, facilities and services				
Strategic Initiative 1.1: Enhance supply chain for hand hygiene products, facilities and services				

Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
Identify supply chain bottlenecks & inefficiencies, including accessibility and affordability for the most vulnerable Strengthen/Establish local enterprises & other private sectors to engage in hand hygiene product manufacturing and business operations Encourage existing innovation efforts on the development of local hand hygiene products and technology options Build local capacity on operation and maintenance	KPI Proportion of HH with basic hand hygiene facilities	8%	31%	58%
	Proportion of HFs with basic hand hygiene service at point of care			
	Outcome indicators Guidelines, strategies and standards for hand hygiene products and facilities developed Number of local enterprises manufacturing hand hygiene products and facilities No of promotion done on innovation of hand hygiene technology options No of established business incubation center for hand hygiene			
Sub-component: Hand Hygiene				
Strategic Objective 2: Ensure sustainable behavior change towards hand hygiene				
Strategic Initiative 2.1: Strengthen context specific social and behavior change communication for hand hygiene				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
■ Identify existing beliefs, practices, social, cultural, economic, and political factors on hand hygiene ■ Design SBCC approach for hand hygiene ■ Develop communication tools and materials based on the designed approaches ■ Pilot and expand the SBCC interventions ■ Address hand hygiene in Pre & primary school curriculum	**KPI** Proportion of population practicing hand washing at critical times	32.8%	40%	60%
	Output indicators ■ National assessment conducted on hand hygiene ■ SBCC approach developed for hand hygiene ■ No of communication materials developed on hand hygiene ■ Hand hygiene integrated in pre and primary school curriculum			
Sub-component: Menstrual Hygiene and Health (MHH)				
Strategic Objective 1: Reduce community misconceptions and cultural taboos towards Menstruation				
Strategic Initiative 1.1: Strengthen social and behavior change communication towards MHM				

Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
■ Assess existing misconceptions and taboos on MHM ■ Increase public awareness on MHM ■ Implement targeted promotion against misconceptions and taboos	**KPI:** ■ Proportion of adolescent girls who have awareness on proper management of MHM	78.5%	80%	85%
	Output indicators ■ Assessment reports on misconceptions and taboos on MHM ■ Number of awareness creation events conducted on MHM ■ Number of promotion conducted against social taboos			
Sub-component: Menstrual Hygiene and Health MHH)				
Strategic Objective 2: Ensure equitable access to safe sanitary materials to women and girls				
Strategic Initiative 2.1: Enhance availability and affordability of safe sanitary materials				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
■ Assess the status of access to MHM products ■ Promote production/supply of sanitary materials in WASH business centers	**KPI:** ■ Proportion of women and girls in reproductive age using safe MHM products	71.5	75%	80%
■ Build the capacity of local businesses on manufacturing of MHM pads ■ Promote safe and affordable MHM technology options ■ Advocate for the effective implementation of tax exemption/reduction on MHM products	Output Indicators Assessment reports on MHM Number of promotion conducted for local business on MHM products Number of training provided for local businesses on MHM products Number of women and girls with ability to pay for MHM products			
Sub-component: Menstrual Hygiene and Health (MHH)				
Strategic Objective 3: Ensure improved knowledge and attitude of school girls and school community towards menstruation				
Strategic Initiative 3.1: Strengthen MHM promotion in schools				

Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
■ Enhance inclusion of MHM in WASH/Health/ Girls club ■ Develop and disseminate MHM promotion materials for schools	**KPI** ■ Proportion of reproductive age school girls with the required knowledge on MHM			
	Output indicators ■ Number of promotion materials developed and disseminated on MHM			
Sub-component: Menstrual Hygiene Management (MHM)				
Strategic Objective 4: Enhance access to MHM service in school				
Strategic Initiative 4.1: Strengthen expansion of MHM services in schools				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
■ Advocate for access to MHM service in schools ■ Build capacity of concerned professionals on MHM ■ Build the capacity of schools towards sustainable MHM service ■ Strengthen integration of the health and education sectors	**KPI** ■ Proportion of schools with the required MHM service			
	Output indicators ■ Number of advocacy conducted on MHM in schools ■ Number of professionals trained on MHM ■ Proportion of schools with sustainable financing for MHM services			
Sub-component: Oral, face and Body Hygiene:				
Strategic Objective 1: Ensure enhanced community awareness and sustainable behavior change towards oral, face and body hygiene practices				
Strategic Initiative 1.1: Strengthen oral, face and body hygiene promotion				

Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
■ Build the capacity of professionals on oral, face and body WASH ■ Roll out SBCC interventions on oral, face and body hygiene ■ Promote oral, face and body hygiene in schools	**KPI** ■ Proportion of population practicing proper oral hygiene			
	Proportion of population practicing proper face washing	20.6%	25%	30%
	Proportion of population practicing proper body hygiene			
	Output indicators ■ Number of professionals trained on baby WASH ■ Number of SBCC tools/materials developed and disseminated on baby WASH ■ Number of oral and body hygiene promotion materials developed and disseminated for schools			
Sub-component: Baby WASH				
Strategic Objective 1: Ensure enhanced community awareness and sustainable behavior change towards baby WASH practices				
Strategic Initiative 1.1: Strengthen child focused environmental health promotion				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
Build the capacity of professionals on baby WASH Roll out SBCC interventions on baby WASH	**KPI** Proportion of HHs practicing proper management of child faeces			
	Proportion of HHs practicing regular child face washing			
	Proportion of HHs practicing regular environmental cleaning of child play grounds			
	Output indicators ■ Number of professionals trained on baby WASH ■ Number of SBCC tools/materials developed and disseminated on baby WASH			
Sub-component: Baby WASH				
Strategic Objective 1: Ensure enhanced community awareness and sustainable behavior change towards baby WASH practices Strategic Initiative 1.2: Ensure integration of baby WASH in other health programs				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025

Promote inclusion of baby WASH in nutrition, NTD and other communicable disease programs	**Outcome indicators** Baby WASH integrated in relevant health programs			
Sub-component: WASH in Health Care Facilities				
Strategic Objective 1: Ensure WASH Service in HCFs				
Strategic Initiative 1.1: Enhance expansion of equitable access to basic WASH services in health care facilities				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
■ Expand construction of inclusive, full WASH package in health facilities ■ Maintain sustainable supply of WASH consumable supplies ■ Expand WASH facility operation and maintenance service	**KPI** Proportion of Health facilities with basic water supply services	30%	40%	50%
	Proportion of health facility with improved water supply	59%	73%	90%
	Proportion of Health facilities with basic sanitation service	59%	69%	79%
	Proportion of health facility with improved sanitation	61%	78%	86%
	Proportion of Health facilities with proper basic waste management (waste segregation, disposal)	64%	70%	80%
	Proportion of Health facilities with proper cleaning and disinfection service			
Sub-component: WASH in Health Care Facilities				
Strategic Objective 2: Ensure adherence to proper WASH practices				
Strategic Initiative 2.1: Strengthen the capacity of HCFs towards proper WASH practices				

Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
■ Build the capacity of HCWs towards proper WASH-IPC practice ■ Avail relevant WASH-IPC guidelines, manuals and protocols ■ Enhance awareness of patients towards proper WASH practices in HCFs ■ Implement WASH FIT in HCFs	**Output indicators** ■ Proportion of HCFs with the required WASH Guidelines, manuals and protocols ■ Number of HCWs trained on WASH-IPC ■ Proportion of HCFs implementing WASH promotion for patients ■ Proportion of HCF implementing WASH FIT			
Sub-component: WASH in Other Institutions				
Strategic Objective 1: Improve WASH service and practice in targeted institutions Strategic Initiative 1.1: Strengthen the capacity of Institutions towards WASH practices				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
■ Conduct evidence based advocacy on access to institutional WASH ■ Promote WASH in targeted institutions (Schools, Prisons, religious institutions, investment corridors, industry parks) ■ Build the capacity of institution managers and workers on WASH implementation	**Output Indicators** ■ Number of advocacy events conducted on institutional WASH ■ Number of WASH promotion materials prepared and disseminated to institutions ■ WASH Guidelines, manuals and protocols developed and disseminated to institutions ■ Number of institutions' staff trained on WASH			
Program Component 2: Food Hygiene and Safety				
Strategic Objective 1: Ensure enhanced community awareness and sustainable behavior change towards food hygiene practices Strategic Initiative 1.1: Strengthen promotion of food hygiene at household and different settings				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025

■ Build the capacity of professionals on food hygiene implementation ■ Roll out community awareness and SBCC interventions on food hygiene ■ Promote food hygiene in schools ■ Build the capacity of schools and other institutions on food hygiene implementation ■ Avail relevant manuals and protocols on food hygiene	**KPI:** Proportion of HHs storing cooked and non-cooked food items separately			
	Proportion of HHs with proper handling of food utensils			
	Output indicators ■ Number of professionals trained on food hygiene implementation ■ Number of food hygiene promotion materials developed and disseminated ■ Food hygiene manuals and protocols developed and disseminated			
Program Component 3: Solid and Liquid Waste Management				
Strategic Objective 1: Ensure Proper solid and liquid waste management practices Strategic Initiative 1.1: Enhance community awareness and sustainable behavior change towards solid and liquid waste management practices				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025

■ Build the capacity of professionals on solid and liquid waste management program implementation ■ Roll out awareness creation and SBCC interventions for the HHs and general public on safe handling, segregation at source, reuse/recycling and safe disposal of solid and liquid wastes. ■ Roll out public awareness interventions on pollution status of rivers, soil and vegetables and corresponding health impacts ■ Build the capacity of HHs on production of compost, biogas and use of the bio slurry ■ jointly with the agricultural and energy sectors ■ Build the capacity of HHs on preparation of soak away pit ■ Advocate for the expansion on solid and liquid waste collection and disposal/re-use/ recycle services in cities/towns	**KPI** Proportion of HHs practicing proper solid waste segregation			
	Proportion of HHs practicing proper solid waste disposal	11%	30%	50%
	Proportion of HHs practicing proper liquid waste disposal	11%	20%	50%
	Outcome indicators ■ Solid and liquid waste management manuals and protocols developed and disseminated ■ Number of professionals trained on solid and liquid waste management program implementation ■ Number of solid and liquid waste SBCC tools/ materials developed and disseminated ■ Proportion of HHs trained on solid and liquid waste management options ■ Number of advocacy events conducted on solid and liquid waste collection and disposal, reuse, recycle services			
Strategic Objective 1: Ensure Proper solid and liquid waste management practices Strategic Initiative 1.2: Enhance proper solid and liquid waste management practice in institutions.				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025

■ Build the capacity of institutional managers and workers on solid and liquid waste management standards and technology options ■ Promote proper solid and liquid waste management practices in institutions ■ Advocate for use of solid waste and waste water treatment, reuse and recycling technology options in institutions	Output indicators ■ Guidelines, manuals and protocols developed for institutional solid and liquid waste management ■ No of workers trained on solid and liquid waste management ■ Number of solid and liquid waste management promotion materials developed and disseminated to institutions ■ Number of advocacy events conducted on institutional solid and liquid waste management			
Strategic Objective 1: Ensure Proper solid and liquid waste management practices				
Strategic Initiative 1.3: Enhance strong regulation of urban solid and liquid waste management				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025
■ Advocate for implementation of strong regulation on indiscriminate disposal of solid and liquid wastes at different settings ■ Promote innovative regulatory options against reduction of the amount of non-degradable solid wastes	**Output indicators** ■ Number of advocacy events conducted on waste management regulation ■ Number of innovative regulatory options implemented			
Program Component 4: Air Pollution and Health				
Strategic Objective 1: Reduce health impacts of indoor and ambient air pollution Strategic Initiative 1.1: Enhance community awareness and practice towards healthy housing and indoor air pollution preventive practices				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025

■ Build the capacity of professionals towards implementation of indoor and outdoor air pollution prevention programs ■ Rollout awareness creation and SBCC interventions on healthful housing and indoor air pollution practices ■ Promote use of clean and renewable energy technology options	**KPI** Proportion of HHs with separate kitchen			
	Proportion of HHs using smokeless stove	6.9%	15%	25%
	Proportion of HHs with separate animal room			
	Output indicators ■ Number of health professionals trained on implementation of healthful housing and indoor air pollution prevention programs ■ No of SBCC tools/materials developed and disseminated			
Strategic Objective 1: Reduce health impacts of indoor and ambient air pollution Strategic Initiative 1.2: Strengthen implementation of air pollution management strategies				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2023)	Target by 2025

■ Build the capacity of health and other relevant sectors' professionals on air quality ad health program implementation ■ Advocate for the relevant authorities towards implementing air pollution management strategies ■ Strengthen utilization of air quality information for public awareness and alarming ■ Scale up ambient air quality monitoring system in major towns	■ Number of air quality and health strategies, guidelines, manuals, standards developed and disseminated ■ Number of professional trained on air quality and health ■ Number of advocacy events conducted on indoor and outdoor air pollution and expansion of smokeless efficient renewable energy sources ■ Number of towns/cities utilizing air quality information for public awareness and alarming ■ Number of towns with ambient air quality monitoring facilities ■ Number of studies conducted on air pollution and health			
Program Component 5: Rodents and Vector Control				
Strategic Objective 1: Reduce health impacts of rodents and vectors Strategic Initiative 1.1: Strengthen integrated rodent and vector control programs				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2022)	Target by 2025

■ Build the capacity of professionals towards implementation of vector control programs ■ Rollout awareness creation and SBCC interventions on vector control practices ■ Enhance advocacy towards the health impacts of rodent and vector control	Output indicators ■ Number of guidelines and manuals developed on vector control ■ Number of professionals trained on vector control program implementation ■ Number of vector control SBCC tools/materials developed and disseminated ■ Number of advocacy events conducted on rodent and vector control			
Program Component 6: Occupational Health and Safety (OHS)				
Strategic Objective 1: Ensure OHS in health facilities Strategic Initiative 1.1: Strengthen OHS implementation capacity in health facilities				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2022)	Target by 2025
■ Build the capacity of health care workers towards OHS ■ Avail OHS equipments and tools in HCFs ■ Establish OHS exposure and hazard monitoring and management information systems ■ Strengthen OHS program at HCF	**Output indicators** ■ Number of OHS guidelines, protocols, standards developed ■ Number of HCWs trained on OHS ■ Proportion of HFs wit implementing OHS program			

Strategic Objective 2: Reduce exposure to occupational hazards and health risks in work places Strategic Initiative 2.1: Strengthen integrated OHS improvement programs				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2022)	Target by 2025
■ Promote OSH laws, regulations, standards and guidelines for its compatibility with new forms of work and emerging health hazards ■ Conduct evidence based advocacy towards OHS ■ Roll out awareness creation interventions on OHS for workers and employers ■ Promote Implementation of OSH exposure and hazard assessment ■ Promote OHS management information system ■ Build the capacity of relevant actors on monitoring of occupational hazards and associated health risks	**Output indicators** ■ Number of promotion conducted on OHS ■ Number of advocacy events conducted on OHS ■ Number of OHS awareness creation message developed and disseminated			
Program Component 7: Chemical Handling and Use Strategic Objective 1: Reduce Exposure to Chemical Hazards Strategic Initiative 1.1: Strengthen safe management and use of chemicals				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2022)	Target by 2025
■ Advocate for the establishment of safe chemical management in Ethiopia ■ Build the capacity of professionals towards promotion of safe handling and use of chemicals ■ Rollout awareness creation and SBCC interventions on safe use of chemicals	**Output indicators** ■ Number of safe chemical handling uses stand procedures and fact sheets produced and distributed ■ Number of health workers trained on chemical handling and use standard operation procedures ■ Proportion of awareness creation campaigns/events conducted			

Program Component 8: Climate change and Health				
Strategic Objective 1:Reduce impacts of Climate Change on Health Strategic Initiative 1.1: Strengthen climate adaptation and resilience capacity of the health system				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2022)	Target by 2025
■ Build climate risk perception of the health program managers and professionals ■ Develop and implement national health adaptation plan to climate change (H-NAP) ■ Promote vulnerability of health to climate change effects	**Output indicators** ■ Number of health managers and professionals trained on health adaptation to climate change ■ Number of regions and woredas prepared and implemented local health adaptation to climate change ■ Number of advocacy events conducted on climate change and health			
Program Component 9: WASH in Emergencies				
Strategic Objective 1:Ensure establishment of WASH Emergency preparedness and response system Strategic Initiative 1.1: Strengthen WASH emergency management capacity of the health sector				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2022)	Target by 2025
■ Build WASH emergency assessment, preparedness, response and recovery capacity of the health system ■ Develop and implement comprehensive WASH emergency preparedness and response contingency plans at all levels ■ Establish WASH emergency early warning and response system	**Output indicators** ■ Number of health managers and professionals trained on WASH in emergency assessment, preparedness and response ■ Number of regions and woredas prepared and implemented context specific WASH emergency preparedness and response plans ■ Number of Regions with functional WASH emergency response steering committees and rapid response team			

Program Component 10: Enabling Environment				
Strategic Objective 1: Ensure strong institutional arrangement for EH at all levels Strategic Initiative 1.1: Strengthen the institutional arrangement for EH at all levels of the health system				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2022)	Target by 2025
Establish/strengthen dedicated structure for EH at all levels	**Output indicators** ■ Human resource need determined ■ Human resource strategy developed			
Strategic Objective 2: Ensure adequate and skilled human resource for EH program at all levels				
Strategic Initiative 2.1: Enhance the human resource capacity for EH program at all levels				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2022)	Target by 2025
■ Conduct rapid HEH human resource and technical and management capacity need assessment ■ Develop need based HEH human resource development plan/strategy ■ Develop and implement short, medium and long term accelerated capacity building training plans	**Output indicators** ■ Coordination and service delivery structures organized with skilled human power			

Strategic Objective 3: Ensure strong EH coordination Strategic Initiative 3.1: Enhance establishment of coordination structure and accountability framework for EH				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2022)	Target by 2025
Advocate for HE coordination mechanisms with accountability framework at all levels	**Output indicators** ■ National, Regional, Zonal and Woreda level coordination platforms regularly convene joint meetings ■ Number joint EH program monitoring and reviews conducted , r			
Strategic Objective 4: Ensure strong regulatory system for EH				
Strategic Initiative 4.1: Strengthen implementation of existing EH lows and regulations.				
Strategic Actions	Indicators	Baseline (2020)	Midterm Target (2022)	Target by 2025
■ Initiate review and revision/amendment of existing laws and regulations relevant to environmental health ■ Initiate development of environmental health, regulations and standards ■ Promote existing environmental health laws, regulations, and standards	**Output indicators** ■ Number of relevant laws and regulations revised/ amended ■ Number of new regulations and standards developed ■ Number of awareness creation and advocacy events conducted			

Table 5 EH Indicator Matrix

	Indicators	Type of Indicator	Level of Data Collection	Data source	Frequency of data collection	Baseline	Mid-term Target	Target by 2025
1	Water quality monitoring & HHWTSS							
	Proportion of water schemes on which WQM and surveillance is conducted	Outcome	woreda	DHIS 2	Annual		20%	30%
	Proportion of Households practicing proper WTSS	Outcome	Household	Survey Study	2 years	8%	10%	15%
	prevalence of water borne diseases	Impact	Health Facility	Survey Study	5 Years			
2	Sanitation Services							
	Number of Woredas and towns with sanitation marketing centers	Output	woreda	Admin	6 months	500	600	800
	Proportion of Households with access to basic sanitation service	Outcome	Household	DHIS 2	6 months	2%	18%	25%
	Proportion of Households with access to safely managed sanitation service	Outcome	Household	DHIS 2	6 months	7%	20%	35%
	Proportion of Kebeles declared ODF	Outcome	kebele	DHIS 2	6 months	40%	55%	80%
	prevalence of diarrhea among under 5 children	Impact	Health Facility	Survey Study	5 Years			
	Under 5 children mortality cased by diarrhea	Impact	Health Facility	Survey Study	5 Years			
	Prevalence of sanitation related NTDs	Impact	Health Facility	Survey Study	5 Years			
3	Hygiene Services							
	Proportion of HH with basic hand hygiene facilities	Outcome	Household	DHIS 2	6 months	8%	31%	58%
	Proportion of HFs with basic hand hygiene service at point of care	Outcome	Health Facility	Survey Study	2 years			
	Proportion of population practicing hand washing at critical times	Outcome	population	Survey Study	2 years	32.8%	40%	60%
	Proportion of adolescent girls who have awareness on proper management of MHM	Outcome	population	Survey Study	2 years	78.5%	80%	85%
	Proportion of women and girls in reproductive age using safe MHM products	Outcome	population	Survey Study	2 years	71.5%	75%	80%
	Proportion of reproductive age school girls with the required knowledge on MHM	Outcome	population	Survey Study	2 years			
	Proportion of schools with the required MHM service	Outcome	schools	Survey Study/ admin	Annual			
	Proportion of population practicing proper oral hygiene	Outcome	population	Survey Study	2 years			

	Proportion of population practicing proper face washing	Out-come	population	Survey Study	2 years			
	Proportion of population practicing proper body hygiene	Out-come	population	Survey Study	2 years			
	Proportion of HHs practicing proper manage-ment of child faeces	Out-come	Household	Survey Study	2 years			
	Proportion of HHs practicing regular child face washing	Out-come	Household	Survey Study	2 years			
	Proportion of HHs practicing regular environ-mental cleaning of child play grounds	Out-come	Household	Survey Study	2 years			
	Proportion of HHs storing cooked and non-cooked food items separately	Out-come	Household	Survey Study	2 years			
	Proportion of HHs with proper handling of food utensils	Out-come	Household	Survey Study	2 years			
	Prevalence of trachoma and other eye diseases	Impact	Health Facility	Survey Study	5 Years			
	Prevalence of scabies and other hygiene related skin diseases	Impact	Health Facility	Survey Study	5 years			
	Proportion of hygiene related oral diseases	Impact	Health Facility	Survey Study	5 years			
	Prevalence of food borne diseases	Impact	Health Facility	Survey Study	5 years			
4	WASH in Health Care Facilities							
	Percentage of HCF's with access to basic water supply services	Out-come	Health Facility	Survey Study	2 years	30	40	50
	Proportion of health facility with improved water supply	Out-come	Health Facility	Survey Study	2 years	59%	73%	90%
	Percentage of HCF's with access to basic Sanita-tion services	Out-come	Health Facility	Survey Study	2 years	59	69	79
	Proportion of health facility with improved sanitation	Out-come	Health Facility	Survey Study	2 years	61%	78%	86%
	Proportion of Health facilities with proper basic waste management (waste segregation, dispos-al)	Out-come	Health Facility	Survey Study	2 years	64	70	80
	Proportion of Health facilities with proper cleaning and disinfection service	Out-come	Health Facility	Survey Study	2 years			
	Prevalence of health facility aquired infections	Impact	Health Facility	Survey Study	5 years			
5	Management of Solid and Liquid Wastes							
	Proportion of HHs practicing proper solid waste segregation	Out-come	Household	Survey Study	2 years			
	Proportion of HHs practicing proper solid waste disposal	Out-come	House-hold/pop-ulation	DHIS 2	6 months	11%	30%	50%
	Proportion of HHs practicing proper liquid waste disposal	Out-come	Household	DHIS 2	6 months	11%	20%	50%

6	Air pollution and Health							
	Proportion of HHs with separate kitchen	Out-come	Household	DHIS 2	6 months			
	Proportion of HHs using smokeless stove	Out-come	Household	DHIS 2	6 months	6.9%	15%	25%
	Proportion of HHs with separate animal room	Out-come	Household	DHIS 2	6 months			
	Mortality rate of under 5 children due to Pneu-monia	Impact	Health Facility	Survey Study	5 Years			
	Prevalence of respiratory tract diseases	Impact	Health Facility	Survey Study	5 years			
7	Vector and Rodent Control							
	Prevalence of vector borne diseases	Impact	Health Facility	Survey Study	5 Years			
8	Occupational Health and Safety							
	% of injuries due to occupational hazards	Impact	Health Facility	Survey Study	5 Years			
	% of HFs implementing OHS program	Out-come	Health Facility	Survey Study	2 years			
9	Climate Change and Health							
	% of drought and flood prone Woredas with adaptation health plans	Output	Woreda	Assess. report	Annual			
	% of hot spot Woredas and health facilities emergency preparedness and response plans for climate sensitive disease outbreaks	Output	Woreda	Assess. report	Annual			
	% of HCFs using clean energy power/energy sources	Output	Health Facility	Survey Study	2 years			
	% of Woredas with WASH emergency prepared-ness and response logistic plan	Output	Woreda	Assess. report	Annual			
12	Institutional and Technical Capacity Building							
	Number of laws, regulations revised, standards and guidelines prepared	Input	National	Admin Report	Annual			
	% of Woredas, Zones and Regions put in place coordination structure	Input	Woreda/ zone/re-gion	Assess. report	Annual			
	% of health care facilities staffed with HEH professional	Input	Health Facility	Admin Report	Annual			
	% of Woredas, Zones and Regions staffed with EH professionals	Input	Woreda/ zone/re-gion	Admin Report	Annual			
13	Financing HEH Strategy							
	Percentage of health expenditure allocated to HEH programs	Input		NHA report	2 Years			
	Percentage contribution of private sector for HEH financing	Input		NHA report	2 Years			

Tanle 6. Roles and Responsibilities of the sector stakeholders

Stakeholders	Description of Roles and Responsibilities
Ministry of Health	Lead implementation of the WaSH & EH strategy, guidelines and standards Strengthen National WaSH & EH Steering and technical Committee and support the regions to establish/strengthen similar coordination structures Monitor and review National WASH and EH strategy, programs, standards, guidelines and implementation manuals Initiate and coordinate review and revision of existing laws and regulations and development of new legal frameworks Develop WASH and EH Advocacy and communication strategies and tools Mobilize domestic and international funds for implementation of WaSH & EH program interventions Monitor and evaluate EH performance and compliance with national standards and guidelines Manage WaSH & EH management information system Strengthen technical, management /leadership and logistic capacities of the National, regional, zonal, Woreda and service delivery structures Develop and implement WaSH & EH human resource strategy and plans Develop national investment plans for each WaSH & EH program components Develop and implement inter-governmental relation, support and accountability system between the federal and regional state governments in line with the house of federation policy
Other Sector Ministries	Take part in the Federal WaSH & EH steering and technical committees and platforms and support the Ministry of Health in coordination of program planning, implementation, monitoring and evaluation Integrate WaSH & EH program in to their development strategies, programs, plans and monitoring frameworks Work in partnership with the MOH in implementation of relevant laws, regulations and standards Provide need based expertise, technology and information support in development of WaSH & EH infrastructures, researches and studies
Regional State Health Bureaus	Play similar roles with MoH within the limits of regional and federal constitutional frameworks Establish regional multi-sectoral WaSH & EH coordination mechanisms and ensure their engagement in planning, monitoring and evaluation of the programs and support the Woredas to do the same Establish partnership, monitor and support civil-society organizations, NGOs and private sector to maximize their contributions in implementation of WaSH & EH programs in the region
Local Governments (Municipalities and Woredas)	Develop and implement Woreda/town WaSH & EH strategic and annual operational plans Establish locally appropriate safe collection, conveyance, and disposal of faecal sludge, solid and liquid wastes generated from residential, commercial, industrial and public institutions Monitor implementation of public and environmental protection laws, regulations and standards through its regulatory structures Provide and monitor proper management of public and communal sanitation and hygiene facilities and services Raise domestic finance for implementation of WaSH & EH program interventions Develop and implement WASH and EH behavioral change and education programs Encourage private sectors engagement in production, building, installation and operation of sanitation infrastructures and provision of solid waste and liquid waste collection, emptying, conveyance and waste recycling and technical support services Monitor and evaluate of performances of WaSH & EH interventions
Donor Partners	Provide technical, financial and monitoring support to the Ministry of Health in line with agreed country partnership framework Actively engage in coordination mechanism and support implementation of the WASH and EH program interventions Engage in development of investment plan for components of WaSH & EH strategy and support the government on fund mobilization Provide grants and loans for implementation of WaSH & EH program interventions Monitor effectiveness of grants and loans Actively engage in WaSH & EH program reviews

Civil Society Organizations/Non-Governmental Organizations	Support the government on development, implementation, monitoring and evaluation of WaSH & EH programs and plans at all levels Promote WaSH & EH and environmental health program at all levels Develop and implement WaSH & EH program in line with OWNP implementation modalities Support the government in designing tailor based WaSH & EH SBCC and advocacy materials and tools Provide business development services to private sector in areas of WaSH & EH interventions Provide capacity building support to the government at all levels Facilitate transfer of knowledge, skill and affordable technologies within and between the countries Mobilize resources for WaSH & EH programs Provide support to the government on evidence generation through operational researches Community empowerment on prevention and control of environmental pollution Support the government on strengthening multi-sectoral coordination
Formal Private Sector (sole, Plc, SCs, individual contractors, MSEs, etc)	Regulated by the government and/or organizations supporting the government/community in line with terms contractual agreement Supply (manufacturing, delivery, installation and promotion) of WaSH & EH products and services Study, design and construction of household and institutions' sanitation and hygiene facilities Emptying, collection, conveyance, treatment and disposal of municipal liquid wastes and faecal sludge Collection, conveyance, recycling, recovery, treatment and disposal of municipal solid wastes Operation and management of public sanitation and hygiene facilities Development and dissemination of sustainable behavioral communication materials Technology development or adoption Technical Services on development or preparation of strategies/programs/standards/guidelines and manuals, program/project evaluation studies, designing of management information systems, etc

7. Annexes

Annex 1: Detail costs

Annex 1 Costs of HEH Strategic Initiatives (...1)

S. No	Thematic Areas	Activities	Unit	Target	Unit Cost	Frequency /Qty	Total
1	Water quality monitoring and Safe Water Handling	Assessment	Assessment	1	15,000,000	1	15,000,000
		Training	Person	2,500	10,000	1	25,000,000
		Document preparation	Document	3	700,000	1	2,100,000
		Advocacy events	Meeting	14	400,000	4	22,400,000
		Procure and distribute water quality testing kits to woredas	Water quality testing kits	150	500,000	1	75,000,000
		Promotion (SBCC package, design, print, distribute...)	Design firm	2	500,000	1	1,000,000
			Broadcasting	14	600,000	4	33,600,000
			Print and distribute	4,000	150	1	6,000,000
2	Household and community sanitation	MBS Assessment	Assessment	1	700,000	2	1,400,000
		MBS establishment	MBS centers	729	500,000	1	364,500,000
		Training (Cascading and Basic)	Trainees	2,916	10,000	1	29,160,000
		Promotion (design, print, distribute...)	Design Firm	2	500,000	1	1,000,000
			Broadcasting	14	600,000	4	33,600,000
			Print and distribute	40,000	150	1	600,000
		Advocacy events (FSM, Integration)	Meeting	14	400,000	4	22,400,000
		Document preparation	Document	3	700,0000	1	2,100,000
		Learning town	Town	1	160,000,000	1	160,000,000
		Sanitation assessment (bottleneck, formative, SBCC)	Assessment	1	700,000	3	2,100,000
		Construct public & communal latrine	Public and communal latrines	200	1,856,250	1	371,250,000
		Construction of of new HH latrine	Household latrine	10,900,00	5,100	1	55,590,000,000
		Maintenance of existing HH latrine	Household latrine	5,000,000	1,530	1	7,650,000,000

Annex 1 Costs of HEH Strategic Initiatives (...2)

S. No	Thematic Areas	Activities	Unit	Target	Unit Cost	Frequency /Qty	Total
3	Hand Hygiene	Construction of hand hygiene infrastructure	HW facility	1	9,602,883,711	1	9,602,883,711
		HBC	HBC	1	711,574,500	1	711,574,500
4	MHH	Assessment	Assessment	1	700,000	1	700,000
		Promotion	Design Firm	2	500,000	1	1,000,000
			Broadcasting	14	600,000	4	33,600,000
			Print and distribute	40,000	150	1	6,000,000
		Advocacy Events	Meeting	14	400,000	4	24,400,000
		Document Preparation	Document	1	700,00	1	700,000
		Training	Trainees	2,280	10,000	1	22,800,000
5	Body and Oral Hygiene	Assessment	Assessment	1	700,000	1	700,000
		Training	Trainees	1,129	10,000	1	11,290,000
		Promotion	Design Firm	2	500,000	1	1,000,000
			Broadcasting	14	600,000	4	33,600, 000
			Print and distribute	40,000	150	1	6,000,000
		Advocacy Events	Meetings	14	400,000	4	24,400,000
		Document preparation	Document	1	700,000	1	1,400,000
6	Baby WASH	Assessment	Assessment	1	700,000	1	700,000
		Training	Trainees	1,129	10,000	1	11,290,000
		Promotion	Design Firm	2	500,000	1	1,000,000
			Broadcasting	14	600,000	4	33,600, 000
			Print and distribute	40,000	150	1	6,000,000
		Advocacy Events	Meetings	14	400,000	4	24,400,000
		Document preparation	Document	1	700,000	1	1,400,000

Annex 1 Costs of HEH Strategic Initiatives (... 3)

S. No	Thematic Areas	Activities	Unit	Target	Unit Cost	Frequency /Qty	Total
7	WASH in HCFs	Develop water supply system for Health centers	Water supply facility	600	840,000	1	504,000,000
		Construct Improved sanitation and hygiene facilities for Health centers	Improved latrine and hand washing facility	500	1,125,000	1	562,500,000
		Construct placenta pit for Health Centers	Placenta pit	500	127,500	1	63,750,000
		Construct Incinerator for Health Centers	Incinerator	300	350,000	1	105,000,000
		Develop water supply system for Health Posts	Water supply facility	1,000	840,000	1	840,000,000
		Construct Improved sanitation and hygiene facilities for Health Posts	Improved latrine and hand washing facility	800	525,000	1	420,000,000
		Construct placenta pit for Health Posts	Placenta pit	500	127,500	1	63,750,000
		Construct Incinerator for Health Posts	Incinerator	300	350,000	2	175,000,000
		Conduct Assessment	Assessment	20	700,000	2	28,000,000
		Advocacy Events	Workshop	14	400,000	1	11,200,000
		Prepare documents	Document	10	700,000	1	7,000,000
		Promotion	Design Firm	5	500,000	1	2,500,000
			Broadcasting	12	600,000	1	7,200,000
			Print and distribute	10,000	150	1	1,500,000
		Organize Training	Trainees	1,000	10,000	1	10,000,000

Annex 1 Costs of HEH Strategic Initiatives (...4)

S. No	Thematic Areas	Activities	Unit	Target	Unit Cost	Frequency /Qty	Total
8	WASH in other institutions	Assessment	Assessment	6	700,000	1	4,200,000
		Advocacy Events	Meeting	14	400,000	4	22,400,000
		Document preparation	document	6	700,000	1	4,200,000
		Promotion	Design Firm	2	500,000	1	1,000,000
			Broadcasting	14	600,000	4	33,600,000
			Print and distribute	4,000	150	1	6,000,000
		Training	Trainees	600	10,000	1	6,000,000
9	Food hygiene	Assessment	Assessment	1	700,00	1	700,000
		Advocacy Events	Meeting	14	400,000	4	22,400,000
		Document preparation	document	1	700,000	1	700,000
		Promotion	Design Firm	2	500,000	1	1,000,000
			Broadcasting	14	600,000	4	33,600,000
			Print and distribute	4,000	150	1	6,000,000
		Training	Trainees	2,280	10,000	1	22,800,000
10	Solid and Liquid waste management	Assessment	Assessment	1	7	1	700,000
		Advocacy Events	Meeting	14	4	4	22,400,000
		Document preparation	document	1	7	1	700,000
		Promotion	Design Firm	2	5	1	1,000,000
			Broadcasting	14	6	4	33,600,000
			Print and distribute	4,000	150	1	6,000,000
		Training	Trainees	2,280	10,000	1	22,800,000

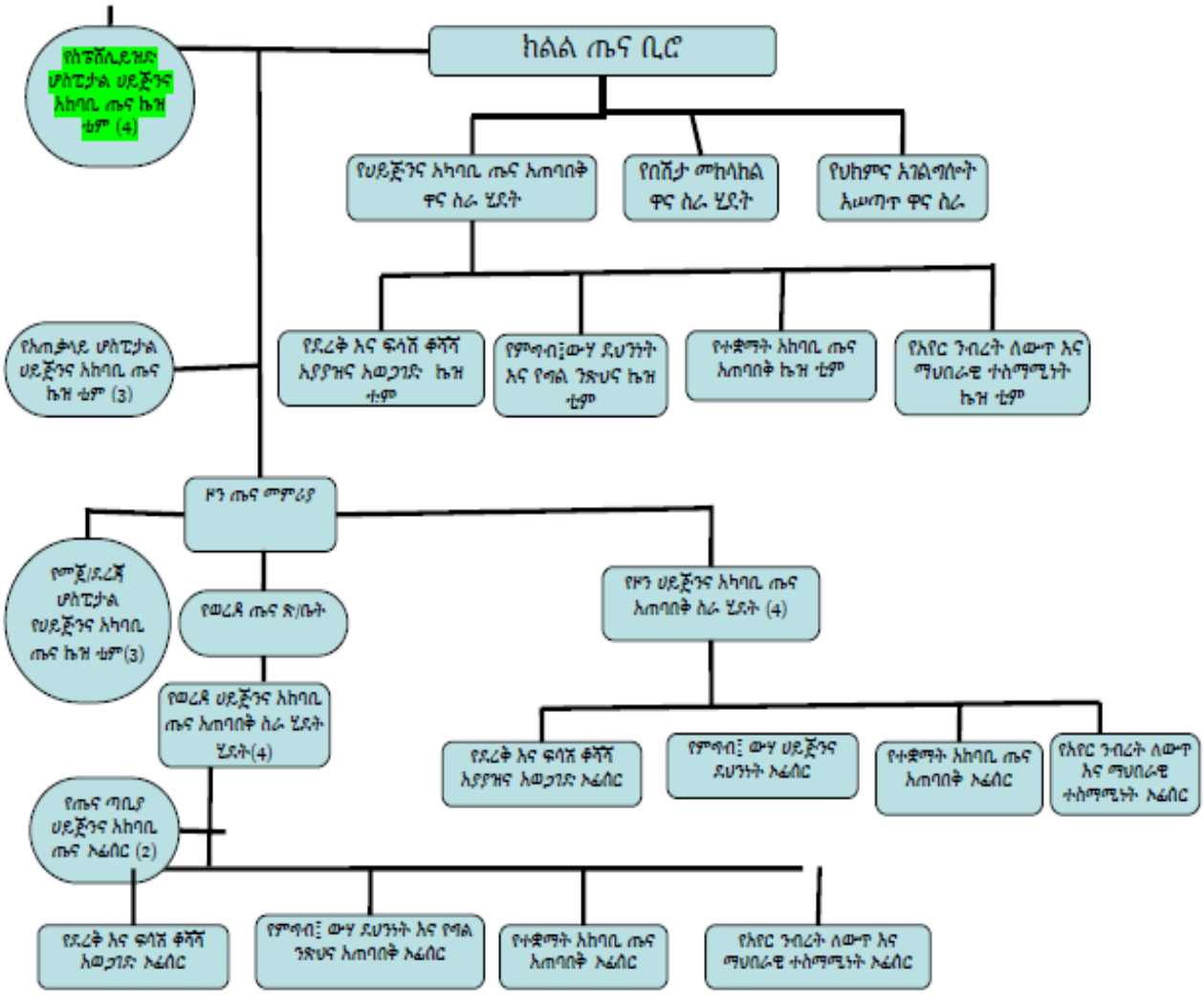
Annex 1 Costs of HEH Strategic Initiatives (...5)

S. No	Thematic Areas	Activities	Unit	Target	Unit Cost	Frequency /Qty	Total
11	Air pollution and Health	Assessment	Assessment	1	7	1	700,000
		Advocacy Events	Meeting	14	4	4	22,400,000
		Document preparation	document	1	7	1	700,000
		Promotion	Design Firm	2	5	1	1,000,000
			Broadcasting	14	6	4	33,600,000
			Print and distribute	4,000	150	1	6,000,000
		Training	Trainees	2,280	10,000	1	22,800,000
12	Rodent and Vector Control	Assessment	Assessment	1	7	1	700,000
		Advocacy Events	Meeting	14	4	4	22,400,000
		Document preparation	document	1	7	1	700,000
		Promotion	Design Firm	2	5	1	1,000,000
			Broadcasting	14	6	4	33,600,000
			Print and distribute	4,000	150	1	6,000,000
		Training	Trainees	2,280	10,000	1	22,800,000
13	Occupational Health and Safety	Assessment	Assessment	1	7	1	700,000
		Advocacy Events	Meeting	14	4	4	22,400,000
		Document preparation	Document	1	7	1	700,000
		Promotion	Design Firm	2	5	1	1,000,000
			Broadcasting	14	6	4	33,600,000
			Print and distribute	4,000	150	1	6,000,000
		Training	Trainees	2,280	10,000	1	22,800,000

Annex 1 Costs of HEH Strategic Initiatives (...6)

S. No	Thematic Areas	Activities	Unit	Target	Unit Cost	Frequency /Qty	Total
14	Chemical Handling and Use	Assessment	Assessment	1	7	1	700,000
		Advocacy Events	Meeting	14	4	4	22,400,000
		Document preparation	Document	1	7	1	700,000
		Promotion	Design Firm	2	5	1	1,000,000
			Broadcasting	14	6	4	33,600,000
			Print and distribute	4,000	150	1	6,000,000
		Training	Trainees	2,280	10,000	1	22,800,000
15	Climate Change and Health	Assessment	Assessment	1	7	1	700,000
		Advocacy Events	Meeting	14	4	4	22,400,000
		Document preparation	Document	1	7	1	700,000
		Promotion	Design Firm	2	5	1	1,000,000
			Broadcasting	14	6	4	33,600,000
			Print and distribute	4,000	150	1	6,000,000
		Training	Trainees	2,280	10,000	1	22,800,000
16	WASH in Emergencies	Assessment	Assessment	1	700,000	1	700,000
		Training	Trainees	1,129	10,000	1	11,290,000
		Document Preparation	Document	1	700,000	1	700,000
		Emergency supplies	Logistics/materials	1	50,000,000	4	200,000,000
17	Enabling Environment	Coordination platforms	Meeting	14	100,000	16	22,400,000
		Advocacy Events	Meeting	14	400,000	4	22,400,000
		Document preparation/regulation	Documents	1	700,000	1	700,000
18	M & E (for all components)	Integrated SS	Person	240	10,000	8	19,200,000
		Survey	Survey	1	50,000,000	1	50,000,000
		Indicator revision and training	Trainees	1,129	10,000	4	11,290,000
		Publication	lump sum	1	100,000	4	400,000
		Learning and Experience sharing	In country/person	400	10,000	4	16,000,000
			International / person	10	100,000	4	4,000,000

Annex 2 Copy of Organizational structure of HEH at Regional Bureaus and town administration



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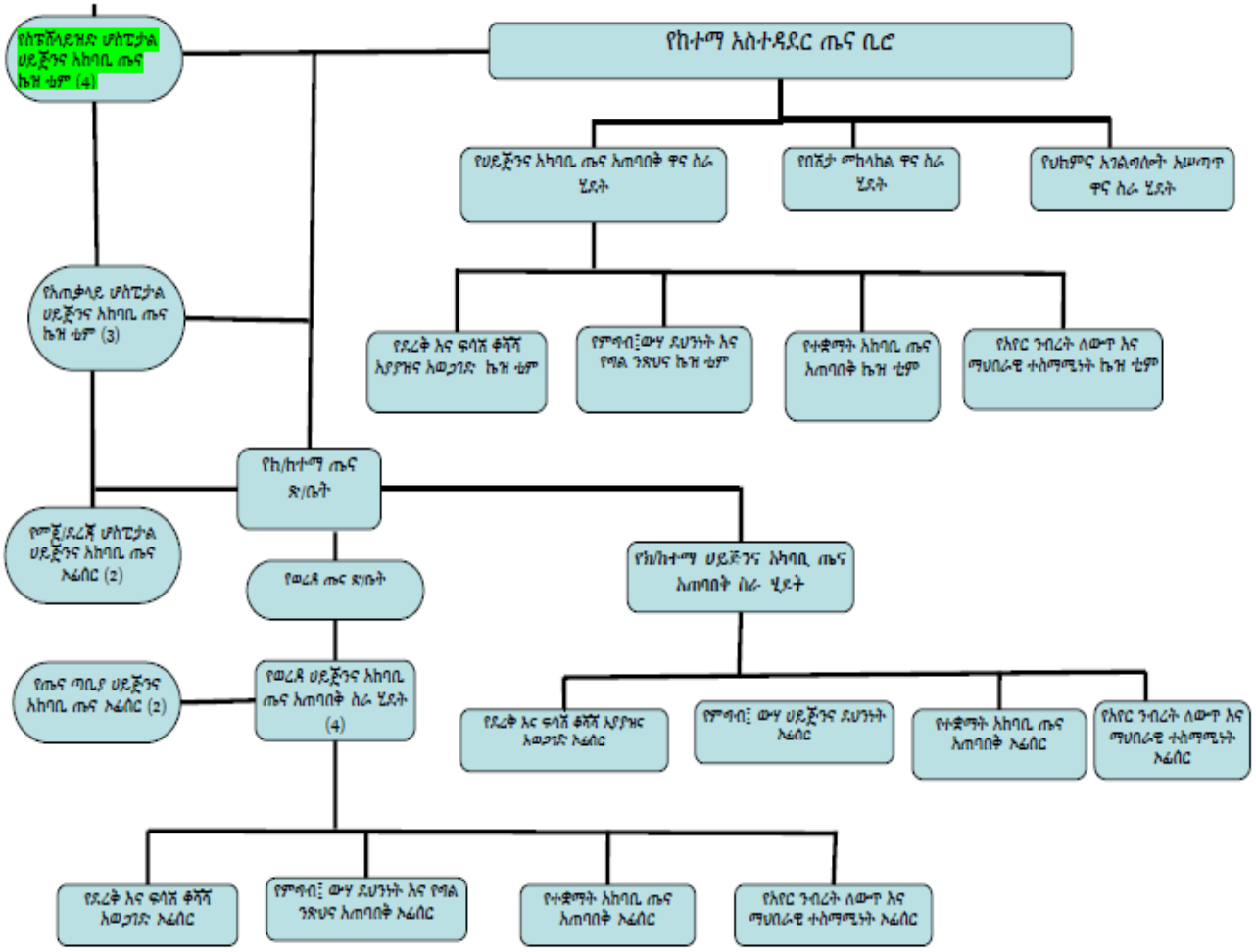

National WASH and Environmental Health Strategy (2021-2025)

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