

# Building adaptation to climate change in health in least developed countries through resilient Water, Sanitation and Hygiene (WASH) Project



**Climate Change and Health - Ethiopia**  
*Lesson learned documentation*  
**WASH Sector**

2016



**World Health  
Organization**



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## Forward - Ministry of Water Irrigation and Electricity



***Semunesh Golla, Hydrology and water quality Directorate Director; Ministry of Water Irrigation and Electricity***

Water is the most essential thing for health and human existence. The availability of safe, adequate and sustainable water is the right of all people for drinking, cooking and personal and domestic hygiene. The government of Ethiopia designed Water Sector Policy and Water Sector Development Universal Access Plan (UAP) I and revised UAP II, and achieved significant progress in the provision of safe water supply both in the urban and the rural settings.

Even though the government driven policy and implementation brings significant change in the provision of water, still one third of the population is not able to get safe drinking water and the safety of improved water source from source to end point is not guaranteed. In addition to that climate change poses threat on the quality and quantity of water as well as the existence of water schemes. Due to this, people are exposed to different water borne diseases, scabies and other health risks.

The Ministry of Water Irrigation and Electricity (MoW-IE) has already developed its water resource management policy. The issue of disaster management - climate change in terms of drought and flood has been incorporated in the policy. In addition to that, we have also designed a strategy to implement it.

To effectively address the impacts of climate change on the water sector, we are working on the risk assessment and risk management approach of building adaptation to climate change in health in least developed countries through resilient WASH project.

So far, the Ministry of Water, Irrigation and Electricity has developed Climate Resilient Water Safety Plan (CR-WSP) implementation strategic framework (2016-2020), CR-WSP implementation guidelines for urban managed piped drinking water supplies, CR-WSP implementation guidelines for community managed rural drinking water supplies and a comprehensive training manual.

Furthermore, the ministry has started implementing this project in 12 sites in four regions and we have witnessed ownership from the community and that is a great result. The process is participatory and bases on the reality of specific water schemes. It helps understand people at a community level that unless we do our water source climate resilient, both the quality of quantity of our water scheme might be compromised. They also understand that this will result decline in their productivity, health and income.

Finally I reiterate the need to scale up CR-WSP and also integrate it with all one WASH program in the country to ensure both water quality and quantity and call up on all stakeholders to join hand together to make this reality.

***Semunesh Golla,***

***Director, Hydrology and water quality Directorate of Ministry of Water Irrigation and Electricity***

# 1. INTRODUCTION

Climate change is becoming the most common word used these days on media and by policy makers than ever. This is because of its destructive impact on human economy, health and livelihood is very clear and massive. The direct effect of climate change includes increased flood, drought, and increased frequency of intense storms and heat stress, posing great threat to human health and lives.

According to The World Health Organization (WHO), climate change contributes to the excess deaths of 140,000 people each year since 1970 worldwide with highest impacts on Africa where there is poor capacity to respond. Climate change has a great impact on a range of communicable and non-communicable diseases including malnutrition, diarrheal disease and vector-borne diseases such as malaria and dengue.

Unfortunately, the future climate change projection shows the worst is yet to come with potentially catastrophic risk to human health and lives. Between 2030 and 2050, climate change is expected to cause 250,000 additional deaths per year, from malnutrition, malaria, diarrhea and heat stress. The direct damage costs to health is estimated to be between US\$ 2-4 billion per year by 2030. (*Quantitative risk assessment of the effects of climate change on selected causes of death, 2030-2050, WHO*)

In 2016 alone, more than ten million Ethiopians are affected by the El Nino caused drought. In addition to that, another climate change incident called La Nino caused flood contributed to the death of 136 people, affecting 195,987 people and the loss of 33,446 cattle until May21, 2016. (The reporter: May 21,2016)

The link between climate change and Water, Sanitation and Hygiene (WASH) is very strong as climate change highly affects the quality and quantity of water. WASH has a very significant impact on health and in particular influence those diseases most likely to be exacerbated by climate change. The 2016 drought in Ethiopia caused scabies outbreak that affects more than 370,000 people in Amhara state. It also causes the Acute Watery Diarrhea outbreak in many parts of Ethiopia including the capital city Addis Ababa.

There is evidence from previous work by UK Department for International Development (DFID) and WHO that WASH infrastructure is at risk from climate change and that unless infrastructure and management systems are made more resilient to future climate change, there will be significant health, social and economic impacts, and achievement of the Sustainable Development Goals (SDGs) will be undermined.

To tackle these problems, DFID funds building adaptation to climate change in health in least developed countries through resilient WASH project to be implemented by WHO in four countries. Ethiopia is selected among Bangladesh, Nepal and Tanzania as pilot country and launched the program on March 2015.

With the leadership of the national WASH sector, this project developed policy documents including Climate Resilient Water Safety Plan (CR-WSP) framework and guidelines for both rural and urban water supply systems. The WASH sector is led by the Ministry of Water, Irrigation and Electricity.

CR-WSP started implementation in 12 pilot sites in four regions. It also provided capacity building trainings on CR-WSP for more than 429 participants. The project, in the current pilot sites, benefits more than 618,406 people and gives CR-WSP training for partners working on WASH. With the leadership of the Ministry of Water Irrigation and Electricity, The project has worked in Partnership with the UNICEF, WaterAid Ethiopia, Community Water Sanitation and Hgiene (COWASH), German Agro Action, Millennium Water alliance, Drop of Water and give CR-WSP trainings for 88 participants.

## 2. The purpose of the documentation

The purpose of this document is to share Ethiopia's experience in the implementation of the *building adaptation to climate change in health in least developed countries through WASH* project especially the WASH sector with development partners, government bodies and project implementing member countries.

Moreover; the Ministry of Water, Irrigation and Electricity is confident that Ethiopia is ready and committed to scale up by incorporating climate change resilient components to the Health Sector Transformation Plan (HSTP), and Growth and Transformation Plan II (GTPII) 2016-2020 and sharing this documentation with others is crucial for adapting climate resilient to WASH programs.

### 3. Water Sanitation and Hygiene (WASH)

#### Water

Water is primarily crucial for life, health and human dignity; hence, the health of any community is entirely depends on the availability of safe, adequate and sustainable water. Both safety and adequacy of drinking water are essential as they are equally important to reduce the occurrence of water-related health problems. (JMP, 2015)

Unsafe water, inadequate sanitation and insufficient hygiene are among the top 10 leading causes of disease worldwide. Each year at least 3 million children under age 5 die from environment-related diseases, including acute respiratory infection and diarrhea more than the entire under-five population of Austria, Belgium, the Netherlands, Portugal and Switzerland combined. (HDR 2011)

The WHO 3rd (2004) and 4th (2011) editions of the Guidelines for Drinking-water quality, outline a preventive management “framework for safe drinking-water” aiming at health-based water quality target which diverge from the traditional thinking and focus of testing end pipe drinking water. Preventive management “framework for safe drinking-water” can be achieved through preparation and implementation of Water Safety Plans which is risk assessment and risk-based management of drinking-water from source to consumers.

#### 4. The Ethiopian context

In the horn of Africa, Ethiopia is nation of an estimated 90 million people. It is geographically diversified with high and rugged mountains, flat topped plateau, deep gorges, river valleys and 12 basins with 1.14 million km<sup>2</sup> total surface area. National prevalence of open defecation declined from 82% in 2000 to 34% in 2012. (progress on Drinking water and sanitation). The current figure shows more decline to be 28%.

The Ministry of health has developed its first ever National vulnerability and adaptation assesment of health to climate change in september 2015. The purpose of the document is to asses climate vulnerability

#### Findings of vulnerability and adaption assessment

- **Ethiopia has become warmer** over the past century and human-induced climate change will bring further warming over the next century at unprecedented rates.
- **Flash floods and seasonal river floods** were found to **occur regularly** throughout the country **inflicting significant losses** in terms of human life as well as productive capital.

- **Frequent drought**

Drought is the most important climate related natural hazard impacting the country from time to time. Recurrent drought events in the past have resulted in huge loss of life and property as well as migration of people. (NAPA, 2007)

Drought contributes highly to the dramatic reduction quality and quantity of water.

El Niño Years	Drought/ Famine	Regions Affected	Impact on human life and property
1965	1964-1966	Tigray and Wollo	About 1.5 million people affected
1972-1973	1973-1974	Tigray and Wollo	0.2 million people and 30% of livestock dead
	1978-79	Southern Ethiopia	1.4 million
	1982	Northern Ethiopia	2 million People affected
1982-1983	1983-1984	Ethiopia	8 million affected
1986-87	1987-1988	Ethiopia	7 million people affected
1991-92	1990-1992	North, Eastern, Southeastern Ethiopia	About 0.5 million people affected
1993	1993-94	Tigray and Wollo	7.6 People affected
2000		Ethiopia	About 10.5 million people affected
2002/2003	2002/2003		13 million people in need of food assistance
	2005-2006	Somali region	1.75 million people need food assistance
2006-2007	2007-2008	Arsi, West Arsi, and West Shoa	3.4 million people need emergency food relief
2009-2010	2009-2010	Eastern and Southern Tigray, Eastern Amhara, Eastern Oromia, Somali, SNNP, Gambella	5.2 million people require emergency food assistance

Source: Adapted from MDGs Country Draft Report, 2010.



- **Diarrhea**

Communicable diseases associated with drinking of unsafe water, inadequate sanitation and poor hygiene such as diarrheal diseases, intestinal parasitic infection, and trachoma remain the most prevailing public health problems in the country and are among the ten top leading causes of morbidities.

Between the years 2006-2011, there was an outbreak of acute watery diarrhea (AWD) in Ethiopia which resulted in a number of morbidities and deaths in different parts of the country. Even though there observed a declining trend in infant and child mortality over the past 15 years (EDHS 2000, 2005 and 2011), yet diarrheal diseases remain the third leading causes of under-five mortality in the country accounting for 19.97% of all deaths (WHO, 2013).

Risk assessments of AWD outbreaks have identified that contamination of water supply sources due to poor operation and maintenance, unsafe water storage practices at household level and inadequate sanitation and poor hygiene were among other responsible associated factors including institutional, environmental and behavioral factors.

## **4. Back ground on Ethiopian WASH**

### **Problem**

Even though the government of Ethiopia has done great achievement in expanding water provision over the years, still 43 percent of the population uses unimproved water sources like untreated river and spring water for drinking.

About 17% of childhood deaths are associated with diarrhea (EDHS 2011) which remains the third leading cause of under-five mortality attributed to poor water, sanitation and hygiene.

Water quality testing (monitoring) and sanitary surveys to all water supplies are not conducted on regular basis mainly due to shortage of skilled human resources and lack of water quality testing equipment and reagents, lack of uniform performance monitoring system between regions and shortage of finance and transport. Focus has been on increasing access than ensuring safety.

Even when testing is done to sort out contamination suspicion, results are obtained too late after many people consumed unsafe water and affected by hazards. And the test result is limited to provide information on where and when the water is contaminated in the water supply systems.

### **The need for Climate Resilient Water Safety Plan (CR-WSP)**

According to rapid drinking water quality assessment (WHO/UNICEF 2010), about one-third of 1,602 tested water samples (32%) from improved sources did not comply with the national standards and WHO guidelines for microbiological quality.

Most of the drinking water contamination in the water source is occurred due to flood. The incidents of flood are increasing and become unpredictable as it is highly linked with climate change. Therefore, it is very crucial to introduce and implement CR-WSP to ensure the quality and quantity of water from source to household. This is to decrease the incidents of water borne diseases.



## Ethiopia's effort

The Government of Ethiopia designed Water Sector Policy that helps achieve significant progress in the provision of safe water supply.

National Drinking Water Quality Standard Specification was issued in 2001. However, in Ethiopia, systematic and comprehensive drinking water quality monitoring and regulator is still lacking.

The WASH sector in collaboration with development partners conducted a joint technical review on water quality and safety in Oromia state in May 2012.

Major gaps were identified and presented on the 5th WASH Multi-stakeholders' Forum (MSF-5, Nov 2012) and Water Safety Plan was identified as one of the five major undertakings to be implemented in Ethiopia.

## 5. What has been done Under this project?

Three policy documents on CR-WSP have been developed, published and distributed to pertinent bodies. CR-WSP has been implemented in 12 sites (nine urban and three rural sites) in four regions.

### 5.1 Capacity building/ sensitization training

Capacity building training has been conducted for many stakeholders to sensitize CR-WSP and other policies. Then detail concept note has been prepared and pilot implementation sites have been identified.

### 5.2 TOT training on CR-WSP

International Training of Trainees (TOT) has been given on December 2014 on CR-WSP by WHO head quarter professionals to 25 selected participants from every pertinent sectors including Water, Health, Environment, Agriculture, Meteorology, University and partners.



***CR-WSP TOT training participants on 16-19 Dec. 2014***

### 5.3 CR-WSP policy and guideline documents

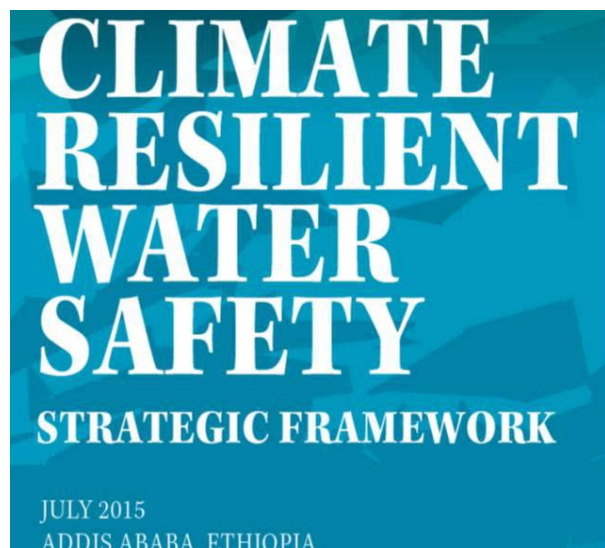
Building adaptation to climate change in health in least developed countries through WASH project led by the Ministry of Water, Irrigation and Electricity (MoWIE) developed, reviewed, and finalized three CR-WSP documents on July 2015.

CR-WSP Strategic Framework, CR-WSP implementation guidelines for community managed rural drinking water supplies and CR-WSP implementation guidelines for urban managed piped drinking water supplies are the three documents produced. The documents have been validated in the presence of relevant stakeholders and other WASH development partners by the MoWIE. Impacts of climate change on water sector have been considered in all steps of Water Safety planning implementation.

The documents have been published and launched on the 7th WASH Multi Stakeholder Forum on 16 Dec, 2015 at Addis Ababa Hilton. They have been distributed to regional water and health bureaus pilot implementation sites and other relevant WASH development partners.

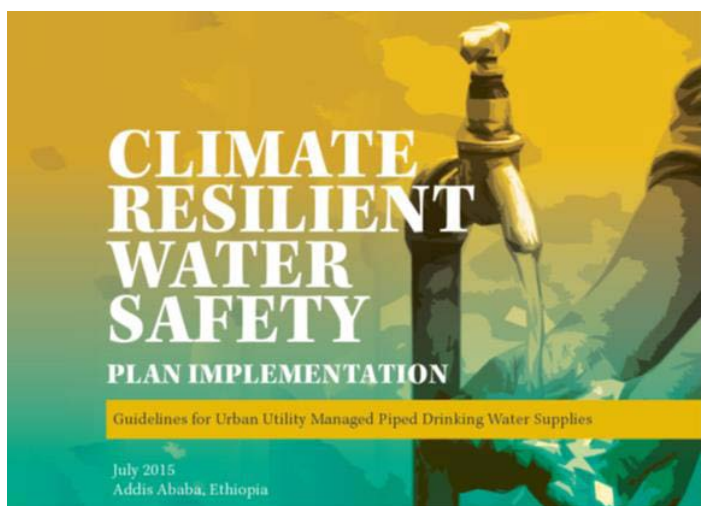
### 5.3.1 CR-WSP implementation strategic framework (Jan 2016-Dec. 2020)

The Ministry of Water Irrigation and Electricity believe that it is a high time to have a roadmap for assurance of safe drinking-water from source to point of use which is climate resilient and implemented as part of one WASH program.



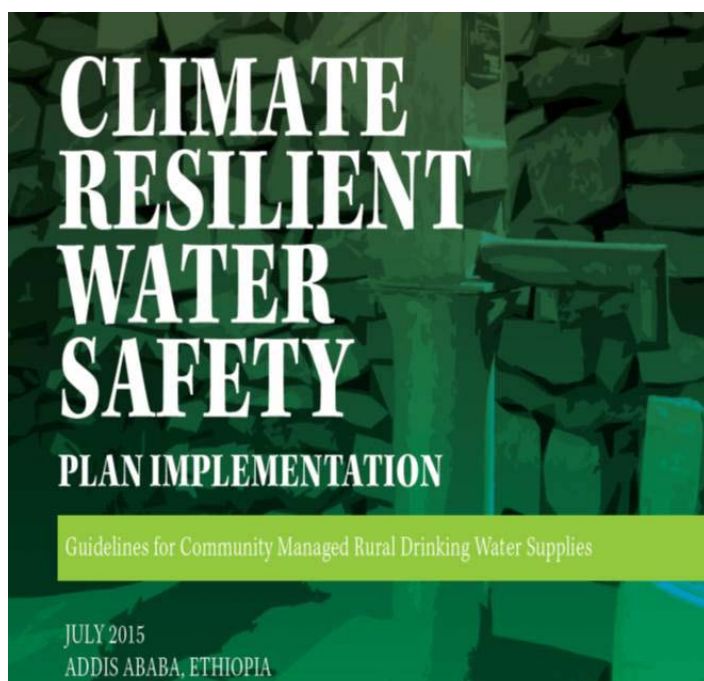
### 5.3.2 CR-WSP implementation guidelines for urban managed piped drinking water supplies

The purpose of the urban CR-WSP guidelines is to provide step-by-step guidance to the operators and managers of the large, medium and small town water supplies with conventional water supply systems.



### 5.3.3 CR-WSP implementation guidelines for community managed rural drinking water supplies

This guidelines is designed to engage, empower and provide a step by step guidance to caretakers of the water supply systems managed by rural WASH boards and WASH committees (WASHCOs). It focuses on how to plan, implement, monitor and evaluate effective risk assessments and risk management including consideration of issues related to climate variability.



## 5.4 Pilot implementation sites

### 5.4.1 Cascading CR-WSP trainings

CR-WSP training has been given in four regional states, twelve sites (nine urban and three rural water supplies), for 429 participants including operators, caretakers, water quality technicians, environmental health workers, natural resource experts and others. The CR-WSP implementation will benefit 618,406 people. During the five days training participants have done risk assessment of their own area starting from water source to household level and present their report. Following that, they have developed an incremental improvement plan based on risk assessment result and did water quality testing as baseline assessment.



## This helps

- Water utilities to have better understanding of their respective water supply system (they didn't have prior knowledge on how water can be contaminated).
- Each water utilities to have better understanding of the hazards and hazardous events that threaten the water supply system



*A farmer explaining the status of common water point in his village*



*CR-WSP training in Debreworkos town*



*Water pipes that are exposed in the open is common in many places during the assessment*



*Participants assessing risk in one of the water reservoir in Debreworkos town*



*In most of the assessments, we have found out that the water container that people use is not clean and might cause water borne diseases like Diarrhea*





*Trainees visiting deep well water source that stops functioning for three months in the rainy season due to flood in Debre markos town*

## 5.5 Improvement actions

### 5.5.1 Diversion Ditch and retaining wall

Most of the water sources in the pilot areas didn't consider the impact of flood during construction. Therefore, there are water sources and distribution centers that do not function during the rainy seasons. But after this project, the CR-WSP teams took the initiative and mobilize their respective communities and resources to dig diversion ditch to safeguard their water sources.



*The community in Elly kebele mobilizes its own resources and digging a 250 meters diversion ditch to protect the only water source that benefits more than 6,000 people. During the rainy season, flood is a great challenge not only for the contamination of the water source, but also for its existence.*





***Lalibela kebele is found in South Achefer woreda of Amhara state. The water source in this kebele is exposed to the risk of damage and contamination due to flood especially in the rainy season. Following the CR-WSP training, the CR-WSP team mobilizes the community to dig a diversion ditch to protect the water scheme from potential damage and contamination risks.***

***Now, they are even planning and budgeting the construction of standard diversion ditch to protect water source from flood hazard (Zabzi River) for long term. They also made necessary preparation for planting indigenous vegetation around water sources to protect heavy flood and improve water recharge and fencing of the water source.***



***This water source is found in Debre-markos town of Amhara region. It has the capacity of providing 10 liters per second. It is exposed to flood because there is a river that runs close to the source. When there is a strong rain, it overflows towards the source with dirt and chemicals that is risky to human health. After the CR-WSP training, they are now completing necessary preparation including budgeting to construct a 70m long retaining wall with one meter high. The retaining wall will help divert the flood to an existing wider natural gully.***





***There are two water sources constructed at the same time, in Wolaita town kunto area in the Southern Nations Nationalities and Peoples' State. The two water sources, 30 meters apart, were frequently compromised by the flood following the overflow of Woja River that starts at the foot of Dabota mountain. That reflected negatively both on the quality and quantity of the water supply to the town.***

***Due to lack of preventive measures, one of the two water source in Kunta area has stopped giving service due to flood. After CR-WSP training, a long term solution has been designed to protect the Kunto water source from destruction. A diversion ditch and this 5m height and 14 m width long retention wall has been constructed. The recent Ethiopian rainy season 2016 was the strongest one due to the extremely overwhelming flood from the woja river. Had it not been for the diversion ditch and retention wall, the remaining water source would have been completely destroyed.***



### 5.5.2 Construction of standard fences with secured gates in the water sources, reservoirs and public water points.

Before the training, almost the majority of public water points didn't have a fence and with full of both liquid and solid wastes.



***A recently fenced water point in Butajira town that used to be open and exposed to solid and liquid wastes***

Elly kebele is one of the three community managed rural drinking water supplies sample sites that CR-WSP is implementing.

Shafi Bedru, Meskan woreda water, mineral and energy office staff, said that after the CR-WSP training, they have visited every water institution in Elly kebele. They have witnessed the only Elly water source is at risk from flood and surrounding farming activities, water leakages, unfenced water institutions, and uncovered manholes. Therefore, the kebele water committee, woreda water office and woreda office head together developed an improvement plan.



***Shafi showing the farming activities near the water source in Elly kebele***

“This is Elly kebele deep water well. First of all the water source is at risk of flood. It didn't have fence and there was also massive leakage. As you have seen, farming activities is performed almost on the water source. Based on our CR-WSP training, we have agreed with the Elly administration that the farming activity in this closeness might cause chemical contamination and must end soon. They are in the process of compensating farmers for their farmland. After clearing the land from farming activities, we have planned to plant indigenous trees to protect the water table and also made the water source climate resilient,” Shafi said.



*The community in Durbete town constructed this fence by self-initiation and resource after the CR-WSP team raises the awareness*

**5.5.3 Covering manholes with metal sheets:** most of the manholes in the project area were covered under the soil and was difficult to maintain and not easy to know if there is a breakage or not. In some places, children are playing with it because it is exposed to the open.



*Manholes covered with metal sheet that prevent contamination and eases maintenance*

**5.5.4 Substituting old and rusty water Reservoir** in some pilot projects the participants realized that the old, rusty and broken water reservoir might cause diseases in addition to water waste. Therefore, they have convinced the community and raise money to change it with the new one.



*This water tanker was leaking and has been rusted for many years in Lalibela Kebele of Amhara region. They have recently ordered a new one and ready to substitute it.*

**5.5.5 Replacement of old and damaged galvanized pipelines with HDPE (plastic).** Currently CR-WSP teams has replaced the old and damaged galvanized pipelines with a new plastic (HDPE) pipelines.

**5.5.6 Road to water supplies sources have been constructed** through community mobilization to facilitate access.

## **5.6 CR-WSP partnership and meeting**

### **Trainings to partners**

- MoWIE/ WHO supported WaterAid Ethiopia in capacity building training on CR-WSP and Water Quality. 27 participants from 20 towns of the country attended the training.



- MoWIE/WHO supported COWASH in capacity building training on CR- WSP. 36 participants from 5 COWASH project regions attended the training.
- UNICEF/ WHO, has given CR-WSP training to 35 ONE WASH implementing participants from 8 towns & Gambella Refugee camp. The participants were from water utilities, UNICEF, Water and Health Bureaus.



***COWASH CR-WSP trainees doing risk assessment in Bishoftu town in Nov 22-27, 2015***

## **7th WASH Multi-Sector Forum (MSF)**

The seventh WASH MSF was held in Addis Ababa on 16 Dec. 2015 at the Addis Ababa Hilton Hotel bringing government bodies, NGOs, development partners and the UN agencies that work on WASH.

Ato Motuma Mekassa, Minister of Water, Irrigation and Electricity and chairman of the national WASH steering committee, said Ethiopia has made great effort so far with its partners to provide WASH services to its people and will further work together to sustain the gains and achieve better.

Motuma said to achieve the “Universal access for all” of WASH services, all WASH actors need to reinforce their approach to equity and redirect financial and technical resources to remote, dry and hydrogeological challenged corners of Ethiopia.

Motuma recalls that WASH implementation in Ethiopia has been project based and lacks harmonization of funding and implementation approaches. The 2013 launched ONE WASH national program, on the other hand, brought together four ministries and several development partners together with a total budget of 2.4 billion USD for seven years. According to him, when fully funded, it would be the largest ever WASH sector program in the world.

Ms. Gillian Mellsop, UNICEF Representative to Ethiopia and donor Co-chair for the WASH sector highlighted development partners’ renewed commitment to continued support to the sector through aligning efforts to the Ethiopian Growth and Transformation Plan (GTP) and working towards the attainment of the sustainable Development Goals.

She said the development partners will support WASH component of the GTP to advance sanitation and hygiene promotion and marketing in zones with high stunting, diarrhea and trachoma prevalence; innovate to improve the functionality and resilience of water supply in water insecure Woredas; intensify urban sanitation and pro-poor water service delivery; and strengthen sector coordination for development and emergency programming.

The Ministry of Water, Irrigation and Electricity launched three policy documents on the same event that aims at ensuring water safety plan that is resilient to climate change. The documents are CR-WSP strategic Framework, CR-WSP implementation guidelines for community managed rural drinking water supplies and CR-WSP for urban utilities.

They have been distributed to regional water and health bureaus on the occasion. The preparation and printing of the documents were supported financially and technically by DFID and WHO respectively. Semunesh Golla, Hydrology and Water Quality Directorate Director at the Ministry of Water, Irrigation and Electricity, told journalists that the ministry is working hard with WHO and DFID to develop a system that ensures water quality and quantity from the source to the tap that is resilient to climate change.

“Currently we are working at a project level. But in the future, we want to scale it up nationwide” she said.

During the Forum, building adaptation to climate change in health in least developed countries through resilient WASH project of Ethiopia has shared its experience on CR-WSP to participants.



*Partial view of participants*



*Regional health and water bureau representatives receiving the CR-WSP documents launched on the occasion*



*Participant discussing on funding modalities in groups*

## **DFID consultative meeting on 2nd phase plan of strengthening WASH and Health**

DFID has conducted a one day consultative meeting on Oct 22, 2015 to discuss on the second phase plan of Strengthening WASH and health project in Addis Ababa.

The WASH policy team had a Concept Note approved by the ICF Board to develop a £50 million project to support Nepal and Ethiopia to make additional WASH investments to ensure a climate-resilient WASH sector; and to help build the evidence-base and policy uptake around climate in the water and sanitation sector in an additional 20 low and low-middle income countries.

This WASH upscaling fully incorporates adaptive health sector priorities. Thus, all Phase II investments will promote and maximize WASH priorities, and health gains, with climate resilient approaches. Investment in WASH and Health infrastructure and management systems to build climate resilience in existing sector programmes in Ethiopia was the major discussion point.

Climate-Resilient WASH Fund Position Paper (including WASH Financing Instrument; Operational Framework/ Guideline; Fund Manager Recommendations; and TORs) were put under the table for discussion.

During the meeting, building adaptation to climate change in health in least developed countries through resilient WASH project of Ethiopia has shared its experience on CR-WSP.

The participants were divided in to different groups and discuss their proposed Fund modality by rank.

## 2nd international steering committee and technical advisory group meeting.

The Second International Steering Committee and Technical Advisory Group Meeting of “Building to adaptation to climate change in health in least developed countries through resilient WASH’ conducted here in Ethiopia Addis Ababa 22-24 Sept.2015.

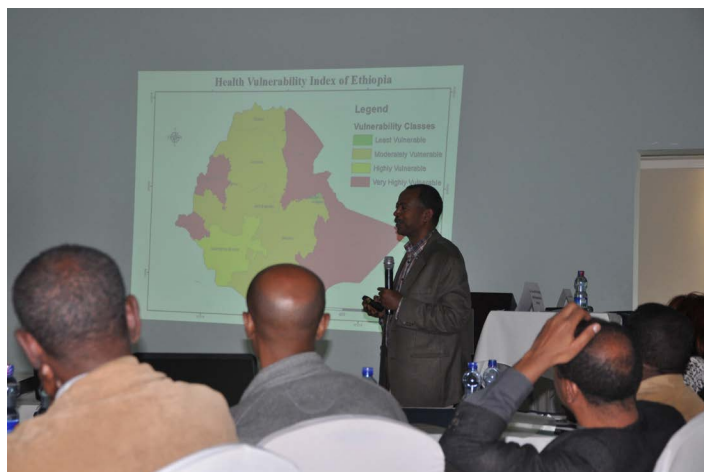
The meeting brought 35 participants from Ethiopia, Bangladesh, Nepal and Tanzania and WHO headquarter and country office. The participants are from the health and water sectors, independent advisory board and research institutes.

During the meeting CR-WSP implementing countries share their experiences and challenges while trying to implement the project and update their progress.

The DFID/WHO project in Ethiopia also present what has been done so far and also present the Vulnerability and Adaptation Assessment of health sector to discussion.

Ministry of Water, Irrigation and Electricity (MoWIE) said Ethiopia has made a remarkable progress in the implementation of CR-WSP.

On behalf of Ato kebede Gerba, MoWIE State Minister, Semunesh Golla said that Ethiopia has develop appropriate strategic framework and guideline documents on CR-WSP.



### ***Presenting the Vulnerability and Adaptation Assessment of the health sector***

Dr. Pierre M’pele-Kilebou, WHO Ethiopia Representative, said that climate change should be part of national, regional and community level agenda as it is a big challenged posed on human life and health.

“Ethiopia is in the front in addressing the climate change impacts on health by undertaking health vulnerability and adaptation assessment to climate change, developing national plan and policy documents,” he added.

Dr. Zufan Abera, Director of Health Extension and Primary Health Care Service Delivery Directorate said that the government of Ethiopia is very committed to avert climate change and its consequences and appreciate DFID and WHO for their financial and technical support.



## 6. Sample Testimonial

Seyfu Haile is a Butajira town water pipe maintenance technician. He said the major water junction points in the town were left in the open and sometimes people throw garbage, floods fill the holes and sometimes people pee on it.

“Therefore it was difficult for me to work as the smell and the dirt was not tolerable. I have taken the CR-WSP training. It is very practical and teaches me a lot and would like to thank the organizer. I am so excited. After we took the training, many manholes are now covered by metal sheets and can be locked.” He said



***Seyfu describing how CR-WSP helps him work properly***

### Water quality and testing in Butajira town

Jemanesh Darunga, 22, is a chemist in Butajira town whose job is to provide quality water by treating water at sources and reservoir with chlorine.

“I have never thought that there will be any problem concerning water quality issue as I diligently treat the water source and reservoir,” Jemanesh said.

Later on Jemanesh attended CR-WSP and found out that she was all wrong.

After the training, she knew that water can be contaminated anywhere from the source to mouth including different water distribution junctions and at household level.

“After the training, I randomly check at household level and find a shocking result.

The quality of water on most household level is highly compromised due to contamination and poor water storage management,” Jemanesh said.

She said much should be done to raise the awareness of the people about how water can be kept safe and clean at household level. Some of the water container most people used is not clean and can compromise the quality of water resulting different water borne diseases including diarrhea.



***Jemanesh to test water turbidity***



***It is common that water management at house hold level is poor and contamination is high***



## 7. Lesson learned in The WASH sector

- After the training, participants including people engaged in water provision realized for the first time that water can be contaminated anywhere from the source to the end pipe and even at the household level.
- Most pilot implementation sites established mini laboratory and undertaking regular water quality testing and analysis. Moreover, utilities with pre-existing mini laboratory facilities have been strengthened. Previously most sites didn't have laboratory, even sites who did have one, have strengthen it by providing reagent and kit.
- Consensus reached with all stakeholders that new water supply schemes will take in to account climate change impacts on the WASH infrastructure.
- Once convinced about the benefit, woreda people have already put CR-WSP in their work plan, started allocating their own budget and felt ownership,
- We have seen that when a project is led by government and community, it is owned by the society and will be sustainable.
- The CR-WSP participants were so excited to materialize the improvement plan designed by them and mobilize social and financial resources. This is due to the fact that the training was practical and problem solving.
- After the training, participants know different hazards like chemicals, physical and microbial especially from open defecation and hazardous events and associated impacts with sickness. Now, they know how far their water is unsafe.
- The CR-WSP team has made a great role in sensitizing the people about CR-WSP.
- Change in operation, maintenance and management practices has been witnessed:
  - Suppliers are now considering CR-WSP as part of their water supply operation and management system.
  - Water utilities have been improving operation and maintenance practice (management) as a result of identifying potential areas that need to be given due attention.
  - Implementation sites have developed operational monitoring plan.
  - Improved maintenance of damaged pipelines in the water supply system that will not only prevent water wastage, but also water pollution.
  - Establish water treatment mechanism in each utilities (in most places they didn't have)
  - Multi stakeholders engagement and collaboration has been improved following the implementation of CR-WSP.
  - Most water utilities were not undertaking community water treatment practice before CR-WSP implementation. While utilities are currently undertaking water treatment practices.
- Helped to mobilize resources from the ongoing water sector program and WASH development partners
  - Water utilities are allocating budget in the implementation of improvement plan developed based on the risks identified to the respective water supply systems.
  - WASH development partners including WaterAid, COWASH, Drop of Water, German Agro Action and others are piloting implementation of CR-WSP in urban water utilities and rural community managed water supplies.
  - Water utilities piloting CR-WSP have been selected as best performing with set of defined criteria including good governance.
- Universities are taking up CR- WSP as research topics.
- There is a need for WASH infrastructure improvement with significant amount of required budget.

## 8. References

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