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
The health sector
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Resilient Green Economy Strategy and policy in 2011. The government also considers the impacts of climate change in the second Growth Transformation Plan (GTP2) and Health Sector Transformation Plan (HSTP) for adaptation and also mitigation of climate change issues.

The Building adaptation to climate change in health in least developed countries through resilient Water, Sanitation and Hygiene (WASH) Project assisted the development of National Framework for climate resilient health sector, National Health Vulnerability and adaptation assessment (the first of its kind in the country), the Health National Adaptation Plan (HNAP) and also conduct a review of policy documents on climate change, WASH and public health in Ethiopia.

This intervention helps us to focus more on climate change adaptation as we have competing priority areas, make targeted intervention in different areas of the health sector by substantiating with assessment and analysis of health and climate data. Which in turn provide us tangible information to guide where to focus in adapting climate change health effects and making our health facilities resilient to climate change.

It also gives us a lesson that we have to make sure that everything we do including renovation and construction of WASH services in the health institution should be resilient to climate change. The ministry of health would like to express its willingness and commitment to scale up this intervention in our routine activities.

Finally, I will like to thank DFID and WHO for their financial and technical support and call upon all stakeholders to come closer and work together to scale it up to realize adaptation and mitigation of the climate change.

Dr. Zufan Abera,
Director of Health Extension and Primary Health Service Directorate

The government of Ethiopia invested highly on health system strengthening by its pro poor policies and strategies that brought significant advancement in improving the health status of its citizens. Because of the implementation of these policies and commitment of the government, Ethiopia meets most of the MDG targets. The Health Sector Transformation Plan (HSTP), has set ambitious goals to improve equity, coverage and utilization of essential health services, improve quality of health care, and enhance the implementation capacity of the health sector at all levels.

One of the challenges that the health sector facing today is that the drastic impacts of climate change. Climate change exposes people to different diseases and affects the performance of the health sector. Drought and floods are the results of climate change that affects human health and health facilities in Ethiopia. Drought compromised productivity and exposes people to malnourishment as well as cause water scarcity. Malnourishment can make people susceptible to different diseases especially affects maternal and child health. Drought and flood also contributes to different diseases including diarrhea, scabies, and vector borne diseases such as malaria among others.

To combat this health sector threat, the government of Ethiopia gave climate change a high priority on its policies and strategies. It has developed Climate

Dr. Zufan Abera, Director of Health Extension and Primary Health Service Directorate
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 the La Nino caused flood contributed to the death of 136 people, affecting 195,987 people and the loss of 33,446 cattle the same year (The reporter: May 21, 2016).

Water, Sanitation and Hygiene (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.

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 the Ministry of Health (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 health sector led by the Ministry of Health, this project developed policy documents including the National Framework of Climate Resilient health sector, Health Vulnerability and Adaptation Assessment, Health National Adaptation Plan.
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 with development partners, government bodies and project implementing member countries.

Moreover; the Ministry of Health is confident that Ethiopia is ready and committed to scale it up by incorporating climate resilience 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 health.
Global Warming

According to IPCC 2014 Synthesis Report, each of the last three decades has been successively warmer at the earth’s surface than any preceding decade since 1850 and the period from 1983 to 2012 was likely the warmest 30 year period of the last 1400 years in the northern hemisphere.

African response

The first African inter-ministerial conference on health and environment held in Libreville, Gabon, in 2008 and came up with Libreville declaration which deals on inter linkage between and strategic alliance of health and environment.

The 5TH IPCC report recommended and request countries to identify country-specific health risks associated with climate change in all African countries through Vulnerability and Adaptation assessment of the health sector. This is because once governments know their vulnerability to climate change and adaptation gaps, it will be easy to plan, implement and mainstream climate resilient projects. It also clearly directs their priority areas.

4. The Ethiopian context

Country profile and climate change

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 km2 total surface area. The geographical variance in this ancient nation is simply explained by the existence of Ras Dashin, a mountain that elevates 4,525 m above sea level and Dalol Depression that goes down to 130 meter below sea level and one of the hottest places on earth. During the last 55 years, in Ethiopia, temperature has been increasing by 0.370c every ten years (NAPA, 2007).

Climate change increased the number of ‘hot’ days in Ethiopia by 20% from 1960 to 2003, and a 37.5% increase in the number of ‘hot’ nights over the same period. (Resources, risk and resilience: scarcity and climate change in Ethiopia 2012)

Health is one of the sectors affected by weather variability and climate change in Ethiopia. That includes morbidity and mortality due to under-nutrition sensitive diseases, health infrastructure damage and shift of resources to respond to the health crisis.

As climate is changing for worse, the existing diseases will aggravate and new diseases will emerge. Morbidity and mortality due to vector-borne infectious diseases like malaria, trypanosomiasis, onchocerciasis, schistosomiasis and leishmaniosis including the 2013/2014 phenomenon of yellow fever (after 65 years) and dengue fever outbreak for the first time are the common direct health sector impacts of weather variability and climate change in Ethiopia.

However, evidence on weather variability and climate change, and its impact on health sector are scanty and unorganized in Ethiopia.

The 2016 El Nino caused drought affected more than ten million Ethiopians and exposed to different health risks including malnutrition, scabies (in Amhara that affected more than 370,000 people) and Acute Watery Diarrhea (in Moyale town).

Ethiopia’s contribution to CO2 emission

Ethiopia’s contribution to the global carbon emission is insignificant as compared to the most polluting industrialized countries. The Green Houses Gas (GHGs) emission of Ethiopia was 150 metric tons CO2 equivalent in 2010. Of which more than 85% came from the agricultural and forestry sectors. They are followed by power, transport, industry and buildings, which contributed 3% each. (Ethiopia’s Climate-Resilient Green Economy Strategy, 2011)
**Ethiopia’s effort to address climate change before the project**

- Conducted a situation analysis and needs assessment of health and environment linkage and produced country report in 2010.
- Developed Climate Resilient Green Economy strategy and policy in 2011 as means of sustainable development and in response to climate change.
- The nation has also developed a National strategy and action plan for the implementation of the great green wall initiative in 2012.

5. **What has been done by this project?**

5.1 **A National working group**

A national working group of 23 members from different ministries and UN agencies has been established since Dec 2013. The National working group plays a technical advisory role to MoH and stakeholders in planning, implementing, monitoring and evaluation of various initiatives, projects and programmes of health adaptation to climate change.

The working group is comprised from experts drawn from Ministries of Health; Agriculture; Water, Irrigation and Electricity; Transport; Urban Development and Housing; Industry, Labor and Social Affairs; Women, Children and Youth Affairs; Ethiopian Public Health Institute, Addis Ababa University. The technical group has also brings together experts from development partners like WHO, UNICEF, UNDP and UNIDO.

The group developed TOR for enrolling project experts. It also contributed highly for the development and review of National framework of policies on climate change and health.

5.2 **The National Framework of Climate Resilient Health Sector**

The national framework of climate resilient health sector has been developed in December 2014. At this stage, the framework has been reviewed by the technical working group, relevant sectors, and the state minister of health. The comments are included and being finalized.

The objective of this framework is to serve as policy guidance and provide a road map for the realization of a comprehensive and practical Health National adaptation plan (HNAP) that will guide future health climate change adaptation practices.

![The Technical working group on finalizing National Framework of Climate Resilient Health Sector 5-7 September, 2014](image)

5.3 **Vulnerability and adaptation assessment of Health to climate change in Ethiopia**

The Ministry of Health has developed its first ever national health Vulnerability and adaptation assessment of Health to climate change in Ethiopia Sept 2015. The purpose of the document is to assess climate variability and its impact on health in Ethiopia and develop national adaptation strategy to reduce vulnerability.
“This document is the first of its kind in Ethiopia which can be used as a tool by policy makers, program managers, researchers, private sectors, civil societies and international organizations working on health, climate change and socioeconomic and environmental determinates of health.” Dr. Kebede Worku; State Minister of Health says in his forward message on the Vulnerability and Adaptation Assessment.

The assessment used secondary data on exposure, sensitivity and adaptive capacity obtained from National Meteorology Agency (NMA), Central Statistical Agency (CSA), Ministry of Health (MOH), Ethiopian Public Health Institute and on line documents including published reports. While data on changes in annual rainfall and temperature for 20 years (1996-2014) were collected from NMA, health related data were collected from Ministry of Health, Ethiopian Public Health Institution (EPHI) and Central Statistical Agency.

Findings of Vulnerability and Adaptation 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. Both average maximum and minimum temperatures are characterized by high inter-annual variability for all regions with different trends for the regions.
- Flash floods and seasonal river floods were found to occur regularly throughout the country inflicting significant losses in terms of human lives as well as productive capital.

Assessment identify climate sensitive diseases

- Frequent drought

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

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 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).

A similar finding is reported by the demographic and health survey also confirms that 17% of childhood deaths are associated with diarrhea (EDHS 2011). 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.
Population Vulnerability to Climate Change Sensitive Diseases

- Least Vulnerable population 1%
- Moderately Vulnerable Population 70%
- Highly Vulnerable population 20%
- Very highly vulnerable population 9%

Malaria and Minimum temperature case were found to have statistically strong association in Tigray, Gambella, Dire Dawa and Afar regions, while maximum temperature and malaria case was found to have statistically strong association in Southern, Nations, nationalities and Peoples (SNNP), Oromia, Benishangul-Gumuz, Amhara, and Afar states. Emerging and remerging vector-borne diseases were found to be reported in recent years.

Yellow fever in southwestern and Dengue fever in eastern parts of Ethiopia re-emerged. Dengue fever is among climate sensitive diseases that are believed to intensify with the rise of temperature.

Health Vulnerability Analysis

The calculated Health Vulnerability Index values ranged from -0.247 (Dire Dawa, less vulnerable) to 0.279 (Gambella, highly vulnerable). The two urban regions (Dire Dawa and Harari) having less than -0.2 values are categorized as least vulnerable. Oromia, Tigrai, and Amhara regions and Addis Ababa with a value of -0.2 to 0.0 medium vulnerable. Southern Nations Nationalities and Peoples’ Regional state (SNNPRS) with a value of 0.033 is categorized as highly vulnerable and those with greater than 0.1 (Afar, Somali, Gambella and Benshangul Gumuz) are very highly vulnerable. All the emerging regions are very highly vulnerable to the impacts of climate change sensitive health issues indicating that an adaptive capacity is in deficit and high exposure relative to other regions.

Health Vulnerability Index (HVI)

In terms of Land Mass

- The land mass least vulnerable to climate change sensitive diseases (1%)
- The land mass moderately vulnerable to climate change sensitive diseases (50%)
- The land mass very highly vulnerable to climate change sensitive diseases (39%)
- The land mass highly vulnerable to climate change sensitive diseases 10%
Health adaptation strategies

Based on the results of the vulnerability assessment, the following adaptation actions related to protecting health from climate change are recommended:

• Improve public health surveillance systems;
• Establish health and climate data management system;
• Strengthening early warning systems;
• Improved public health services;
• Improved water, sanitation, and hygiene system;
• Human resource development;
• Enhanced public awareness and attitudes;
• Targeted intervention to regional contexts by enhanced financial resources; and
• Partnership, coordination and collaboration

5.4 Health National Adaptation Plan (HNAP)

Climate Resilient Green Economy and other studies have identified health sector as one of the most vulnerable sectors to climate change since the disease burden will increase if mitigation of climate change fails. Thus, developing a health adaptation plan is critical to implement convenient adaptation options in the health sector.

Based on the national framework, Vulnerability and adaptation Assessment, and WHO health adaptation guidelines; the National Health Adaptation Plan to Climate Change has been developed and shared to all stakeholders.

The preparation of these documents followed the United Nation Framework Convention on Climate Change (UNFCC) steps.

5.5 Advocacy workshop on Climate Change and Health

An advocacy workshop on Climate Change and Health for health leadership, organized by the Ministry of Health in collaboration with WHO, had been conducted in October 31, 2015 at Adama town bringing regional health bureau heads and directors. The workshop is aimed at discussing and advocating what is being done by this project in relation to climate change and health. Vulnerability and Adaptation Assessment and Health National Adaptation Plan were presented to the participants.

“We have witnessed recurrent droughts and drought-related health problems due to climate change. We also remember extreme flood incidents that cost the lives of many in Diredawa, South Omo and Somali regional states. Climate change creates favorable situation for breeding of disease causing bacteria. It also highly contributes to diseases resulted by poor water quantity and quality,” Dr Kebede Worku said.
Dr kebede mentioned climate change as a man-made problem and its solution and adaptation is also man made. That is why, he added, that the government considers climate change while revising its policies.

Environment, Forest and Climate Change; Ethiopian Public Health Institute, Universities and development partners. The HNAP is implemented by the technical and financial support of WHO and UK Department for International Development (DFID) respectively.

Dr. Zufan Abera, Director of health extension and primary health care service delivery directorate said on the occasion that health is one of the three sectors badly affected by climate change. Therefore, she said, it is important and timely to develop HNAP both to prevent and respond well to Climate changed induced health issues. “It will help us prioritize what we should do. For instance it will guide us how a health facility should be built that is resilient to climate change,” she said.

The participants share their concerns that the current description of the Health Vulnerability Index by region might mislead some regions. ‘Even among the moderate vulnerable region, there are most vulnerable zones and woredas that needs immediate intervention,’ they said.

The participants recommend that every region should do its own vulnerability and adaptation assessment. Dr kebede, on his hand, assured that the ministry with its partners will do everything possible to build their own capacity so that they will develop their assessment.

5.6 Consultative meeting on Health National Adaptation Plan (HNAP)

A consultative meeting of technical people from different federal and regional bureaus was held in Adama town 11-13 May 2016 to review and comment on the draft Health National Adaptation Plan (HNAP).

The HNAP is developed by technical working group led by the ministry of health comprised from different sectors including agriculture; water; metrology; Environment, Forest and Climate Change; Ethiopian Public Health Institute, Universities and development partners. The HNAP is implemented by the technical and financial support of WHO and UK Department for International Development (DFID) respectively.

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The participants were regional government health bureau heads and directors of FMOH; and the discussion was vibrant.
5.7 Review of policy documents on climate change, WASH and public health in Ethiopia.

The Ministry of health has conducted, with the technical and financial support of this project, a review of policy documents on climate change, WASH and public health in Ethiopia. A total of 26 relevant policy, strategy and program documents were reviewed. The purpose of the review was to generate evidences of whether WASH and public health policy documents are sensitive to climate change; and whether climate change policies prioritize WASH and public health as sectors vulnerable to climate change events.

Key findings

At the time of this review, the status of sectors in terms of mainstreaming climate change within their respective development programs and operational plans remain to be at its infancy. Only Climate Resilient Green Economy (CRGE) implementing sectors are currently developing climate resilient strategies.

Both health and water sectors have adequate institutional arrangement with right staffing which create opportunity for implementation of the climate sensitive interventions. Dependency of its population on climate sensitive sectors for livelihoods, limited national response capacity, poor infrastructure as well as wide spread environmental degradation and fragile ecosystem are reported to contribute towards Ethiopia’s vulnerability to climate change risks.

Climate change posed disaster prone areas are not well known across the country by most of the sectors visited during this review. This is mainly because of the underdeveloped research and knowledge management in the areas of climate change in Ethiopia.

Where there is mapping of climate change related risks, they are not being updated. For example, there is no update on malaria transmission mapping in light of current changes in urbanization, expansion of large scale agricultural and industrial development, improvement in economic growth and climate change. Desert and drought prone areas are characterized by either erratic or shortage of rain fall, high temperature, and flush flooding resulting in damage of Water supply and sanitation infrastructures and creation of avorable environment for vector and water borne diseases.
6. Lesson learned in the health sector

Lesson learnt

- Climate change effect is higher and more adverse in countries like Ethiopia because of lack of adaptable capacity and coping mechanism. Previously the assumption is that we are all equally impacted by climate change. This issue is repeatedly raised in many occasions.

- When there is already any existing policy in place related to a new project, then things will be smoother.

- We have witnessed that the vulnerability and adaptation assessment clears things up for the health adaptation plan. Previously there was confusion. Now we know where we can focus.

- It is evident that climate change might cause drought and flood. But most people including health experts didn’t relate climate change’s impact on health and diseases.

- Focus should be on preventive actions to protect the people against diseases that can be aggravated during season change like diarrhea, malaria, meningitis and others.

- The need of capacity building and knowledge management with health sectors and the universities.

Opportunities

- The existence of climate change related government strategy shows the commitment from the government side.

- The government has directed every sector to prepare its own adaptation plan to climate change. In reaction to that, the Ministry of Agriculture, Water, Irrigation and Electricity, has already prepared their own plan. The health sector is also on track by developing its draft plan.

Challenges

- Capacity gap

- Staff turnover among the technical working group

- Competing priorities

- Poor data management especially in the health sector.
7. Reference


9. Quantitative risk assessment of the effects of climate change on selected causes of death, 2030s and 2050s. 2014. WHO
