

# United Rep. of Tanzania



## Climate change, health & WASH

Tanzania is currently experiencing severe weather extremes as a result of a changing climate. Increased temperatures, prolonged droughts and erratic rainfall are resulting in significant impacts to public health and livelihoods, with climate projections indicating that the situation is expected to intensify. This case study describes activities undertaken in Tanzania from 2013-2018 to implement the United Kingdom's Department for International Development (DFID)-funded project on "Building adaptation to climate change in health in least developed countries (LDCs) through resilient water sanitation and hygiene (WASH)", the aim of which was to assist countries to respond to changes in health risks as a consequence of climate variability and change, through improved and more resilient health and WASH adaptation measures.

### 1. Country profile & climate vulnerabilities

Tanzania is a coastal country in East Africa which shares a Lake Victoria border with Uganda and Kenya. Given the vast majority of the population's livelihoods are dependent on climate-change sensitive agriculture, Tanzania is considered to be particularly vulnerable to climate change.

Climate change impacts are already taking a significant toll on the livelihoods and wellbeing of Tanzanians, including:<sup>1,2,3</sup>

- › Frequent and severe droughts and the associated water scarcity issues, as well as impacting food production and economic and poverty reduction gains
- › Reduced quantity and quality of water in Lake Victoria, and other water sources, including an increase in contaminants such as harmful cyanobacterial blooms which impact the acceptability of water and have the potential to harm health
- › Reduced surface-water flows and aquifer recharge during drought periods, as well as groundwater depletion through aquifer reduced recharge and over extraction
- › Saline intrusion into aquifers in low-lying coastal areas, as well as impacts from coastal flooding.

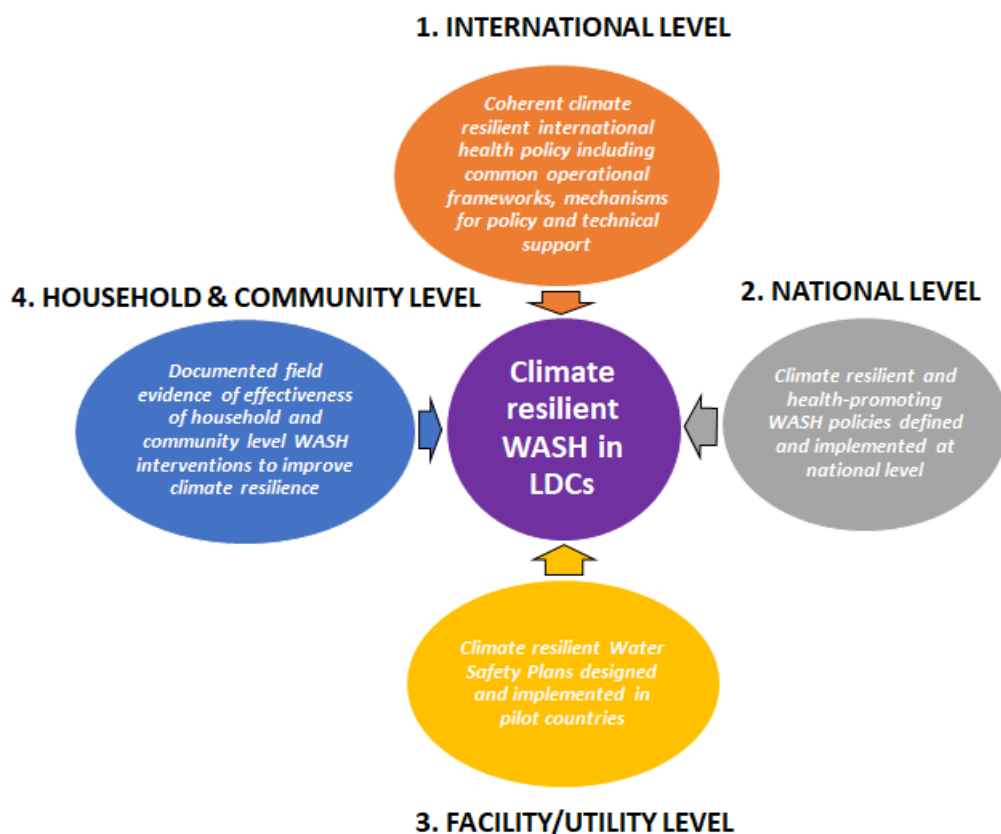


**Fig. 1: An estimated 80% of the Mount Kilimanjaro glacier has been lost in the last century, and is expected to be gone entirely by 2025, impacting surface-water flows.<sup>1</sup> Source: [flickr.com/NASA](https://www.flickr.com/photos/nasa/) via Creative Commons.**

Climate projections for Tanzania include increased periods of prolonged drought, more erratic rainfall patterns (leading to extreme flooding) and sea-level rise, all of which may exacerbate the aforementioned pressures on water resources in this already water stressed country.<sup>3</sup> If Tanzania's low capacity for climate resilience is not addressed, this will likely have a profound impact on WASH and public health, retarding future development in urban and rural settings alike.

## 2. Building adaptation to climate change in health in least developed countries through resilient water, sanitation and hygiene

In light of the above situation, DFID supported a £6.85 m project (via the International Climate Fund) to assist the development of effective strategies for climate adaptation in the health sector in low and low-middle income countries. The project aimed at improving policy and practice on health adaptation to climate change through robust evidence from field testing in Bangladesh, Ethiopia, Nepal and Tanzania. Countries were chosen to participate based on their exiting high burden of climate-sensitive diseases, including WASH-related disease, and the extent through which climate variability and change is expected to adversely impact health and WASH. An overview of the expected outputs from this project is presented in Fig. 2. The current case study focusses on Outputs 2 and 3 (i.e. from national through to facility/utility levels, respectively). Activities and outputs related to implementation of Output 4 (i.e. research) are included in a separate synthesis report.



**Fig. 2: Key outputs from the DFID-funded project “Building adaptation to climate change in health in LDCs through resilient WASH”.**

### Climate resilient health and WASH activities implemented under the DFID project (2013-2018)

The following section presents some of the key outputs from the DFID project on climate resilient health and WASH. For more information and a full list of project outputs, refer to Appendix I.

#### *Policy review (Output 2)*

A comprehensive review of the relevant national policies, strategies and guidelines was undertaken to identify opportunities to strengthen existing/develop new policy instruments to move towards climate resilient health

systems in Tanzania. This review aimed to support the future development of national adaptation plans, as well as health and water and sanitation policies that incorporate climate resilience towards public health protection, and covered existing health, water and environment policy, as well as climate change and environmental strategies and strategic plans for the health sector.

### *Health and WASH Vulnerability and adaptation assessments (Output 2)*

In Tanzania, the health sector requires significant strengthening to confront the current and projected impacts from a changing climate. In 2015, an assessment was undertaken by the Tanzanian Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) to determine the climate vulnerability the health and water sectors. The assessment focussed on six districts within Tanzania, which represented the major climatic zones within the country. From the assessment the following key health adaptation priorities were as follows:

- vector-borne diseases (such as malaria, dengue, plague)
- nutrition (including wasting and stunting)
- disasters (flood and drought), and
- water-related diseases (such as diarrhoea, dysentery, cholera).

A number of key recommendations were made to strengthen the adaptive capacity of the health sector and reduce its vulnerability to the impacts of climate change. This included, amongst others, the need to: strengthen meteorological forecasting and health surveillance systems; ensure availability of specialized trained staff and medical facilities for addressing climate-related diseases and other health risks; promote nutritional education in the face of growing food insecurity; enhance government funding for institutional sanitation and hygiene infrastructure (including schools and healthcare facilities); diversify water sources for drinking-water and hygiene; and promotion and scale-up of national climate resilient water safety planning activities for both urban and rural systems.

### *Development of the health component of the National Adaptation Plan (Output 2)*

Based on the outcomes from the vulnerability and adaptation assessment, the Tanzanian MoHCDGEC developed a Health National Adaptation Plan to outline the national strategy to reduce vulnerability and enhance adaptation measures to protect public health from the impacts of climate variability and change. The plan promoted the integration of health adaptation to climate variability and change into national health planning strategies, policy instruments, processes and monitoring systems to ensure a climate-resilient health system.

### *Climate resilient water safety planning (Output 3)*

The water safety plan (WSP) process offers a systematic framework to manage climate-related risks by considering the implications of climate variability and change at each step of the water supply system. This generates what is commonly referred to as a “climate resilient” WSP (or CR-WSP), which considers all water supply system vulnerabilities, including current and projected climate impacts on water quality and quantity, and enhances preparedness and response to severe weather events and disasters.

**WATER SAFETY PLANS** are a comprehensive risk assessment and management approach, considered to be the “*most effective means of consistently ensuring the safety of drinking-water supply*” from catchment to consumer.<sup>4</sup> The principles are fully adaptable to many system types, sizes and socioeconomic settings.

In Tanzania, CR-WSPs were developed on a pilot scale for both urban and rural water suppliers. National guidelines for CR-WSP implementation were developed based on the lessons learned from this pilot programme, alongside shared experiences from the Ethiopia component of this same project. For further information on climate resilient water safety planning activities conducted in Tanzania under this project, please refer to Box 1.

### **Box 2. Piloting of climate resilient water safety plans in Tanzania**

Climate variability and change is impacting already stressed water resources in Tanzania, with climate projections indicating that the poor water security situation is expected to intensify.

In this context, the need for systematic identification and proactive management of climate-related risks was identified as a key strategic objective in the Health National Adaptation Plan for Tanzania. Through the DFID project, capacity building for climate resilient water safety planning was undertaken for key national stakeholders and water suppliers from both the urban and rural sub-sectors. Tanzanian representatives attended a national urban CR-WSP training of trainers event in Ethiopia in December 2014, as part of an effort to promote collaboration and experience sharing with other project countries within the region. This was followed by national CR-WSP training events held in Tanzania.

In 2016, an urban CR-WSP training event was organized in Kigoma by the Ministry of Water and Irrigation, MoHCDGEC and the Vice-Presidents Division of the Environment, with support from WHO Country Offices for Tanzania and Ethiopia. The training targeted national stakeholders and water suppliers responsible for urban water supply, in particular, Kigoma Urban Water Supply Authority (KUWASA), the chosen urban pilot location. Rural water supply representatives were also present to support nascent rural climate resilient water safety planning activities in this sub-sector. A WSP team was established, which oversaw the development of a draft CR-WSP for the Kigoma water supply system, which identified and prioritized significant system vulnerabilities, including risks posed by climate change. From this, an improvement plan was developed to address the significant system risks, including catchment protection measures to minimize contamination of the water source, leak repair and detection program to minimize water loss and unaccounted/non-revenue water, and community education and awareness raising programmes on water safety and climate change.



**Fig. 3. Urban CR-WSP training in the classroom in Kigoma water supply system.**



**Fig. 4. Field visit to identify climate-related vulnerabilities in the Kigoma system.**

Following the drafting of a rural CR-WSP for Mbande Community Owned Water Supply Organization (COWSO) based on the Kigoma training, a follow-up dedicated rural training event was delivered in May 2017 in Morogoro. This event was to support both the existing Mbande WSP, as well as the development of an additional pilot WSP for Mkambarani COWSO. Following a desk-based review of the existing Mbande WSP, the training was tailored to specifically focus on key areas that required strengthening towards WSP implementation. A CR-WSP “template” (or “blank” WSP) was developed to support rural water safety planning activities. The CR-WSP template was piloted during the training event, and updated based on the WSP teams feedback. Following the training event, a strengthened improvement plan was developed for the Mbande water supply system, which outlined step-wise improvements to address key climate-related risks, including the provision of flood defence barriers for water sources and critical assets, erosion control in the



catchment area, leakage control programme and diversification of water sources. The template CR-WSP has since been globally disseminated on [www.WSPortal.org](http://www.WSPortal.org), a joint WHO/International Water Association platform for resource sharing amongst the WSP community.



**Fig. 4. Delivery of a tailored rural climate resilient WSP package in Morogoro.**

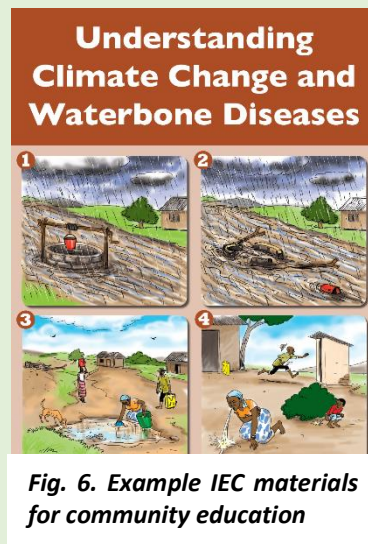


**Fig. 5. Identifying household-level risks during field inspections.**

To support future development and implementation of CR-WSPs, the Ministry of Water developed their national “Guidelines for the Implementation of Water Safety Plans Resilient to Climate Change” for both urban and rural water supplies. Based on the lessons learned from the Ethiopian project experiences, these customized guidelines serve as a tool to support future CR-WSP scale-up efforts nationally.

Additionally, to support stakeholder education and awareness raising on climate change and health, including climate resilient water safety planning, information, education and communication (IEC) tools were developed (Fig. 6; see also Appendix I).

On the policy level, as an outcome from this project, the Water Sector Strategic Plan (2014/15 – 2018/19) includes that climate resilient WSPs should be developed and implemented by all regional water supply utilities and 50 COWSOs.



### 3. Project outcomes

Overall, the following are the key outcomes from the climate resilient WASH project in Tanzania:

- ✓ Strategic assessment of national policy settings and instruments and identification of key areas of health and WASH sectors to support the development and implementation of climate resilient WASH policies
- ✓ Mainstreaming of outcomes from the national policies and practices review into the national Health Sector Strategic Plan IV (2016-2020) as well as the Water Sector Development Programme Phase II (2016 – 2021)
- ✓ Development of a national strategy and adaptation plan on climate change and health
- ✓ Improved public education and awareness on water safety and health with respect to climate change
- ✓ Improved management of climate-related risks to water supply in the pilot locations, including enhanced preparedness for extreme weather events
- ✓ Tailored climate resilient water safety planning guidance and training materials for both urban and rural sectors
- ✓ Inclusion of the requirement to develop and implement CR-WSPs by all regional water supply utilities and 50 COWSOs under the Water Sector Strategic Plan (2014/15 – 2018/19)
- ✓ Integration of environmental protection, CR-WSP as well as climate resilient sanitation facilities and hygiene in the budget of the Ministry of Water and Irrigation's Water Sector Development Programme Phase II.

#### *Key lessons learned...*

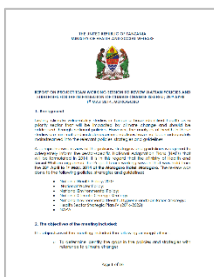
- › **When vulnerability and adaptation assessment are developed in the first instance, national health adaptation plans are more focused and targeted**
- › **Establishment of a strong pilot WSP programme is critical for building awareness, technical capacity and skills that can also support advocacy efforts at the national level**
- › **Disease outbreaks (e.g. cholera) can divert limited national resources away from longer-term projects; however, such incidences and other national health priorities represent an important entry point for climate resilient health and WASH, in particular CR-WSPs and other sanitation initiatives**
- › **Rural water supplies benefit from highly customized and targeted training materials and tools**
- › **Understanding of the linkages between climate impacts and water quality/operations is key to identifying system vulnerabilities and developing an effective plan of improvement**
- › **Simple IEC materials are a useful tool to support awareness raising for stakeholders and consumer education on climate resilient WASH.**

# Appendix I

## United Rep. of Tanzania: Roadmap of climate resilient health and WASH resources

The following resources have been developed to support climate resilient health and WASH activities in Tanzania as part of the DFID-funded project on “Building adaptation to climate change in health in LDCs through resilient WASH”, which aimed to provide target countries with a clear framework for protecting health and reducing the risk of disease as a consequence of climate change.

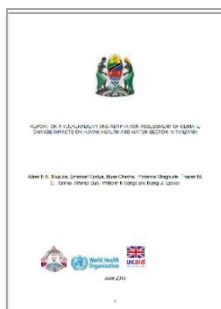
### NATIONAL CLIMATE CHANGE & HEALTH POLICIES, STRATEGIES & PLANS



[Review of Policy Documents on Climate Change, WASH and Public Health in Tanzania](#)

May, 2014  
Ministry of Health and Social Welfare, United Rep. of Tanzania

This document reviews the current policy instruments in Tanzania to support the development and implementation of climate resilient health and WASH policies. Key recommendations for the health and WASH sectors are presented, towards improving climate change and health adaptation practice.



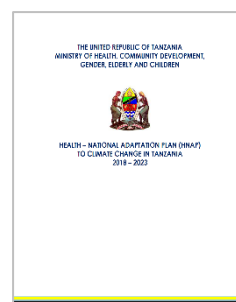
[Health National Adaptation Plan \(H-NAP\) to Climate Change in Tanzania](#)

In preparation  
Ministry of Health, Community Development, Gender, Elderly and Children, United Rep. of Tanzania

This document provides a broad framework for health sector action toward adaptation to climate change to mitigate the projected adverse impacts on public health in Tanzania.

The plan outlines long-term strategic objectives to address the climate vulnerabilities as they relate to health. It describes strategies to mainstream climate change into existing health policies, strategies, plans and programmes to deliver climate resilient health systems in Tanzania.

### VULNERABILITY & ADAPTATION ASSESSMENTS (V&A)



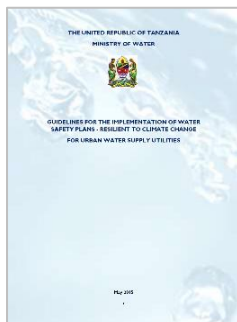
[Report on Vulnerability and Adaptation Assessment of Climate Change Impacts on Human Health and Water Sector in Tanzania](#)

Final Report  
June, 2015  
Ministry of Health, Community Development, Gender, Elderly and Children, United Rep. of Tanzania

This report describes the assessment of vulnerability and adaptation to climate change impacts on the health and water sectors in Tanzania.

The outcomes and recommendations from the report support evidence-based decision making on appropriate adaptation strategies to ensure the future resilience of the health and water sectors to climate change.

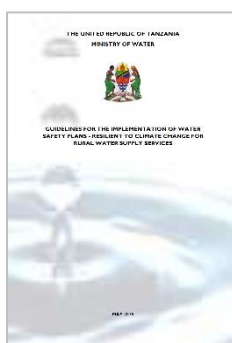
**CLIMATE RESILIENT WASH**



**Guidelines for the Implementation of Water Safety Plans Resilient to Climate Change**  
 Urban Water Supply Utilities  
 May, 2015  
 Ministry of Water, United Rep. of Tanzania

These implementation guidelines have been developed to support urban water supply utilities to development and implement climate resilient WSPs.

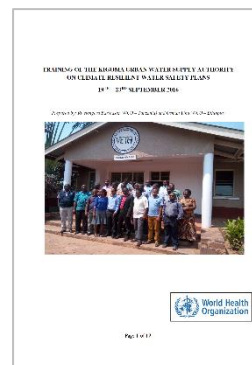
The guidelines have been developed with consideration of internationally accepted best practice, and tailored to the context of Tanzania.



**Guidelines for the Implementation of Water Safety Plans Resilient to Climate Change**  
 Rural Water Supply Services  
 May, 2015  
 Ministry of Water, United Rep. of Tanzania

These guidelines have been developed to support water supply authorities with water safety planning that adequately addresses the current and projected risks from climate change on rural water supply.

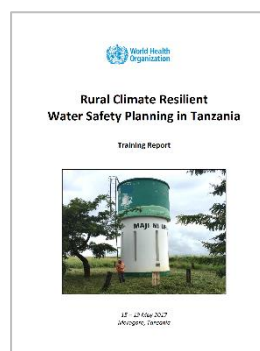
The approach has been adapted and simplified for the rural context, to effectively identify and manage water security risks in the face of a changing climate.



**Training on the Kigoma Urban Water Supply Authority on Climate Resilient Water Safety Plans: Meeting Report**  
 September, 2016  
 World Health Organization, United Rep. of Tanzania and Ethiopia

To support the development of WSPs that consider climate impacts, a 5-day comprehensive training for urban water supplies was delivered. This pilot programme assisted the Kigoma Urban Water Supply Authority to proactively identify, prioritise and manage climate-related risk to the water supply to ensure the availability of quality water supply into the future.

The meeting was attended by key operational and management staff for the Kigoma water supply, as well as stakeholders from ministries of health, water and the environment. The process to develop a draft climate resilient WSP is described, which may serve as a model for WSP develop nationally.



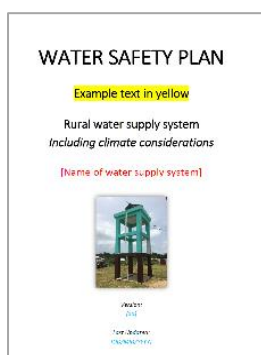
**Rural Climate Resilient Water Safety Planning in Tanzania: Meeting Report**  
 May, 2017  
 World Health Organization, United Rep. of Tanzania and Switzerland

The purpose of this training event was to strengthen national capacity for the development of climate resilient WSPs in rural areas. In particular, the training focused on two pilot water supplies, namely, the communities of Mbande and Mkambarani, which may serve as a model for national scale-up.

The training event complimented an urban training event that took place in Kigoma in September 2016, and included specific consideration of climate



impacts and locally appropriate mitigation measures in the context of rural Tanzania. The training was tailored specifically based on the needs of the water supplier, and a “template” WSP was developed to support future climate resilient WSP piloting and scale-up.



**Template Climate Resilient Water Safety Plan for Rural System**

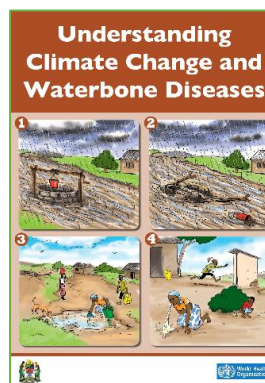
**2017**  
World Health Organization, United Rep. of Tanzania and Switzerland

This water safety plan (WSP) template was developed to support the integration of climate risks into the WSP approach for rural water supplies in the United Rep. of Tanzania.

The template is based on [WHO EURO \(2014\) Water safety plan: a field guide to improving drinking-water safety in small communities](#), but adapted to the local setting.

Examples are presented on how to complete the template, and the information should be considered and customized to the local context as appropriate.

**INFORMATION, EDUCATION & COMMUNICATION MATERIALS**



**IEC Materials on Climate Resilient WASH**

**2016**  
Ministry of Health and Social Welfare; World Health Organization, United Rep. of Tanzania

These materials were developed in response to the identified need to raise awareness and educate key stakeholders on specific aspects of climate resilient WASH. Posters, leaflets and brochures were developed for advocacy and education purposes targeting both professional and community—level stakeholders, with topics covering:

- Climate change impacts on WASH and adaption strategies
- Climate adaption through climate resilient water safety planning
- Climate change and waterborne disease.

<sup>1</sup> UNDP (2018). Climate change adaption: Tanzania. <http://www.adaptation-undp.org/explore/eastern-africa/united-republic-tanzania>, accessed March, 2018.

<sup>2</sup> USAID (2013). Tanzania climate vulnerability profile. Washington DC, USA. [https://www.climatelinks.org/sites/default/files/asset/document/tanzania climate vulnerability profile jan2013.pdf](https://www.climatelinks.org/sites/default/files/asset/document/tanzania%20climate%20vulnerability%20profile%20jan2013.pdf), accessed March 2018.

<sup>3</sup> World Bank (2017). Climate change knowledge portal: Tanzania. [http://sdwebx.worldbank.org/climateportal/countryprofile/home.cfm?page=country\\_profile&CCode=TZA&ThisTab=Overview](http://sdwebx.worldbank.org/climateportal/countryprofile/home.cfm?page=country_profile&CCode=TZA&ThisTab=Overview), accessed March 2018.

<sup>4</sup> WHO (2017). Guidelines for Drinking-water Quality. 4<sup>th</sup> edition incorporating the first addendum. Geneva, Switzerland.