IRC + water for people

Climate Change, Water Resources, and WASH Systems

COUNTRY CASE:

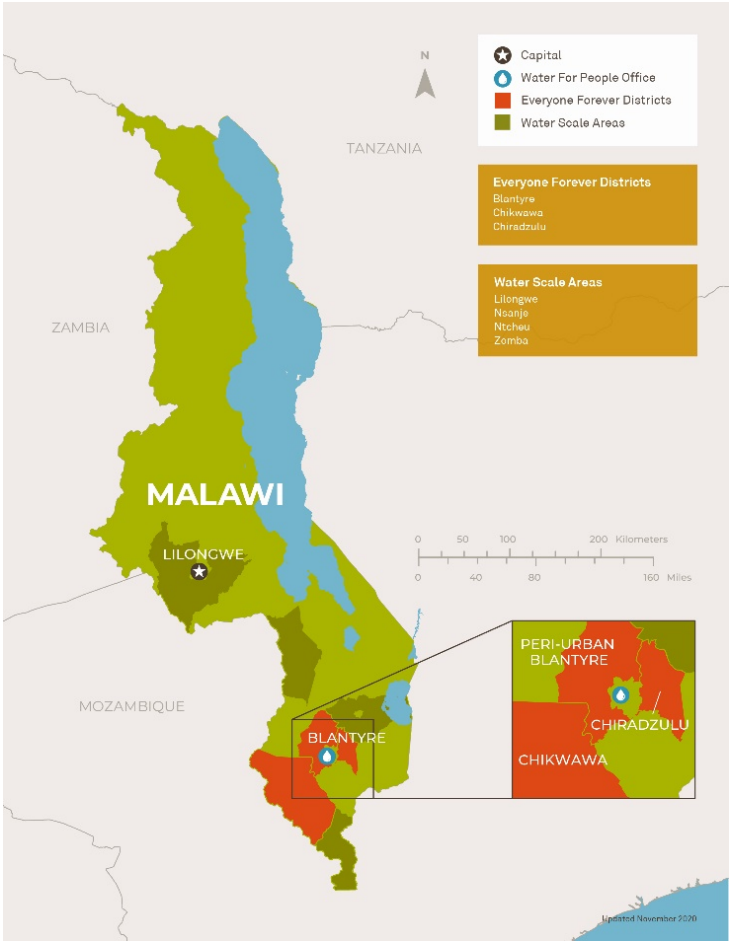
MALAWI

	Risk	Programming	Policy & Planning	
Polluted water	Medium	Related	NAP	No
Too little water	Medium	Related	National climate policies & plans	Some
Too much water	High	Focused	Extent WASH is included	Large

Climate trends and impacts on water resources

Temperature increases and changing precipitation patterns are expected to worsen in the coming decades. Key trends and impacts in the districts where Water For People works in Chikwawa, Blantyre, and Chiradzulu include:

- More intense rain events that cause flooding and storms, including major floods in 2015 and Cyclone Idai in 2019.
- Gradual decline in annual rainfall and evapotranspiration in the southern part of Malawi,[1] making the areas where we work more prone to droughts.
- Flooding in Chikwawa when the Mwanza River overflows its banks due to rains in the Shire Highlands.
- High surface run-off due to more intense rain events. Because very little water percolates into the groundwater or is retained in surface water bodies, most parts of the country have already started experiencing a decrease in the water table. Coupled with frequent droughts, some perennial rivers are now becoming seasonal.
- Increased loading of sediments and other nonpoint source pollutants to surface water due to higher surface run-off. At the same time, with changing rain and temperatures, farmers must make difficult decisions regarding planting and harvesting. Some are clearing land and planting crops closer to streams and lakes, which affects water quality.
- Rising temperatures that can increase evaporation and evapotranspiration which can, in turn, increase water scarcity issues. In Chikwawa,



[1] Adhikari, Umesh and Nejadhashemi, A., Impacts on Climate Change on Water Resources, 2016.

increased evaporation and evapotranspiration also contribute to high salinity in shallow groundwater.[2,3]

Impacts on WASH infrastructure and services

Most water supply systems depend on groundwater, especially in rural areas where 80% of Malawi's population live. Boreholes are drilled to an average depth of 45 to 60 meters and fitted with an Afridev hand pump, which is the government standard pump. With the decrease in the water table, there is an increased demand for deep 100-meter wells fitted with the LifePump or other reticulated pumps using solar or mechanized power. In some areas, water is tapped from a stream, spring, or river in the Highlands to a treatment plant and distributed to taps through the force of gravity.

Water quality issues contribute to source protection challenges with spring and surface water sources. People are also experiencing seasonal shortages or intermittent water supply with the increased scarcity issues and the decreased water table. The intense heavy rains and floods have washed away pipe networks, especially when the network crosses a river. Replacing such pipes year after year is expensive and time consuming. In the worst-case scenario during floods, the handpumps get submerged in muddy water, thereby compromising the water quality and making the water point inaccessible to users.

Most urban areas are supplied with piped systems with either communal or private taps. The Blantyre water services supply comes from three sources: Shire River (40km away), Likhubula River from Mount Mulanje (60km away), and Mudi River within Blantyre. In the Shire, water quality is affected by sediment from erosion on farmlands. Degrading activities include growing crops close to the riverbanks, widespread cutting down of trees for firewood, and clearing land for agriculture. Water availability is affected by power interruptions because water from the Shire River is pumped by hydroelectric power into a reservoir, and whenever the energy company fails to generate power, the water supply is affected.

Due to high population growth and lack of alternative energy sources, deforestation is a major problem in all the three districts. Blantyre is the most affected area, as deforestation affects water quality from the Shire intake and the power supply for pumping water.

Sanitation is a major challenge in both urban and rural areas. In rural areas, pit latrines are common sanitation facilities, and most of them have been constructed through Community Led Total Sanitation which discourages open defecation. However, the infrastructure constructed to achieve the open defecation status is usually temporary. When floods come, these latrines are the first to collapse or are washed away. This brings previously Open Defecation Free communities back to open defecation practices. In addition, the increased run-off in areas with latrines can increase water quality concerns.

In Chikwawa, the water service level dropped from 86% in 2018 to 66% in 2019 due to the effects of Cyclone Idai.[4] The impacts from storms such as Cyclone Idai extend to all WASH services. At a national level, WASH infrastructure worth US$3.8 million was damaged by the cyclone.[5]

[2] Northwater International and Water For People, Rapid Assessment of Groundwater Availability and Recommendations for Drinking Water Supply in Challenge Areas of Chikwawa, 2019.
[3] Rivett, Michael O., et. al. 2019. Responding to Salinity in Rural African Alluvial Valley Aquifer System: To Boldly Go Beyond the World of Hand Pumped Groundwater Supply. Science of the Total Environment, Vol 653.
[4] Water For People service level monitoring results, 2019.
[5] The World Bank Group, PDA Report, 2019.

Climate and WASH policy and initiatives

Malawi has a National Water Policy[6] which recognizes the importance of Water Resources Management (WRM) and climate change impact on WASH as explained in the National Water Policy goal: sustainable management and utilization of water resources, to provide water of acceptable quality and of sufficient quantities and ensure availability of efficient and effective water and sanitation services that satisfy the basic requirements of every Malawian and for the enhancement of the country's natural ecosystems.

The policy document highlights institutions necessary to harmonize policies that are relevant to the natural resources management knowing that WRM requires an integrated approach involving a number of stakeholders such as the Ministries of Agriculture, Health, Irrigation, Education, Natural Resources, and Climate Change Mitigation. As such, the policy recommended the establishment of a regulator, The National Water Resources Authority (NWRA). However, the NWRA has not yet been instituted, and the National Water Resources Board has not yet been operationalized. This is hindering catchment management and coordination with other sectors.

The Government of Malawi began its National Adaptation Plan (NAP) process in 2014 with a goal to reduce vulnerability to the impacts of climate change by building adaptive capacity and resilience into relevant new and existing national development policies, programs, and activities. In 2020, the Ministry of Natural Resources, Energy and Mining documented the current progress of the NAP process in Malawi's National Adaptation Plan Framework,[7] which proposes the institutional arrangements needed to drive the NAP forward.

Country program activities: mitigation and adaptation

Our activities support government and development partner initiatives to improve climate resilience and ability to withstand drought-induced shocks and mitigate the impact of run-off and floods. We strengthen capacities and systems of the local government to ensure that various staff are providing the necessary support to farmers, community-based management groups and associations, and households on how to manage WASH services, including protection of water catchment areas and water point sources. Specific activities include:

- Behavior change work to increase household investments in latrines to withstand floods or to re-build latrines that have collapsed.
- Ensuring that the aprons for borehole handpumps or standpipes are raised enough that they do not get submerged during floods. Initially, the river crossing pipes were constructed above the river on pillars which were prone to being washed away during flooding. Now, we bury the river crossing pipes below the riverbed.
- Establishing borehole gardens to reuse wastewater at the water point. This helps communities grow crops when there is drought or during the dry season. In addition, it helps water to percolate back into the soil thereby recharging the water table.
- Establishing of water point banks where water tariffs are not just saved but used as revolving funds for lending to users at an interest to grow the fund and help communities save for future major repairs or replacements of pumps. The next phase will be to see if the funds in a rural setting can also help support catchment management. At the water point level, some use part of the tariff to buy tree seedlings and plant a tree nursery around the borehole gardens using wastewater.
- Water For People is studying the hydrogeology and exploring the possibility of drilling deep boreholes (100 meters and beyond) that can be reticulated using solar power to

[6] Malawi Ministry of Irrigation and Water Development, National Water Policy, 2005.
[7] Ministry of Mines, Natural Resources and Environment, Malawi's National Adaptation Plan Framework, March 2020.

supply water in the saline or dry zones. This is still a work in progress with a recent completion of the District-Wide Rapid Assessment of Groundwater Availability.

- Catchment protection through tree planting along riverbanks and gullies to prevent soil erosion.
- Recently Water For People has partnered with Blantyre Water Board and The Nature Conservancy to establish a Water Fund for Blantyre. Water Funds are organizations that design and enhance financial and governance mechanisms which unite public, private, and civil society stakeholders around a common goal to contribute to water security through nature-based solutions and sustainable watershed management.

Key challenges

The key challenges in pursuing this work include:

- The water policy prohibits people from cultivating along the riverbanks and buffer zones, while the agriculture policy promotes irrigation using a treadle pumps which by design cannot reach further away from the river, causing people to cultivate along the riverbanks.
- Sourcing funding for this kind of work as most donors like supporting infrastructure or work that can easily count people supported (beneficiaries).
- In places like the Lower Shire in Chikwawa, where natural disasters are common and most organizations do disaster relief work, working on long term climate change resilience or adaptation programs can be disrupted with relief handouts.
- The lack of a regulator can limit the effectiveness of well-intended policies like the National Water Policy which encourages water rights.