

Water Stewardship in Malawi: Implementing Water Stewardship guided by the AWS Standard with the Thuchila Tea Association (TTA) in Southern Malawi.



Smallholder farmers in Malawi face challenges of water insecurity, impacting livelihoods and climate resilience. This case study documents how improved water stewardship led by smallholder farmers in tea supply chains can improve water security for more than >32,000 people by securing cost-effective and long-term management of water risks.

The focus of the case study is Thuchila Tea Association (TTA), who were strengthened and supported Water Witness (WW) and the Sukambizi Association Trust (SAT), an association of smallholder farmers previously trained by WW and now champions of water stewardship. As associations of rainfed smallholder farmers, both understand that water is an essential resource, and that careful management of water is a top business priority.

In order to expand the scope of water stewardship within the tea industry, the Tea Association of Malawi (TAML) was actively engaged in the project, with the aim of utilizing the association as a platform to extend outreach. Building on their knowledge and skills, SAT are now committed to upscale water stewardship principles to other smallholder tea associations within the districts of Thyolo and Mulanje, key tea producing areas in Malawi with the aim of impacting an additional 25,000 climate-vulnerable people. In partnership with SAT, WW has not only been able to upscale water stewardship through TTA and TAML, but also to ensure that the capacity is in place to scale up further both in the catchment and beyond in future.

To guide a proactive response to the smallholder farmers’ water risks, TTA is supported in this water stewardship project of Water Witness International (Malawi), funded by the Peter Stebbings Memorial Charity.

As part of the Fair Water Futures Malawi programme, this case study presents the results, costs, benefits and challenges of implementing water stewardship by the smallholder tea cooperative, TTA, and makes recommendations for improving water stewardship support and practice for smallholders.

1. Background and methodology

1.1 The site

The TTA is a cooperative of smallholder tea growers, with a membership of over 8,082 farmers (70% women) located in Mulanje and Thyolo Districts, Southern Malawi. 70% of cooperative members are women and most land is owned by women as land tenure in the area is through matrilineal inheritance.

Located south of Mulanje Mountain and in Thyolo Central, where annual rainfall is 2000 to 2400 mm, all of the tea grown by TTA farmers is rainfed. However, delayed and increasingly erratic rainfall due to climate change are a major concern for the site. While access to water for domestic use is generally sufficient, seasonal variations and population growth have resulted in insufficient water supply for livelihoods, particularly in 70% of surveyed blocks during the hot, dry season. Women and girls often bear the brunt of water shortages, affecting their health, education, and productivity. Water quality is a crucial aspect that affects human health, agricultural production, and the environment. Recognising the importance of water to their livelihoods and the challenges they are already experiencing due to climate change; TTA farmers are highly motivated to engage in water stewardship.

“Most sources of water are being used for drinking, irrigation, and also hydro-power generation. In the old days, we never used to have water shortages, now every dry season, the levels of water go down and it is partly because there is too much need for water”
Namvivi Block

Their annual yield of nine million kilograms of green tea is purchased by Eastern Produce Malawi to be processed and sold at local auction and to international markets. TTA is certified against the Fairtrade Small-scale Producer Organisations Standard for tea and the Rainforest Alliance’s Sustainable Agriculture Standard.

1.2 What is the Alliance for Water Stewardship Standard?

The AWS Standard offers a credible, globally applicable framework for major water users to understand their own water use and impacts, and to work collaboratively and transparently with others for sustainable water management within the wider water catchment context. Implementers follow the steps and guidance in the AWS Standard to achieve good water stewardship practices that improve site water performance and contribute to wider sustainability goals.



The AWS Standard is built around five steps, which each contain a series of criteria and indicators. Following the steps and criteria will lead to improved performance in five areas: water balance, water quality, healthy status of important water-related areas, good water governance and safe water, sanitation and hygiene for all. Sites making claims to good water stewardship are audited and certified by credible, third-party auditors.

1.3 Implementation methodology

WW conducted an initial desk-based review of the site and catchment water security context for TTA to identify likely water risks and opportunities. This was coupled with a participatory baseline survey targeting groups of TTA farmers in Mulanje district to assess water stewardship risks and opportunities in November 2022. Using information from the site visits and the documentation review, WW Malawi then conducted a gap analysis with TTA farmers to assess the extent to which their current water stewardship practice met the principles of good water stewardship as recommended by the AWS Standard, which include good water governance, sustainable water balance, good water quality status, protection of important water related areas and safe water, sanitation and hygiene for all. This assessment identified priority areas to address and formed the basis of TTA’s action plan to address their key water stewardship needs and begin demonstrating progressively best water stewardship practice. The WW Malawi team provided training, guidance and support to TTA management and lead farmers throughout the implementation process in the form of regular site visits, calls, and reviews of materials and plans.

2. Water security context

This section provides an overview of the catchment context, where TTA operates in the Ruo sub-basin of the Shire River Basin. It includes the hydrological, socio-economic, and regulatory features of the catchment.

2.1 Catchment overview

The Shire River Basin is divided into six sub-basins, namely: Rivirivi, Lisungwi, Wamkulumadzi, Mwanza, Ruo, and Thangadzi (Figure 1). TTA member farmers are located within the Ruo sub-basin of the Shire River Basin.

The Ruo sub-basin covers parts of Blantyre (rural), Chiradzulu, Mulanje, Thyolo and Phalombe Districts. The most prominent feature of the sub-basin is the Mulanje Massif, the highest peak in Malawi which reaches maximum elevation of 3,002m. The major river within the sub-basin is the Ruo River, which forms the border with Mozambique for much of its length and drains from the Mulanje Massif into the Shire River at Chiromo, near Bangula. (NIRAS et al, 2017b).

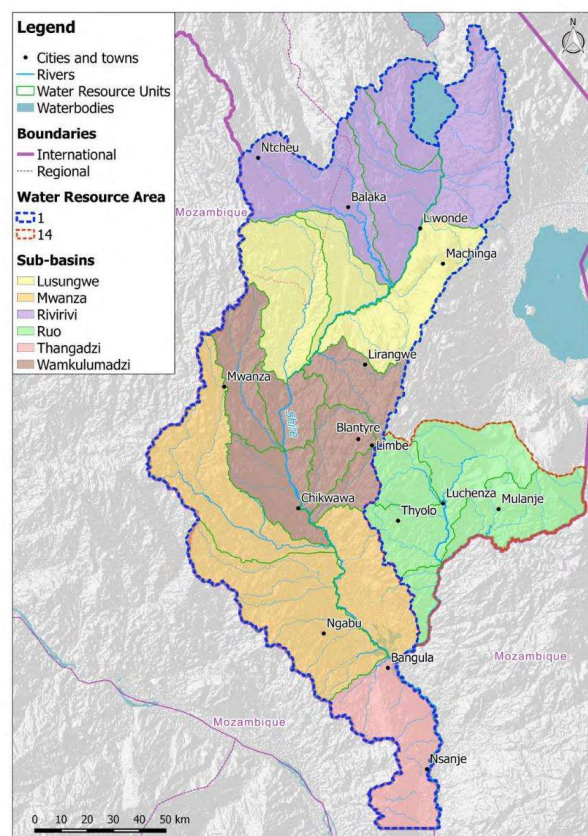


Figure 1: Sub-basins of the Shire River (NIRAS et al,

Water resources in the Shire River Basin are vital to support health, food security, livelihoods, and the national economy. The primary water uses in the basin are agriculture, hydropower, fisheries, industry, tourism and domestic use. A description of their significance is provided in Annex 1.

Water supply in the Shire River Basin is generally provided through gravity fed piped water systems managed by the Southern Region Water Board and through rural boreholes. At present the Shire River Basin has sufficient capacity to supply public water and meet irrigation demands at present in the dry season. However, this has started to be problematic and is expected to deteriorate further, as the Ruo Sub-Basin, the highest population density in the Shire River Basin, grows. The rapidly growing population is not only putting pressure on the provision of basic services including water supply, sanitation, health care and education, but also is leading to the massive destruction of the forests of the sub-basin.

2.2 Water Sector Regulatory Context

The institutional setup of the water sector in Malawi involves various government agencies, regulatory bodies, and other stakeholders, including CSOs, working together to ensure the effective management, development, and provision of water resources and services. Key institutions in regulation are the Ministry of Water and Sanitation (MoWS) established in 2022, mandated to manage and develop sustainable water resources for multipurpose use and provide safe water supply and sanitation services; and the National Water Resources Authority (NWRA), established in law in 2013 as an independent and sustainable parastatal authority tasked with ensuring improved water resources management and enforcing regulation in the country.

The comprehensive policy and legislative framework in which TTA operates reflects Malawi's commitment to sustainable natural resource management including water, environmental protection and the well-being of its people. This includes the National Environmental Policy, which aims to ensure a suitable environment for the health and well-being of all residents while promoting efficient utilization and management of natural resources. It also emphasizes the importance of restoration and maintenance of ecosystems, public awareness, and cooperation with various stakeholders.

The Water Resources Act emphasises the need for integrated water resources management with well-defined functions mandated to various institutions. The Act primarily includes provisions for catchment management and planning. The National Water Policy serves as a vision statement, promoting sustainable water management within the existing institutional framework, while the National Sanitation Policy focuses on improving sanitation and hygiene practices for better health and socioeconomic development, covering areas such as national health promotion in rural and urban settings, schools, and healthcare facilities.

3. Water security context

TTA farmers are entirely reliant on rainfall for tea cultivation, which makes them vulnerable to the water security impacts of climate change. To understand these challenges, a Water Risk and Opportunities survey was conducted, along with a comprehensive catchment analysis of the site. Through these assessments, the following priority water risks were identified. .

- Degraded quality of water
- Water scarcity for domestic use
- Erratic rainfall
- Limited knowledge on water and WASH related laws and regulations
- Perception of stakeholders, including communities and investors, that the site contributes to water contamination through fertiliser application.
- Potential loss of revenue from production losses and/or increased costs of production due to limited water availability.

4. Water-related opportunities from Implementing Water Stewardship Plan

At the outset of the project, TTA farmers did not have an effective strategy for dealing with water security risks they faced. However, in response to the findings of the water risks and opportunities survey they have developed a Water Stewardship Plan (Annex 2) to address these challenges.

5. Challenges of TTA in implementing water stewardship

5.1 Flooding

In March 2023 Malawi was hit hard by Cyclone Freddy, one of the deadliest storms to hit the continent in the last two decades, creating widespread devastation and loss of life. The impact of the cyclone on the TTA's catchment area significantly affected Thuchila farming communities and therefore the implementation of planned activities. 13 deaths were reported, and 447 families were displaced. The devastation caused by the cyclone initially forced a shift in focus towards saving lives, providing medical aid, and distributing essential supplies to the affected population, diverting resources and attention away from the project's action plan. Damaged infrastructure and limited accessibility made reaching the project sites not only difficult but unsafe. As a result, project activities were temporarily suspended, and project timelines revised to allow the refocus of priorities by TTAs management.

5.2 Access to safe water, sanitation and hygiene (WASH)

Access to safe drinking water is provided to most communities through boreholes and piped water systems. Many, which in the past were maintained by the government, have fallen into disrepair, leaving households without adequate safe water, sanitation and hygiene (WASH) provision.

“Women and girls face the most problems during shortages because they have to walk long distances just to go find water” -Resident of Nzambakoma Block

“In the past, the government made sure that we had pipes to draw water from the mountain for use in our homes, but over the years, the pipes have broken down, and some have been washed away by heavy rains. We have not had any other interaction with the recent governments on water” – a resident of Sukamayere Block

TTA policies encourage good WASH practices, and while most households are able to practice good sanitary hygiene, improving the availability of WASH facilities and encouraging better WASH practices would be beneficial to ensure the health and wellbeing of all community members. This is not only part of water stewardship but also a strong focus of the Fairtrade certification.

TTA holds WASH awareness campaigns targeting its member farmers to ensure that it is compliant with both Fairtrade and Rainforest Alliance standards.

5.3 Cost & Cost Sharing

The TTA faces significant challenges due to limited access to funds, which hinders the prioritization of water-focused projects among smallholder farmers' associations. To overcome these financial constraints, the association is actively seeking ways to leverage Fairtrade premiums and apply for grants designed to support smallholder farmers and vulnerable communities in addressing water-related challenges.

6. Changes driven by water stewardship implementation guided by the AWS Standard

6.1 Improved skills and knowledge of water management

6.1.1 Lead Farmer Catchment Management Training

The training of lead farmers (training of trainers) is a key part of the approach to building the farmers' knowledge and empowering them to tackle important catchment-level challenges identified by the Water Risks and Opportunity survey. From 13th – 14th February 2023, the Sukambizi Association Trust (SAT) Environmental officer trained lead farmers from Thuchila Tea Association (TTA) and SAT woodlot management committee members. A total number of 64 participants (25 women and 39 men) attended the training.

The community forest component includes training on how to establish and manage a tree nursery, forest establishment and management, and how to sustainably utilise them. By establishing and managing local woodlots, the aim is to promote practices that reduce deforestation and soil erosion, improving water infiltration rates and improve water quantity and quality within the watershed. The training focused on active participation, practical learning and collaborative learning, sharing ideas among participants.



Image 1: Community Forest Stewardship training

6.1.2 Water Point Management Committee Training

A training session was conducted for TTA lead farmers and community members who will form an active water point management committee for the newly installed water supply scheme in the Makawula area in Mulanje District. The participants were equipped with the necessary knowledge and skills to manage the water point and effectively disseminate information and practices within their communities. The training session, facilitated by Water Witness Malawi, took place from May 2023, with the collaboration of the Mulanje District Water office, community, and health officers. A total of 46 participants (30 women and 16 men), attended the training. Five people were trained for each of six water points and the remaining 6 were from the water supply scheme committee that will provide oversight to the water point committees.

Structured as a participatory workshop, the training fostered a collaborative learning environment that encouraged participants to actively share ideas and engage in meaningful discussions. Relevant case studies were effective in illustrating key concepts and demonstrating real-life examples. This approach allowed participants to grasp the practical applications of the training content and encouraged them to ask insightful questions and actively contribute to group discussions. Community participation and engagement were key focal points of the training, and a field visit was organized to the water scheme to enhance the experiential learning aspect. The importance of sustainable practices in water point management was highlighted through coaching on monitoring water quality, conducting routine maintenance, and ensuring the long-term functionality and sustainability of water points.



Image 2: Water Scheme field visit

6.2 Improved access to safe water for domestic use

TTA has installed a piped water supply scheme with six water points or tap stands in Makawula to improve access to safe water in these communities, helping to address water scarcity challenges. Water point management committees have been set up for each water point and District Water Development Officer (DWDO) was engaged to support with water governance training and water point management in May 2023. Training participants included the six committees managing water points installed by TTA.

The association plans to access funds through grants to install further water points in areas affected by water scarcity. Fairtrade Premiums are being explored and a self-help grant application has been submitted to the US embassy.

At the communities' request, government District Water Officers have carried out a thorough assessment of the existing piped system to identify areas of weakness and deterioration. Recommendations have been made to replace or repair damaged pipes with durable materials to ensure a reliable and efficient water supply.



Image 3: Chifunilo Mapila at one of the taps installed, Thuchila Water Scheme field visit

6.3 Improved water quality

Concerns were raised by TTA's management regarding the safety of the six newly drilled boreholes in their area, as they had not been provided with water quality test results. In response, TTA took action by requesting the drilling records from the project funders and examining the construction report. The report demonstrated that the drilling work had been conducted in compliance with established standards, and water quality tests had indeed been conducted, with the results showing that the water met the required quality parameters.

Upon receiving this information, TTA took proactive steps to engage with the communities and share the findings. This transparent approach was effective in addressing concerns and provide assurance regarding the safety of the water from the newly drilled boreholes. However, this experience served as a valuable lesson, highlighting the importance of involving community members in the drilling process from the beginning. By actively engaging community members, providing them with relevant information, and involving them in decision-making processes, concerns and uncertainties can be minimized. Doing so ensures that community members have access to necessary information and are empowered to make informed decisions about their water supply.

Additionally, at the catchment level, some farmers raised concerns regarding potential contamination of river water sources due to poor fertilizer application methods used by some farmers. To address these concerns, the issue was investigated, but no concrete evidence or collaborative reports indicating widespread contamination were found.

Understanding the significance of educating farmers on good fertilizer application methods to minimize any potential negative effects on water quality, TTA provided farmers training sessions. These offered farmers knowledge and guidance on best practices for fertilizer application, emphasizing the importance of following recommended guidelines and protecting the environment. In taking such proactive approach, TTA demonstrates its commitment to promoting sustainable and responsible farming practices which empower farmers to make informed decisions and actively contribute to the protection and preservation of the catchment area's water quality.

Continuous engagement, monitoring, and periodic reassessment of farming practices will be essential in maintaining the effectiveness of these efforts. By fostering a culture of responsible farming and ongoing education, TTA contributes to the long-term sustainability of tea farming while safeguarding the quality of the catchment's water sources

6.4 Watershed management

Currently there is insufficient data on groundwater including fluctuation of groundwater levels. The District Water Office are interested in identifying and researching boreholes affected by reduced groundwater. The data on depths, aquifer characteristics and other hydrogeological information can contribute to the development of guidelines for borehole drilling in the area, and may include recommendations to minimize the risk of groundwater depletion or contamination.



Image 4: Victor Gologoda from Phwela Block explains why he started a tree nursery .

TTA management have introduced by-laws to ensure farmers plant a minimum of 10 trees a year in their fields that can be harvested. Lead farmers were trained in February 2023 as part of a catchment management training,

Following the catchment management training for lead farmers in February 2023, seven farmers have tree nurseries, two groups of farmers own shared tree nurseries, and 85 farmers own woodlots that have on average 100 trees each. TTA plans to establish a woodlot on 0.77 hectares of land owned by the association. TTA lead farmers who WW trained in catchment management have since trained 125 more farmers who will use it to plan activities to address environmental degradation in the catchment. WWI shared the tiyeni deep bed farming approach for farmers to explore in assisting with soil erosion as one potential option.

6.5 Stakeholder engagement

The benefits of stakeholder engagement, such as the collaboration between SAT and TTA, have been instrumental in promoting a collaborative effort towards catchment management within the Ruo basin. Both SAT and TTA are involved in farming activities within the same catchment area, making their collaboration particularly relevant and impactful.

Through stakeholder engagement, SAT has facilitated the sharing of expertise and knowledge from their Environmental Officer, who supported by training farmers on sustainable environmental practices. This expertise is crucial for both SAT and TTA in managing their farming operations in a manner that is environmentally responsible and aligns with water resources management objectives. The incorporation of such a training will help ensure that farming practices are conducted in a manner that minimizes negative impacts on the catchment and promotes long-term sustainability.

Furthermore, TTA has specifically benefited through the programme from engaging with government officials, particularly the extension services on water resources management. The involvement of government officials in providing guidance and support to TTA enhances their understanding of best practices in managing water resources within the catchment and water governance. Their support will assist TTA in developing and implementing effective water management strategies in the long-term, such as efficient water use practices, good water point management water conservation measures, and compliance with regulatory requirements.

Ongoing monitoring visits and support from Water Witness will ensure the continued progress and success of these efforts, enabling participants to actively contribute to responsible water point management and the conservation of water resources. Harnessing the expertise of the lead farmers actively contributes to building a sustainable and resilient farming community.

7. Conclusions

Through the project, by strengthening and supporting the Sukambizi Association Trust (SAT), WW have been able to not only upscale water stewardship through TTA and TAML, but also ensure that the capacity is in place to scale up further both in the catchment and beyond in future. The water stewardship project has been important in contributing to TTA now being better water managers, ensuring compliance with legislation and international best practice, and demonstrating and monitoring responsible water use to catchment stakeholders. This has meant increased water security, improved livelihoods and climate resilience for more than >32,000 people in the Ruo sub-basin.

Severe flooding, due to Cyclone Freddy in March 2023 had a devastating effect on the lives of the smallholder farmers. Project implementation was disrupted, but not immeasurably. Investing in WASH in communities as part of water stewardship planning could not have been timelier when the risk of cholera rose following the floods.

Despite being able to address their most pressing water risks, TTA encountered some challenges in mobilising sufficient financial resources to address all of their water risks as well as funds to support further training by lead farmers to their peers. Despite these hardships, TTA remains resolute in their commitment to finding innovative solutions, seeking partnerships, and exploring sustainable strategies to overcome these financial constraints. With astute foresight, TTA has incorporated comprehensive training programmes focused on environmental and water shed management within their new grant submissions. They have incorporated these important elements into the environmental component of a newly awarded Agricultural Commercialisation (AGCOM) Project, funded by World Bank. As a result of the relationships build through this project, WW is in discussion with TAML as to how to bring Water Stewardship into the wider AGCOM project.

8. Recommendations

Engage the District Water Department Office (DWDO) and the National Water Resources Authority (NWRA) to ensure regulatory compliance and strengthen accountable water resource management

Effective engagement with government is key to the integrity and effectiveness of water stewardship initiatives. Bringing authorities, regulators and smallholders together to constructively discuss compliance efforts and sharing best practice is essential to strengthening accountable water resource management ensuring regulatory compliance.

Alleviate the financial and administrative burden for smallholders through closer alignment between water stewardship and agricultural standards: There is strategic complementarity between water stewardship and the requirements of agricultural standards, such as the Fairtrade Standard for Small Producer Organisations (SPO Standard) and the Rainforest Alliance's Sustainable Agriculture Standard. Highlighting to smallholders where a water stewardship action can not only reduce their water risk but also assist in meet compliance criteria, for example in WASH, represents a significant opportunity to mitigate the financial and administrative burden for smallholders. This would strengthen complementarity on water resources management and the need for compliance with agricultural standards.

Tea Association of Malawi (TAML) must embrace water stewardship as it is pivotal in enhancing the climate resilience of farmers and reinforcing the indispensable significance of responsible water management throughout the entire tea industry. To further increase the impact of water stewardship within the tea industry, we highly recommend that the Tea Association of Malawi (TAML) proactively continues its engagement in with water stewardship. By utilizing the association as a robust platform for outreach and collaboration, TAML can effectively expand the scope of water stewardship practices within its diverse membership, encompassing both small and large tea estates. Therefore, by fostering a culture of water stewardship, TAML has the power to drive transformative change and inspire other associations to adopt similar practices. There is also the opportunity for TAML to demonstrate the way forward in water stewardship to other agricultural supply chains in Malawi.

Tea growing smallholder farmers should actively engage to expand the scope of water stewardship within the tea farming communities. Collaborating with fellow farmers in responsible water management both in their own association and beyond, will not only enhance their resilience but contribute to the overall sustainability of the tea industry.

To ensure improved governance and citizen empowerment in water resource management, it is essential for local communities to actively engage with government authorities. By establishing effective communication channels and fostering collaborative relationships, smallholders and duty bearers can contribute to strengthening accountable water resource management practices. Engaging with government entities not only promotes transparency but also enables farmer communities to amplify their voices in decision-making processes that directly their lives.

Annex 1: Water uses in the Shire River Basin

Water use	Description
Hydropower	<ul style="list-style-type: none"> 99% of Malawi’s electricity comes from hydropower. The installed capacity of Malawi’s hydropower generating stations is 350.8 MW, of which 346.3 MW is located on the Shire River (NIRAS et al, 2016b).
Agriculture	<ul style="list-style-type: none"> Agriculture contributes almost 40% of the total gross domestic product for Malawi, employs 85% of the labour force, and accounts for 83% of foreign earnings (NIRAS et al, 2016a). Agriculture in the country is primarily rainfed, however, there are an estimated 35,000 hectares under irrigation in the Shire River Basin, 20,000 of which are estate irrigation and the rest consisting of smallholder irrigation (NIRAS et al, 2017a). The Mwanza sub-basin is home to the largest irrigation scheme in Malawi, the Illovo Sugar Estate near Nchalo (NIRAS et al, 2017b).
Fisheries	<ul style="list-style-type: none"> It has been estimated that 6% of the Shire River Basin’s livelihoods come from fisheries, and that the value of the fisheries in the Shire River basin is around \$7.5 million/year (NIRAS et al, 2016a) The fisheries surrounding Elephant Marsh are estimated to produce between 2,000 and 12,000 tonnes per annum (MRAG et al, 2017).
Industry	<ul style="list-style-type: none"> Water is of critical importance for many industries in their direct operations and supply chains. While the bulk of industry in the Shire River Basin is located in Blantyre, the Illovo sugar estate processing facility near Nchalo is located within the Mwanza sub-basin and is a significant water user. Indiscriminate disposal of waste is a concern in industry in the country (NIRAS et al, 2016c).
Water supply and sanitation	<ul style="list-style-type: none"> The Blantyre, Southern and Central Water Board’s abstract water from the Shire River Basin. It is estimated that the average daily water production in the Shire River Basin is 160.32 mega litres a day – including Water boards, gravity schemes, and rural boreholes (NIRAS et al, 2017b).
Tourism	<ul style="list-style-type: none"> The most popular tourist sites in the Shire River Basin are the various protected areas and wetlands – which are directly dependent on water resources. There are seven tourist areas in the Shire River Basin which are significant in terms of biodiversity and conservation: Liwonde National Park, Lengwe National Park, Majete Wildlife Reserve, Mulanje Mountain ecosystem, Mangochi Palm Forest Reserve, The Shire Marshes (Elephant Marsh and Ndindi Marsh), and Mwabvi Wildlife Reserve.

Annex 2: TTA Water Stewardship Plan

OBJECTIVE	CHALLENGES	TTA PLAN TO DEAL WITH THE CHALLENGES	ACTIONS PLANNED	PROGRESS
<p>Improve access to safe water-domestic use</p> <p>LINKAGE TO AWS</p> <p>OUTCOME:</p> <p>WASH</p>	<p>All blocks – use boreholes and tap water but insufficient water points</p> <p>In Zambakoma and Kanjedza blocks people still using unsafe water from wells based on the Thuchila Water Risks and Opportunities Survey</p>	<p>Install safe water points like boreholes and piped water.</p> <p>Nangowe Block; the Piped Water Project in progress - end in early 2023.</p>	<p>Do research for areas where water is scarce.</p> <p>Develop and implement plan to improve access to a safe water supply.</p>	<p>Areas identified below.</p> <ol style="list-style-type: none"> I. Kangaza II. Nakadangwa III. Lingani IV. Chanukha V. Kanjeza VI. Mpala <p>TTA installed a piped water supply scheme with six taps to help address water scarcity challenges.</p> <p>Assessment done by Water officers indicated leakages in the piped water system. Recommended that TTA fix the leaking pipes.</p> <p>Water point management committees setup for six taps but not yet trained. To be trained by Water Officers.</p> <p>The association plan to access funds through grants to install additional water points in areas affected by water scarcity. US embassy self-help grant application submitted. Currently also exploring using Fairtrade Premiums for next water projects.</p>
<p>Good water quality</p> <p>LINKAGE TO AWS</p> <p>OUTCOME:</p> <p>Water Quality</p>	<p>People do not know quality of water they access from water points. At Mpala, tests done but results never shared with community.</p> <p>Water pollution due to surface run-off (fertiliser contaminating water resources e.g., rivers)</p>	<p>Engage local water office for any records of water quality testing reports of the water points</p> <p>Engage local water office to support water quality testing.</p>	<p>Do research on which boreholes and pipes have not been tested.</p>	<p>Based on records. Water quality tests of the recently drilled boreholes were done through a United Purpose project.</p> <p>Piped water has not been tested.</p> <p>Follow ups were made regarding fertiliser contamination of rivers. No evidence or collaborative reports were found.</p>
<p>Water Shed Management</p>	<p>Reduced water availability</p>	<p>Introducing groundwater</p>	<p>Engage local water office on</p>	<p>Currently insufficient data on ground water and fluctuation of its levels. It was</p>

<p>LINKAGE TO AWS OUTCOME: Water Balance</p>	<p>within the catchment, especially ground water that feeds boreholes.</p> <p>Erratic rainfall</p> <p>Farmers' fields (some fields) were not holding moisture efficiently</p> <p>Siltation.</p> <p>Soil erosion</p>	<p>recharge practices</p> <p>Planting of trees by each farmer</p> <p>Establishment of a woodlot by the association to conserve the catchment.</p> <p>Engage the local Forestry office to offer training - Lead Farmers and Supervisors to be part of the trainers.</p> <p>Establish Woodlot Management committee and environmental committee will be in supervisory roles.</p> <p>Planting of vetiver around and in the farmers' tea fields to check soil erosion and reduce run-off</p>	<p>how best to address reduced groundwater availability challenges</p> <p>Association to enforce bylaws that require each farmer to plant a minimum of 10 trees and Vetiver grass.</p> <p>Lead farmers to be trained on:</p> <ul style="list-style-type: none"> -Catchment conservation -Tree nursery establishment and woodlot management -Soil moisture conservation -Water Conservation (Harvesting) 	<p>agreed with water office to research which boreholes are affected by reduced ground water.</p> <p>TTA management agreed to introduce bylaws to ensure farmers plant a minimum of 10 trees a year that can be harvested.</p> <p>Lead farmers were trained in February 2023 as part of a catchment management training. Lead farmers training farmers, so upscaling.</p> <p>Tree nurseries: Based on research the following information was developed.</p> <ul style="list-style-type: none"> -7 farmers have nurseries -2 nurseries are owned by a group of farmers -85 woodlots owned by farmers that have on average 100 trees -TTA plans to establish a woodlot owned by the association. Land to be allocated is 0.77 hectares <p>Good agriculture practices. WWI shared the tiyeni deep bed farming approach to help with soil erosion https://www.tiyeni.org/deep-bed-farming</p> <p>Plan to see if this was shared among farmers and if there are uptakes of the approach</p>
<p>Improve farmer knowledge of Water & WASH Laws & Regulations.</p> <p>LINKAGE TO AWS OUTCOME: Water Governance and WASH</p>	<p>Farmers are not empowered with knowledge of water laws and regulations that help in water resource management</p>	<p>Training farmers and the community on the Laws and regulations to improve knowledge on water use.</p>	<p>Engage DWDO (District Water Development Office)</p> <p>Develop a Plan to Train Farmers.</p> <p>Conduct Training</p>	<p>DWDO was engaged to support with water governance training</p> <p>Training on water governance and water point management done in May 2023.</p> <p>Training participants included 6 committees managing water taps installed by TTA</p>