

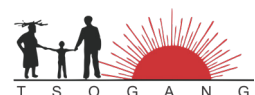


A CASE STUDY FOR MAYEPU VILLAGE

HOUSEHOLD WATER USE IN RURAL AREAS

Acknowledgements

We gratefully acknowledge the funding and support for the programme entitled Adaptive Response and Local Scale Adaptation for improving water security and increasing resilience to climate change in selected communities in Giyani, Limpopo. The programme is funded by the Government of Flanders, managed by the Water Research Commission and implemented by Tsogang Water and Sanitation, Association for Water and Rural Development (AWARD), University of the Western Cape (UWC) and the WRC's TTO Enterprise Development.



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The Giyani Local Scale Climate Resilience Programme (GLSCR) aims to develop and implement activities that will research, develop and demonstrate climate adaptive responses and solutions for optimising water utilisation in drought-stricken areas.

The programme will focus on the Greater Giyani Municipal area within the Mopani district and aims to impact an estimated 5000 beneficiaries over a three-year period in terms of water utilisation, improved water mix, and socio-economic opportunities as responses to climate adaptation.

A 2019 WRC study on droughts and adaptation strategies has highlighted risks to reduced productivity, livelihoods and food security, and an increase in vector and water-borne diseases in communities such as Giyani. Ultimately, climate change impacts on water resources in the Giyani area cannot be underestimated.

The programme has three key areas that will support improving local scale adaptation and resilience in Giyani.

They are:

- 1) a strengthened enabling environment whereby local authorities, institutions, communities, traditional authorities and market players are mobilised to improve climate resilience and water utilisation;*
- 2) improved energy, ground and surface water solutions developed with communities to optimise and diversify water sources;*
- 3) activities that support livelihoods and local economic development opportunities.*

The programme will cover a spectrum of rural and rural residential areas in Giyani, working closely with the Mopani District Municipality and the Greater Giyani Local Municipality. Implementation partners include Tsogang Water and Sanitation as the lead on water projects and infrastructure; Association for Water and Rural Development (AWARD) in support of capacity development and stakeholder engagement, University of the Western Cape (UWC) as the water and energy technical partner and the WRC's TTO Enterprise Development arm on social enterprise development supporting local economic development projects.





HOUSEHOLD WATER USE

A CASE STUDY FOR MAYEPU VILLAGE

**A guideline for household water use in the rural villages
of Greater Giyani Local Municipality**

ABOUT THIS GUIDELINE

The Household Water-Use case study and guideline, Mayephu Village located in Dzumeri, Giyani within the Mopani District Municipality, outlines the ongoing challenges faced by residents in water supply due to climate change, infrastructure issues, and load shedding. It also shares how the residents in the community have become resilient to the water supply challenges that they face.

Who is the guideline for?

The Household Water-Use case study and guideline, Mayephu Village is designed to serve a diverse group of stakeholders engaged in addressing water access, management, and resilience issues in rural communities. It targets policymakers, municipal planners, and water management authorities within the Mopani District Municipality and broader South African region grappling with similar water access challenges. Additionally, it aims to inform non-governmental organizations, climate resilience advocates, and researchers interested in the impacts of climate change, infrastructural limitations, and socio-economic factors on water resources. The case study offers valuable insights for community leaders, traditional councils, and local water committees involved in water distribution and conservation practices, highlighting the adaptive strategies and water access disparities among households. By examining these dynamics, the study supports informed decision-making to improve water accessibility and resilience for rural communities such as Mayephu Village.

What does the guideline contain?

The Household Water-Use case study and guideline, Mayephu Village provides an in-depth look at water access, usage, and adaptation strategies within this rural community. It examines the village's evolving water supply system, initially reliant on the Letavi River bulk supply scheme before shifting to community boreholes, which pump water to a central reservoir for distribution via communal standpipes. The study explores water use in the village, detailing how a 15-member water committee manages the weekly filling cycle of a 700,000-liter reservoir and oversees water distribution. It categorizes households into four main groups based on their water access and storage capacities, reflecting the village's socio-economic diversity. The study also addresses water use practices, including common storage solutions such as containers, drums, and JoJo tanks that residents use to manage the intermittent water supply. This case study offers insights into how rural communities adapt to limited water resources, highlighting the socio-economic factors influencing water access and utilization practices.

How to use the guideline?

To effectively use the case study, stakeholders should analyse the community's unique water supply challenges and adaptive strategies to inform decision-making in similar rural contexts. By examining details on water sourcing transitions, users can understand how infrastructural and environmental changes impact water reliability. The study's categorization of households based on water access and storage (from communal reliance to private borehole ownership) highlights socio-economic disparities and different levels of resilience. This segmentation is valuable for designing targeted interventions and policies that address varying needs within a community. Additionally, water use practices documented in the study, including storage solutions and community-led distribution management, provide practical insights into coping mechanisms for intermittent water access. Overall, the case study serves as a blueprint for rural water management, enabling planners, researchers, and policymakers to develop sustainable solutions that are both community specific and resilient to climate-related and infrastructural challenges.



HOUSEHOLD WATER USE

Mayephu village, founded in the early 1930s by Mayephu Mnisi falls under Dzumeri Traditional Authority in Greater Giyani Local Municipality and within Ward 27 of the Mopani District Municipality. It is 41.5 km to the southeast of Greater Giyani town. The population is estimated at 1940, with 365 households, 60% of which are female-headed families. The community relies on social grants, migrant work, domestic work, and small business enterprises for survival.

The village faces challenges of high unemployment, especially affecting women and youth. The village has relatively low rainfall and hot summers. The village's water supply has undergone significant changes over the years, influenced by climate change, infrastructural inefficiencies, and load shedding.

Initially, water for Mayephu Village was sourced from the Letavi River through a bulk supply scheme until around 2007. However, water shortages and supply unreliability emerged as challenges. In response, the community transitioned to a system relying on three community boreholes, installed in 2007, 2016, and 2022, respectively. These boreholes pump water to a village reservoir, which is then distributed through approximately 108 communal standpipes. In addition to these communal water sources, many households in Mayephu have their private boreholes, estimated to be around 120 boreholes. Some of these boreholes predate the introduction of the bulk water scheme in the area.



WATER USE IN THE VILLAGE

The water supply system operates by filling the village reservoir, with a capacity of 700,000 liters, once a week. Pumping continues for six days to achieve this goal, and taps are opened on Friday afternoons. By the next day, the reservoir is empty, and the pumping cycle restarts.

Water allocation and operation are managed by a 15-member water committee, including a pump operator employed through the Mopani District Municipality. The committee represents various stakeholders, including traditional and ward councils, cooperatives, and the livestock association.

Households in Mayephu have adapted to this system by acquiring containers (25 liters), drums (210 liters), and JoJo tanks (2200 liters) to store water for the week. These containers are filled from standpipes or informal tap connections in their yards. It's estimated that there are close to 300 of these informal taps in the village.



HOUSEHOLD CATEGORIES

Water is a precious resource in Mayephu, and its availability varies among households. Water is accessed in different ways:

Fetching from communal standpipes, using wheelbarrows and 20L containers. This is extremely labour intensive and also competitive as queues are long and people need to fetch all the water they need for a week in one day. (20% of households)

Informal yard (also called "illegal") connections to households. Some homes have connected their own supply to the bulk reticulation from the reservoir. From these yard taps containers are filled, usually large basins 210L drums and 20L containers and buckets. This practise has been condoned by the water committee and local structures. Issues here are that these pipes often leak and that this practise (~80% of households) reduces water availability to the communal taps. Often those collecting from communal taps, need to wait for these households to first get water, before water is available in the communal taps.

Household Jo-Jo tanks, filled from the "illegal" yard connections or directly from communal taps. It is estimated that around 5-10% of the households in the village do this.

In theory it is not allowed, but in practise the households that do this are the more influential households in the village and are not challenged directly and claim that everyone in the village is free to do this.

Individual boreholes at household level in addition to household JoJo tanks and yard connections. These households have resources to install their own boreholes with storage facilities.

The outcome is skewed access to water, with the poorer and more vulnerable households struggling to access even enough for basic human needs. There is not enough water supplied through the system to accommodate for all the unlawful connections presently in place. Household Categories

In Mayephu village, households can be categorized into four main groups based on their water storage and access:

- **Group 1 less than 20L per person per day**
- **Group 2 less than 40L per person per day**
- **Group 3 less than 90L per person per day**
- **Group 4 more than 200L per person per day**





WHAT CAN BE DONE

These guidelines are intended to help each group make the most efficient and sustainable use of the available water for household purposes, small livestock, household gardens, and small businesses based on the four groups of access to water resources and infrastructure.

GROUP 1: 20-40L per person/day allocation

These households are extremely vulnerable and poor, consisting mostly of woman-headed households, pensioners, or new entrants into the village. They do not have access to their own yard taps and rely on communal standpipes. Approximately 17% of households are in this category.

Guidelines for Group 1:

- **Basic Needs Priority**

Prioritize water use for basic needs such as drinking, cooking, personal hygiene, and sanitation.

- **Water Conservation**

Use water-saving techniques, fix any leaks promptly, and minimize wastage.

- **Community Support**

Collaborate with neighbors and community initiatives to ensure efficient use of communal standpipes.

- **Resource Assistance**

Seek assistance from community organizations to improve water access.



GROUP 2: <40L per person/day

These households have access to yard taps and can undertake some productive activities, such as small home gardens. Around 25% of households are in this category. They have enough water for general household use and can supplement their food supply to some extent.

Guidelines for Group 2:

- **Household Needs First**

Prioritize basic household use, including drinking, cooking, and sanitation.

- **Small Gardens**

Utilize extra water for small home gardens (20-100m²) to supplement your food supply.

- **Water-Saving Practices**

Implement water-saving techniques like mulching and drip irrigation to maximize garden productivity.

- **Community Support**

Share your gardening knowledge and resources with neighbors in Group 1.



GROUP 3: <90L per person/day

This group is functionally similar to Group 2, with either no productive activities or very small household gardens, which are generally slightly larger (around 200m²) than those in Group 2. Approximately 24% of the community falls within this category, and some participants have traditional poultry.

Guidelines for Group 3:

- **Balanced Use**

Prioritize essential household needs while maintaining slightly larger gardens (around 200m²).

- **Garden Efficiency**

Implement advanced gardening techniques like crop rotation and soil improvement to maximize yield.

- **Community Collaboration**

Share successful gardening practices with neighbors in Group 2 and Group 1.

- **Consider Small Livestock**

Explore keeping traditional poultry or small livestock if suitable for your circumstances.



GENERAL GUIDELINES FOR ALL GROUPS

- **Fix leaks promptly**

Regularly check for and repair any water leaks to prevent water wastage. Do not allow community standpipes to waste water.

- **Rainwater harvesting**

Consider installing rainwater harvesting systems to supplement your water supply, especially during the rainy season.

- **Community cooperation**

Support community water management initiatives and collaborate with neighbours to optimize water access and use.

- **Education and awareness**

Continuously educate yourself and your family about water conservation and sustainable practices.

GROUP 4: >200L per person/day

Households in this category have their boreholes or water sources and can maintain well-established gardens, small livestock (chickens, goats), and small, diverse fruit orchards.

Guidelines for Group 4:

- **Sustainable Practices**

Continue prioritizing household needs, maintaining thriving gardens (200-400m²), and supporting small livestock.

- **Water Management**

Implement efficient irrigation methods and monitor water usage to prevent wastage.

- **Diversify Your Garden**

Cultivate a variety of fruits, vegetables, and herbs to enhance your self-sufficiency.

- **Community Leadership**

Share your knowledge and expertise

WATER MANAGEMENT PRACTICES (Applicable to Groups 2, 3, and 4)

- **Site Assessment**

Begin by conducting a joint assessment of your site and water flow patterns to identify areas where runoff and water should be managed. Introduce the concept of contours and how they can be maintained.

- **Diversion Ditches**

These ditches divert excess water from areas with runoff to locations where you want to use the water for food production.

- **Swales**

Swales are ditches and ridges constructed along contours, allowing water to infiltrate the surrounding soil.

THE IMPORTANCE OF STORAGE

In rural areas, water storage is crucial for ensuring a stable water supply, especially in regions where water scarcity is a common issue. Despite its importance, water storage is frequently overlooked in development planning, leading to challenges in water access during dry periods.

Water storage makes it possible for people to be involved in productive uses and contribute to food security. Proper water storage systems enable communities to engage in agriculture and other productive activities even during periods of low rainfall. This contributes significantly to food security, allowing for irrigation and the maintenance of livestock throughout the year.

Water storage is a relatively cheap option for rural projects. Investing in water storage solutions, such as rainwater harvesting tanks or small reservoirs, can be a cost effective way to enhance water availability. These systems are often more affordable than large-scale infrastructure projects and provide immediate benefits to rural communities. Water storage needs monitoring (mostly not done) and management.

Effective water storage requires regular monitoring and maintenance to prevent issues like contamination, leaks, and evaporation. Unfortunately, many rural storage systems lack proper management, which can lead to reduced effectiveness and potential health risks. Water quality and storage are frequently not considered in rural programs. In many rural development programs, the focus is often on providing water access, with insufficient attention given to the quality of stored water. Ensuring that water storage solutions include measures to maintain water quality is essential for the health and well-being of rural communities.

Over-specified water storage, on the other hand, is a problem for groundwater and borehole over exploitation. While water storage is vital, overbuilding storage infrastructure can lead to the over-extraction of groundwater, which may deplete local water sources. This highlights the need for balanced planning that considers both the benefits and potential environmental impacts of water storage.



WATER USE PRACTICES & FOOD SECURITY

These guidelines are intended to help each group make the most efficient and sustainable use of the available water for household purposes, small livestock, household gardens, and small businesses based on the four groups of access to water resources and infrastructure.

In reality, only households in Group 4, with their private boreholes, have managed to maintain reasonably sized household gardens (200-400 square meters). Households in Group 3, with JoJo tanks filled from the communal system, often have smaller gardens (20-100 square meters).

Households in Groups 1 and 2 are less active in productive activities. Irrigation practices in the gardens mainly involve hosepipes and buckets for adaptations of short furrow irrigation, or drip irrigation. Householders are well aware of water salinity issues and have adjusted their crop varieties, watering routines, and soil management practices accordingly.

THE CHANGING CLIMATE

The Mayephu Villages water use practices demonstrate a clear progression from no productive activities to household gardens, small livestock, and fruit trees, depending on the consistent availability of water. Despite the challenges posed by climate change and water scarcity, community members are intrinsically aware of water demand for productive activities and adapt their practices accordingly.

Dryland field cropping (depending on rainfall), once common, has become difficult under current climatic conditions, pushing villagers towards more water-efficient gardening methods. While challenges persist, including equitable water access and addressing salinity issues, the community's resilience and adaptive practices are evident in their agricultural endeavours.



WHAT HAVE WE LEARNT IN GIYANI?

The conclusions that can be drawn from the **Giyani case study** highlight the strength and resilience of the communities in the region:

- **Resilience and Coping Mechanisms**

The communities in Giyani have demonstrated a remarkable ability to adapt and develop their own coping systems in the face of challenges. This resilience is crucial for maintaining their livelihoods and ensuring continued access to resources.

- **Agency and Stewardship**

There are clear signs of agency and stewardship within the communities. This suggests that the local population is actively engaged in managing and protecting their resources, ensuring sustainability for future generations.

- **Self-Regulation and Local Governance**

Village structures play a vital role in self-regulation and the management of resources. By adhering to local rules and regulations, these communities effectively manage the availability of resources, ensuring equitable distribution and use.

- **Storage Management**

Access to and use of storage facilities is identified as a major community management issue. Effective storage solutions are critical for managing resources during times of scarcity, highlighting the need for improved infrastructure and resource management strategies.

- **Community Savings and Infrastructure Maintenance**

Villages often organize around savings specifically for infrastructure maintenance. However, these savings are typically reserved for times of crisis, indicating a reactive rather than proactive approach to infrastructure management.

- **Rainwater Harvesting**

Although roof rainwater harvesting is practiced by almost all households, this is not a focus – as storage options are very limited. Foreseeably, a greater focus and more support in this area can improve the management of limited water resources in the village substantially.

Mayephu Village's experience highlights the importance of sustainable water management and the integral role of water in supporting household livelihoods and local food production and underscore the importance of community driven approaches in resource management and resilience building, particularly in rural areas such as Giyani.



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