GLSCRP
GIYANI LOCAL SCALE CLIMATE RESILIENCE PROGRAMME

WATER RESEARCH COMMISSION

GUIDELINES FOR WATER USE IN GIYANI

IMPROVING WATER USE MANAGMENT

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The Giyani Local Scale Climate Resilience Programme (GLSCRP) 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.

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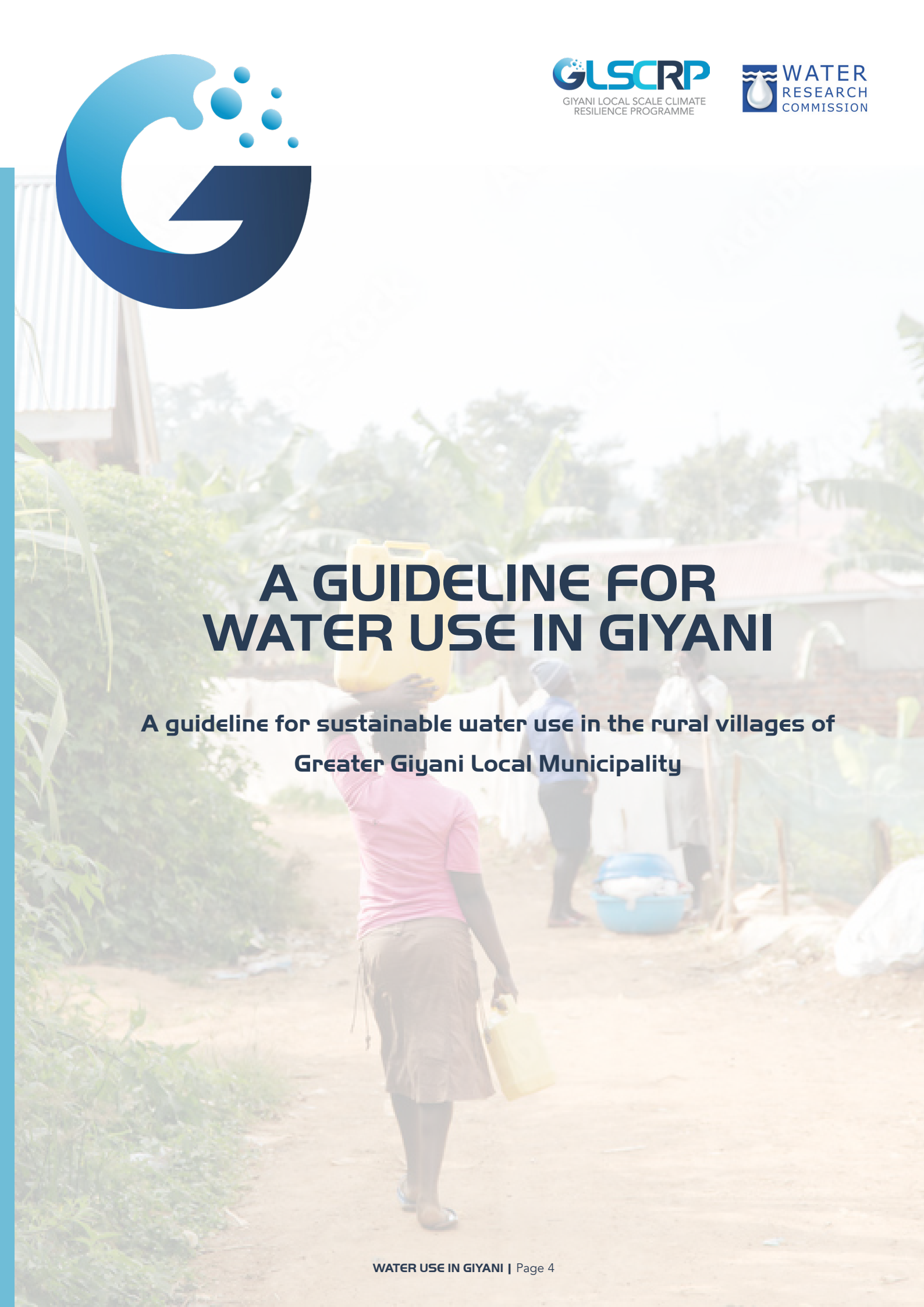

A GUIDELINE FOR WATER USE IN GIYANI

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

ABOUT THIS GUIDELINE

The Water Use guideline for rural areas focuses on equitable and efficient use of water, recognizing the varying levels of access across households.

The guideline helps households make the most of available water for domestic use, livestock, gardens, and small businesses, promoting sustainability and responsible water management in rural communities.

Who is the guideline for?

The Water Use guideline is designed for households in rural areas with varying levels of access to water infrastructure. It targets four groups based on their water availability, including those relying on communal collection points or standpipes, as well as households with private water sources such as springs or boreholes. The guideline aims to assist community members, especially in regions like Limpopo, where water supply can be unreliable, by helping them optimize water use for household needs, small livestock, gardens, and small businesses. It is meant to promote sustainable water management across all households, regardless of their access to water resources.

What does the guideline contain?

The guideline consists of water access options whereby water availability is categorized into four groups based on access to infrastructure such as communal collection points or standpipes, which are common in Limpopo. Each of those four categories of households use water differently according to water availability and storage. The guideline also consists of general guidelines for all those four groups in terms of operation and maintenance, sustainability of water use, and education and awareness of water conservation. Furthermore, the guideline also consists of water management practices. The practices are considered for households in terms of water use efficiency and enhancing water availability in gardens.

How to use the guideline?

The water use guideline for rural areas can be used to help households manage their water resources more effectively and sustainably. By following the recommendations based on their specific water access, households can ensure they are using water efficiently for daily needs, such as cooking, cleaning, and drinking, as well as for supporting small livestock, household gardens, and small businesses. Communities can use the guideline to promote equitable water distribution, ensuring that all households, whether they rely on communal points or private sources like boreholes, use water responsibly. Additionally, the guideline can inform decision-making during times of water scarcity, encouraging practices that conserve water and prioritize essential uses, which is critical in areas with unreliable water supply.

RESPONSIBLE WATER USE MANAGEMENT

Water is a precious resource in our villages, and its availability varies among households. To ensure equitable and responsible water use, we have categorized households into four groups based on their access to water resources and infrastructure. 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.

The water services and access options are different depending on the area and village. In Limpopo water schemes generally provide water either at communal collection points or through communal standpipes. Yard connections in homesteads are extremely rare. Reliability and continuity of water supply is an issue and householders often have to go long periods without water. Private and individual arrangements for access from springs, streams and boreholes is common for those householders who can afford this.

WATER ACCESS OPTIONS

Group I: 20-40L per person/day allocation

These households are extremely vulnerable, consisting mostly of woman-headed households, pensioners, 'foreigners,' or new entrants into a village. They rely solely on communal water access points and have little to no water storage options at household level. This group usually makes up around 15-25% of the households in a village. Here are some guidelines for group 1:

- **Prioritize basic needs before other uses**
  Use water primarily for drinking, cooking, personal hygiene, and sanitation.
- **Limit water use in households**
  Reduce any losses and wastage immediately and use water saving-and-sharing rules in the household.
- **Collaborate with neighbours**
  Cooperate with nearby households to ensure the communal standpipes are used efficiently and that taps are not left running.
- **Explore community support**
  Seek assistance from community initiatives and organizations to improve water access.

Group 2: <70L per person/day

These households have access to standpipes close to, or in their homesteads (private), have access to limited water storge options 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.

- **Household needs first**

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

- **Maintain small gardens**

Use extra water for small home gardens to supplement your food supply.

- **Water conservation**

Implement water-saving practices like mulching, drip irrigation, greywater management and rainwater harvesting.

- **Support the community**

Share knowledge and resources with neighbours in Group 1 to help them improve their situation.

Group 3: ~100L per person/day

This group is functionally similar to Group 2, but with better storage options and more productive activities such as slightly larger (around 200m2) households gardens, than those in Group 2. Approximately 24% of the community falls within this category, and some of these households also have traditional poultry, or other small livestock such as goats.

- **Balance needs**

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

- **Improve garden efficiency**

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

- **Water management**

Implement water conservation strategies and efficient irrigation methods and monitor water usage to prevent wastage

- **Collaborate**

Share successful gardening practices with neighbours in Group 2 and Group 1 to help them improve their productivity.

- **Consider small livestock**

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

- **Support the community**

Share knowledge and resources with neighbours in Groups 1 and 2 to help them improve their situation

Group 4: >200L per person/day

Households in this category have private boreholes or water sources, in addition to the communal options, with better water storage options and can maintain well-established gardens, small livestock (chickens, goats), large livestock and small, diverse fruit orchards.

- **Sustainable practices**

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

- **Water management**

Implement water conservation strategies and 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, expertise and resources with other groups to help them improve their water management and productivity.

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.

Manage and regulate use of borehole water to reduce the danger of over pumping and salinization. Pay attention to potential sources of contamination of groundwater in and around your homestead and borehole. Also pay attention to the need for groundwater recharge by minimizing soil erosion and run-off and maximizing water infiltration around boreholes and in the village as a whole.

WATER MANAGEMENT PRACTICES

(Kruger, et al., 2021)

Good water management practices are essential for water use efficiency and enhancing water availability in both gardens and fields. Many practices have both soil and water components. Here we focus on those practices that increase water in the soil in situ water harvesting, increase infiltration and increase water holding capacity. Practices are applicable in both garden and field cropping contexts.

SITE ASSESMENT

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 (see guidelines) and how they can be measured.

DIVERSION DITCHES

These ditches carry water from places where there is too much run-off to areas where you would like to use the water – through infiltration into the soil. You can for example divert water off a local road into fruit tree basins to both reduce erosion and improve water availability. Ditches 30cm deep and 30cm wide are dug at a shallow gradient -1,5-3% to channel water to beds in the garden or field. Planting can be done in the ridge, adding manure and compost and mulching of both ridges and ditches is a good idea.

SWALES

Swales are ditches and ridges constructed along contours. The ridge is made below the ditch, allowing water to infiltrate through the ditch into the surrounding soil. Permanent crops (e.g., fruit trees) can be planted just below the ridge, while seasonal crops (e.g., vegetables) are planted between the swales.

FURROWS AND RIDGES

Furrows are dug on contour and soil placed upslope in a mound. Planting is done on the mounds or ridges and irrigation or water, flows along the furrow. It is possible to create cross ties to ensure good irrigation- so water can accumulate in the furrow and seep into the ground. Mulching is a good idea.

INFILTRATION PITS & BANANA CIRCLES

Basins are dug in the soil along water flow lines (to catch and slow water). These basins are filled with organic matter (large amounts) mixed with soil and bananas or other water loving crops are planted in the basins A variation of this is that one pit or basin is dug in a water flow line and slowly filled with organic matter (green and manure)- for slow composting. Here bananas or other crops are planted on the edges.

STONE LINES & BUNDS

Stone lines are packed on contours to control water movement and provide for a bit of build up of soil and silt behind the lines. The stones are keyed into a shallow ditch and larger stones are packed downslope from the smaller stones to avoid stone lines form breaking and also to allow slow movement of water though the stone lines. Planting can be done below the stone line as more water accumulates there, or just above the stone line in the accumulated silt and soil.

CHECK DAMS

These are small dams constructed perpendicularly across a drainage ditch, or waterway to counteract erosion by reducing water flow velocity and allowing sedimentation of silt. Different materials can be used including soil, stones, wood and vegetation. The stones or other materials are keyed into the slope, on contour, to reduce erosion caused by overland flow of water. The outcome is the formation of small, benched terraces of fertile soil for plant growth.

Other water management practices that can be explored include rainwater harvesting and greywater management.

By incorporating these water management practices into your gardening and farming activities, you can increase water use efficiency and contribute to the sustainability of our village's water resources. Together, we can ensure that everyone has access to an adequate and sustainable water supply while promoting productive and resilient livelihoods in Giyani.

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