# Evaluation of the Impact of Gender Transformation Interventions in the Water Sector to Improve Access to Water for Women

Report for the

Water Research Commission

By

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A special thank you to the WRC for funding the project and in particular the Research Manager for his input and guidance.

## List of Acronyms

| | |
|---|---|
| AGP | Austrian Government Programme |
| AIP WACDEP-G | Africa Water Investment Programme- Gender Transformative Water, Climate and Development |
| AMCOW | African Ministers' Council on Water |
| AU | African Union |
| AWF | African Water Facility |
| CEDAW | Convention on the Elimination of all forms of Discrimination |
| CL | Compulsory Licensing |
| DAC | Development Assistance Committee |
| DPME | Department of Planning, Monitoring and Evaluation |
| DWS | Department of Water and Sanitation |
| GDH | General Department of Hydraulics |
| GIZ | Germany Agency for International Cooperation |
| GOM | Government of Morocco |
| GRES | Gender Results Effectiveness Scale |
| HDIs | Historically Disadvantaged Individuals |
| HWR | Hippo Water Roller |
| ICWE | International Conference on Water and the Environment |
| IWMI | International Water Management Institute |
| KII | Key Informant Interviews |
| MUS | Multiple Use Water Services |
| NEMA | National Environmental Management Act |
| nPFWeGe | National Policy Framework for Women's Empowerment and Gender Equality |
| NWA | National Water Act |
| NWRS | National Water Resource Strategy |
| ONEP | National Potable Water utility |
| PDR | Lao People's Democratic Republic |
| RPF | Resource Poor Farmers |
| SDG | Sustainable Development Goals |

| | |
|---|---|
| SMT | Social Mobilization Teams |
| STC | Specialised Technical Committee |
| ToC | Theory of Change |
| WARS | Water Allocation Reform Strategy |
| WHRC | Water and Health Research Centre |
| WRC | Water Research Commission |
| WWEP | Women in Water Empowerment Programme |
| UJ PEETS | University of Johannesburg’s Process, Energy & Environmental Technology Station |
| UNGA | United Nations General Assembly |

# Executive Summary

The intention of the impact evaluation was to assess the impact of policies, programmes, projects or interventions linked towards providing women with more access to water. To inform the impact evaluation, four case studies were selected, with each representing a different form of intervention or initiative to provide increased access to water. These case studies consisted of interventions aimed at changing available water resources to communities (Water Allocation Reform Strategy, WARS), providing new and alternative sources of water (Hydro Panel), revamping available sources of water (Multiple Use Water Services, MUS), as well as enabling collection and handling of water (Hippo Roller). Fieldwork was done in three of the four case studies, while document analysis was conducted in the fourth. The objective was to assess the impact of these interventions in terms of increasing access of water to rural women. Data collection and analysis followed the case study method, assessing each intervention within its contextual application, while evaluating how it contributes to the general programme of correcting the historical imbalances within the water sector through water resource allocation, provision of new sources, and means of handling water. Thereafter a comparative analysis was undertaken across the case studies to identify themes.

A limitation to the evaluation was the lack of meaningful monitoring data, across all the case studies, to support the evaluation, hence the evaluation relied heavily on the perceptions of the participants. It was not possible to arrange interviews with WARS beneficiaries. Instead, only the Implementing Agent from the Department of Water and Sanitation was interviewed. All data regarding the benefits of the intervention were inferred from existing reports.

In total, eight interviews were conducted at a programme/implementation level, 37 beneficiaries were interviewed, and eight non-beneficiaries were interviewed in the course of the evaluation.

A Theory of Change was developed with the understanding that equitable access to water can only be realised if sustainable resources, effort and time is dedicated to the cause. South Africa has legislation in place that promotes gender equity and women empowerment. The National Policy Framework for Women's Empowerment and Gender Equality of 2000 provides a clear vision and framework to guide the process of developing laws, policies, procedures and practices which will serve to ensure equal rights and opportunities for women and men in all spheres and structures of government as well as in the workplace, the community and the family. The results of providing women with increased access to water must be the empowerment of women. As such a short-term outcome has to see an increase of water access to women. In the intermediate run, this increase of water access should lead to women spending less time collecting water, therefore making more time available to other social, household and income related activities. The increase of water access should also lead to improved safety, health and hygiene related activities. Ultimately, the aim of various initiatives and interventions being developed and implemented within the water sector is to empower women within the water sector of the country. When women receive increased access to water, it creates an environment for alternative opportunities such as school and other income

related opportunities, which challenges the patriarchal social norms and stereotypes of women being the water bearers of the country. By providing women with increased access to water women are able to take greater control over their lives at personal, household and community level thereby empowering them to enjoy an improved quality of life. The achievement of these outcomes is based on the assumptions that there is political will, commitment and motivation to achieve these results. In addition, that there is awareness, capacity and the available funding and resources to meet these obligations.

The Organisation for Economic Co-Operation and Development evaluation criteria were used to guide the evaluation. However, due to a lack of design and/or monitoring and reporting data it was not possible to evaluate the effectiveness and efficiency of each case study. Hence, the impact evaluation was conducted in line with the relevance, coherence, impact and sustainability criteria.

Based on the analysis of both secondary and primary data as well as the Theory of Change in line with the objectives of the evaluation, the following conclusions are drawn.

**Conclusion 1:** The interventions studied under this evaluation are effective in increasing access to water for women in some remote areas in the Eastern Cape, Limpopo, and Mpumalanga. All interventions had the effect of increasing water access to women, through either (re)allocation of new water resources, construction of new and alternative sources, as well as enabling collection and storage of water in households.

**Conclusion 2:** Access to water improved the health of family members in the household but surprisingly, access to water did not improve the health of women to the same extent as that of other family members in the household.

**Conclusion 3:** Contrary to the finding of the literature review, access to water did not have a significant positive impact on children's ability to attend school.

**Conclusion 4:** The evaluation did not identify any relationship between access to water and the ability to start or run a business.

**Conclusion 5:** The sustainability of the hydro panels is in question due to unaffordable maintenance costs by community members. The high capital outlay and maintenance costs are a barrier to entry for the intervention and for the expansion the intervention. While the hydro panel mechanism is a green innovation, its water production capacity is insufficient in meeting all the drinking water demands of the beneficiary households in the village. While the system is apt for the mountainous terrain of the beneficiary communities in the Eastern Cape, more needs to be done to ensure that residents do not resort to contaminated river water to supplement the insufficiency of the system.

**Conclusion 6:** The hippo rollers are effective in shortening the time taken to collect large volumes of water, but such interventions must go hand-in-hand with

infrastructure development projects, to increase number of potable water sources in communities.

**Conclusion 7:** The MUS intervention has empowered community members in the self-supply of water by allowing community members to design, create and implement solutions relevant to their environment and challenges. By doing this, it fostered a sense of ownership and accountability and therefore the community members will be more willing to look after the infrastructure built.

**Conclusion 8:** All interventions that increase access to water to communities appeared to be appreciated by beneficiaries, however, political will and government collaboration is needed to enhance the effectiveness and sustainability of such systems and constant and regular maintenance is indispensable to any technological innovative project.

**Conclusion 9:** According to beneficiaries, while the received interventions shortened the time and distance spent on water collection activities, especially for women and children, more water infrastructure should be extended to remote areas, including piped water in residences.

**Conclusion 10:** The stakeholder engagement and collaborative methods used by different interventions were effective in building rapport, trust and local ownership. However, care must be taken to ensure that the structural arrangements and constraints that produced discrimination of certain groups, such as women, are not reproduced within the reform interventions.

**Conclusion 11:** The interventions had an aggregate effect of increasing access to water, as well as making it reasonably effective for women to collect, store, and use clean water.

**Conclusion 12:** The time and distance expended in water collection activities was reportedly reduced, re-allocating more time for other household activities, income generation and selfcare.

**Conclusion 13:** The gender divide in water collection roles was marginally impacted due to the introduced new and convenient means of collecting water. Men were reportedly increasing their water collection role due to the effectiveness and convenience of the infrastructure. However, while this may be few and anecdotal, there is potential to include men's participation in water collection as means of distributing domestic tasks within household members, thereby relieving pressure on women and children.

**Conclusion 14:** Whereas the correlation of water access to education, health, and business was affirmed in this evaluation, with most beneficiaries reporting positive outcomes, there is need for more inductive studies to ascertain/confirm the extent of the positive developments.

**Conclusion 15:** The main challenge identified was lacklustre involvement of government. Implementing agencies and local communities indicated challenges in getting districts and municipalities, as Water Services Authorities, involved in the various interventions. This was seen as essential since most of the funding instruments have a limited time-span, whereas the government does have the mandate and resources to sustain the initiated changes.

**Conclusion 16:** Another challenge is the need for effective and regular maintenance of the infrastructure. While the implementing agency for hydro panels reported that the funder and the technology company have offered guarantees for fixing and replacing ineffective and inefficient hydro panels, this has not been experienced on the ground. Instead beneficiaries resorted to supplementing hydro panel water with river water due to faulty and inefficient hydro panels.

**Conclusion 17:** There is need for specificity and intentionality in achieving gender transformation and empowerment within the water sector. Simply providing infrastructure or services without intentionally addressing the structural constraints that keep women in a subservient role may not realise intended objectives.

The following recommendations emanated from the evaluation:

**Policy and Legislative Framework**

- Increase the empirical adequacy of the theoretical framework (ToC).
- Ensure accountability at all levels of implementation

**Design and Implementation**

- Encourage, mandate and expand water infrastructure

**Institutional & Governance**

- Better inter-governmental alignment through clear lines of communication
- Review current resourcing strategies

**Financial Management**

- Develop clear guidelines and inclusion criteria of beneficiaries

**Stakeholder Engagement**

- Reassess existing stakeholder initiatives in terms of gender transformation in the sector
- Develop and implement a comprehensive awareness campaign

**Capacity Development, Knowledge Sharing and Strengthening Partnerships**

- Strengthen institutional capacities of all government officials, non-state actors and sector stakeholders

- Use existing water sector forums to share information, to encourage collaboration, and to share lessons learnt
- Strengthen partnerships with other government departments, funders, and key stakeholders

**Monitoring and Reporting**

- Strengthen the current data collection methods, mechanisms, and storage
- Develop key performance indicators for gender transformation in the water sector

**Areas for Future Research**

- Evaluation of the impact of sanitation interventions on women in the water sector.
- Evaluation of the impact of WARS.
- Research on the standardisation of gender transformation terminology in the water sector.

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# 1 INTRODUCTION

## 1.1 Overview

It has long been accepted by government, labour and the private sector that women are marginalised in almost all aspects of society, the water sector is no exception. Since the dawn of democracy in South Africa in 1994, government has worked tirelessly with its partners in civil society and the private sector to prioritise the involvement of women in the water sector, as well as to improve access to water for women.

Across the world, women and men access, manage, use and benefit from water differently. In many cultures women are the sole users of water within a household as they are responsible for the provision, sanitation and health of their household, while the men primarily use water for income generating activities such as large-scale farming or livestock (Adeniyi and Adeniyi, 2020). Research has found however that women are considerably more disproportioned in terms of access to water compared to men and therefore they are also markedly more affected by the lack of access to water (Kayser et al., 2019).

Although there are many projects and programmes that have been implemented in the public and private sectors in South Africa to improve access to water for women, there have been limited studies to assess the impact of these interventions on women's lives. This evaluation will provide a categorical and evidence-based analysis of four sector interventions to show what has worked, what has not worked and what can be improved to support change in the sector towards gender equality with specific focus on access to water. The findings of the evaluation will inform the way forward on the design and implementation of programmes relating to access to water for women.

The evaluation was conducted in four main steps namely (1) planning and design, (2) data collection and consultation, (3) data analysis and (4) report writing. Several tools were used to inform the evaluation including:

- Literature and document review which included national and international case studies;
- Semi structured interviews at a programme level;
- Structured interviews with the beneficiaries of the various interventions; and
- Field observations.

The evaluation provides an understanding of how the different initiatives implemented to increase access to water have impacted the lives of women.

## 1.2 Gender Equality Objectives in South Africa

The Constitution of South Africa, the basis for all legislation in the country, guarantees gender equality. It is from this undertaking that various gender transformation interventions are implemented in the country. Gender transformation requires efforts that are put in place to challenge gender stereotypes and norms to reach gender equality and is commonly associated with gender mainstreaming (Winterford, Megaw and Gero, 2020). In South Africa, a multi-layered approach in the legislative process towards gender equality was adopted. The National Policy Framework for Women's Empowerment and Gender Equality establishes the roadmap for public policy, legislation and organisation and operational policy. Amongst the various objectives identified in the Policy Framework, women's rights as a human right, the design and implementation of affirmative action programmes targeting women, the promotion of economic empowerment of women and the need to change policies and practices which hinder women's access to basic needs. The economy and decision making are considered central to improving access to water for women. Other water sector gender transformation policies such as the National Gender Policy which actively promote the participation of women in the water sector are aligned with the fundamental objectives of the National Policy Framework for Women's Empowerment and Gender Equality.

## 1.3 Aim, Scope, Objectives and Criteria of the Evaluation

### 1.3.1 Aim of the Evaluation

The aim of the impact evaluation is to assess the impacts of programmes, projects or interventions that prioritise access to water for women. The evaluation aims to understand how gender transformation is positioned as a central tenet in the access to water, how change due to the intervention is measured, how access to water interventions responded and kept pace with a rapidly changing environment and economy that has contributed towards the disproportional impact on women and how the livelihoods of the women who benefitted from improved access to water have changed since the inception of the various interventions.

### 1.3.2 Scope of the Evaluation

The impact evaluation was informed by the findings of four case studies representing a different form of intervention in providing improved and/or increased access to water for women. The case studies were compared and analysed against the overall objectives of gender transformative initiatives in South Africa.

The following case studies were identified:

- The Eastern Cape Hydro-panel Project;
- The Hippo Water Roller Project;
- The Multiple Uses of Water Project; and
- The Water Allocation Reform Strategy.

### 1.3.3 Objectives of the Evaluation

The objective of the evaluation is multi-fold and includes the following:

- To assess the impact of the intervention on women's access to water;
- To assess the extent to which the intervention has achieved its aims and objectives;
- To assess which processes, methods or practices have worked;
- To better understand the challenges women encounter in accessing water; and
- To better understand the challenges Implementing Agents experience in implementing interventions that prioritise access to water for women.

### 1.3.4 Criteria of the Evaluation

The Organisation for Economic Co-Operation and Development (OECD), an intergovernmental organization, developed a set of evaluation criteria, through its Development Assistance Committee (DAC) to evaluate development assistance projects and programmes. The DAC principles include six criteria namely (1) Relevance, (2) Coherence, (3) Effectiveness, (4) Efficiency, (5) Impact and (6) Sustainability. The principles are intended to help ensure that evaluations are thorough, consistent, and useful. The evaluation of gender transformation interventions in the water sector in South Africa has not been undertaken in recent years. According to OECD (2021) the criteria should be used applied thoughtfully and the use of the criteria depends on the purpose of the evaluation. Therefore, even though it is not necessary to use all six principles in an impact evaluation, it was the intention of the team to evaluate each case study against all six principles. Due to a lack of design and/or monitoring and reporting data it was not possible to evaluate the effectiveness and efficiency of each case study.

Hence, the impact evaluation was conducted in line with the relevance, coherence, impact and sustainability criteria. According to OECD (2021), relevance entails examining the extent to which the intervention's objectives and design respond to beneficiaries' needs and priorities, as well as alignment with national, global and partner/institutional policies and priorities. Coherence examines the extent to which other interventions (particularly policies) support or

undermine the intervention and vice versa. Impact is the extent to which the intervention has generated or is expected to generate significant positive or negative, intended or unintended, higher-level effects. Sustainability is the extent to which the net benefits of the intervention continue or are likely to continue.

Further the evaluation aligned to the Department of Planning, Monitoring and Evaluation (DPME) Guideline on Impact Evaluation (2024)

## 1.4 Evaluation Approach and Methods

Primary and secondary data was used to assess the objectives of the evaluation and to answer the questions of relevance, coherence, impact and sustainability of the 4 access to water for women interventions that were implemented. The evaluation was based on a case study approach. As such the gender transformation interventions are discussed as case studies however the design remains an impact evaluation at a programme level.

### 1.4.1 Data Sources and Collection

Both primary and secondary data sources were used to inform the evaluation. Secondary research included a literature and document review.

The secondary data was used to answer questions on the factual aspects of the programme design and implementation, such as programme objectives, programme resources (human, financial and physical), programme activities and the institutional arrangement (implementation and governance structures).

**Document Review:** Documents reviewed included project documents, diagnostic reports, conceptual frameworks, handbooks, and annual review reports.

**Literature Review:** Literature reviewed included academic articles and research reports published on similar programmes and initiatives conducted internationally and locally.

This literature and documents reviewed assisted in understanding the water access initiatives and designing the research instruments such as the questionnaires, the interview and observation guides and the development of a Theory of Change (ToC) at a programme level.

Quantitative and qualitative primary data was collected as follows:

- Key Informant Interviews (KII) with Implementing Agents;
- Interviews with beneficiaries; and
- Guided observations (site visits).

**Interviews:** A total of 53 interviews were conducted across the four interventions sampled. Interviews were held with Implementing Agents, beneficiaries and non-beneficiaries of each projects. The interviewees provided information on different aspects of the interventions. The

interviews were guided by a standardised questionnaire (refer to Annexure A) – although each focused on the relevant case study implemented.

**Guided observations (site visits):** A site visit was undertaken for each case study, with the exception of the Water Allocation Reform Strategy programme. The team observed the implementation of the interventions.

### 1.4.2 Sampling Framework

Access to water interventions were purposively selected with a specific focus on gender equity. Purposive sampling was necessary to ensure that only access to water projects which prioritised women were selected. The identification of the case studies was informed through stakeholder engagement and the findings of the literature review. Although many interventions were initially identified, only the four selected as part of the evaluation agreed to participate in the study. Many of the Implementing Agents declined to participate in the study because of a lack of project data.

The following four case studies were selected:

1. The Eastern Cape Hydro Panel Project;
2. The Hippo Water Roller Project;
3. Multiple Use Services Project; and
4. Water Allocation Reform Strategy (WARS).

Once the case studies were identified and met the evaluation criteria, beneficiaries of the interventions were then randomly selected from the community. No beneficiaries were interviewed as part of the WARS programme as the team were unable to secure any interviews. A minimum of ten beneficiaries were selected from each of the three interventions. In addition, a minimum of three non-beneficiaries were also randomly selected from the community to act as a control group.

Table 1 below, provides an overview of the number of participants that contributed to the evaluation.

Table 1: Number of interviews per intervention

| No | Intervention | No of interviews | | |
|---|---|---|---|---|
| | | Implementing Agent | Beneficiaries | Non-Beneficiaries |
| 1 | The Hydro Panel Project | 3 | 16 | |
| 2 | The Hippo Roller Project | 2 | 11 | 5 |
| 3 | The Multiple Use Services Project | 2 | 10 | 3 |
| 4 | Water Allocation Reform Strategy | 1 | 0 | 0 |

### 1.4.3 Data Analysis

The primary data collected was analysed using Excel. All text, audio, video and pictures were recorded, transcribed and then coded. A thematic analysis of qualitative data was done using Excel.

### 1.4.4 Evaluation Method

The evaluation was conducted in three main steps namely: (1) planning and design, (2) data collection and consultation, (3) analysis and report writing. Figure 1 contains an overview of the overall impact evaluation study starting from the inception phase to the project close out phase.

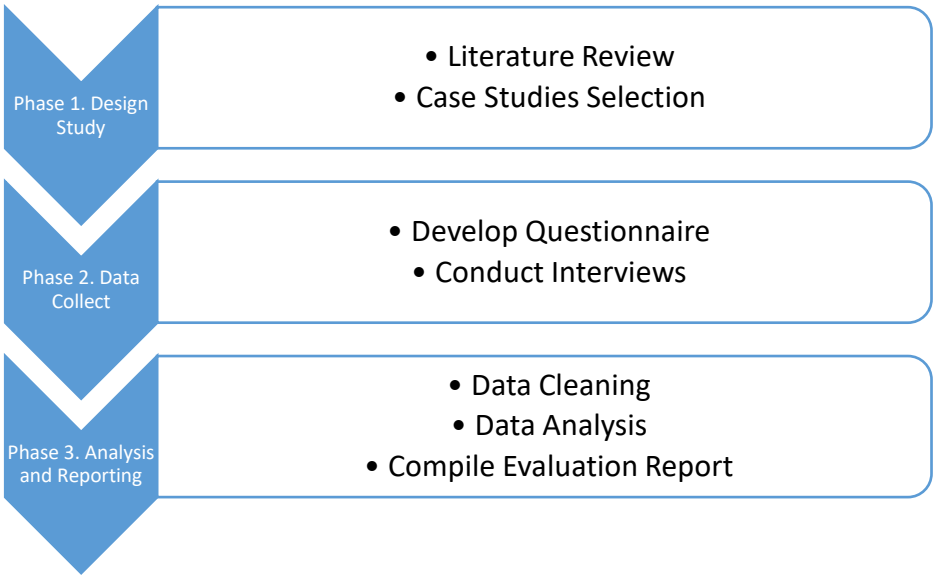



*Figure 1 – Evaluation method*

The outcomes of the review of secondary data informed the selection of the case studies as well as the development of the questionnaire, the interviews and the development of the Theory of Change.

### 1.4.5 Ethical Considerations

Ethical considerations were applied holistically across the evaluation, with the team ensuring that all reporting information was kept confidential. No information was shared with any party not relevant to the evaluation and without the consent of the participant. Further to this, as and when necessary, respondents' identities were kept anonymised so that freedom to communicate was ensured, thus contributing to the veracity of the evaluation. All participants provided consent to be part of the evaluation.

### 1.4.6 Limitation to the Evaluation

Many of the case studies had no meaningful monitoring data to support the evaluation, hence the evaluation relied heavily on the perceptions of the participants.

In addition, the design of the programmes that made up the case studies were not documented therefore vital information such as business plans, project rationale and the design of the intervention were unavailable for review. It was difficult to ascertain if the intervention was designed with the intention of improving access to water for women and if the interventions added value for money.

In many instances the ultimate source of data was the beneficiaries themselves.

It was not possible to arrange interviews with the beneficiaries of the Water Allocation Reform Strategy Programme. Instead, only the Implementing Agent from the Department of Water and Sanitation was interviewed. All data regarding the benefits of the intervention were inferred from existing reports.

# 2 THEORY OF CHANGE

## 2.1 Purpose of a Theory of Change

A ToC is a tool that describes a process of change. Specifically, it is a detailed description and illustration of how and why a desired change is expected to occur in a particular context or due to a specific intervention or initiative implemented. A ToC consists of linking various elements together to create a visual representation of how an intervention will lead to a certain outcome. These elements include inputs, activities, outputs, outcomes and the various assumptions that are linked to the intervention. The ToC is developed to answer key questions such as: is this the right intervention? and is the intervention achievable and is the intervention likely to create the impact it is aiming for?

## 2.2 Problem Definition and Overall Vision

According to CanWaCH (2023), 1 billion women lack access to safely managed drinking water, with 1.7 billion women lacking access to safely managed sanitation and every year over 800 000 women lose their lives due to insufficient access to safe water. Furthermore, it is estimated that women make up 50% of the agricultural labour force, which depends heavily on access to water and therefore limited access to water threatens their livelihoods.

Access to water is a basic human right and essential for achieving gender equality, sustainable development and poverty alleviation (Adeniyi & Adeniyi, 2020). The South African National Water Policy is under-pinned by the principle of equity with reference to racial and gender equity. This puts an obligation on government to ensure that the past imbalances to the access and control of water resources are redressed as a priority.

Specifically, women are seen as the water bearers and are the primary users and providers of water in their communities, with them being responsible for providing their households with food, water, sanitation etc. all activities which need access to water. When access to safe water is limited women are therefore the ones responsible for collecting water for their families, which is accompanied by long journeys, is physically demanding and can leave women vulnerable to crime, victimisation and attacks. Furthermore, this takes time away from their opportunity to go to school or to pursue different economic opportunities to earn an income (CanWaCH, 2023; Adeniyi & Adeniyi, 2020; Interagency Task Force on Gender and Water, 2004; Women's Environment and Development Organisation, n.d.; Svahn, 2011). It is estimated that in two out of every three households, women are primarily responsible for collecting water, where they are required to walk long distances and are therefore at greater risk of gender based violence (CanWaCH, 2023). Women and girls around the world are

estimated to spend approximately 200 million hours collecting water every day, which limits their time for other activities such as school.

In addition, women also have specific hygiene needs during menstruation, pregnancy and birth, therefore requiring functional access to clean water and a sanitary product (United Nations, 2023; Savoy & Staguhn, 2022). The lack of safe access to water in schools has an impact on girls particularly when girls are menstruating. Water and sanitation are essential to health and the lack of access to water, especially for pregnant women, exposes them to infections and diseases.

By providing women with increased access to water women can take greater control over their lives at a personal, household and a community level. This implies that by providing women with better water access women spend less time collecting water and it is possible to then improve their economic situation through being able to invest more time for income generating activities, spend more time on their own welfare and leasure as well as increase their agricultural yield which in turn improves their food security and health (Svahn, 2011).

## 2.3 Input

For equitable access to water to be realised, South Africa requires a sustainable dedication of resources, effort and time. The South African government has ensured that legislation is in place that promotes gender equity and women empowerment. The National Policy Framework for Women's Empowerment and Gender Equality of 2000 provides a clear vision and framework to guide the process of developing laws, policies, procedures and practices which will serve to ensure equal rights and opportunities for women and men in all spheres and structures of government as well as in the workplace, the community and the family.

Other inputs into the development of gender transformative initiatives, are intergovernmental relations between the national, provincial and local governments as prescribed within the Intergovernmental Relations Framework. Partnerships should be established and developed within the private sector, NGOs and other key stakeholders, which would allow for the sharing of information, resources and finances. Public organisations (national, provincial and local governments) together with the private sector must work together to create platforms and dedicate personnel to oversee and implement interventions linked towards providing women with access to water. Additionally, in order for initiatives and strategies being implemented to work, community engagement and a thorough understanding of the context of living and experiences are necessary in order to fully understand and comprehend what challenges women face within the water sector, which would then guide the development of context specific and lived experienced interventions. Financial resources are also needed to ensure

that the initiatives developed to provide women with increased access to water can be appropriately funded and sustained.

The conversion of these inputs into measurable outputs is based on several assumptions: (1), that the government is committed and willing to develop and implement strategies, policies and intervention initiatives targeting the enhancement of gender equality and women empowerment. (2) developing and implementing specific gender transformation and mainstreaming policies and initiatives targeting women's access to water will increase and allow for more awareness and ability or willingness to provide women with access to water (3) if government had a greater understanding of how women's access to water leads to women empowerment it leads to greater awareness and commitment or political will to achieve the goals of women empowerment and targeting women with interventions strategies specific to their lived experiences and contexts and (4) providing women with access to water will automatically enable an environment where women can be empowered.

## 2.4 Activities and Output

Activating these inputs needs intentionality, motivation and will. The activities associated with developing gender transformative initiatives targeting women's access to water must focus or target three key areas: social (attitudinal) change, legislative (administrative) change and environmental (infrastructure) change. These activities can be in the form of policy interventions or programme interventions.

Legislatively, changes in policies and administrative frameworks in various sectors will be key to bring about awareness and active participation in bringing about social change and in implementing gender transformative approaches to provide women with more access to water. Within interventions and initiatives being developed quantitative and measurable Key Performance Indicators (KPIs) need to be developed which will assist in creating a database of how many women have access to water and how many are benefiting from these policies and intervention initiatives. Additionally, these KPIs can be used to develop a database, informing status of women's access to water within various sectors of the country as well as monitor and evaluate women's access to water and create recommendations and improvements. This database would also assist in targeting the most vulnerable populations as well as inform what type of initiatives are needed to be implemented based on that specific sector's infrastructure, needs and environment.

Training and other forms of capacitation and advocacy should be initiated to ensure uniform understanding and adaptation of these strategies as well as how to appropriately fund and budget for these initiatives. Advocacy and awareness campaigns in all social groups should also be included as specific activities that can be used to bring about awareness, social change

and equip individuals and groups with information, knowledge and capacity to bring about change as well as target negative attitudes, prejudices and stereotypes associated with women. These activities can be in the form of workshops, conferences and lectures as well as through the use of media (print, audio and social).

Lastly, the implementation of the various intervention initiatives can bring about environmental (infrastructure) change. The policies and programmes being developed can include mechanisms on how to strengthen water system infrastructure to provide women with better access to water. This in turn can lead to capacity building and skills training within communities which further strengthens women participation and empowerment.

## 2.5 Outcomes

The results of providing women with increased access to water must be the empowerment of women. As such a short-term outcome has to see an increase of water access to women. In the intermediate run, this increase of water access should lead to women spending less time collecting water, therefore making more time available to other social, household and income related activities. The increase of water access should also lead to improved safety, health and hygiene related activities.

Ultimately, the aim of various initiatives and interventions being developed and implemented within the water sector is to empower women within the water sector of the country. When women receive increased access to water, it creates an environment for alternative opportunities such as school and other income related opportunities, which challenges the patriarchal social norms and stereotypes of women being the water bearers of the country. By providing women with increased access to water women are able to take greater control over their lives at personal, household and community level thereby empowering them to enjoy an improved quality of life. The achievement of these outcomes is based on the assumptions that there is political will, commitment and motivation to achieve these results. In addition, that there is awareness, capacity and the available funding and resources to meet these obligations.

Figure 2 below is a visualisation of the intervention logic of gender transformation initiatives within the water sector.

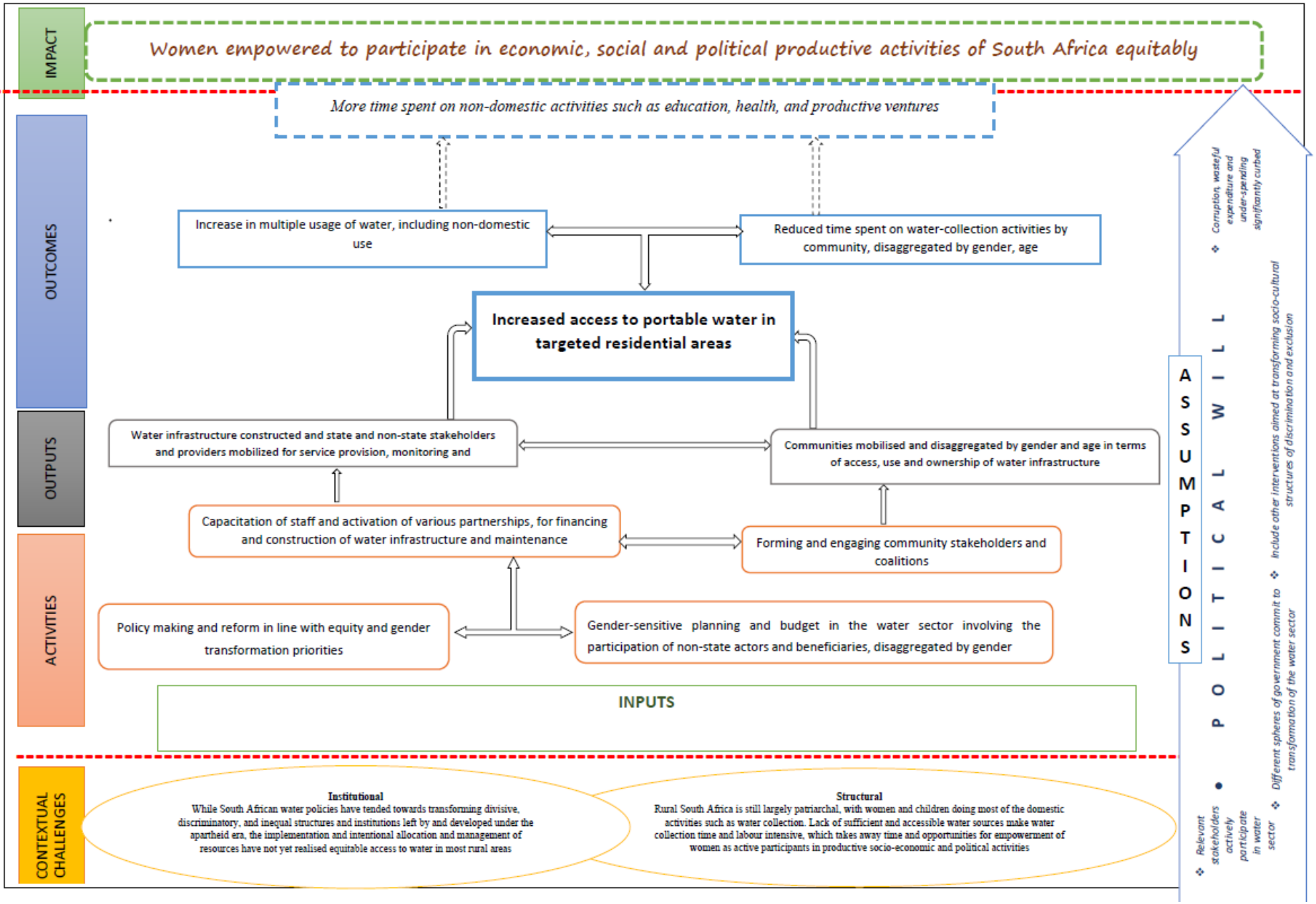



*Figure 2 – Theory of change*

# 3 LITERATURE REVIEW

Water is an important natural resource and is essential to all aspects of human life. Government is therefore obligated by law to provide citizens with access to safe and clean water (Interagency Task Force on Gender and Water, 2004; United Nations, 2023).

Access to water refers to the physical availability and accessibility of water within or in the immediate vicinity of a household, educational institution, workplace, or health institution (We Are Water Foundation, 2021). The World Health Organisation (2023) sets out specifications and defines access to water as the availability of at least 20 litres of water per person per day from a source within 1 kilometre of walking distance (Interagency Task Force on Gender and Water, 2004). Although access to water is recognised as a basic human right across many countries of the world, it has been found that access to water is disproportionately distributed and there is a big difference between who has access to water and who does not (Adeniyi and Adeniyi, 2020).

According to UNICEF (2023); Reid (2023); United Nations (2023), 1 in 10 people or 771 million people around the world lacked access to safe water, with 1 in 4 people or 2 billion people worldwide lacking access to safe drinking water; 122 million people depend on surface water such as a river to meet their basic needs and approximately, 282 million people spend more than 30 minutes or more collecting water from areas far away from their settlement or household. Lack of access to water is a huge burden and can be directly linked to increased poverty, not to mention that having limited to no access to water is a severe violation of human rights (Adeniyi and Adeniyi, 2020).

Despite how vulnerable women are to the lack of access to safe and clean water, government recognition, policy, and law development as well as strategic interventions have not always recognised and engaged with women in solution development strategies and interventions. Many policies and intervention strategies in place therefore do not differentiate between men and women and how they use and manage water. Leaving women out of the design, planning and implementation of interventions to increase access to water may inadvertently increase or add to their burden as you are assuming what they need and not asking them what they need (Interagency Task Force on Gender and Water, 2004; Purejav, Tudiyarova, and Fuertes 2023). For example, in East Nepal, a drinking water project was implemented to increase access to water through installing tap-stands and tube wells within the community. However, it was found that due to the lack of women involvement in the design, and implementation of the project, these measures were ineffective, and women stopped using them. The reasoning behind this being that these tap stands, and tube wells were installed along-side the road. Women therefore could not bathe freely or comfortably without the fear of being seen and to avoid this woman also travelled further to collect water. It was further found that the hand-pump handles were either too short or long, making it difficult for women to operate and sometimes also causing injuries (Regmi and Fawcett, 1999).

How women use, access, and need water is a crucial consideration to consider when developing interventions to increase access to water. It is therefore not only important to consider women's perspectives and views on how to improve water access, but it is also important to involve them in the design, development and implementation of these interventions (Adeniyi and Adeniyi, 2020, Interagency Task Force on Gender and Water, 2004).

## 3.1 A Global Perspective

In response to the numerous challenges facing women when accessing water, countries have adopted various policies and legislation as well as implemented various projects, programmes, and interventions, with the overall aim of providing women with access to safe and clean water within the areas in which they reside. Many of these projects, although not solely focusing on integrating gender mainstreaming and equitability as part of their implementation strategies, can be seen as having an indirect benefit on increasing women's access to water.

In order for gender transformation interventions to realise the full intended benefits of addressing structural causes that give rise to inequities, discrimination and unfair power relations the interventions must be centred on gender intentionality in the design of the programme/intervention. The Gender Results Effectiveness Scale (GRES) was developed has a framework to evaluate and classify the impact of development programs and interventions on gender equality (UN Women. Independent Evaluation Office, 2015). The GRES helps assess how gender interventions influence gender and power dynamics, aiming to address inequities, discrimination, and unfair power relations. The GRES scale categorizes results into different levels, ranging from gender-neutral to gender-transformative outcomes, Figure 3. The GRES is a valuable tool for assessing the impact of programs on gender equality.

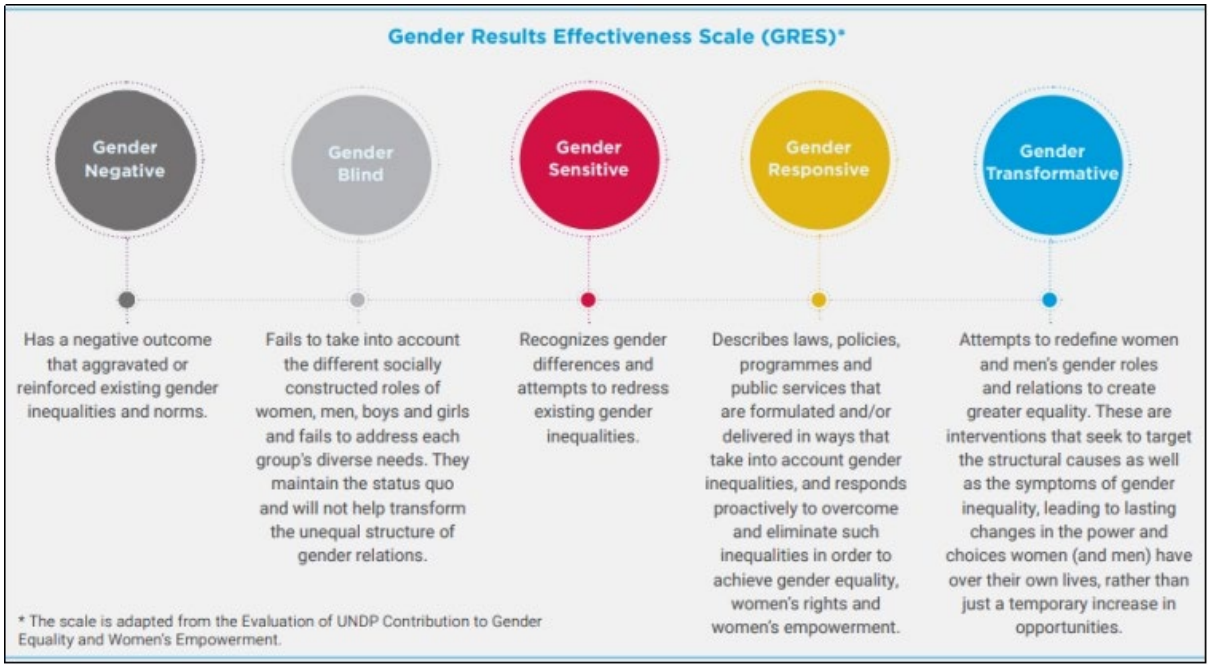



***Figure 3 – Ranking from gender negativity to gender transformative states (Source: UNDP contribution to gender equality and women's empowerment)***

### 3.1.1 Mexico

To reduce the gender gap in Mexico City, the Rain Harvest Programme was established to decrease social vulnerability of women through rainwater harvesting systems as an example of green-grey infrastructure (Bosch et al., 2021). World Economic Forum (2021) found that in some of Mexico City's municipalities, women spent almost their entire working week on water-related activities. This program aimed to improve water security and reduce burdens on women. By prioritizing households headed by women, single mothers, indigenous people, older adults and people with disabilities, the program aimed to improve equity in water access particularly for women.

To date, more than 13,000 female heads of household have benefited — comprising around 65% of installed rainwater harvesting systems. The scarcity of water in Mexico City most affects communities with the highest degree of marginalization. For example, Iztapalapa, the most populous area in the city, has a water supply deficit of 35%. This results in women investing between one and four hours a week hauling water to their homes. One of the project's positive results was the reduction of the time residents spend ensuring adequate water supply for their households by 20-30% in households where women have sole responsibility for water supplies. The Secretariat of the Environment of Mexico City's Climate Change and Care Work stated that the focus on equitable distribution of water-related tasks increased from 45 to 55% according to World Economic Forum (2021). Additionally, Mexico City also launched the 'Aqua a tu Case' programme with the objective of offering women training in the installation and maintenance of rainwater harvesting systems to solve the

drinking water scarcity problem in marginalized areas. As a result, an annual saving of $200 was achieved by each family through the rainwater harvesting system that trained the women of these families (C40Cities, 2017).

In addition, the Sustainable Development Goals (SDG) Fund contributed to the development of a Safe Water System intervention within Mexico City. This intervention aimed to improve water management within rural and peri-urban areas of Mexico, with a specific focus on empowering women and gender equality. The strategy intervention system revolved around three core ideas:

- Enhancing water and sanitation services with a gendered perspective
- Institutionalising policies and institutions related to water, strengthening gendered policies and providing training and assistance to these institutions responsible for water management.
- Increasing the participation of women in water management systems, through creating local committees involving and requiring the participation of women.

After an analysis of the intervention, it was found that the programme generated or led to the development of new water laws and encouraged participation within the community in water management. A permanent post for gender and regulated gender parity was established at local water management departments; increases in budgets relating to water management as well as a Water Institute was developed, and the programme encouraged the participation of women in water management offering counselling and education with regards to water management and monitoring. Drinking water systems such as water kiosks were deployed in various rural communities, which connected to nearby wells and collected rainwater. Women made up most of the committees and some of the water systems became local businesses which are run by women and this in turn empowers and creates economic independence for women (Sustainable Development Goals Fund, 2017).

Throughout the implementation of this project, lessons learnt can be drawn from various aspects of the project 1) Coordination with the various agencies and institutions involved in the project aids in mutual learning and connectedness, however clear roles and assigned duties and agreements must be outlined to guarantee responsibility. 2) The programme highlights the need to define and structure terms correctly, referring to the terminology of community and the different meanings and connotations that can be attached to it. 3)This programme recognised the different needs and interests of women and men and highlighted that it is essential to design and implement programmes that help explain choices that women and men make and how these differences can influence perceptions and participation within the programme. 4) This programme made use of incentives through providing information and education to the citizens, which informed participation within the programme and ensured that the citizens have confidence in the institutions established to help them. 5) This programme further highlights the necessity for access to reliable information to strengthen institutional capabilities as this allows for identification and analysis of areas of improvement which in turn

provides support for political and policy decision making and development. 6) Having active participation of recipients in the development and implementation of strategies, methodologies and processes boosts the intervention to change. 7) Finally, this project emphasised the political, financial, and practical support of local and regional authorities as a key mechanism for success (Sustainable Development Goals Fund, 2017).

### 3.1.2 Jordan

The Hashemite Kingdom of Jordan is a small dry country made up of 75% desert. According to Ruggeri (2018) the Kingdom has about 150 cubic metres of water available per person per year making access to water scarce and difficult to come by. To make matters worse, 40% of the water delivered to the nation's tanks, taps and pipes are lost due to leakages (Chalaby, 2017).

Many of these leakages could only be fixed by plumbers and until recently most of the plumbers were men, which caused an additional problem. Many of the women at home, who are responsible for taking care of the household, cooking, cleaning, and washing were left to deal with the restricted access to water due to the leakages and in many communities, it was uncustomary for another male (who is not a relative) to enter the house of a women when their husband was not there. This therefore made it difficult for plumbers to fix the pipes as they could not enter the homes (Chalaby, 2017; Ruggeri, 2018).

In response to this, Jordan's Ministry of Water and Irrigation realised that women could play an essential part in solving the water leakage problems in Jordan and in return gain greater access to water. Therefore, the Water Wise Women initiative (WWWI) , which provides women with plumbing training, was launched by the Jordan Hashemite Fund for Human Development (JOHUD) and funded by the Germany Agency for International Cooperation (GIZ) (Chalaby, 2017; Ruggeri, 2018; Singh, 2018).

The project's main aim was to bring awareness to water management and reduce household water consumption and to empower and encourage local women to become agents of change. This project was designed for long term behavioural change and used local outreach approaches. The programme works as follows: Each participant of the Water Wise Women is trained through eight different levels, covering topics such as water leakage eradication, harnessing technology, reducing water usage in household, and improving hygiene. After training, each woman is then expected to share their knowledge with local communities by reaching out to approximately 25 other women, which aids in bringing awareness and empowerment (Chalaby, 2017; Ruggeri, 2018; Singh, 2018).

This programme has trained over 300 women in plumbing and water saving techniques, reaching approximately 2000 households in seven communities. In areas where the programme was implemented it was found that there was a 30-40% reduction in water leaks in households where female plumbers are active (Chalaby, 2017; Ruggerti, 2018; Singh, 2018). Additionally, 23 trainees formed a cooperative and put their skills to use in schools and

government departments. This allowed them to address water concerns at a community level and to inform and provide feedback to government institutions towards better policy making (Singh, 2018).

Chalaby (2017), highlights some challenges in the implementation of this initiative, one being that women being trained to become plumbers was met with resistance by men, which is the reason why the training initially focused on women's own homes. Another major challenge the programme faced was that of financial support.

### 3.1.3 Ireland

An International Conference on Water and the Environment (ICWE) was held in Dublin, Ireland in 1992, due to the recognition of increasing water scarcity throughout the world. At the closing session, the Conference adopted the Dublin Statement which calls for new approaches to the assessment, development, and management of water resources. Within this statement, there are various guiding principles, with principle 3 highlighting the need for women to be involved in the development and management of water resources as they are considered as playing a central role in the provision, management, and safeguarding of water. The development of these principles has guided approaches to govern and manage resources throughout the world (Human Rights Library, 1992; Srinivas, n.d).

Since the presentation of the Dublin Statement, the United Nations General Assembly (UNGA) advocated for a UNGA Resolution on the right to safe and clean drinking water and sanitation as a right for women in 2010. Global water initiatives have increasingly included women's right advocates in the collection of institutions for global water initiatives (Varady et al., 2022).

### 3.1.4 Austria

The Minister of the Federal Ministry of Agriculture, Regions and Tourism established a gender mainstreaming working group under the Water Directorate as part of the Austrian Government Programme (AGP) 2020-2024 to safeguard gender equity.

In addition to their own internal efforts, the Austrian Development Agency also promoted gender equity through water infrastructure investments for the African continent, starting from 2020 and expected to end in 2025. Fifty women benefitted from the programme's leadership training to increase their agency, decision making power, choices and access to information (Austrian Development Agency, 2020).

### 3.1.5 Bangladesh

One of the main objectives of the National Water Policy in Bangladesh is to “ensure the availability of water to all elements of the society... and to take into account the particular needs of women and children” (Ministry of Water Resources, 1999).

For over twenty years, Bangladesh has instilled institutional changes that have decentralized the management of water resources to enhance the role of women in recognition of their critical role as providers and carriers of water. This policy enabled women to play a key role in local community organisations for management of water resources as the same policy protects them in water resource management.

It was found, particularly in the rural areas of Bangladesh that women faced hardship in carrying water over long distances, which caused a significant impact on their productivity and well-being. Although Bangladesh has provided an overarching framework for gender mainstreaming in water resource management through the National Water Policy of 1999, the Coastal Zone Policy of 2005 and the National Women Development Policy of 2011, government has recognised that it needs to continue increasing efforts to ensure greater participation of women in this endeavour. As a result, Bangladesh is designing future water resources management through economic efficiency with a particular focus on gender equity to facilitate achievement of water management objectives through public participation.

### 3.1.6 India

Generally, across India, water supply is associated with women who are considered as ‘domestic water managers’ (Singh et al., 2008). Much has been done to advance their roles from merely ‘users’ to managers of the water management processes with an aim to strengthen their access and control of water resources.

The Ministry of Water Resources (1987 and 2002) stated that the National Water Policy promotes the needs and interests of women as water users, prioritizing adequate safe drinking water facilities in rural areas for women.

DWCD (2001) analyses the National Policy on Empowerment of Women’s special focus on the needs of women in the provision of safe drinking water within the accessible reach of households, particularly in rural area.

Another policy, the Women’s Policy in Madhya Pradesh envisages the water needs of women as a key area of interest and proposed to ensure sources of safe drinking water in every rural settlement for women (DWCD, 1997). All these policies were developed as attempts to promote the needs and interests of women as water users, after an early concern was detected regarding women as the focal target group to be benefitted through domestic water supply programmes.

In another extreme case, Muslim women of Thanarpara village of were directly denied access to water that was installed near a Hindu temple, an area where Hindu women are dominant. This was later resolved through the intervention of liberal volunteers who proposed a time schedule as it was found that Hindu women were reluctant to share the same source of water with Muslim women. It emerged that programmes need to be designed within the context of social norms, cultural beliefs and practices.

A project in the state of Rajasthan, India, demonstrates the importance of involving women in watershed development projects that seek to improve the domestic water supply as well. In this project, a surface water-harvesting tank was constructed to provide water for the cattle and recharge of wells and could not be used for domestic water supply. When women were consulted on this issue, they proposed two solutions: to construct a well downstream of the tank for drinking water or a small, protected tank below the large tank for domestic use. However, funds were no longer available for these interventions. Involving women in the entire project would have avoided this (Ruths et al., 2001).

### 3.1.7 Lao People's Democratic Republic (PDR)

Lao People's Democratic Republic (PDR) compiled guidelines on the achievement of gender equity at a local level through water resources and river basin management (Government of Laos, 2021).

As part of the country programme for 2017-2021, the Ministry of Health and Ministry of Education and Sports, supported by the Lao Women's Union at a national and subnational level, developed a hygiene and sanitation programme under the programme 'Towards Climate-Resilient Inclusive WASH Services in Rural LAO PDR' funded by UNICEF. Women directly benefitted from the improved hygiene and sanitation that were provided through interventions that were developed through the thematic funds. Although 72% of women and girls in Lao PDR are able to access water for their sanitary needs in urban areas, only 29% of women and girls in poorer households have access to water in rural areas This led to the implementation of one of the 16 principles of the 2019 National Policy on Water Supply stating that "build capacity for development and overall management of water supply, sanitation and hygiene services through scheduling regular training at all levels and institutions, including for the private sector, with particular focus on increasing women's involvement in the water supply, sanitation and hygiene sectors" (Finance Minister's Meeting, 2020). Since then, the proportion of women-led households with access to basic water supply increased from 69% in 2012 to 78% in 2017. However, only two in seven women-led poorer households use a basic sanitation facility, leaving these women more vulnerable to climate-related challenges.

The Asian Development Bank (2014) stated that there are scholarships offered to women of Lao People's Democratic Republic to become water leaders of their country. This female scholarship programme is a pilot programme funded by the Asian Development Bank's (ADB) Gender and Development Cooperation Fund to address the current gender gaps in leadership

of the urban water and sanitation sector to build a future pipeline of female water professionals. Of all the 26 scholarships that were awarded, all 26 students passed their examinations making the female-oriented scholarship for water supply projects a 100% success. As a result, a demand driven and performance-based capacity development programme for promoting gender equality in provincial water supply utilities has been provided through the Asian Development Bank grant. The programmes under this grant have been able to train and build capacity for the sustainability of water and sanitation initiatives, benefitting women as technical and managerial roles as well as beneficiaries (Asian Development Bank, 2014).

### 3.1.8 Nepal

Although all strategies, government policies, plans, and programmes in the water resources sector, as well as the master plan and water-related legislations, include a Gender Equality and Social Inclusion compulsory component in Nepal, this has not translated well at a local level. Women in vulnerable households are supported by the Water for Women Fund, such that women's priorities in water usage are protected and supported to promote productivity. Van Koppen et al. (2022) found gendered poverty was alleviated through the control of women over food production and income. As a recognition of women's empowerment as a key tenet of development, all national development programmes adhered to Nepal's National Plan of Action for Gender Equality and Women's Empowerment to address gender equality in water resource management. Donor's influence could not be tracked for gender mainstreaming initiatives in the water sector in Nepal, however, policy initiatives towards gender equality in water management have continued to be formulated to enhance the participation of women in water user associations. All published case studies of Nepal point to their limited impact, with identified policy gaps in the legal quotas on women's participation in water user associations. There has not been a large-scale study on this matter to date, which has led to challenges in assessing the outcomes and impact of women's participation in water resource management across Nepal (Agarwal, 2010). Consequently, women's water usage and needs have been largely ignored. This has led to the reliance on male relatives by women to secure access to irrigation water (Panta and Resurrección, 2014).

## 3.2 An African Perspective

Below is an overview of policies, strategies, and initiatives that are in place within Africa to improve access to water for women in the water sector and the lessons we can learn from their implementation.

### 3.2.1 African Union

The African Ministers' Council on Water (AMCOW) can be seen as a Specialised Technical Committee (STC) of the African Union (AU) as it does not implement any activities rather it

provides a platform for dialogue and facilitates information exchange with the aim to develop policies and strategies to address water issues facing the continent. Their main functions are to facilitate regional and international cooperation through coordination of policies and actions among African countries on water resource issues; review and make finance available to water sector and provide a mechanism for monitoring the implementation progress of initiatives ('AMCOW Policy and Strategy for Mainstreaming Gender in the Water Sector in Africa', 2011).

In 2011, AMCOW launched a policy and strategy for mainstreaming gender in the water sector in Africa. This policy and strategy followed a 3-year participatory process that involved hundreds of stakeholders such as government, civil society, and donor organizations in 40 countries. Three key gender priorities were identified that needed to be resolved if African women are to be empowered and gender equality in water access is to be realised:

- Women's equity, which looks at the percentage time women spend accessing water and sanitation services compared to men as well as the percentage of women who participate in decision making and management about water and sanitation compared to men.

- Economic needs measuring the extent to which women experienced increase in income through productive use of water compared to men and the percentage of women obtaining access to safe water infrastructure.

- Practical needs which look into the percentage of women who make use of safe improved water and sanitation sources as compared to men and number of hours girls spent away from school due to lack of safe water ('AMCOW Policy and Strategy for Mainstreaming Gender in the Water Sector in Africa', 2011; Salo, 2015).

The policy and strategy were based on international and continental protocols and were developed in relation to the Integrated Water Resources Management process, which highlighted the importance of the involvement of women in decision making and the design and implementation of water management progammes. The policy served as a framework to advance equitable access, use and management of water resources in Africa and set guiding principles for stakeholders within the water sector that allows them to design and implement their own projects and initiatives with this policy as a backbone or framework in mind ('AMCOW Policy and Strategy for Mainstreaming Gender in the Water Sector in Africa', 2011; Salo, 2015).

It was expected and encouraged that all African countries would adopt and report on the seven-point strategy to mainstream gender within the water sector and to tailor the objectives to the specific needs of each country.

AMCOW's monitoring framework is based on the use of national, sub-regional and regional structures and resources to implement interventions. These institutions, programs and initiatives at the various levels are required to provide a single report to AMCOW.

Salo (2015) conducted a study to examine the extent to which the AMCOW Policy and Strategy for Mainstreaming Gender in the Water Sector was implemented in national states and the level of commitment of each country towards the policy. The study found that the initiation and implementation of the AMCOW Policy and Strategy for Mainstreaming Gender in the Water Sector was uneven across the various countries in Africa, with only 2 countries currently showing that they have resource allocation for gender mainstreaming in place to provide equitable access to water.

Salo (2015) highlights some reasoning behind this, and some key lessons can be learnt from this. 1) It is difficult to implement and integrate a policy or strategy when water activities are governed across various stakeholders or entities, creating a fragmentation of responsibility, and making evaluation and monitoring difficult to measure. 2) It was found that in many countries the customary laws governing the country are mainly male dominated, thereby even if there are laws prohibiting sex or gender discrimination in the country, there is still a bias towards male domination and ownership of land and resources. 3) Economic and political stability are key prerequisite factors that create an environment of support and enable the development of initiatives and progress in gender mainstreaming. It was found that countries that are in war or in conflict such as Somalia, Central African Republic, Libya, and Mali, already have fragile state institutions and therefore are unable to address gender inequalities effectively (Salo, 2015).

Salo (2015) recommends that governments need to be committed to providing resources to enable gender mainstreaming in the water sector. Awareness and knowledge about the gender inequity within the water sector was also highlighted as a key indicator to improving access to water for women, as being aware of a problem means being able to address the problem. Although this report analyses the implementation of the policy, Salo (2015) highlights that to date there are no review systems in place to assess whether and how women's participation in water management is ensured in legislation and policy, and whether women's participation in water management ensures gender equitable access to water.

### 3.2.2 Morocco

In 1995, the Government of Morocco (GOM) launched the first Rural Water Supply programme known as the Grouped Drinking Water Supply Programme for Rural Populations, or 'PAGER' (World Bank, 2003; World Bank, 2014). This programme was launched following the outbreak of the cholera epidemic within various communities and villages within Morocco and it followed a demand responsiveness and community-based approach. The General Department of Hydraulics (GDH) and the National Potable Water utility (ONEP) was considered responsible for the project's implementation. Specifically, the GDH was responsible for building standalone groundwater systems, while the ONEP department was responsible for laying water pipelines to connect citizens and villagers to water institutions. The project was financed through the Moroccan State, local authorities, and beneficiaries across varies countries of the world,

additionally, financial support was also enlisted through various parties and donors (World Bank, 2003, World Bank 2014, National Portal of Territorial Authorities, 2023).

The objective of the project was to improve access to water within rural areas and populations, with the overall aim being to improve the health and productivity of rural populations. In addition, it also aimed to reduce the burden of women and girls who were traditionally responsible for fetching water within their communities (World Bank, 2003). In addition, this programme followed two principal guidelines for the design and implementation of the intervention's strategy, with the first one being to use simple techniques to implement the strategies and concepts of water access as well as to ensure participation of beneficiaries at all stages of the project (National Portal of Territorial Authorities, 2023).

According to the World Bank (2003 and 2014), this project targeted 27 priority provinces out of the total 58 rural provinces within the country and it consisted of four components:

- First component was aimed at constructing and rehabilitating water supply facilities.
- The second component focused on rural sanitation and aimed to increase construction of household latrines and block latrines within the schools and health centres across the provinces.
- The third component focused on Local Institutional Strengthening, which facilitated the creation, training, and operation of Social Mobilization Teams (SMT). These individuals were responsible for bringing about awareness and implementing different participation and educational programmes for the population. According to the World Bank (2003), provisions were made to ensure that at least one woman was represented in each SMT team to ensure women participation and engagement on hygiene education.
- The fourth component focused on central and provincial support and provided a means to monitor and evaluate the progress of the project.

All these components were designed to meet the project aim, which was to improve access to water in rural areas and populations and by extension improve access to water for women who were largely responsible for collecting water.

At the start of the project, it was estimated that only 14-20% of Morocco's rural population had access to safe drinking water, while the remaining population had to travel long distances to fetch water or to engage in buying water (World Bank, 2003). After some of the projects were completed, it was found that at a national level, access to safe water increased from 20% in 1994 (about 2.6 million people) to about 50% by the end of 2002 (about 6.4 million people). It was also found that the project had a significant social impact on girls and women within the provinces as it was found that safe water was now available during all seasons of the year and that women and girls spent less time fetching water (estimated to be reduced by 50% to

90%). Women are therefore now more available to do other activities such as child rearing, agricultural production and even attend school (World Bank, 2003).

Another finding was that the training and support to the various SMT teams were lacking. Additionally, only one out of the 6 SMT teams managed to successfully retain a female member, making direct women participation in the design and management limited (World Bank, 2003).

Throughout the implementation, lessons learned can be found in both the success of this project and the challenges it faced. 1) A great success of this project can be seen in the implementation strategy, which focused on the most accessible water resources and least cost systems. World Bank (2003) highlights that different water technologies and management models needed to be designed and implemented according to the local conditions of the country. For example, this programme specifically created water access through creating water points from an already existing structure such as a borehole or a well (groundwater). 2) Alternatively, it was found that the project did not include any formal coordination mechanisms, therefore collaboration between the different entities, coordinators and departments was difficult. Additionally, no formal budget allocation or funding scheme was in place making it difficult to monitor and track expenditure and see whether the funds are going to where they are supposed to be going. Governments therefore need to be committed, willing and able to invest in social capital building, with good donor coordination from the start of the project to the end. 3) Furthermore, the training and support to the various SMT teams were lacking. Only one out of the 6 SMT teams managed to successfully retain a female member, making direct women participation in the design and management limited (World Bank, 2003). Therefore, although the project benefited women and girls greatly, it is believed that the results would have been higher if there were more rigorous attempts to involve direct participation of women within the project design and implementation.

Since 2004, ONEP took over the entire management of the programme and renamed it the Universal Water Access Programme with the objective to expand rural water supply coverage. Today, there are various Rural Water Supply programmes within Morocco that aim to increase access to water to all.

### 3.2.3 Algeria

The National Strategy for Promotion and Integration of Women was established in Algeria to promote women's participation in water resource management systems, considering their role in family stability and social cohesion. The most important objective developed under this strategy by the Ministry of Environment and Renewable Energies was to promote access to benefits of water for the empowerment of women and their needs. Since the inception of this strategy, 13% of women participate in the water resources sector, 52% of women fill the central administration posts in the Ministry of Water Resources and 38% of women make up the local water resources directorate (People's Democratic Republic of Algeria, 2019). In 2014,

93 women were interviewed to gather information on how water was used in their daily lives during rationing. At that time, women were impacted by the discontinuous and frequent weak water supplies which led to the development of an internal water storage system to address this issue. In the survey findings, the majority of the 93 women who participated indicated that the hours during which water distribution affected their daily tasks as most of their water was supplied at night (Habi and Harrouz, 2015). Although it is generally known that the task of water collection in households that have no connection to the public water supply is assigned to women and girls, it is also acknowledged that this has left women and girls behind, considering the strain that this daily task has on their access to education and income-generating activities. Gender dynamics in the field of agricultural water management are neither effectively nor systematically documented (Food and Agriculture Organisation of the United States, 2021).

### 3.2.4 Zambia

The Global Water Partnership Africa conducted a study on the gender transformative approaches for water security and climate resilience in Zambia. The study found that climate change was widening the gender gap and warned of a lack of gender transformative agendas in water investments, perpetuating gender inequality. It was found that women were not well acquainted with policy issues regarding water security, since low numbers of women work in institutions that focus on water security and climate resilience. This led to the establishment of the Continental Africa Water Investment Programme- Gender Transformative Water, Climate and Development (AIP WACDEP-G) to trigger long-term change with the goal to ensure development, governance and management of climate resilient water investments and institutional development to strategically advance gender equality. Through this programme, the 'Gender Community of Practice' was formed, effectively nested under the WACDEP-G (Water, Climate, Development – Gender) umbrella. It was stated during one of the programme's meetings that water security cannot be attained without adequately attaining gender equality (Global Water Partnership, 2022).

### 3.2.5 Uganda

Uganda has made great strides in eliminating gender inequalities, such as through the Water and Sanitation Gender Strategy of 2018-2022 (Ministry of Water and Environment, 2018). The strategy acknowledged that women and girls remain as the major water collectors, users and promoters of both household and community sanitation activities with the inadequate and inappropriate water and sanitation services particularly affecting women and girls. It was found that 1 in every 3 women faces shame, disease, harassment and attack because of lack of safe sanitation sites (Ministry of Water and Environment, 2018).

Uganda's Water Sector policy and legal framework is one of the most developed and comprehensive in the country. This National Water Policy of 1999 emphasizes that the Water and Sanitation Committee should be comprised of at least 50% women representatives. At a

community level, 86% of water sources have the occupation of women in key positions which is one of the key indicators of gender mainstreaming in rural water interventions in Uganda. One of the key findings by Amondo et al. (2022) was that rainfall shortfalls affected the health of women more negatively than that of men. After the term of Maria Mutagamba as Minister of State for Water, an increase of safe water from 51% to 61% was recorded in a period of two years because of her role in changing decision-making committees to be assumed by women (Government of Uganda Ministry of Water and Environment, 2010). Despite this increase, women were still marginalized in water governance and still faced poorer access to agricultural inputs and productive resources, having negative implications for sustainable water management (Njie and Ndiaye, 2013; Sadoff, Borgomeo and De Waal, 2017).

### 3.2.6 Togo

Approximately 20% of Togo's population has access to safely managed drinking water services (UN Women, n.d.) hence the Safe Water Project was initiated. The women benefitting from the Safe Water Project have reported that they no longer need to fetch water from the river daily and now dedicate their water collection time allocation to household duties, family activities and attending Mother Club meetings due to the access to clean water in their village (Jones, 2023). The Togo Mother Clubs oversee the rehabilitation of boreholes in every village where the Togo Safe Water project is situated. The clubs comprise women who are committed to the maintenance of the water sources, receiving training to teach their communities. The women of Togo Mother Clubs also reported that illness in their communities had reduced significantly and that their families' well-being had increased due to the repair of the boreholes. These women work together to keep their villages clean. The Ministry of Water and Village Hydraulics set up its Gender Unit, the chair of which is the Director of the Ministry's Cabinet. The involvement of women in management of water points in rural and semi-urban areas was strongly recommended to ensure a defined quota of at least two women out of five members in the Ministerial Gender Unit committee (International Monetary Fund, 2014).

## 3.3 A South African Perspective

The South African national water policy and legislative framework is under-pinned by the principle of equity with reference to racial and gender equity. This puts an obligation on government to ensure that the past imbalances to the access and control of water resources are redressed as a priority. It recognizes the importance of women's voices in the water sector.

### 3.3.1 Established interventions for women's access to water in South Africa

In South Africa, there is strong political will for gender mainstreaming. All departments are given a mandate from the President of South Africa to establish Transformation Units. All spheres of government are responsible for gender mainstreaming and the empowerment of women and youth as well as people with disabilities.

### 3.3.2 Policy and Legislative Review

The National Policy Framework for Women's Empowerment and Gender Equality (nPFWeGe) 2000 is the roadmap for public policy, legislation, and organisational and operational policy. There is an established National Gender Policy, which promotes the participation of women in the water sector. The Constitution of South Africa, the basis for all legislation, guarantees gender equality. More specifically, certain chapters of the Constitution guarantee the participation of women in society, such as the Bill of Rights (Chapter 2) and State Institutions Supporting Constitutional Democracy (Chapter 9). The National Environmental Management Act (NEMA) makes it clear that the role of women and youth in environment management must be recognised. In the National Water Act, as a measure to redistribute national resources, priority is given to historically disadvantaged groups (including women) when obtaining licences for the use of water resources. At the lower implementation level, government authorities, catchment management agencies, and water user associations have gender-sensitive policies.

South Africa's National Water Act promulgated in 1998 incorporates some fundamental aspects of a pro-poor and gender-equitable policy. Some of the measures under the Act include equitable representation by race and gender in water management institutions, in Water User Associations and processes of public consultation.

Water rights are no longer assumed to be tied to land ownership but based on a time limited authorisation granted by the government. Under the new legislation, there is no link between allocation of water and land title. This is an important legal step for women in South Africa in the sense that land ownership is often vested in men in both formal and customary practices, even though the actual farm decision-makers are women who need direct access and control over water. This is an important step towards gender equality in access to water for farming purposes.

### 3.3.3 Policy and Legislative Review Timeline

The National Water Act of 1998 and Water Services Act of 1997 form the basis for the legislative framework within the water sector in South Africa. In addition to these Acts there are several associated Acts and policies that contribute towards the legislative framework in the water sector.

Below is an overview of some of the key domestic policies relevant to gender transformation interventions in place to improve access to water for women in the water sector.

*Table 2: Domestic policies relevant to gender transformation in the water sector*

| Policy | Objectives related to Gender Transformation Interventions to Improve Access to Water for Women in the Water Sector |
|---|---|
| Irrigation and Conservation of Waters Act 8 of 1912 | This was considered the first codification of water law in South Africa and focused mainly on water irrigation (Gildenhuys, 1997). It made no provisions or gave no consideration to the water needs of marginalised groups including women. |
| Water Act 54 Year: 1956 | The Act followed the Irrigation and Conservation of Waters Act of 1912 and was developed to ensure that there were sufficient water supplies to support South Africa's growing economy, in all areas, including socially, agriculturally, and industrially.<br>This Act also provided the government with more control over the use, access, and control of water resources throughout the country.<br>Specifically, the government divided the use and access of water into three different categories namely, Public water, Private water and surplus water.<br>The Act was developed within the apartheid era and was therefore considered to be highly discriminatory to racial minorities (Gildenhuys, 1997; Tempelhoff, 2017). |
| White Paper on Water Supply and Sanitation, 1994 | The White Paper, a policy document, was published shortly after South Africa's transition to democracy. This policy recognised the need to highlight the national government's role in providing access to water and sanitation services to all South Africans (Malzbender et al., 2009).<br>Furthermore, the policy can also be seen as the first framework to recognise the importance that women play in providing and maintaining basic services. Specifically, it highlights that women should be involved in the development and planning of policies and legislation involving access to water and water management, further stating that all statutory bodies within the water sector |

| | |
|---|---|
| | should comprise of a minimum of 30% of women at all levels of functioning (Steele et al., 2005). |
| Constitution of the Republic of South Africa 1997 | The Constitution of South Africa is the highest law in South Africa, establishing human rights for all South African citizens and defining the structure of government.<br>Section 27 (1) establishes access to water as a human right, thereby guaranteeing the right of everyone to have access to sufficient water which includes women. |
| White Paper on a National Water Policy for South Africa, 1997 | The policy addressed water resource management within South Africa and is seen as establishing principles that sets frameworks on water management that led to the development of the National Water Act (Malzbender et al., 2009).<br>Additionally, the policy dedicated an entire section to “Water and Gender” which emphasised the importance of women’s empowerment and need for participation in all levels of water management (Steele et al., 2005). |
| National Water Act 36 of 1998 | The National Water Act of 1998 replaced the Water Act of 1956, with the aim of redressing racial and gender discrimination.<br>The purpose of the Act is to ensure that the nation’s water resources are protected, used, developed, conserved, managed, and controlled in an equitable and fair manner to all; highlighting the national governments responsibility and authority over the nation’s water resources and their use (Steele et al., 2005; Heleba, 2009). |

| | |
|---|---|
| Water Services Act 108 of 1997 | The aim of the Act is to assist municipalities to undertake their role as water service authorities in providing South African citizens with access to safe, reliable, and affordable water. It deals with water as a resource and regulates access and delivery of water as a service. The Act can be seen as complimenting the National Water Act in promoting effective water resource management and conservation. |
| Free Basic Water Policy, 2001 | The policy was implemented to ensure that indigent people or households that cannot afford to pay for water receive a free basic allowance 6 kilolitres of water per month per household.<br>The policy is important female headed households, particularly women living in the rural areas who struggle to pay for water. |
| Strategic Framework for Water Services, 2003 | Replacement policy for the White Paper on Water Supply and Sanitation and it sets out goals and targets that are to be met within 10 years (Malzbender et al., 2009). Specifically, this framework includes goals that highlight and emphasise gender equality within the water sector, these include:<br>Water services must be provided in a gender sensitive manner and consider the different needs and responsibilities of men and women with regards to water<br>All water services providers must be accountable, cost effective, efficient, and viable in implementing gender equity policies (Steele et al., 2005). |
| Gender Policy of the Department of Water Affairs and Forestry, 1996 | Outlines a framework for gender sensitive water management. The department aims to build the capacity of women through training and work on solutions to curb gender discrimination within the water sector (Steele et al., 2005; Commission for Gender Equality, 2011). |
| National Implementation Strategy and Action Plan 2006 – 2010 for Mainstreaming Gender in the Water Services Sector | This is a strategy that provides guidelines to implement gender mainstreaming programmes, projects, and activities at a national, provincial and local government level. |

| | |
|---|---|
| Gender Policy Framework for Local Government, 2007 | Outlines a framework for gender mainstreaming within local government. It therefore provides guidelines as to the roles different governmental departments play with regards to gender mainstreaming, further highlighting specific areas within local government where gender mainstreaming can improve upon, which includes basic service delivery. |
| The Water Allocation Reform Strategy, 2008 | It is the first strategy document to include targets for black women namely 60% of allocable water should be in the hands of black people of which half should be in the hands of black women |

From the table above, it is evident that South Africa has a comprehensive landscape of well-formulated policies and plans to address gender equity and to improve access to water for women in the water sector.

### 3.3.4 Water Boards

In South Africa, at the regional level there are established entities called Water Boards playing a key role in the water sector, operating water infrastructures and providing technical support to municipalities. According to the Mmbengwa (2014) study on 14 Water Boards in South Africa, men have more access to managerial and advisory positions within the water expert fields as compared to women. At a governmental level, more men occupy the high-ranking positions. There were very few transformative initiatives in transferring resources and influence on women in Water Boards. These results confirm a study conducted by Ngcaba (2012) that there is indeed a slow implementation of affirmative action and transformation processes, as required by legislation in Water Boards and municipalities. Literature evidence acknowledges that women are largely marginalised from decision-making processes that affect their lives, particularly at the level of water management (Crown et al, 2003; Olsson, 2010; Ngcaba, 2012).

According to WRC (2018) the DWS regulations stipulate that 30% of the representatives on all water boards and other water committees must be women. It is a well-established theory that when women are in a position of authority, they make decisions that benefit women. Hence, increasing the number of women on Water Boards is likely to make an impact on gender sensitive service deliver in the water sector.

### 3.3.5 Water Sector Women Empowerment Programmes

The Women in Water Empowerment Programme (WWEP) is built on two legs: The WWEP Mentorship Programme and the WWEP Entrepreneurship Incubator. The purpose of the

Programme is to provide support to women-owned and led enterprises to be effective and efficient in delivering proper water and sanitation related services to the public.

The Women Incubator Programme, a partnership between DWS and the WRC was aimed allowing women to participate in water and sanitation projects in the water sector. The programme introduced women owned entities into the water and sanitation industry as consultants, contractors, suppliers, and innovators and also created set asides for women in the water-sector to ensure that they too benefit from the huge economic benefits that accrue from water and sanitation infrastructure development and maintenance.

### 3.3.6 Mabule Sanitation Project

The Mabule Sanitation Project in South Africa was a joint initiative between the then Department of Water Affairs and Forestry (now called DWS) and the community, with funding from Mvula Trust. The DWS provides funding for sanitation projects in communities where there is gender-balanced decision-making. There is increased acceptance of women's leadership roles by community members, as well as an increased collaboration between women and men. Initially, it was gathered that the community was not in full support of women leading this development project. Furthermore, it was noted that some of the husbands of the wives who formed part of the project committee did not approve the participation of their women in this sanitation project as it is considered taboo for women to discuss sanitation issues in this part of South Africa (Yumpu, 2015; United Nations, 2006). This did not deter the women, as some of them continued their training activities and led the installation of latrines as a measure to promote health and hygiene. They also went on to initiate other water community development projects considering their growing influence in the Mabule village (United Nations, 2006).

Key lessons can be drawn from the success of this project. 1) Creating an environment where women can participate in the planning and implementation of a project, for example: allowing women to attend meetings; providing them with financial support to compensate for their time spent in meetings or for attending training and workshops. 2) Providing women with the necessary skills to address water shortages and water hygiene. 3) Establishing a method of thinking that links the demand for safe access to clean water and hygiene with the supply of trained and informed community individuals (United Nations, 2006).

### 3.3.7 GIBB Incubation Programme for Female Entrepreneurs

The GIBB Incubation programme was established in June 2017 to develop women in the water sector. Three women-run small water businesses benefitted from the programme to unlock their skills and opportunities in the sector. GIBB further installed 90 women in the programme, half of which were enrolled in the entrepreneurship project and the other half in the mentorship project. The women in the programme expressed their need for an ISO 9001 certification,

which GIBB supported by assessing systems at incubator companies. This closed the gap in quality management processes and helped them gain work on bigger projects (GIBB, 2019)

### 3.3.8 Peddie Water Scheme

The gender policy of the DWS requires a quota of 50% of women in all decision-making committees as well as equal participation and access to training in projects and in the department itself. It was found that quotas as targets and indicators were not enough, and transformative initiatives were needed. The Peddie water scheme is a Build Operate Train and Transfer scheme. The Amatole District Municipality had oversight of the scheme. They carried out routine inspections and held monthly meetings with the community organisation to discuss problems. The village water service providers, who worked on contract, sold the tokens with which consumers bought water from the token-operated taps which were closely monitored. It was later found that the scheme improved women's lives, because of the supply of clean running water, but although it was noted that women were not directly involved in the meetings, so the decisions were made mainly by men.

### 3.3.9 Water Allocation Reform Strategy

The Water Allocation Reform Strategy (WARS) was approved by the DWS in 2008. The strategy was put into place to redress past imbalances in the allocation of water. The WARS followed the principles set out in the National Water Resource Strategy on how water should be used and aimed to implement the objectives of the National Water Act (Anderson et al. 2008). Specifically, the WARS stipulated national targets which were inclusive of black women that are to be progressively achieved by 2024.In terms of these targets 60% of allocable water should be in the hands of black people of which half should be in the hands of black women.

The strategy entails several initiatives to ensure and enhance equitable access to water. Central to the strategy is that all water use except what is needed for basic human needs and to maintain water ecosystem functioning must be authorised by the DWS or a Catchment Management Agency. Compulsory licensing is one the main legal instruments in the National Water Act that is used within the WARS programme and is a mechanism where relevant water use authorisations in an area are reviewed to see how water is used and to relocate water if necessary to ensure that all potential users have an equal opportunity to apply to use water and that water is shared fairly (National Water Resource Strategy, 2013).

### 3.3.10 Financial Assistance to Resource Poor Irrigation farmers

The DWS offered poor farmers financial assistance towards agricultural water use through the Resource Poor Farmers (RPF) policy and regulations. This policy was adopted in 2004 and the financial assistance enabled resource poor farmers to purchase rainwater harvesting tanks

and rehabilitate irrigation water infrastructure such as canals, pipelines, dams and valves (Department of Water Affairs and Forestry, 2004; Dhavu et al. 2016).

The intention was to promote social and economic development through the use of water in an equitable way and to provide different forms of assistance and is guided in terms of the National Water Act (No 36 of 1998). Three grant products were made available, namely: i) capital cost for water distribution infrastructure, ii) socio-economic viability studies and iii) training of management committees. According to this policy there is one condition that should be met to qualify for the full extent of the three grant products and that is that historically disadvantaged females should be involved in the decision making and be a part of the Management Committee of the relevant Water User Association or other approved legal entity otherwise the grant will be reduced (Department of Water and Forestry, 2004).

Dhavu et al. (2016), conducted a study on this funding policy delivery model and some lessons can be taken from the implementation process. 1) there were no defined and standard processes within the application process, therefore there were no clear guidelines set out on who qualifies for this funding. 2) The application process took over 2 years as the Coordinating Committee on Agricultural Water – a committee in place to review and determine who receives the grant - rarely meets to discuss applications nor do they go out and meet applicants (Dhavu et al., 2016). To date very little research has been done on the benefits of this policy, with no research found on whether this policy is benefiting farmers or women, therefore indicating that the monitoring and evaluation of this policy is lacking. The programme is currently dormant.

### 3.3.11 Women's Empowerment and Gender Equality Policy – City of Cape Town

The City of Cate Town developed a Women's Empowerment and Gender Equality Policy that was aligned to the Equality Clause, as set out in Chapter Two of the South African Constitution, as well as the National Gender Policy Framework adopted by Parliament in 2000. The policy further seeks to align the practices and function of the City of Cape Town to the UN Convention on the Elimination of all forms of Discrimination (CEDAW).

The policy set broad guidelines for the City in order to achieve gender equality. The policy was informed by women's lack of control over resources such as water in the City and that the lack of water infrastructure in rural areas compounded the problem.

As a result, one of the key indicators for the City of Cape Town included the percentage of women that have access to water (Kornegay, n.d).

## 3.4 Lesson Learnt

The comparative analysis assesses the programmes implemented both locally and internationally, to extract the lessons learned, for guidance in evaluating the impact of gender transformation interventions to improve access to water for women in the water sector.

*Table 3: Lesson learnt*

| No | Key Lesson | Implications |
|---|---|---|
| 1 | Monitoring and Evaluation System | An easy-to-understand tool must be developed and maintained throughout the lifecycle of an intervention strategy to ensure that the project is meeting its set out aims and achieving its objectives.<br>Key indicators of success need to be identified. |
| 2 | Commitment and Capacity | Capacity building of Implementing Agents is essential for the effective design and implementation of access to water projects that prioritise women. |
| 3 | Coordination Mechanisms and Proper Structures in place to ensure engagement and communication | Coordination and a good working structure setting out clear responsibilities and duties within these various departments are therefore very important |
| 4 | Accountability | Mjoli, Nenzhelele and Njiro (2009) highlight that effective legal frameworks should be put into place that allow for and provide women with channels for lodging complaints against those who violate their rights and gender equality |
| 5 | Commitment at a policy level and at a financial and budget allocation level | Policy development should always lead to awareness, building capacity, informing structures and most importantly lead to action.<br>With planning an intervention an important element to include in the design of the study is how one is going to fund the study and for how long funding is going to be necessary. |
| 6 | Poor understanding of the needs of women | A committed effort must be made to incorporate women in all aspects of gender mainstreaming from the start of the programme to the end, with their needs and views forming the baseline of thinking |
| 7 | Technology specific to community abilities | Having good knowledge of the community infrastructure and community cultures can inform what type of intervention strategies to put into place.<br>Where additional technologies and structures are put in place it is imperative to educate communities on how to use and maintain the infrastructure. |

| | | |
|---|---|---|
| 8 | Awareness, Education, Training and Capacity Building | Provide educational opportunities to not only women on the ground, but also within governmental and institutional sectors.<br><br>Build capacity and skills that will inform a line of thinking to improve on existing interventions and strategies in place. |

# 4 DATA ANALYSIS - CASE STUDIES

The evaluation was designed to explore the impact of 4 interventions and initiatives developed and implemented within various contexts of South Africa towards providing women with more access to water. Four of the OECD/DEC evaluation criteria were used in the evaluation namely, relevance, coherence, impact, and sustainability.

Each of the four case studies were evaluated and analysed individually according to the OECD DAC principles to determine the impact of increased access to water on women. Thereafter, a programme level assessment was undertaken by aggregating the findings of the case studies, discussing how access to water as a gender transformation intervention has impacted and transformed the lives and livelihoods of women.

## 4.1 The Hydro Panel Project

### 4.1.1 Background and Rationale for the Intervention

The Eastern Cape Province is situated along the southeast coast of South Africa characterised by dense concentrations of rural and peri-urban settlements throughout the province. Specifically, the OR Tambo District is predominantly a rural-based community with 93% of the population dwelling in rural areas (SALGA, 2020). Rural areas in the Eastern Cape are characterised as areas that do not have widespread access to public services including water and sanitation health facilities.

Between August and November 2022, the University of Johannesburg's (UJ) Process, Energy & Environmental Technology Station (UJ PEETS) and SOURCE Global, in collaboration with UJ's Water and Health Research Centre (WHRC) initiated and implemented a clean drinking water project to various villages across the Eastern Cape. The goal of the project was to identify water scarce communities that have challenges with access to water and to use innovative technologies to try and improve their access to water. Two remote villages in the OR Tambo District, Luphoko and Lujazu, were chosen as beneficiaries of the installation of the hydro-panel project.

The ultimate objective of this project was to improve the access to quality water and reduce water collection efforts.

According to the Implementing Agents, the villages were selected because they are remote and lack appropriate road and water infrastructures. The layout and characteristics of the community homes are ideal, and the villages are located near the ocean, characterised by humid and warm climate conditions. Many community members highlighted that the road infrastructure is a key challenge to accessing water in the community. The area is rocky and mountainous therefore it is difficult to walk, use wheelbarrows or gain access to water trucks to deliver water. In order for the panels to be installed, they had to be flown in by helicopter.

Based upon these challenges the installation of the hydro-panels provided a unique, simple and immediate access to clean drinking water for the community.

Rob Bartrop from Source Water, the US manufacturer of the hydro-panels, mentioned that the technology is uniquely applicable to the villages because the homes have thatched roofs. Rainwater harvesting from thatched roofs is unsuitable and the use of pit toilets means that borehole water maybe polluted.

The hydro-panels were therefore seen as a short-term solution for communities without infrastructure as the water is immediately accessible and usable as there is no need to purify or clean the water before consuming it. The hydro-panel also requires no infrastructure to work as it does not need any electrical lines, pumps, treatment plants or miles of water pipes for it to work. The only requirement for the hydro-panels to work is an abundance of sunlight and humidity.

Four hundred hydro-panels were installed across the 2 villages, including two schools.

### 4.1.2 Project Description - How the Hydro-panels Work?

There are several different types of technology that involve extracting moisture from air to produce potable water, however, the Implementing Agents selected a technology option built within a solar panel which is the first of its kind. This was selected because the village did not have access to electricity and a totally off-grid solution was required. The hydro-panels were developed by SOURCE Global, a US-based company.

The hydro-panels are solar panels equipped with hydrophilic material that attracts water from the air and then condenses it into suitable safe drinking water. The hydro-panels work completely off the grid using solar energy, therefore it does not require any additional external power sources (University of Johannesburg, 2023; 2024; Mashale, 2023). The hydro-panels are equipped with software that can remotely monitor the operational efficiency of the system. The systems are built to last up to 15 years.

The hydro-panels are plumbed to a tap so that the householder can easily use the water for cooking and drinking purposes, Figures 4, 5 and 6.

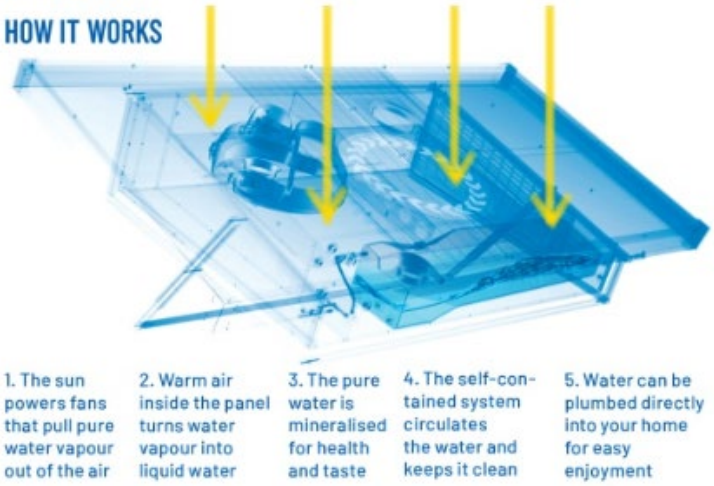



*Figure 4 - Hydro-panel System (Source:UJ PEETS, 2022)*

*Figure 5 –Hydro-panels installed at a School in the Village*

*Figure 6 –Domestic use of hydro-panel system*

### 4.1.3 Project Site - Lophoko Village (Eastern Cape)

Before the installation of the hydro-panels the implementing team engaged with the community to gain a better understanding of the community needs and what their challenges were with accessing water. Through these community engagements consent to implement the project was established and obtained. Beneficiaries from the Lophoko Village were sampled to be part of this evaluation study. A total of 16 female respondents were interviewed. Each respondent either had hydro-panels installed in their household or made use of hydro-panels

at the various other locations that the panels were installed within the village such as the spaza shop. No non-beneficiaries were identified as all residents had equal access to the project.

Demographic statistics revealed that of the 16 female beneficiaries interviewed, 12% were between 18 – 25 years of age; 25% were between 26 – 35 years of age; 25% were between 36 – 45 years of age; and 38% were between 46 - 60 years of age. In terms of education level, 50% indicated that they did not have any formal educational background, with 25% indicating that they went to secondary school, 19% indicated that they went to primary school and only 6% indicated that they had a tertiary level of education. Most respondents (81%) indicated that they were unemployed with 6% indicating that they are students and only 13% were self-employed.

When enquiring about the number of individuals residing in a household, 25% indicated that 1 – 3 individuals reside in their household; 31% indicated that 4 - 5 individuals reside in their household; 25% indicated that between 6 - 10 individuals reside in their household and 19% indicated that more than 10 individuals reside in their household.

All beneficiaries have been living in the community for longer than 10 years.

### 4.1.4 Relevance & Coherence of the Project

The Hydro-panel Water Provision Project in the Eastern Cape Province was initiated in response to a specific need for improved water access in the province. This has been confirmed by participants during the fieldwork. Women in the community reported that they used to take up to 2 hours a day collecting water from a river, covering over 2 kilometres in distance. The project was driven by a donor's desire to make a difference in terms of water accessibility, particularly in communities where municipal plans for water provision were lacking. This indicates that the project is aligned with the immediate needs of the community, addressing a critical gap in water supply. This foundational motive underscores the project's relevance, as it directly addresses the urgent needs of vulnerable communities facing water scarcity.

The technology option is also appropriate for localised conditions. The hydro-panels require no additional infrastructure and do not place an operational cost burden on the community other than routine maintenance.

The project's relevance is further demonstrated through its community-wide approach, which aims to benefit entire populations rather than isolated individuals. By deploying hydro-panels that extract moisture from the air, the initiative not only caters to immediate water needs but also aligns with broader environmental sustainability goals. This dual focus on social and environmental needs is essential in contexts where water scarcity is exacerbated by climate change and inadequate infrastructure. The emphasis on community engagement ensures that the solutions provided are culturally appropriate and tailored to the specific challenges faced by the residents.

*Coherence* is a critical element in assessing the effectiveness of any development initiative. The hydro-panel project exhibits strong coherence with other national and local initiatives aimed at improving water quality and access, particularly in the aftermath of the COVID-19 pandemic. The collaboration between diverse stakeholders including the Medical Research Council and local community partners demonstrates an integrated approach to water access and sustainability.

*"… intervention has come in to identify communities... to bring those together."*

The project's objectives also resonate with national priorities that emphasize sustainable development and equitable access to resources. By aligning with existing policies and frameworks, the project enhances the overall effectiveness of water provision strategies in the region. This coherence not only ensures that efforts are synergistic but also maximizes the use of resources and expertise across various sectors. The project's focus on innovative technology and community involvement further complements other interventions, positioning it as a vital component in the broader landscape of water accessibility and renewable resource activation efforts in South Africa. This indicates that the project fits within the framework of existing policies and complements other interventions by focusing on innovative technology and community involvement.

### 4.1.5 Impact of the Project

The impact of the hydro-panel project is evident through tangible improvements in water access facilitated by the installation of the hydro-panels in communities and schools. According to the Implementing Agent and various news reports, it is estimated that 2500 people have benefitted from the installation of the hydro-panels in the Eastern Cape. Overall, 50% of the respondents agreed that the implementation of this project has impacted them positively, with 56% of respondents indicating that since the implementation of the project they have more access to clean drinking water and that their quality of life has improved. 44% of respondents indicated that since the implementation of the hydro-panels they feel more independent and more in control of where their drinking water comes from.

The project has increased water sources and reduced the distance and time needed to collect water per day. As shown in Figure 7, respondents use multiple sources of water, and in most cases using the intervention to augment their erstwhile source (river, rainwater, borehole). The installation of the hydro-panels has had a significant positive impact on the drinking water supply to the households.

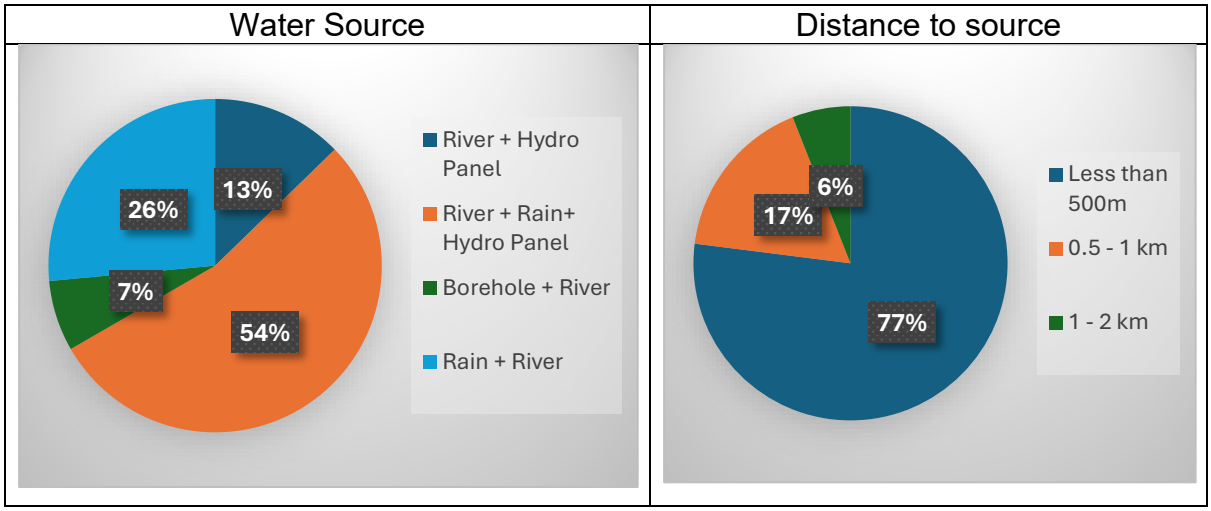



***Figure 7 - Water Source and Distance***

While it may be innovative and providing a renewable water sources, many respondents complained about the adequacy of the water. Upon enquiry with the beneficiaries, many reported to use the hydro-panels for their intended use, which is for drinking purposes only. Nevertheless, even though many respondents indicated that although the hydro-panels do provide them with a source of water, the quantity of water provided is very little and it does not provide for the whole family. This can be seen as significant as data collected from the beneficiaries indicated that within each household there are multiple people residing, with 3 respondents indicating that there are more than 10 people residing in their household, 4 respondents indicating that there are 6 – 10 people residing in their household, 5 people responding that there are 4 – 5 people residing in their household and 4 respondents indicating that there are 1 – 3 people residing in their household. Taking into account the amount of water produced by the hydro-panels in relation to the number of people residing in the household, it is clear that not enough drinking water is produced by the hydro-panels to sustain a large family.

*"The water does not come out in large quantities. Sometimes we try fill up a jug and it is not sufficient for all my family members."*

*"The hydro panel helps only to a certain extent because there is often, little to no water to cover for extended days."*

*"The Hydro panel only produces 1.5 litres and that is not sufficient for all my family members."*

Most complained that either the pressure or the production rate is too slow to meet the demand. As such, most reverted to using their traditional sources of water such as river, rain harvesting, and borehole. However, women travelled less than 500m to collect water (77%) (Figure 6), which is way below the 2km noted in various literature. This is further clarified below.

The results shown in Figure 8 may seem counterintuitive since respondents seem to be suggesting that their water collecting time has increased since the hydro-panel project. For example, 62% of respondents remember spending less than 30 minutes collecting water per day before the hydro-panel project, which will be a fair time on many accounts. Only 15% spent between 1 and 2 hours on water collection activities. After the project, 46% spend less than 30 minutes collecting water – which is 16% less people than before the project. On the other hand, 31% of respondents now spend between 1 and 2 hours per day collecting water – a 16% increase to the pre-project figures. This may be interpreted in a variety of ways. However, when read together with other comments from respondents, these figures make sense. Most respondents complained about the lack of reliability and lack of sufficient water within the hydro-panel system. One respondent complained that, “hydro-panels hardly work”. Others noted that the “hydro-panels have not worked for a year”. They then reported that, while most people appreciated the quality of water from hydro-panels the time spent going to the hydro-panels only to find them not working and then re-routing to other sources such as river or boreholes may take extra time, compared to when they just went to the river/borehole. As such, lack of maintenance and proper functioning of the hydro-panel system has exacerbated the situation – consequently increasing the time and distance to collect water. Further, the hydro-panels were designed to provide only drinking water therefore women are still required to collect water for other domestic, agricultural and business uses.

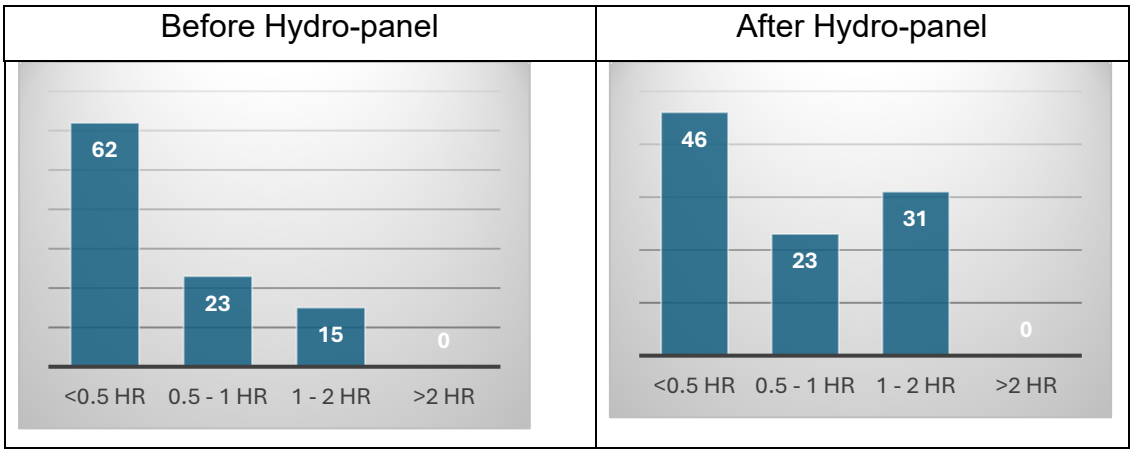



*Figure 8 – Time spent per day collection water*

However, when the panel work properly, the quality of water surpasses that from other sources (Figure 9).

As shown in Figure 9, only 7% of respondents rated the water from the hydro-panel as poor quality, while 79% of respondents rated the water from the hydro-panel as good. On the other hand, the quality of other sources (river, borehole, rain) is inversely proportional to the hydro-panel, with 83% of respondents rating it between fair and poor.

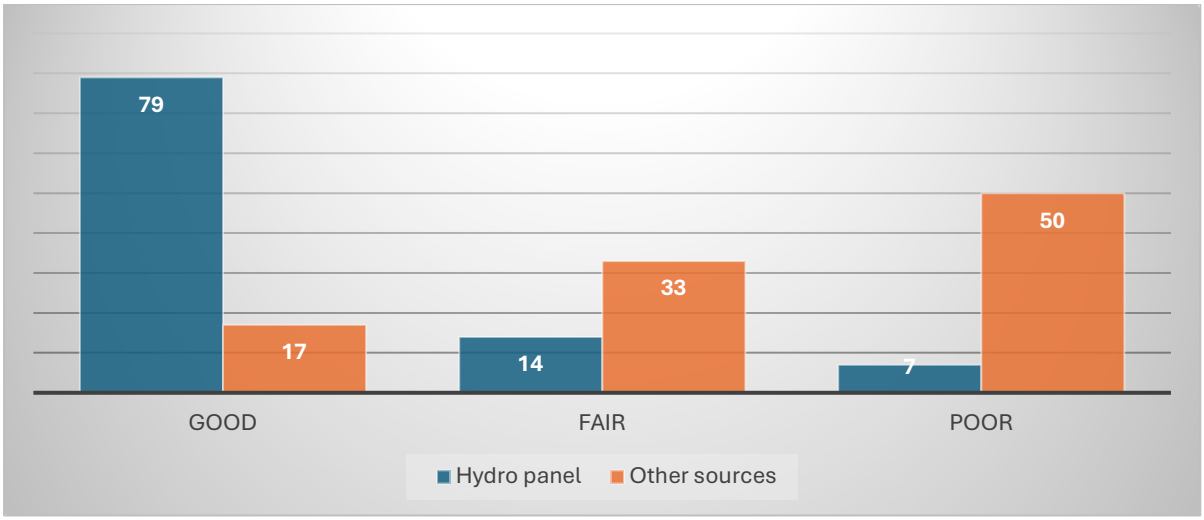



*Figure 9 - Water quality from different sources*

The water quality from the various water sources affects the uses of the water as shown in Figure 10. Again, the prevalent use of “other sources" for domestic purposes (40%) in Figure 10, even when rated as “fair” to “poor” quality must be understood within the above interpretation. It is clear that most respondents (prefer to) use hydro-panel water for domestic purposes (56%) if it is available, since it is of high quality. However, the lack of its reliability compels most residents to travel long distances to other sources to collect water for multiple use, include farming and business. The use of hydro-panel water for farming by 28% of the respondents is unexpected which was not explained by the respondents. However, it is expected that some people may want to sell water from hydro-panels, or use it in various businesses, since it is of good quality.

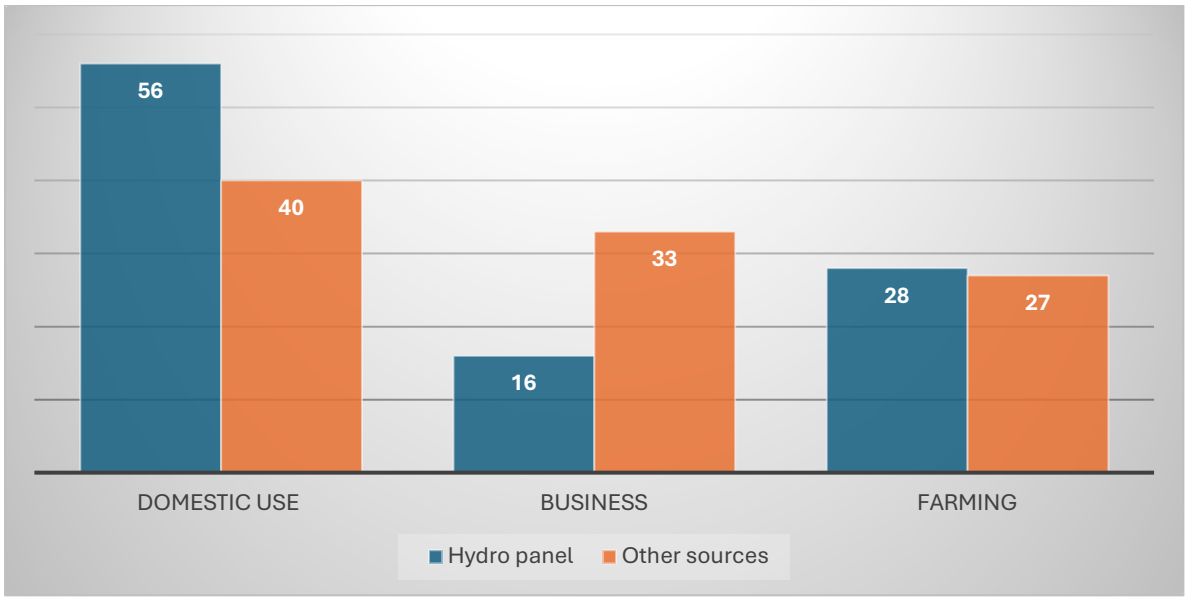



*Figure 10 – Use of water from different sources*

Access to water is positively correlated to health outcomes (Figure 11). According to the women interviewed, 77% reported improvement in their families' health and 57% reported improvement in their own health since receiving access to hydro-panel water. However, it is possible to infer from the foregoing argument that lack of reliability in hydro-panel water system may negatively impact on these positive effects.

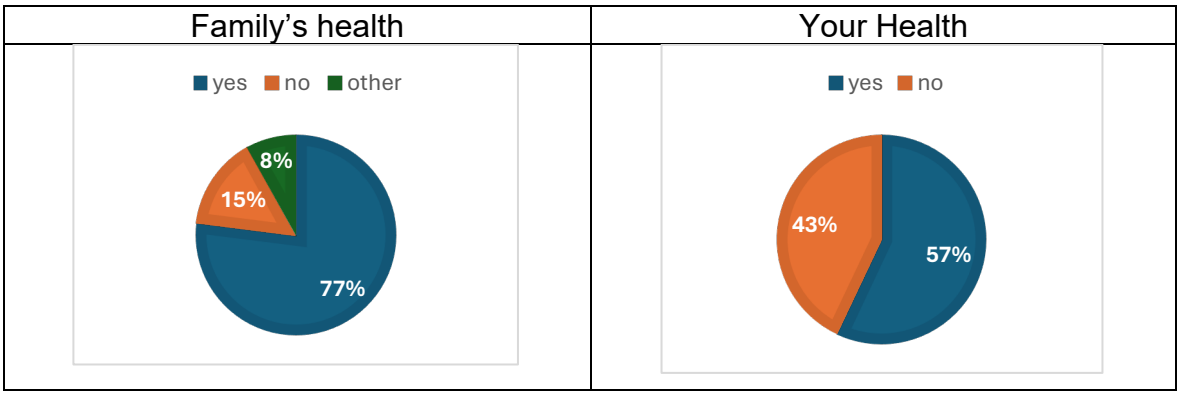



*Figure 11 –Has access to water improved your family's and your health?*

The majority (77%) of women did not see much correlation between access to water and their children's ability to go to school (Figure 12).

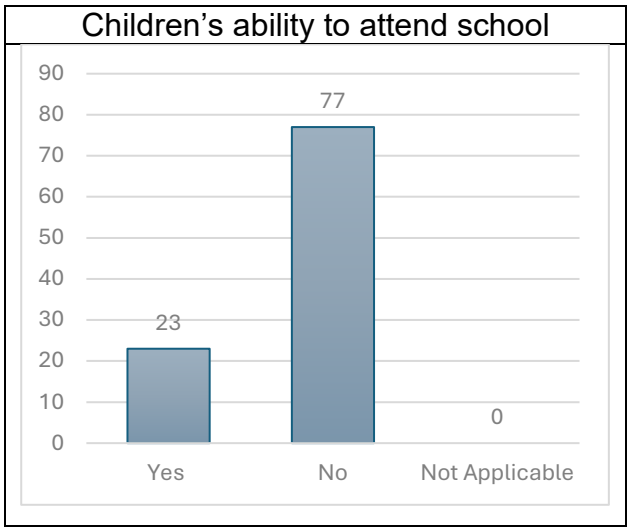



*Figure 12 – Has access to water improved children's ability to attend school?*

In the main (72%), women did not see any change in their ability to start or run a business since receiving water from the hydro-panel project (Figure 13). Some (14%) even saw their ability decreased, probably due to the time they spend searching for water.

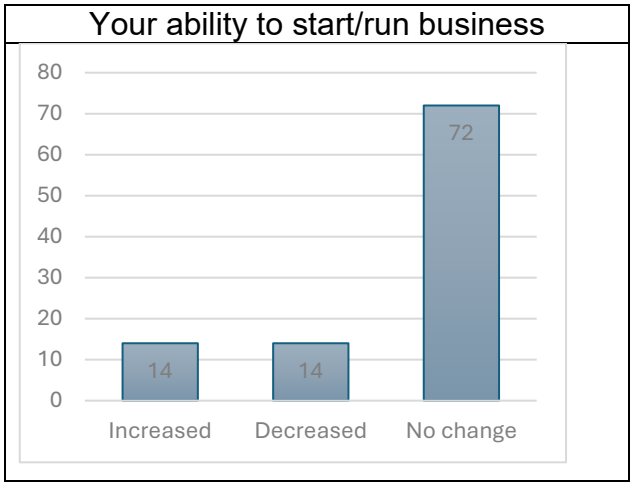



*Figure 13 – Has access to water improved your ability to start/run your business*

When asked to rate how access to water has impacted their daily lives, respondents identified a number of effects. According to Figure 14, respondents recognised effects of water access on hygiene and health (53%), saving time (33%), improved farming (13), and improves business (2%) while 27% of respondents did not see any change in their daily lives.

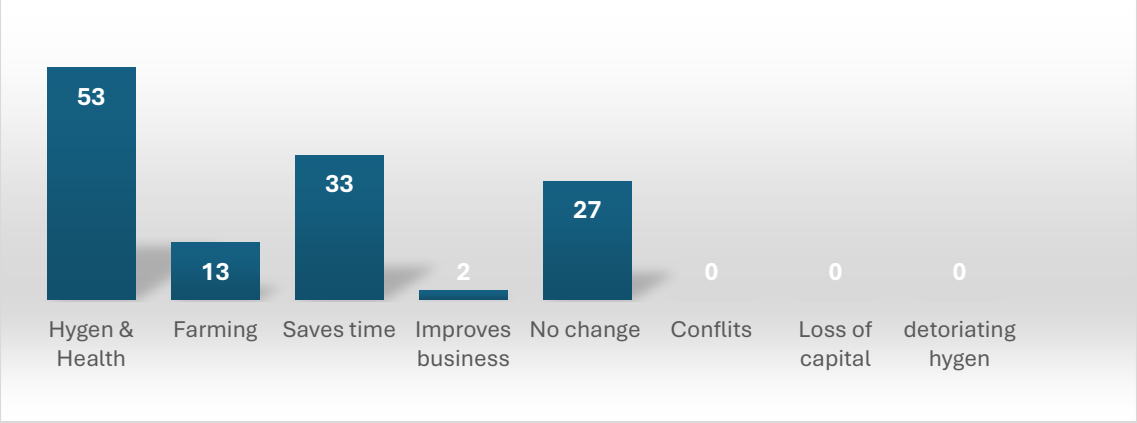
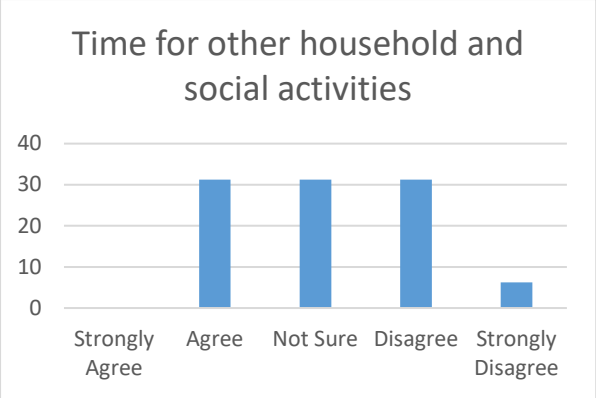



*Figure 14 – How has access to water affected your overall daily life?*

There were mixed responses on whether women had more time for other household, social, school or income related activities since the installation of the hydro-panels (Figure 15). Specifically, 31% of the respondents agreed that they have more time for other household and social activities, while another 31% disagreed. Moreover, 13% of the respondents strongly agreed that they have more time for income related activities, however 19% of the respondents strongly disagreed with this statement, indicating that they do not have the time for other income related activities. Further to this, 31% of respondents indicated that since the implementation of the hydro-panels they were able to grow their own food and provide for their livestock.



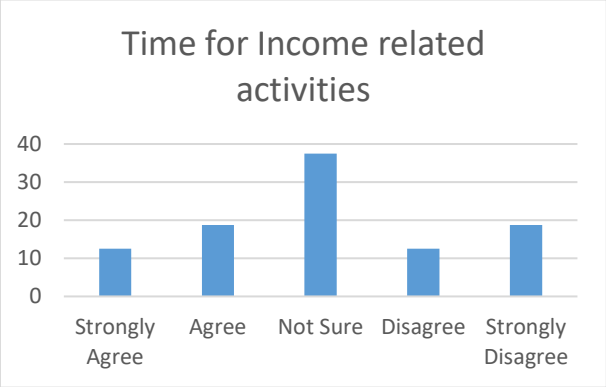




***Figure 15 – Time for other productive activities***

Upon making an inference one could argue that this could be since the hydro-panels were only intended to provide for drinking water purposes, in order for the individuals to complete their other household activities and chores they have to collect water from the river in addition to what they receive from the hydro-panels. This was made clear when asked about the challenges experienced in collecting water. Apart from raising concerns about the inadequate volume of drinking water provided by the panels, many raised concerns about the storage of water. This resulted in them having to do multiple trips a day in very difficult terrain to collect water.

*"Carrying water is exhausting and river water is not clean. We do not have proper storage for water and it can easily get dirty/ contaminated."*

*"Collecting water is very difficult especially for us older women. It is heavy and painful to carry and it affects our health, but we do not have the means to make it easier. Sometimes we have to wake up very early or go late at night to fetch water because the river gets crowded. The buckets are not big enough so we have to make several trips in a day. It is time wasting and limits what we can do in a day in our home duties and chores."*

To collect water from both the river as well as the hydro-panels, many respondents indicated that they use buckets or any other plastic containers or plastic bottles to collect the water and, in some instances, they use a wheelbarrow to assist in carrying the water back to their household.

While the project is self-sustaining at the moment, many local community members raised concerns that the hydro-panels did not work in rainy and overcast weather conditions as the hydro-panels produce very little to no water. This added to the frustration of the householders as they had to then resort to collecting water from previous water sources which added to the time for water collection in general. This can be seen as a design oversight given that the panels only work during sunny conditions, however when the panels do work they provide hassle free drinking water for the community.

Despite the challenges raised by the beneficiaries of the hydro-panel project, the net benefit of the project remains a positive impact as women have access to clean water although it is a

limited volume. Also, women have noticed an improvement in their health and that of their families when provided with clean water. Although, the time spent on collecting water has not decreased in any meaningful way, the intention of the project was never to provide an alternate water source for all water uses instead it was only to provide clean drinking water and the project has partially succeeded in this regard.

### 4.1.6 Sustainability of the Project

While the sustainability of the hydro-panel project appears promising, because they are easy to install, require little to no training to operate efficiently and do not incur any operational costs it is expensive to upscale the project in line with the growing water needs of the householder. Further, improving the sustainability of the intervention is training provided to local community members on the functioning of the hydro-panels. Empowering local individuals with the knowledge and skills necessary to manage these technologies is essential for promoting long-term benefits. This capacity-building aspect ensures that the community can effectively address maintenance issues as they arise, thereby enhancing the project's longevity. The Implementing Agent confirmed that a community member was trained to monitor the functioning of the panels on the ground. He had a direct line to the team at SOURCE, who could help arrange for repairs to be made available although many women were unaware of the details of the maintenance person.

It is estimated that the cost of one panel is approximately R43 000 for the purchase and installation of a panel. The project was funded by the Chan Soon-Shiong Family Foundation and the technology was provided by SOURCE Global, however under normal circumstances it would not be possible for women in the village to fund the purchase of additional hydro-panels. For the benefits flowing from the intervention to last, alternate funding mechanisms must be considered to provide adequate panels to the community.

A potential threat to the benefits of the project is the continued maintenance of the infrastructure. Respondents indicated that after a while the hydro-panels stopped working and that the pipes are very thin, easily breakable and that the pipes get easily blocked, which stops the hydro-panels from working and therefore they cannot receive any water from the system.

*“The hydro panel pipes are very thin and get easily blocked. There is no maintenance at the momement , so we are responsible for everything and that is why only one of the two panels is working.”*

## 4.2 The Hippo Water Roller Project

### 4.2.1 Background and Rationale for the Intervention

The Hippo Water Roller (HWR) Project was invented in 1991, by two South African farmers, Mr Petty Pitzer and Mr Johan Yonker, when they noticed that women and children bear the burden of walking long distances carrying heavy buckets of water. They used their engineering skills to develop and design a wheelbarrow shaped system to assist the women and children in transporting water.

In many instances the primary source of water in rural areas is boreholes mostly located within a 2km radius of the homestead. Water is transported in plastic containers, buckets and wheelbarrows limiting the volume of water that can be collected hence many trips are made to service the water needs of the household. Women and children shoulder the responsibility of making these trips and carrying these heavy loads resulting in injuries and preventing them from going to school, furthering their education or generating income for the household.

*Carrying heavy water containers lead to injuries, including back pain, especially from lifting heavy buckets and bending at boreholes every other day. However, with the Hippo Water Roller we can transport water while standing*

The envisioned impact of the HWR was to reduce the burden of walking long distances with heavy loads and to increase the volume of water that people can carry without increasing the physical load on women and children. The HWR provides immediate benefits to women, the time to collect water is shortened and injuries from carrying heavy loads are prevented, Figure 16.


***Figure 16 – HWR in use***

Often the road infrastructure is rudimentary making it difficult to travel with wheelbarrows, there are long ques at the boreholes and the boreholes frequently run dry. While the HWRs cannot resolve the lack of infrastructure and the limited availability of water, it does provide a unique, immediate and practical solution to collecting larger volumes of water and reducing the physical strain on women and children. In addition, the HWRs are used to store the water, and are easy to maintain and clean.

### 4.2.2 Project Site – Bushbuckridge, Mpumalanga

The Lowveld in rural Mpumalanga experiences significant fluctuations in rainfall, largely due to its geographical location of dry and descending air resulting in low and unpredictable annual rainfall. Consequently, the region frequently grapples with droughts which exacerbates water scarcity challenges. Piped water infrastructure to most households is lacking, and as such, accessing clean and safe water poses a formidable challenge for many families.

The Africa Foundation and & Beyond donors funded the distribution of 84 HWRs in the Greater Kruger region. Forty-two HWRs were distributed to the beneficiaries close to the Ngala conservation area (Northern Kruger Region) and the remaining 42 HWRs were distributed to households in the Sabi Sand conservation area (Southern Greater Kruger region).

According to Africa Foundation, of 367 community members linked to the 75 homesteads that received a HWR, the majority were female beneficiaries. The roll out of the programme was done in consultation with community leaders. Elderly women, child-headed households and individuals living furthest away from the water points were prioritised. Training was provided to all beneficiaries on the operation, maintenance and disposal of the HWR.

During the evaluation, 11 beneficiaries who received the HWRs and 5 households that did not receive the HWRs were interviewed. The participants reside in Malamulele Village in Kildarea and Khomanani Village in Ireagh in the Southern Greater Kruger Region.

Demographic statistics revealed that of the 16 female beneficiaries interviewed, 7% were between 18 – 25 years of age; 31% were between 26 – 35 years of age; 31% were between 36 – 45 years of age and 31% were between 46-60 years of ages. In terms of education level, 25% indicated that they did not have any formal educational background, 38% indicated that they went to primary school, 25% indicating that they went to secondary school, and 12% indicated that they had a tertiary level of education. Most participants (63%) indicated that they were unemployed with 30% indicating that they are students and only 7% were self-employed.

When enquiring about the number of individuals residing in a household, 25% indicated that between 1 - 3 individual reside in their household; 37% indicated that 4 - 5 individuals reside in their household; 19% indicated that between 6 - 10 individuals reside in their household and 19% indicated that more than 10 individuals reside in their household.

Most participants (75%) have lived in the community for more than 10 years, with 25% indicating that they have been living in the community for 6 -10 years.

### 4.2.3 Project Description – How the HWR Works

The design behind the HWR was largely influenced by the rough terrain, specifically within the rural communities making it difficult to transport water in containers.

*"Normal wheelbarrows got stuck in the mud and sand and therefore it was difficult to manage, carry and push them through the rough terrain."*

However, because the HWR uses the water barrel as the wheel it has a lower centre of gravity making it easier to manage and move along the rough terrain. The HWR is a durable, barrel shaped container that can hold up to 90 litres of water. The drum is manufactured from UV stabilised polyethylene and has a large opening (135mm) to easily fill and clean the barrel. It is designed to be rolled on the ground using a steel handle, making it easier for recipients to transport large quantities of water over long distances. The steel handle provides firm control over the difficult terrain and is designed to withstand rural conditions such as uneven footpaths, rocks and broken bottles (Department of Rural Development and Land Reform, 2012; Hippo Roller, 2024; Westgaard & Gibbs, 2023).

The design is also adaptable and flexible, it can be used for multiple purposes including: drinking water, providing for livestock, gardening and farming or business and other household activities such as cleaning or washing (Westgaard & Gibbs, 2023; Department of Rural Development and Land Reform, 2012). A utility cap can be installed with a filter on the drum to ensure a more hygienic way to extract water without contaminating the contents, providing sufficient drinking water. The drum of the HWR can also be used to water vegetable gardens as the barrel can be opened while being rolled on the ground. These design features match and meet many of the water use demands of the community.

### 4.2.4 Relevance and Coherence of the Project

The HWR project aims to alleviate the burden of water collection in rural communities, particularly benefiting women and children. Designed to transport water more efficiently, the HWR replaces traditional methods that often involve carrying heavy containers on the head which poses significant physical strain and health risks. The HWR Project addresses a critical need in rural communities where water collection is a daily burden, particularly for women. The HWR offers a transformative solution by enabling users to transport larger volumes of water more efficiently and comfortably. The innovation not only alleviates physical burdens but also empowers women by freeing up their time for other activities, such as education and economic pursuits. The project thus serves a dual purpose: to improve access to water and to enhance the social and economic well-being of vulnerable populations, particularly women and children who are disproportionately affected by water scarcity.

According to respondents, before the HWR project, they spent a lot of time in water collection activities, balancing small containers on their heads or on a wheelbarrow (Figure 17).

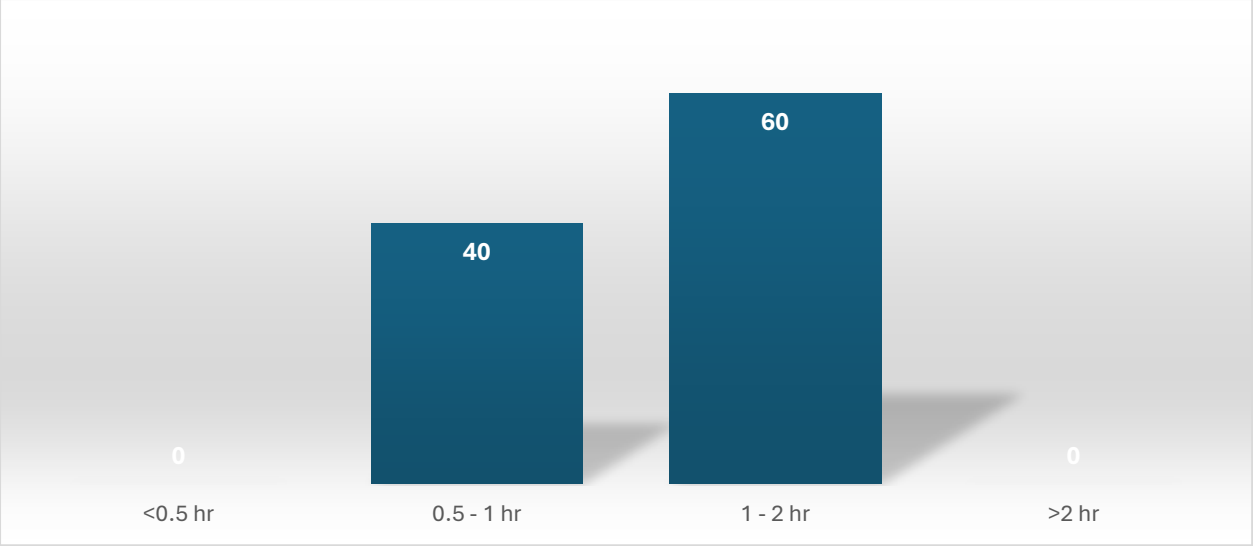



*Figure 17 – Time spent collecting water before the HWR Project*

As many as 60% of women confirmed that they spent between 1 and 2 hours a day fetching water, and 40% spent between half an hour and 1 hour a day fetching water. Not one participant spent less than 30 minutes a day collecting water emphasising the burden and significant role of collecting water in the day of woman. As such, the intervention of the HWR was necessary to enable women to collect water easily and faster.

*I do not have to spend much time waiting for the 10 buckets to fill when I can take at least the hippo roller container and get more water while spending less time.*

Even though the HWR project does not provide additional water source infrastructure – which is desperately needed in most communities – the change in the methodology of collecting water provided is essential in engendering transformation in women's lives and livelihoods. Many respondents also attested to the fact that water collection is mostly affected by sources that are too far, and sometimes water-shedding which leads to conflicts.

*The area experiences water shedding; therefore, during the dry period, the Hippo Roller is beneficial as it allows us to store water and maintain access to it throughout the water shedding period, which typically lasts between two to three days and sometimes even longer*

The water collected using the HWR serves multiple purposes, including drinking, washing, and irrigation for food gardens (Figure 18). This flexibility allows families to enhance their food security and contribute to their household income through small-scale agriculture.



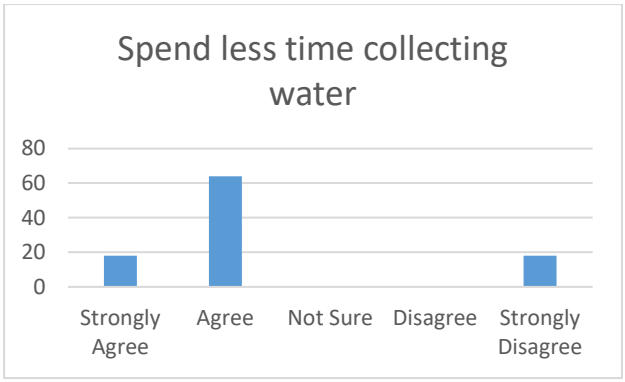
*Figure 18 – Multiple uses of the HWR*

### 4.2.5 Impact of the Project

The project not only improves access to water but also significantly reduces the time spent on water collection. This shift allows women and children to invest time in education and other productive activities, thereby improving their overall quality of life. The HWR project has profound societal implications, particularly in reducing the time spent on water collection. According to the Implementing Agent, the amount of time spent by women and children collecting water has negatively impacted on the quality of their education. To date, it is estimated that over 70 000 Hippo Rollers have been distributed to over 57 countries, predominantly to sub–Saharan Africa countries including south Africa.

By alleviating the burden of water collection for women and children, the HWR has created the time for them to spend on productive activities. This shift can lead to significant improvements in quality of life, as access to education is directly correlated with better economic opportunities and health outcomes. Moreover, as time previously dedicated to laborious water collection is freed up, the project fosters broader social transformations, empowering individuals to pursue personal development and community engagement in ways that were previously unattainable.

Out of the 11 beneficiaries of the HWR project that were interviewed,18% and 64% strongly agreed and agree respectively that they spend less time collecting water while 46% indicated that they do not travel daily to collect water (Figure 19). Hence, the intervention has achieved its intended objective.



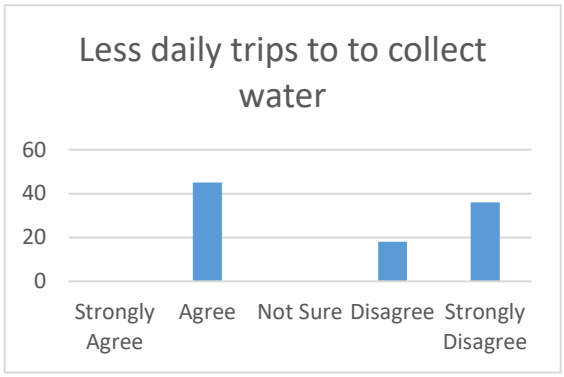




*Figure 19 – Time spent on fetching water*

As already mentioned, while the HWR project does not include additional water source infrastructure, sources of water were hardly impacted by the project. Over 80% of participants collected water from communal boreholes. Only the means and time of water collection was affected, as shown in Figure 20 below. Everyone in the control group used containers to collect water while 13% of the HWR beneficiaries had piped water in the home, 54% used a wheelbarrow and 33% used a the HWR to transport their water from the source. Households increased the collection of water by using both the wheelbarrows and the HWR. Water collected with the HWR was stored and the supply was supplemented with water collected in containers transported in wheelbarrows. The HWR created an opportunity for householders to increase storage and decrease daily collection trips making more time for other activities, Figure 21. This illustrates the change in mode of water collection and storage.

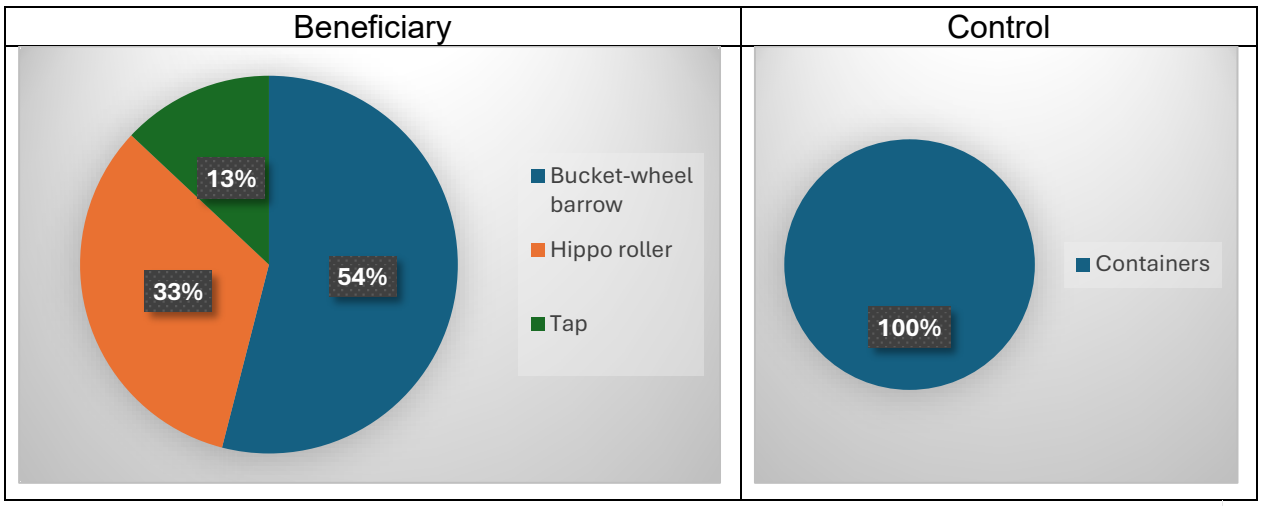



*Figure 20 – How is water collected for the source*


(a). Communal tap


(b). Rainwater Harvesting

*Figure 21 – Water sources used with HWR*

When it comes to time taken collecting water, which is the main proof of the HWR concept, there was significant changes experienced by the participants. As shown in Figure 22 below, all beneficiaries spent more than 30minutes, and a maximum of 2hrs collecting water per day before the HWR project. After receiving the HWRs, 50% of participants reported an hour to 30minutes reduction in time spent collecting water, as they now take only less than 30minutes. Half of the beneficiaries still take between 30 minutes to 1 hour. This can be attributed to participants still using wheelbarrows to collect water to increase their storge capacity. Not one of the beneficiaries spent more than an hour collecting water per day anymore.

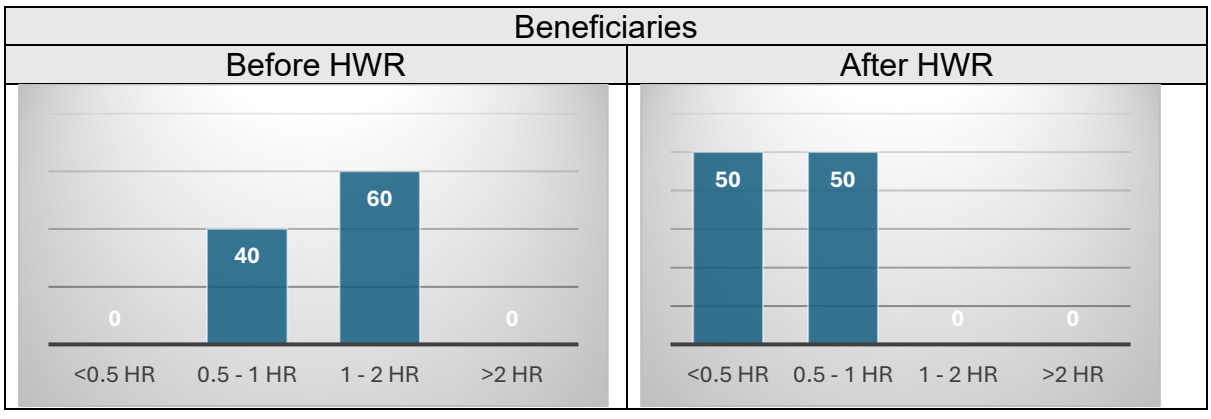



*Figure 22 – Beneficiaries – time spent collecting water*

In the control group, 60% spent less than 30 minutes per day collecting water while 20% spent up to 1 hour and 20% spent up to 2 hours per day collecting water (Figure 23).

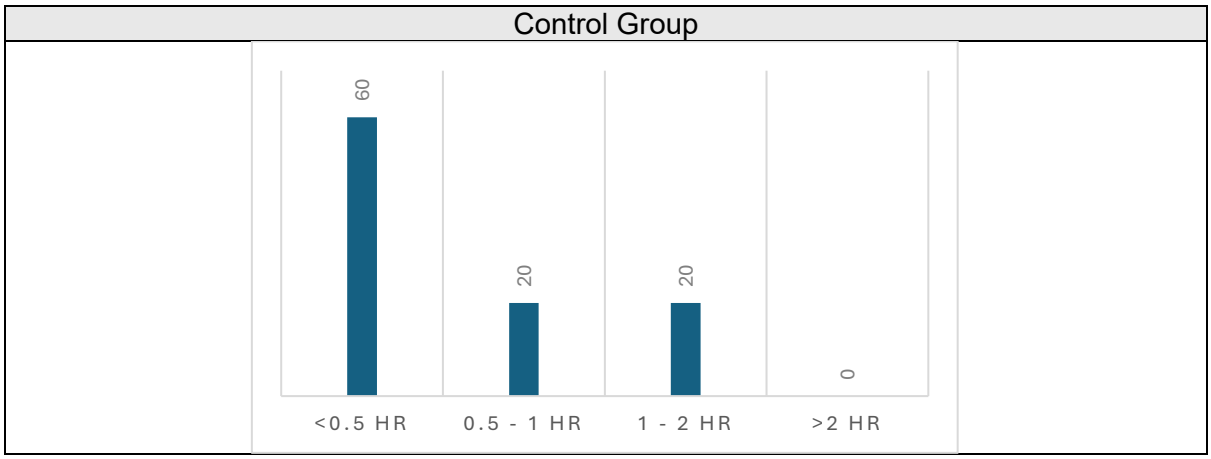



*Figure 23 – Control – time spent collecting water*

Water quality and use are not expected to be different before and after the HWR project as the water source has not changed. The HWR is not a water source, but a method of collecting water. As such, water collected using the HWR, wheelbarrow and containers, are used in the manner shown in Figure 24 below, domestic (41.5%), farming (46%) and business (12.5%). What is crucial is that the HWR project provides improved access to water, individuals and families are now able to realise multiple uses of water, from domestic to productive.

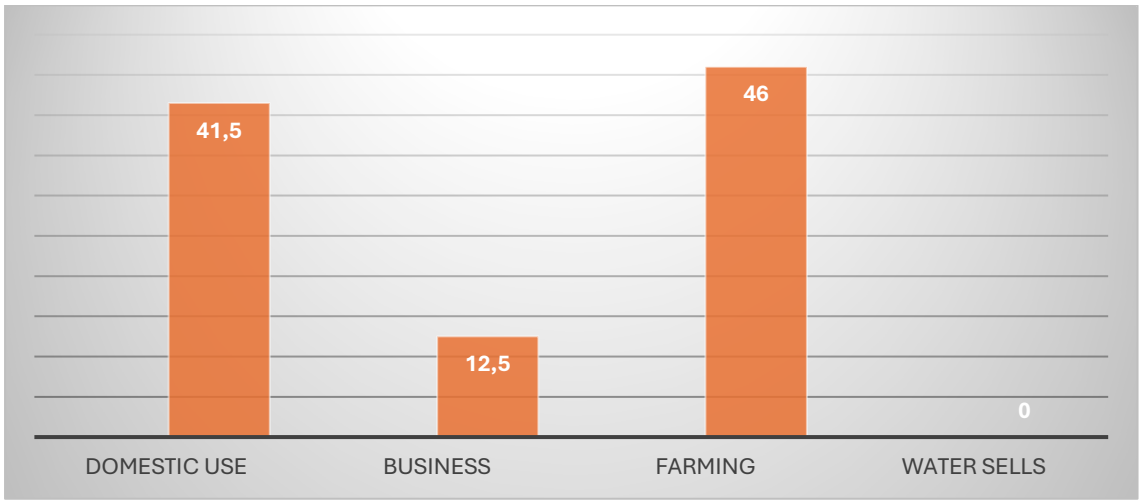



*Figure 24 – Water uses*

While respondents had challenges evaluating the quality of HWR water versus water from other sources, it can be argued that the quality of water may be affected by the method of collecting and handling (transporting). As such, the HWR containers provide low probability for contamination.

91% of respondents confirmed that access to water had improved the health of their families, only 40% thought their individual health had been improved by access to water, Figure 25. In fact, 60% were of the view that their health had not been improved by the access to water, Figure 25.

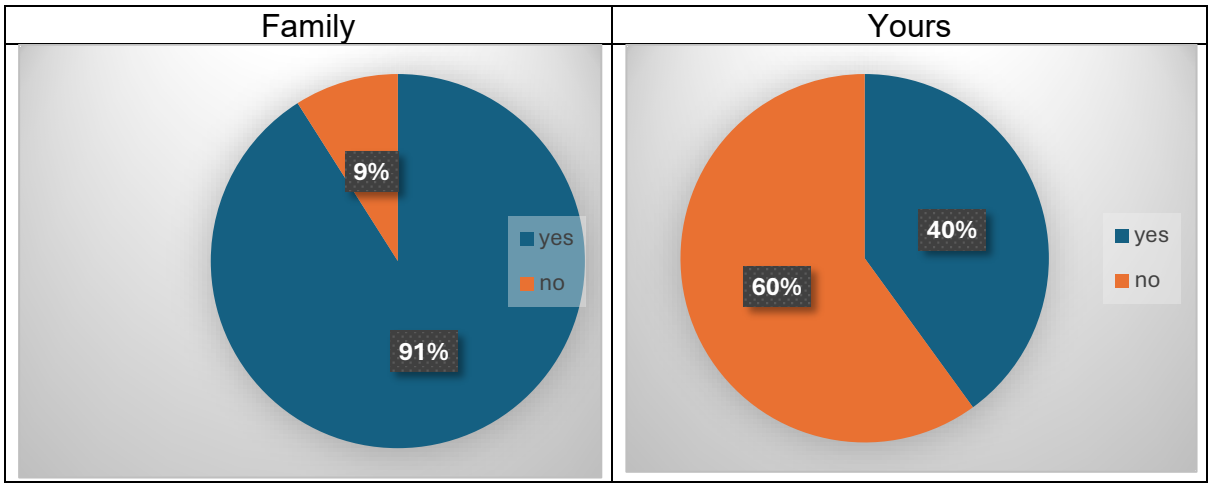



*Figure 25 – Has access to water improved your family's and your health?*

45% of participants agreed that access to water had improved their child's ability to go to school. 36% of participants said that access to water had not improved their child's ability to go to school because children in these households were not the primary person responsible for fetching water (Figure 26). Nineteen (19) % did not have children in the home therefore the question was not applicable.

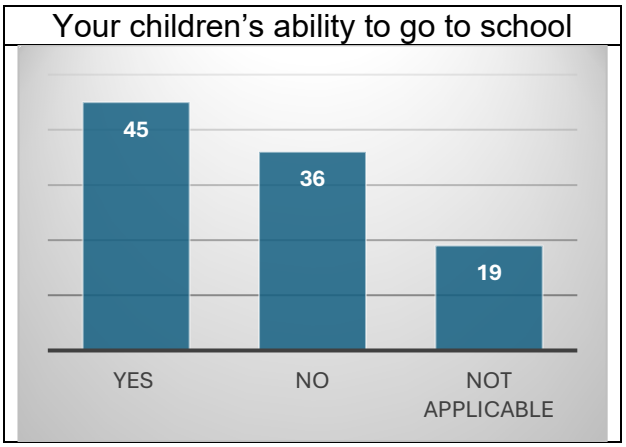



*Figure 26 – Has access to water improved children's ability to attend school?*

50% of participants responded that the HWR project improved their ability to start and run a business, as they had more time for income related activities (Figure 27). This can be attributed to the uniqueness and adaptability of the HWR, for example, the Implementing Agent indicated that the HWR can be used for multiple water use such as irrigation purposes. Households are able to start food gardens to grow their own food and the excess is sold to the community. This is attested, as 50% of the respondents indicated that they grow their own food and water their livestock.

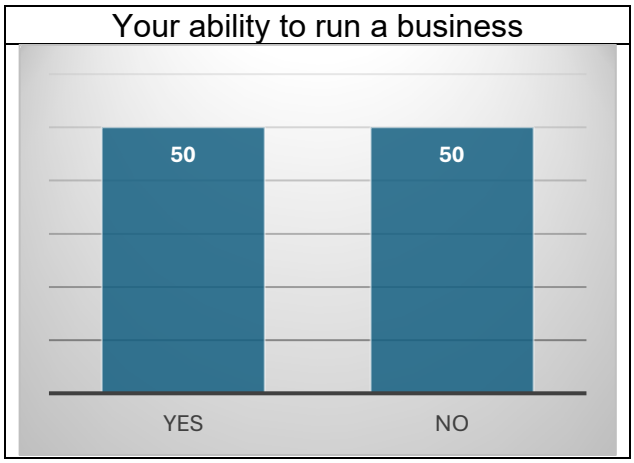



*Figure 27 – Has access to water improved your ability to start/run your business?*

In addition, the Implementing Agent mentioned that the HWR can be converted into a Hippo Spaza. A trolley or cart is attached to the HWR allowing for easy transport of goods to market and sets up into a display stand with shade covering to support entrepreneurs.

While 50% of the beneficiaries agreed that the HWR improved their ability to start/run a business, the remaining 50% of beneficiaries felt that the project had no impact on their ability to start/run a business. Many mentioned that access to water is a vital ingredient in your business however they lack access to capital and land which limits their aspirations to start a business.

An overwhelming majority of beneficiaries (64%) agreed that the HWR had a positive impact on their quality of life. They felt more independent and that they had more control over their water uses which left them feeling empowered. One woman mentioned that carrying buckets of water on her head meant that she could not braid her hair. The HWR project gave her back her confidence because she was able to show off her braids and feel beautiful again.

Another women mentioned that men are more open to sharing the responsibility of fetching water because a large volume of water can be collected quickly and easily. This task can easily be done after work as the water source is a local borehole. She did caution that if the water source was the river or spring it is unlikely that men would be willing to assist. This view was shared by other participants who confirmed that men were willing to assist with the collecting water if it is convenient to do and the HWR has provided that convenience.

The HWR project has improved access to water for women. It has also improved the quality of life of rural women and has given women a chance to explore income generating opportunities and feel more in control of their lives.

### 4.2.6 Sustainability of the Project

The HWRs is a low maintenance design that easily operated and has a lifespan of between 5 to 7 years depending on the terrain and distances travelled.

It is easy to clean and has multiple functions.

> *Water containers need to be replaced over time. When using buckets and plastic containers, we end up spending much more money because it breaks. The HWR is lasts a long time and it does not easily broken or get damaged.*

In addition, upon delivery of the HWR to the community, the HWR comes with spare parts and an instruction booklet – in picture format – on how to set it up, use it or to replace parts when necessary. Specifically, according to the distributor these spare components are also in the colour red, which assists users in seeing whether a part is missing or needs to be replaced.

The HWR is versatile, it can be used to transport goods when a trolley or cart is attached to the roller. This expands the income possibilities for the women.

Once the HWR has reached it design life, they can be re-purposed as a storage bin, flower pot, feeding or water trough for animals or a bath for washing clothes. The metal handle can be recycled.

The HWR is a sustainable project however, one of the challenges still to be overcome, is the cost of the HWR which is approximately R2 202. This is largely outside the reach of rural communities. The distribution of the HWR is dependent on sponsors and donor funding which impacts the expansion and sustainability of the project.

## 4.3 Multiple Use Services Project

### 4.3.1 Background and Rationale for the Intervention

The African Water Facility (AWF) of the African Development Bank initiated a demonstration project called “Operationalising community led Multiple Use Water Services (MUS) in South Africa” in late 2016, with the Implementing Agent being the Water Research Commission (WRC).

According to van Koppen et al., (2009), the MUS project is a unique project in that villagers oversee the design and implementation of the water supply process. Villagers are empowered to design water supply systems based on their needs, climate and geography.

The MUS project approach therefore addresses water access challenges by collaborating, and implementing community led water system designs and management practices. It incorporates both domestic and productive uses of water in the design and delivery of water supply services and can be implemented according to a six-step community driven process.

The design of the MUS project is centred on a holistic, participatory approach to planning resulting in a water supply system that supports people’s self-supply and their multiple water needs which are identified by the community. An integral part of the approach is to liaise and coordinate with relevant government departments.

The project was implemented in six rural villages in Limpopo, the poorest province in South Africa. A non-governmental organisation, Tsogang Water and Sanitation, was the socio-technical facilitator for the project and the International Water Management Institute (IWMI) was the research partner for the project.

The MUS project is aligned with the National Water Resource Strategy (NWRS), a key component of South Africa’s water legislation. The NWRS provides a strategic framework for managing water resources at national and regional levels and emphasises the sustainable and equitable use of water. Specifically, one of the guiding principles of the strategy is to use a multiple use approach when implementing, developing, planning and financing water infrastructure and services according to the needs of the communities. The MUS project is in support of the NWRS goals, hence the programme adopts a holistic and community driven approach.

The intervention is aligned with National Water Act, as well as various other gender transformation legislation frameworks that highlight the need for equitable and sustainable access to water for all, specifically towards women, who are seen as the main user responsible for the collection and use for water.

### 4.3.2 Project Site - Ga Mokgotho Village (Limpopo)

The Ga Mokgotho village of approximately 800 households, is located in a mountainous area of the Sekhukune District in Limpopo. The main source of water is a communal gravity system, where water from a borehole is pumped into a reservoir that was constructed in 2007. Community members mentioned that the system started breaking down due to a lack of maintenance. The system operator started to charge the villagers for the use of the system.

The MUS project was implemented in Ga Mokgotho village to assist community members by providing them technical and institutional capacity to upgrade their gravity system and look for additional ways of improving their access to water for multiple uses such as domestic use, household activities, business activities, growing food and watering livestock.

During the evaluation, a total of 13 community members were interviewed. Ten were beneficiaries of the MUS project while three were non-beneficiaries of the project. Demographic statistics revealed that of the 13 women interviewed, 46% were between 18 – 25 years of age, 23% were between 26 – 35 years of age; 8% were between 36 – 45 years of age; 23% were between 46 - 60 years of ages. The sample was largely made up of the youth.

In terms of education level, all participants had some form of formal educational background, 31% indicated that they went to primary school, 61% indicating that they went to secondary school, and 8% indicated that they had a tertiary level of education. An alarming number of participants (84%) indicated that they were unemployed while 8% indicated that they were students and only 8% were employed. This bears testimony to the crisis of unemployed youth in the country which makes the MUS project appealing if access to water improves the economic opportunity of young people.

When enquiring about the number of individuals residing in a household, 54% indicated that 4 - 5 individuals reside in their household; 23% indicated that between 6 - 10 individuals reside in their household and 23% indicated that more than 10 individuals reside in their household.

The majority of participants (77%) have lived in the community for more than 10 years, with 23% indicating that they have been living in the community for 6 -10 years.

### 4.3.3 Project Description – How the Multiple Uses of Water Project works

The MUS project is based on the principle of inclusive decision making and community driven planning with support from government. The MUS intervention is implemented in a 6 step cycle that includes:

**STEP 1:** Initiate collaboration with communities;

**STEP 2:** Diagnose the water situation in terms of needs and challenges in accessing water;

**STEP 3:** Envision solutions;

**STEP 4:** Fit the financial framework;

**STEP 5:** Implement the agreed upon solutions; and

**STEP 6:** Operate and maintain the system.

In 2017, Tsogang Water and Sanitation was appointed as the socio-technical facilitator to mentor the community through the 6 step process.

During **Step 1**, Tsogang Water and Sanitation introduced the project to the Traditional Authorities and got their approval to implement the MUS project in the Ga Mokgotho village. A meeting was held with all villagers to present the project. A MUS Forum was established based on gender, youth, representation of governance structure and geographic location. The MUS Forum was tasked to oversee the implementation of the project and to serve as a conduit between the community and Tsogang Water and Sanitation.

During **Step 2**, the MUS Forum, the community and Tsogang Water and Sanitation analysed the water situation in the village to generate a shared understanding of what challenges they face when accessing and collecting water. Participatory resource mapping, focus group discussion, interviews and transect walks throughout the area were held to get to a collective understanding of the situation. Tsogang Water and Sanitation undertook all technical analysis of the infrastructure on behalf of the community.

During **Step 3**, technical and institutional solutions were identified, analysed and prioritised. This was workshopped with the MUS Forum and the community. A plan of action was agreed, which included refurbishing water intakes, repairing and installing new pipes from the reservoir system, installing new standpipes and building two animal troughs

During **Step 4**, the financial and human resources needed, to implement the agreed upon solutions, were identified.

During **Step 5**, it was agreed that the MUS project will be constructed by the community with oversight from Tsogang Water and Sanitation. The idea is to empower and provide individuals with skills, knowledge on how to maintain and use the systems and to foster a sense of ownership and accountability for the system.

*We need to bring the Community into this project right from the beginning before you can even construct anything. And by doing that, you are actually trying to build a sense of ownership. And once people own this project, they will actually look after it. They will make sure that they take care of the infrastructure (TWS, 2014)*

Tsogang Water and Sanitation conducted a 5 day technical training programme with the villagers who were selected to construct and maintain the system. The themes of the training included reading and interpreting drawings; identifying different types of pipes, pipe laying, excavation and backfilling; checking scope of work, checking materials requested and occupational health and safety.

During **Step 6**, Tsogang Water and Sanitation undertook another 5 day training programme, after construction, with the villagers who were responsible for maintaining the system. The

training included environmental health and hygiene, water quality, climate change, operations and maintenance, basic bookkeeping and homestead cultivation and seeds.

Figure 28 illustrates the installation of the MUS project in the Ga Mokgotho village.

*Figure 28 – Installation of the MUS project*

### 4.3.4 Relevance and Coherence of the Project

The Multiple Use Service (MUS) project aimed to enhance water access while emphasizing women's empowerment. Operational from 2017 to 2020, the project recognized that water is not just a domestic necessity but also a resource critical for agricultural and small business applications.

> *One of the element or component in the programme was to make sure that we actually empower women because all along women have been isolated when one speaks about water provision or water infrastructure or anything to do with water, but forgetting that the end users of this resource is mainly women. In all the activities that we are actually doing, we aim to not only include women, but also to empower them through capacity building*

In line with the National Water Act (NWA, 38 of 1998) and National Water Resource Strategy III (NWRS-3, 2023), the project aims at providing water for a number of uses.

This comprehensive approach underscores the project's commitment to addressing the multifaceted needs of communities, particularly by integrating economic opportunities alongside essential water provision. By targeting multiple uses of water, the MUS project not only sought to improve living conditions but also aimed to empower women, who often bear the burden of water collection, thereby promoting gender equity in resource management.

Collaboration among a diverse range of stakeholders was vital for the MUS project's success. Key partners included the African Development Bank, the Water Research Commission, local government entities, and community representatives. This collaborative effort was essential for addressing the diverse needs of the communities served.

*"We actually work with government especially on the WASH sector... there is nothing we can do without the Department of Water and Sanitation"*

In addition to working with government, local and international and non-state organisations worked with local communities in Sekhukhune District to see the project through. This collaboration ensured that the project was aligned with national policies and community needs, facilitating a more responsive and effective implementation. Engaging multiple stakeholders not only brought together varying expertise and resources but also fostered a sense of collective ownership over the project. By integrating the perspectives and needs of local communities, the MUS project was able to address diverse challenges related to water access and enhance the sustainability of the initiatives undertaken. In addition to aligning the project objectives with national institutional frameworks (NWA, NWRS-3) and other priorities within DWS and WRC, the project also aligned with needs of the communities. The mechanism for delivery of the water system was identified by the community, helping to foster ownership and accountability for the infrastructure.

### 4.3.5 Impact of the Project

Prior to the MUS project, villagers walked to communal standpipes to collect water fed from a reservoir. Since women have the primary role of collecting water in the project area, it would also imply that their lives and livelihoods are somewhat positively impacted by the MUS project as indicated in Figure 29 below, where 92% (38% from the project and 54% from river, rainwater harvesting and the project) of participants confirmed that their access to water was improved by the MUS project.

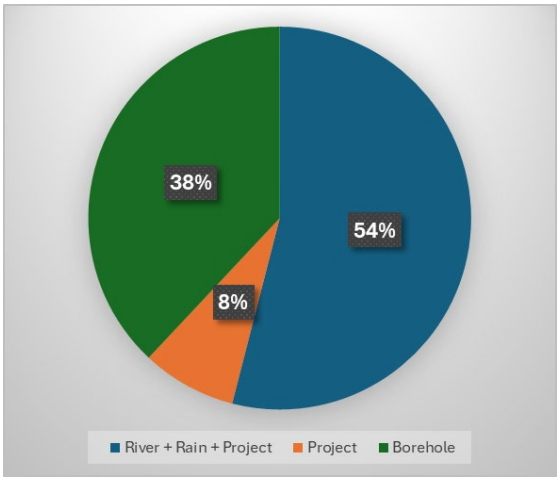



*Figure 29 – Water Source*

Contrary to the situational analysis in the country that shows that many people in rural areas walk up to 2kms per day to collect water, 88% of the respondents travel only less than 500m to collect water per day as shown in Figure 30 below. Unlike the other case studies, the distance to a water source is not the main concern in the village. Instead, having an assurance of supply and availability of water for multiple uses is the primary concern. The 12% of participants that walked between 1 – 2 km per day to access water, were walking to alternate water sources, such as the river, to supplement existing access to water for multiple uses.

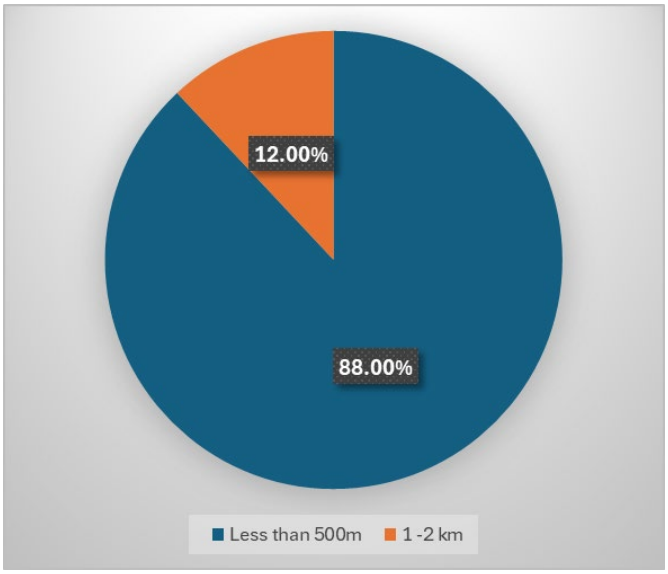



*Figure 30 – Distance to water source*

In addition to shortened distances waked to access water and expanded sources of water, the beneficiaries also indicated that since the inception of the of MUS project the time spent collecting water per day has reduced.

As shown in Figure 31, before the MUS project 46% of participants spent less than 30minutes collecting water while 27% spent between 30 and 60 minutes a day collecting water and the remaining 27% spent between 60 and 120 minutes per day collecting water. Since the introduction of the MUS project, the majority (54%) spent less than 30 minutes collecting water a day, and no one spends more than 60 minutes a day on water collection activities. This shows a marked improvement in not only access to a reliable source of water but that women now have more time for other productive activities in their lives. Women who continue to spend is excess of 30 minutes per day collecting water, do so because they need more water for other uses which they source from boreholes and the river.

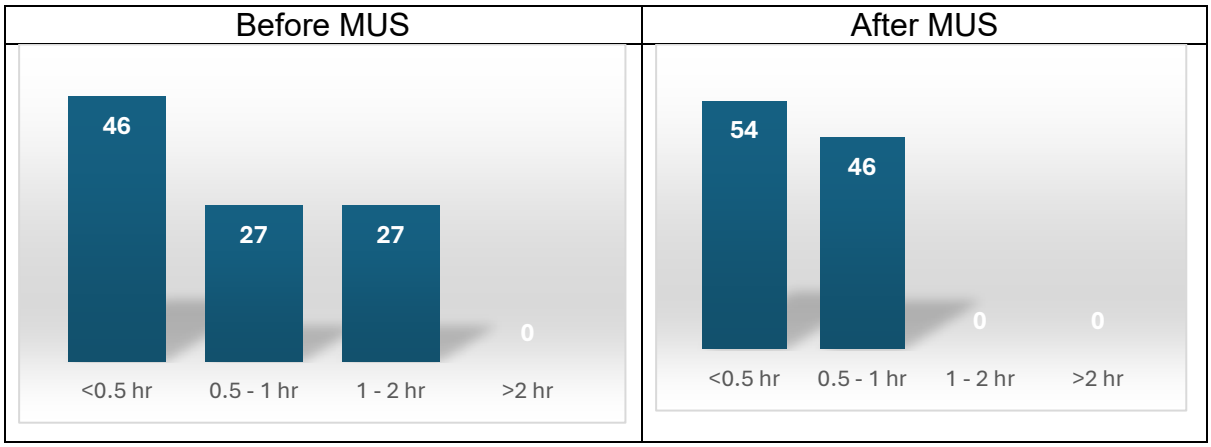



***Figure 31 – Time spent collecting water per day***

*I spend less time traveling to fetch water, which allows me to use that time for other activities, such as attending church, community meetings, and programmes. It also gives me the opportunity to focus more on myself and my personal care.*

Not only has the procedure of collecting water improved since the MUS project, 90% of participants agreed that the water provided under the project was of good quality compared to other water sources (Figure 32). Although, 75% of participants thought other water sources were also of good quality.

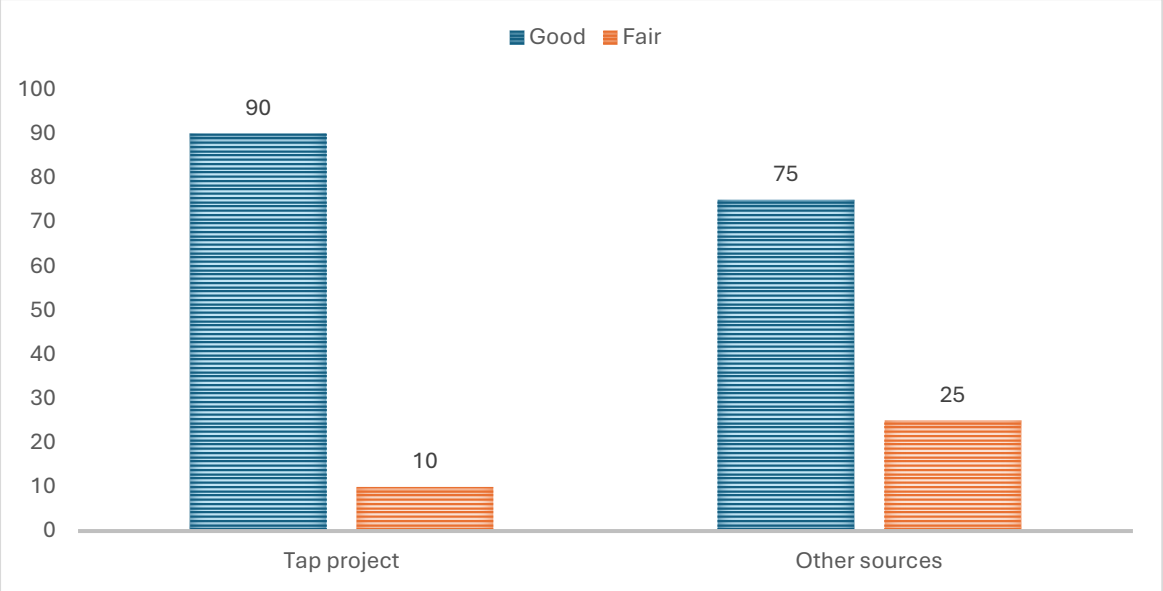



***Figure 32 – Water quality***

As shown in Figure 33, regardless of the quality, participants use the water from the MUS project for domestic, business and farming uses while water from other sources is mostly used in farming followed by domestic use. It is a recurring theme that the MUS project has expanded the sources of water for the villages however the volume of water is not enough to

meet the full water needs of the community.  Hence, villagers still spent time collecting water from other sources to supplement their needs. This confirms the objectives of the project for enabling the provision of multiple uses water.

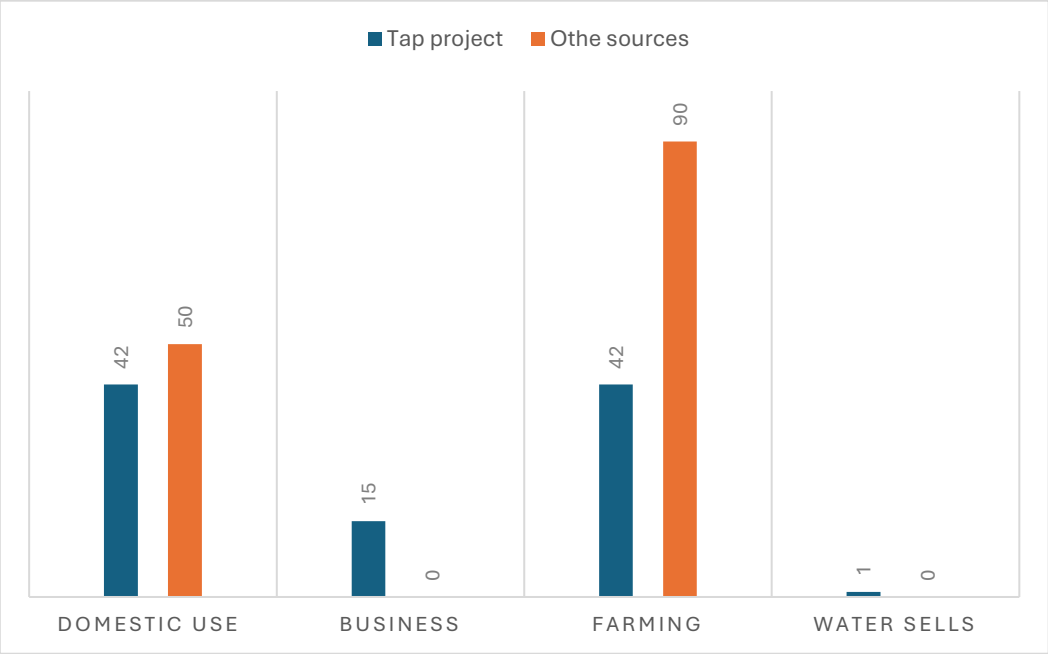



*Figure 33 – Water use from different sources of water*

Most beneficiaries (91%) attest to a positive correlation between access to piped water from the MUS project and improved family health (Figure 34). They indicated that family members are less sick or they have spent less time taking family members to the hospital.

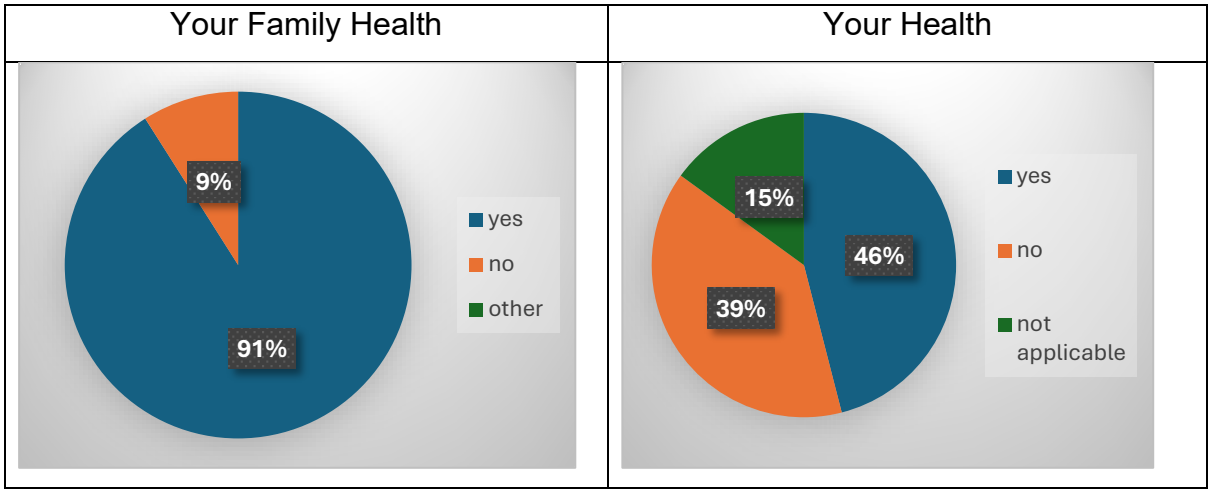



*Figure 34 – Has access to water improved your family's and your health?*

*It has greatly improved my life and that of my household. We now have more time to focus on other tasks, and we can also maintain better hygiene, which has made a significant difference in our daily lives*

This was also confirmed in responses to open-ended questions, where respondents elaborated that access to the MUS project has “improved the hygiene” for individuals and families, which exerts a downward pressure on several illnesses. It is interesting that only 46% of participants thought that access to clean water improved their health and yet 91% confirmed an improvement in the health of their family. Given the youthful age of the participants, it is assumed that they do not have any health concerns and that access to clean water has improved the health of children and elderly family members residing in the household.

The correlation between access to water and improved health was not extended to ability of children to go to school or to start a business as shown in Figures 35 and 36. As indicated in Figure 35, participants (46%) confirmed that of access to water did not have an impact on children’s ability to go to school. 39% of participants did not have school going children in the house. Many women mentioned that given the rural nature of the area, it is difficult for children to travel to school therefore children reside with family members closer to schools. It can then be imagined that with improved family health, it would be easier to tend to domestic activities hence sharing the unpaid care work of women in the house.

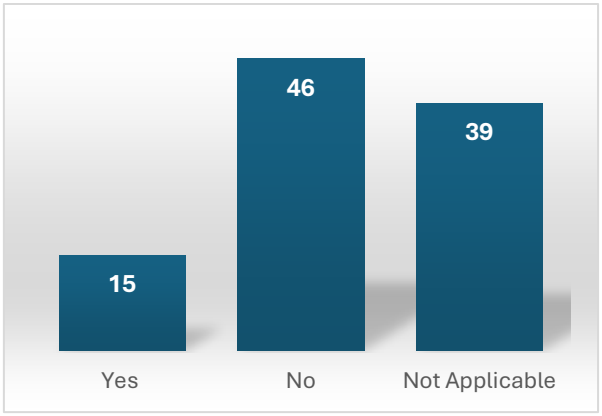



*Figure 35 – Has access to water improved children’s ability to attend school?*

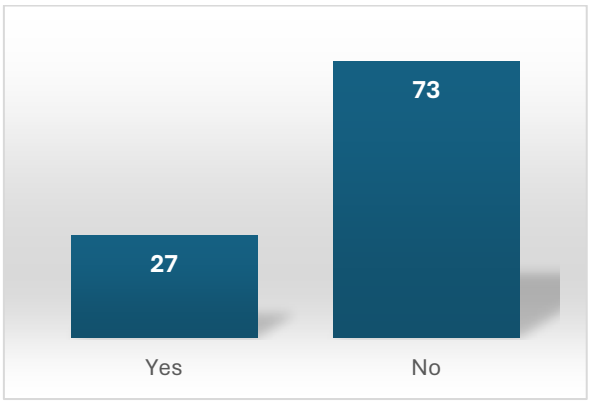



*Figure 36 – Has access to water improved your ability to start/run your business?*

In the Ga Mokgotho village, irrigation is used for growing fruit trees and vegetables and due to this increase in water use towards these irrigation purposes, there was an increase in the

yield of fruit and vegetables, which in turn also increased the value of the produce. Specifically, it was estimated that the produce value increased from R2 324 123 before the project, to R3 713 198 after the project implementation, a 60% increase. This resulted in an increase in income for individuals selling their fruit and vegetables that they grow, specifically for women van Koppen et al., (2020 and 2021).

While the majority of the beneficiaries agreed that the MUS project did not increase their ability to start or run a business, most participants (63%) indicated that the increase in access to water gave them more time for other household, social and school related activities (Figure 37). This is in line with the research conducted by van Koppen et al. (2020 and 2021), in which it was reported that due to the increase in water quantity some community members started using the water for other purposes such as brickmaking and then constructing houses. In Figure 36, 45% of participants indicated that due to the increase in access to water, they now have more time for income related activities which has increased their productivity.

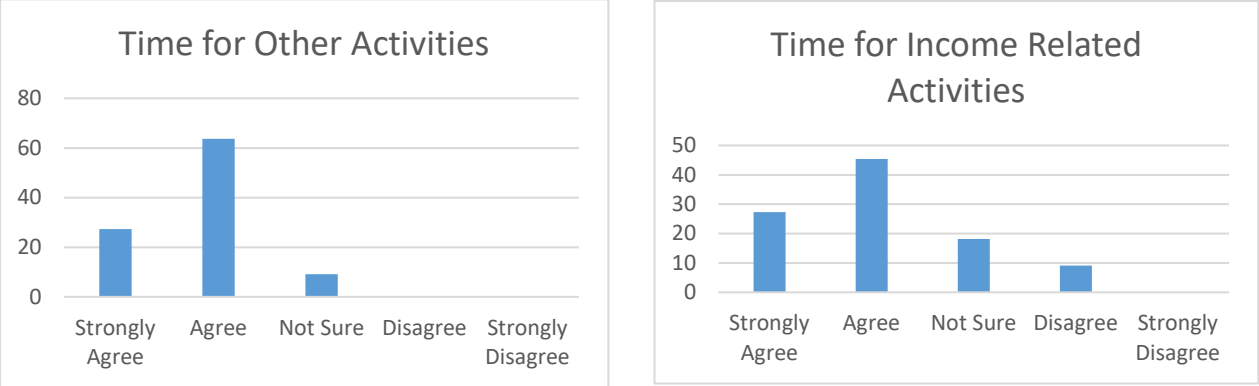



***Figure 37 – Time for income and other related activities***

*It has greatly improved my life and that of my household. We now have more time to focus on other tasks, and we can also maintain better hygiene, which has made a significant difference in our daily lives.*

*It also creates income opportunities, such as cooking and selling food to taxi drivers in the area.*

*Water is not a problem in the area, ever since the MUS project, it assisted us so much. We are doing small co-operatives for income purposes.*

*Access to water has improved my time management, allowing me to focus more on other family responsibilities.*

In addition, due to the MUS project being community led, many of the infrastructure development and implementation was conducted by community members themselves, which assisted in creating jobs and providing them with skills.

*As a committee member of the MUS project, I can say that our initiative has helped the appointed operators receive a stipend. While the project started as a voluntary effort from the community, it has at least created some employment opportunities, especially for the youth. The valve operators are paid through the EPWP, providing them with a much-needed income.*

This was recognised by most participants who mentioned that they were excited and empowered. Many women mentioned that they feel more independent and in control over their water use activities resulting in them feeling empowered. 90% of the beneficiaries agreed that the MUS project has had an overall positive impact on their quality of life (Figure 38).

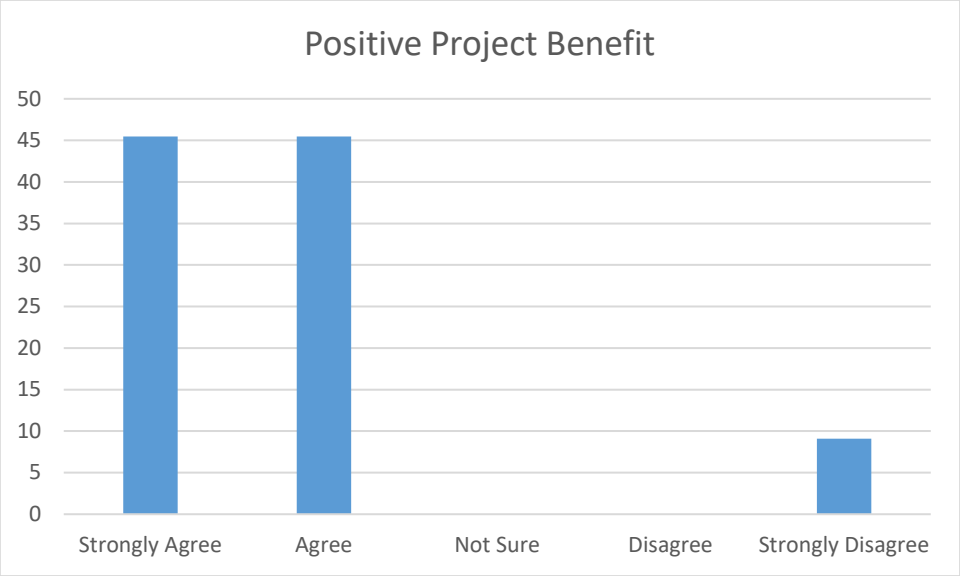



***Figure 38 – Positive impact of project on quality of life***

The main benefit of the project was the improvement in hygiene and health as mentioned by 64% of the participants followed by 45% who indicated that the project saved them time, and 27% mentioned that the project improved their farming.

It can be concluded that the MUS project has had positive effects in beneficiary lives and livelihoods, including enhancing women livelihoods by shortened time and distance spent in water collection activities each day.

From the 13 beneficiaries of the MUS project that were interviewed, there was unanimous agreement that the MUS Project has improved access to water for multiple uses.

Through the implementation of the MUS project within the Ga Mokgotho village there were reported technical and institutional improvements. Specifically, the technical improvements included installing bigger and better pipes for more water to be provided; more taps were installed closer to homesteads and blocked and leaking taps were repaired.

In terms of institutional improvements, the MUS Forum was seen as a huge benefit and improvement overall as it served as the communication link between the community and the implementors and therefore the community members could report their problems and

challenges to this forum who would then communicate this back to the implementors (van Koppen et al., 2020).

### 4.3.6 Sustainability of the Project

One of the objectives of the MUS project was to empower community members in the self-supply of water and this was achieved by allowing the community members to design, create and implement solutions relevant to their environment and challenges. By doing this, it fostered a sense of ownership and accountability and therefore the community members will be more willing to look after the infrastructure built.

Certain community members were trained in monitoring and maintaining the MUS systems.

With the introduction of the MUS Forum, a reporting and grievance mechanism was created. Even after the implementation of the project, the MUS Forum remains a conduit for the community to raise concerns and to collaborate on the solutions. This inclusive thinking gives all community members an equal voice and the opportunity to be part of the solution. For instance, one person was appointed to repair the infrastructure, but the situation becomes overwhelming as the pipes continued to break. Most operators and helpers work on a voluntary basis. However, a lack of funds for proper maintenance, especially as the area continues to expand, put additional strain on the system. In response to the situation, the community came to an agreement that each household would contribute R20 towards the hired operator in charge of maintaining the system, which would cover his wage and provide him with enough money to purchase any materials needed for the repairs or maintenance of the structure. This collective solution ensures that the water system remains functional.

The MUS project is sustainable because the community is empowered and takes ownership of the project. Further, training provided to local community members on the maintenance of the infrastructure has contributed to improving the sustainability of the intervention. Empowering local individuals with the knowledge and skills necessary to maintain the system is essential for promoting long-term benefits. This capacity-building aspect ensures that the community can effectively address maintenance issues as they arise, thereby enhancing the project's longevity.

## 4.4 Water Allocation Reform Strategy

### 4.4.1 Background and Rationale for the Intervention

The legacy of apartheid has resulted in significant inequalities in access to water resources, particularly affecting marginalized communities. Many rural and historically disadvantaged groups lack sufficient access to water for agricultural and domestic use. Many river catchments are over-allocated, leading to unsustainable water use practices. Existing lawful water uses exceed the available supply, creating a pressing need for reform. The degradation of water resources and ecosystems due to over-extraction and pollution has raised alarms about the long-term sustainability of water supplies.

The Water Allocation Reform Strategy (WARS), approved by the Department of Water and Sanitation (DWS) in 2008, aims to address historical inequities in water distribution in South Africa. Aligned with the National Water Resource Strategy (NWRS) and the National Water Act (NWA) (Act 36 of 1998), WARS established national targets to ensure that by 2024, 60% of allocable water is controlled by black individuals, with 30% specifically allocated to black women. The strategy includes various initiatives to promote equitable water access. Compulsory licensing, a significant legal tool within the NWA, requires water users who do not have water use licences issued under the NWA to apply for licences to ensure fair allocation and access for all South Africans.

South Africa is one of the world's driest countries, facing significant water scarcity issues. The demand for water has consistently outstripped supply, leading to competition among various users, including agriculture, industry, and domestic consumption. This situation is further exacerbated as pressures on water resources increase due to urbanization, industrialization, and climate change. Effective management and allocation of water have become critical for sustaining livelihoods, promoting economic development, and ensuring environmental sustainability. Hence, the WAR Programme is an essential tool for government to ensure the sustainable and just allocation and use of our limited resource. The success and benefits of the WARS have yet to be realised. Although it was estimated that in 2013, only 8% of volume of water allocated to individual users was in the hands of women, an important lesson can be highlighted within the structure of this strategy which is that there is currently no reliable measure in place to measure the impact that WARS has on the allocation of water in South Africa (Anderson et al. 2008).

### 4.4.2 Project description – How WARS works

The Water Allocation Reform Programme employs a multi-faceted approach designed to create a fair and equitable water allocation system that addresses the needs of all communities, particularly those historically marginalized. Central to this approach is stakeholder consultation, which prioritizes active engagement with local communities, government agencies, NGOs, and other relevant stakeholders through workshops, focus

groups, and public forums, allowing stakeholders to voice their concerns and needs regarding water use and allocation. The feedback collected during these consultations is invaluable for identifying local water usage patterns, understanding the challenges faced by marginalized groups, and pinpointing areas for improvement, ensuring that the strategy is responsive to the actual needs of those affected by water allocation policies. Complementing this is a robust data collection and analysis process that utilizes diverse methods, including aerial photography to map water bodies, field studies for firsthand observations, and the analysis of existing water use records, which together provide a comprehensive understanding of current water availability and usage. This data enables the WAR Programme to assess disparities in water allocation, identify areas with insufficient access, and determine the specific needs of different sectors, particularly those of Historically Disadvantaged Individuals (HDIs).

The programme also conducts sophisticated hydrological modelling to simulate water availability under various conditions such as climate change, population growth, and agricultural demands. This helps forecast future water scenarios and assess the potential impacts of different allocation strategies, thus informing policy decisions and the development of allocation frameworks based on robust scientific evidence that can adapt to changing circumstances. In developing these frameworks, WARS establishes clear, equitable guidelines for water distribution that prioritize fairness and sustainability, including the legalization of existing unlawful water uses to formalize and regulate previously informal practices, thereby enhancing security and predictability for users. These frameworks serve as a blueprint for Catchment Management Agencies and stakeholders, guiding them in making informed decisions about water allocation while ensuring compliance with national policies and legal standards.

Additionally, the WAR Programme invests in capacity building by providing training programs and resources focused on sustainable water management practices, covering topics such as water conservation techniques, efficient irrigation practices, and community-led monitoring of water resources. By enhancing the skills and knowledge of community members, the programme fosters local ownership of water resources and encourages sustainable practices that can lead to improved water security and economic resilience in the long term. Overall, these activities form a framework for WARS, ensuring that the approach is inclusive, data-driven, and sustainable, ultimately aiming to create a more equitable water allocation system that meets the needs of all communities while particularly supporting those historically marginalized.

### 4.4.3 Relevance and Coherence of the Project

The WARS could have a profound impact on communal water access, significantly enhancing the relevance and coherence of water management practices in South Africa. One of the primary deliverables is the development of comprehensive water allocation plans that effectively balance the needs of various sectors agricultural, industrial, and domestic while

prioritizing HDIs and marginalized communities. This approach addresses the critical issue of over-allocation and ensures that water resources are distributed equitably, fostering a more inclusive system that recognizes the rights and needs of all users.

A key outcome of WARS is the legalization of existing unlawful water uses, particularly for emerging farmers and small-scale operations. The project provides security and legitimacy to marginalized users, enabling them to operate within a legal framework that supports sustainable practices. This step not only empowers individuals but also reinforces the overall integrity of the water management system, making it more resilient and responsive to community needs. Furthermore, WARS aims to increase water availability for new users by identifying additional resources, with a target of significantly boosting allocable water by 40 million $m^3/a$. This initiative is essential for fostering new economic opportunities, particularly for HDI backgrounds, and supporting the growth of local enterprises. The increased availability of water will not only enhance agricultural productivity but also stimulate industrial growth, ultimately contributing to community development and economic resilience.

The project also recognizes the importance of improved data management and monitoring systems. Establishing reliable data collection methods and analytical tools, WARS enables stakeholders to assess water resources more effectively, facilitating informed decision-making and promoting transparency in allocation processes. Enhanced data management supports the equitable distribution of water and strengthens accountability among all users, fostering a culture of responsible water use. Community engagement and awareness programs are integral to the success of WARS, as they prioritize increasing awareness and participation among local communities in water management issues. Through extensive education and outreach initiatives, stakeholders will gain valuable knowledge about water rights, the compulsory licensing (CL) process, and sustainable water use practices. This engagement is crucial for fostering a sense of ownership and responsibility among community members, ultimately leading to more sustainable and cooperative water management.

Additionally, WARS implements capacity-building initiatives aimed at improving livelihoods through responsible water use. Supporting emerging farmers, particularly in sectors like sugar production and afforestation, the project provides training, resources, and technical assistance. This focus on enhancing the skills and capabilities of farmers not only promotes sustainable agricultural practices but also builds economic resilience within communities, ensuring that they can adapt to changing conditions and thrive. Lastly, the establishment of a fair and transparent water allocation framework minimizes adverse impacts on existing lawful users while ensuring that new users gain access to vital resources. This framework will incorporate stakeholder input and adhere to legal and regulatory standards, fostering trust and cooperation among all parties involved. By aligning the interests of diverse users and promoting equitable access, WARS reinforces communal water access as a fundamental right, ensuring that all community members benefit from the region's water resources.

### 4.4.4 Impact of the Programme

While it was the intention to include the WAR Programme in the evaluation, the team could not secure a meeting with the Implementing Agent. Hence, no primary data was collected to assess the impact of the project. Instead, the evaluation team, assessed the potential impact based entirely on only the secondary data provided by the Department of Water and Sanitation. The information was therefore not verified by the beneficiaries.

The WAR Programme is fundamentally motivated by the urgent need to rectify historical injustices in water access and allocation, particularly for HDIs, with a strong emphasis on black women and rural communities who have faced systemic barriers limiting their access to essential water resources; by prioritizing these groups. WARS seeks to dismantle entrenched inequalities that have persisted for decades, thus fostering social justice and cohesion in South Africa. Furthermore, the Programme aims to empower women, especially those from historically disadvantaged backgrounds, who have been disproportionately affected by inequities in water allocation, and by actively involving them in water management processes. The WAR Programme is designed to enhance their economic opportunities and promotes gender equality, thereby contributing to broader societal benefits since empowered women play a critical role in community development, poverty alleviation, and sustainable practices.

In addition to supporting women, the initiative directly benefits local communities, particularly those reliant on agriculture, recognizing that their livelihoods are directly tied to water availability. Assistance was provided to approximately 760 small-scale cane growers. If implemented effectively, WARS will enhance food security, improve economic resilience, and promote sustainable agricultural practices, which are vital for fostering community stability and ensuring local economies thrive

Moreover, the Programme acknowledges the pivotal role of local municipalities and governments in water management and allocation, seeking to engage these entities to create a more coordinated and effective approach, and by fostering collaboration between local governments and communities.

WARS develops solutions tailored to the unique needs of each area, enhancing the impact of water allocation strategies while building trust and accountability within communities for responsible water management.

Finally, WARS sets clear and ambitious targets for water allocation, including a commitment to have a minimum of 10% of irrigation water in black hands immediately, with aspirations to reach 30% by 2014 and 45% in the Mhlathuze catchment, reflecting a transformative vision that prioritizes the needs of historically disadvantaged groups while fostering sustainable economic development; by establishing these goals. WARS not only provides a framework for accountability but also inspires collective action toward achieving meaningful change in water distribution, ensuring that the multifaceted approach of the project significantly enhances the livelihoods and economic opportunities of thousands within the catchment area and paves the way for a more just and resilient future.

In theory, the WAR Programme has the potential to positively impact the lives of women if implemented as designed. The Programme has the ability to solve the problem of over-allocation, bring about equitable distribution of water, address the plight of the rural poor and promote gender equality, all of which will result in an equal and just society.

### 4.4.5 Sustainability of the Programme

While WARS was initiated in response to the growing challenges of water scarcity, over-allocation, and to remedy past water allocation disparities, progress has been slow. The sustainability of WARS remains uncertain due to the lack of reliable metrics to assess its impact. According to Anderson et al. 2008 the implementation of the WARS is considered complex and costly, with its success being highly dependent on government cooperation and political support. The National Water Resource Strategy (2013) further highlights issues with the design of the WARS, indicating that there is poor external alignment with other reform programmes and the legal requirements set out in the strategy are too complex and therefore act as barriers to individuals wanting to make use of them, with many of them forgoing the access to water and finding other means of access.

In its current form the WAR Programme deters under-resourced historically disadvantaged individuals from engaging in water reform which will fundamentally impact the benefit flows of the Programme in the future.

# 5 DATA ANALYSIS – COMPARATIVE ANALYSIS

A comparative analysis to assess the 4 programmes implemented in South Africa was undertaken with the intention to understand the lessons learned and to identify emerging themes that would benefit the design of future programmes and improve the implementation of current programmes. The analysis is based on aggregated data collected across the case studies. The information was sourced from the primary data collected and the secondary data sources. In each of the case studies, beneficiaries of the programmes where randomly selected called the target group while community members that did not benefit from the programmes were also identified called the control group.

## 5.1 Relevance of water access interventions aimed at women in South Africa

Access to potable water is a challenge for many people outside the urban areas in South Africa. This challenge has negatively impacted women and children, who are primarily responsible for water collection duties. As indicated in the cases above, this responsibility, within the context of poor water source infrastructure, leads to reduced livelihood opportunities for women as they labour many tasks a day to fend for large families. The average household size in the population of this evaluation was 4 to 5 individuals, with more than 80% of respondents living in households ranging from 4 to over 10 people. The majority of the participants, Figure 39, are youth that is below 45 years of age. In only the HWR project, there were participants older than 60 years of age.

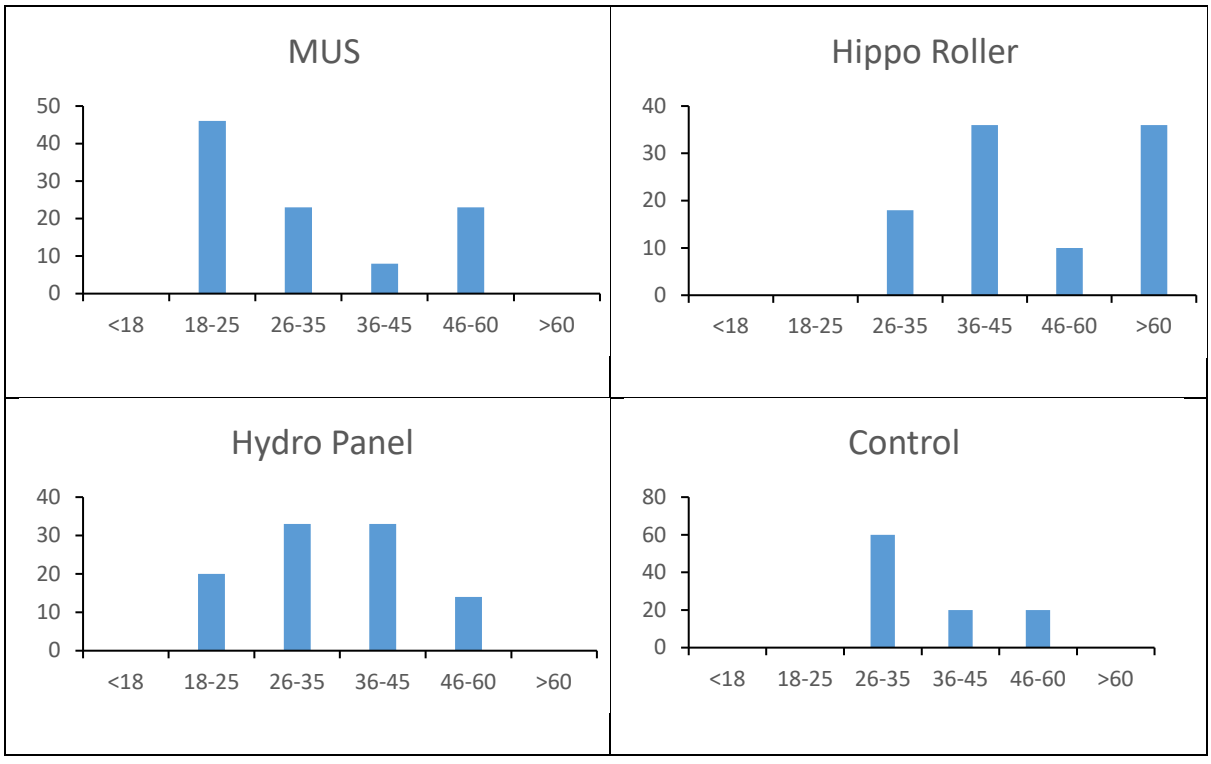


*Figure 39 – Age Distribution*

While not representative of the whole population, it was also instructive that the majority of respondents (64.5%) were youths, under the age of 35, and most (52.5%) had primary education only, and were either self-employed (25%) or unemployed (71%). As such, most are underprivileged on many socio-economic standards. Spending valuable time in their day on water collection and handling activities may future hamper their chances of getting ahead. As shown in Figure 40 below, most indicated that access to water has a positive role on their health and hygiene, business, and farming. However, challenges in access included far away sources of water, which then led to time being wasted on water collecting activities, and sometime conflicts due to water shortages.

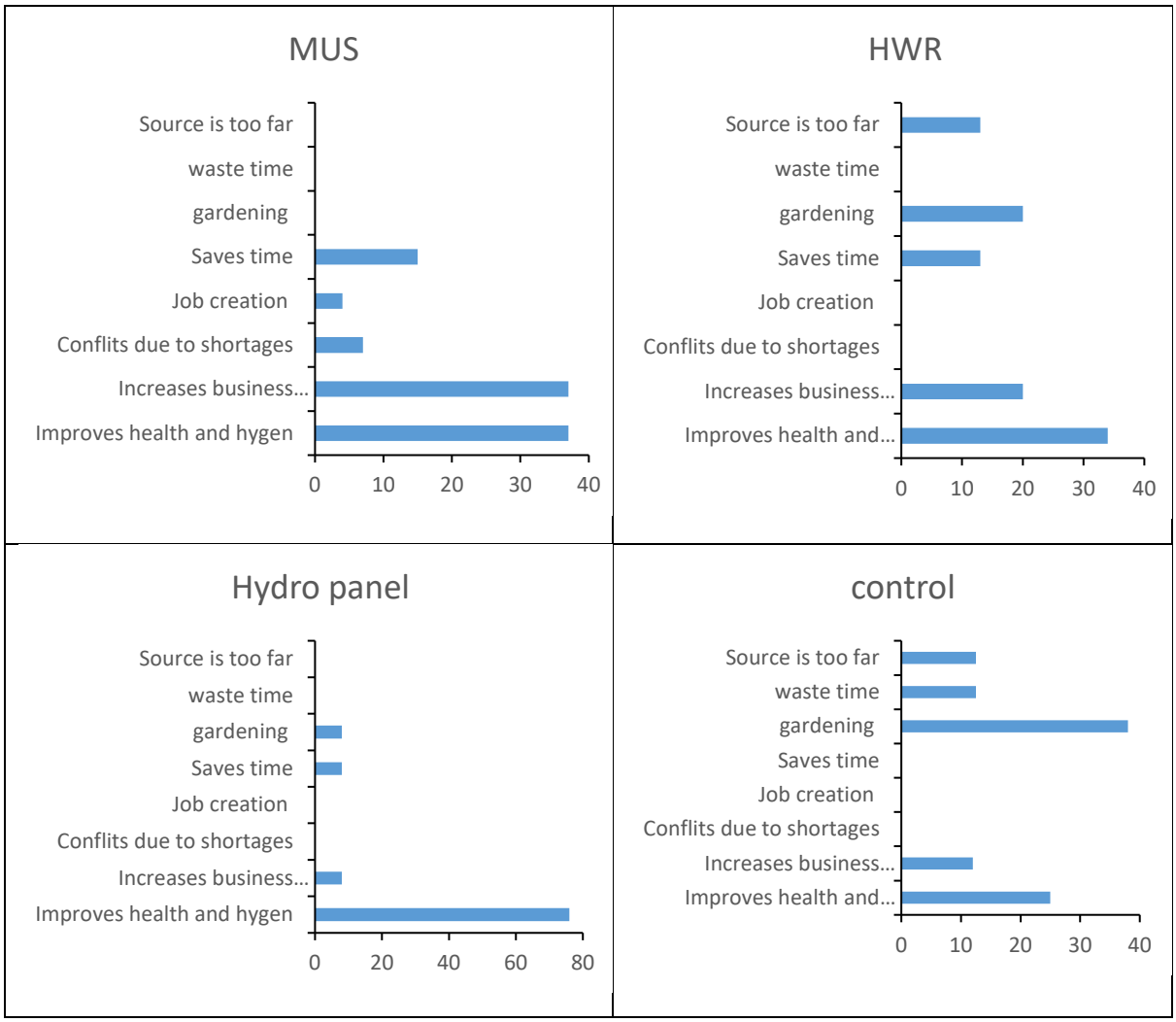



*Figure 40 – Effects of water access on livelihood and productivity*

As such, the water access interventions were needed in most of these communities and, it can also be argued, in other communities with similar characteristics. The hope is that the said interventions will reduce the time spent collecting water, as well as the distance it takes to reach water sources. A significant number (47%) of respondents attested to the fact that they spend between 30 minutes to 2 hours every day collecting water, while 53% said they spend

less than 30 minutes (Figure 41). While it may seem that the majority is better off, various national priorities envisage a context in which most people spend less time searching for and collecting resources such as water.

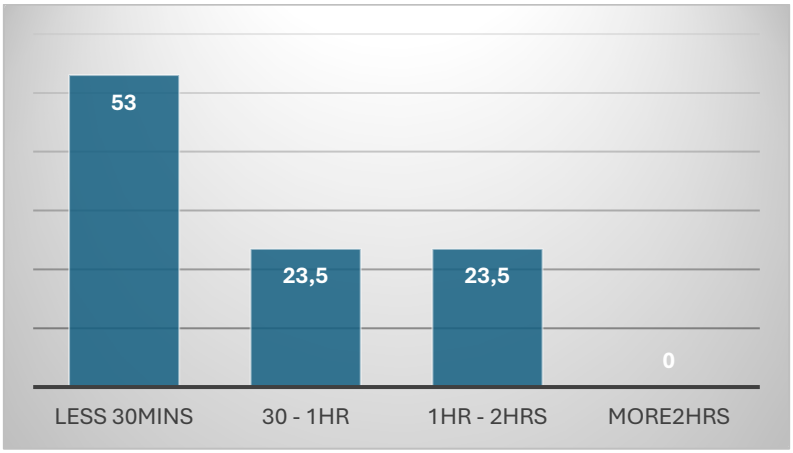



***Figure 41 – Aggregated data across the case studies on time spent on water collection activities before the intervention***

## 5.2 Coherence of the interventions

*Coherence* is a critical element in assessing the effectiveness of any development initiative. All 4 interventions exhibited strong coherence with other national and local initiatives aimed at improving water quality and access, particularly in the aftermath of the COVID-19 pandemic. The collaboration between diverse stakeholders including the NGO's, research institutions, donor funders, government and local communities demonstrates an integrated approach to water access and sustainability.

The objectives of the interventions resonate with national priorities that emphasize sustainable development and equitable access to water. By aligning with existing policies and frameworks, the case studies enhance the overall effectiveness of water provision strategies in the country. This coherence not only ensures that efforts are synergistic but also maximizes the use of resources and expertise across various sectors. The collaborative approach of the interventions ensures that the case studies remain vital components in the broader landscape of water accessibility and renewable resource activation efforts in South Africa.

This indicates that the case studies fit within the framework of existing policies and complements other interventions by focusing on innovative technology and community involvement.

Finally, the interventions are aligned with the objectives of national institutional frameworks (NWA, NWRS-3) and other gender transformation priorities within the water sector.

## 5.3 Impact of access to water on women

All the interventions targeted rural communities, particularly the plight of women empowerment and improved livelihood in the context of challenges in water access. As such, whether they intended to increase the water sources (hydro-panel, WARS), revamp existing infrastructure for enhanced access and use (MUS), or provide effective means for collecting, handling and storing drinking water (HWR), the interventions intended to realise positive change in water access especially as it applies to women. This discussion synthesizes findings from all cases to ascertain the impact of the intervention on water access and gender transformation.

Generally, the assessment of the four case study interventions indicates that enhanced access to water has had some impact on women's livelihoods. Women who previously struggled to secure adequate water supplies have realised marginal utility in domestic lives, farming, and other business. It is of course also important to note that the marginal changes realised may not completely be attributed to the said interventions, but that the interventions have contributed to the positive changes realised. This has been the case with regards to water sources, ways of carrying water, distance traversed, and time spent collecting water.

### 5.3.1 Water access and uses

As noted, both in national institutional frameworks such as the NWA and NWRS-3 and various research undertaken in the sector by the DWS and the WRC, women in rural areas experience challenges in accessing water for domestic and productive uses. As shown in Figure 41 below, communal boreholes are the main source of water in rural areas where the interventions were implemented. This is also indicated in the control and HWR groups, where over 80% of respondents use boreholes as their main source of water.

As such, the significant impact of new sources of water is observed (Figure 42) in the MUS and Hydro-panel projects, where the projects contribute to new water sources for over 50% of community residents. However, in most cases it is also clear that new water sources are often combined with existing options, either due to ineffectiveness of one source or communal loyalty to their traditional sources or the needs for additional water to satisfy the household water needs. For example, 54% of the MUS project participants reported that they get their water from many sources for example rivers and rainwater harvesting, while 17% of HWR beneficiaries use mixed sources like rainwater harvesting, boreholes and communal taps, and 54% of hydropanel beneficiaries reported using river water, rain water harvesting and hydro-panel as their main water sources.

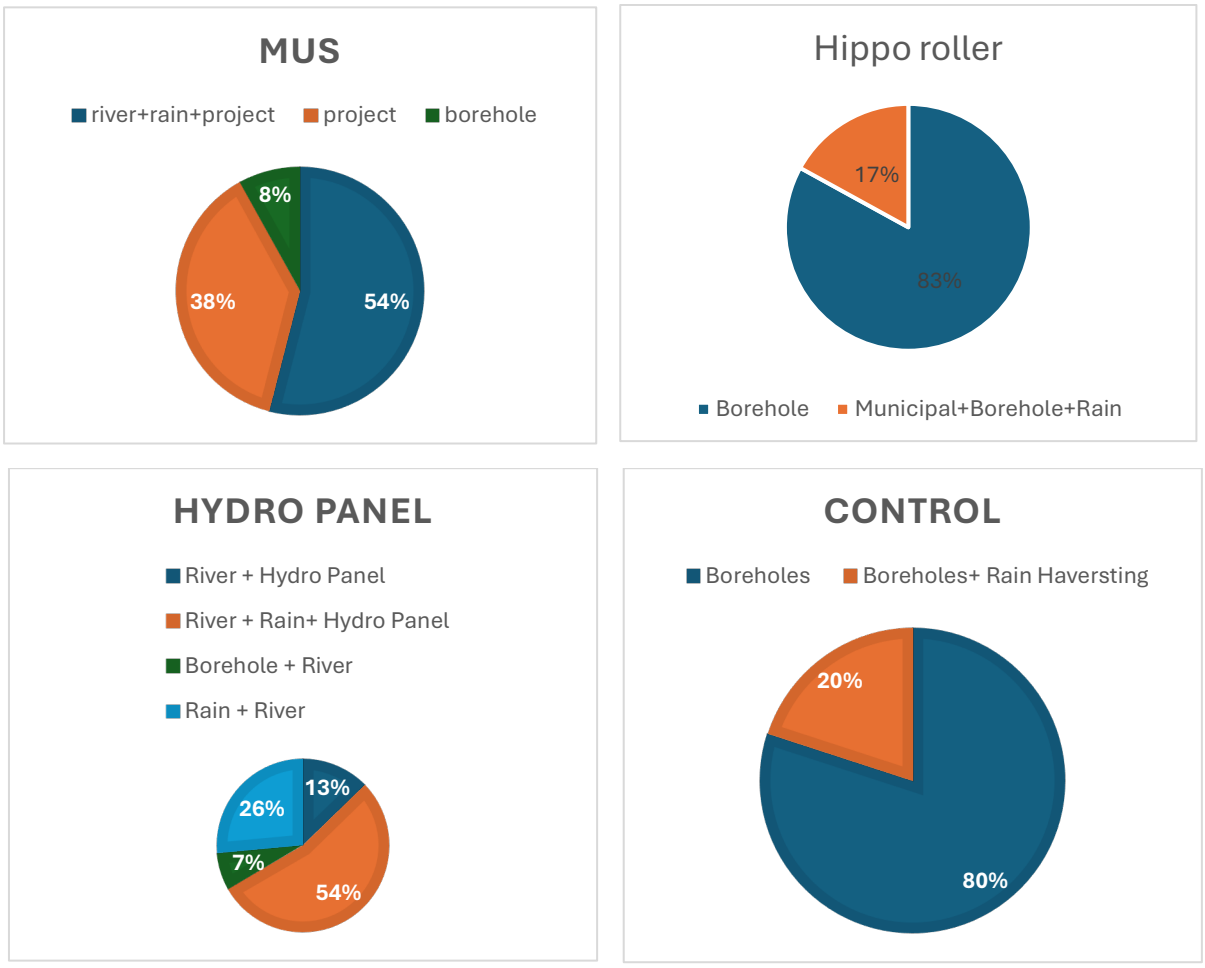



*Figure 42 – Communal water sources*

While beneficiary communities used multiple sources of water, including new sources provided the interventions, into their daily options, it was also clear that water provided by the interventions is appreciated as of good quality.

As shown in Figure 43, 90% of water provided under MUS and 79% of water from HWR was assessed as of good quality by beneficiaries. On the other hand, other sources used in the control have fair quality water. The fact that MUS tap water is cleaned and treated to acceptable and suggested standards was the reason for this observation. As such, in terms of water quality the interventions that provide additional sources of water (MUS, hydro-panel) have contributed positively to the beneficiary communities.

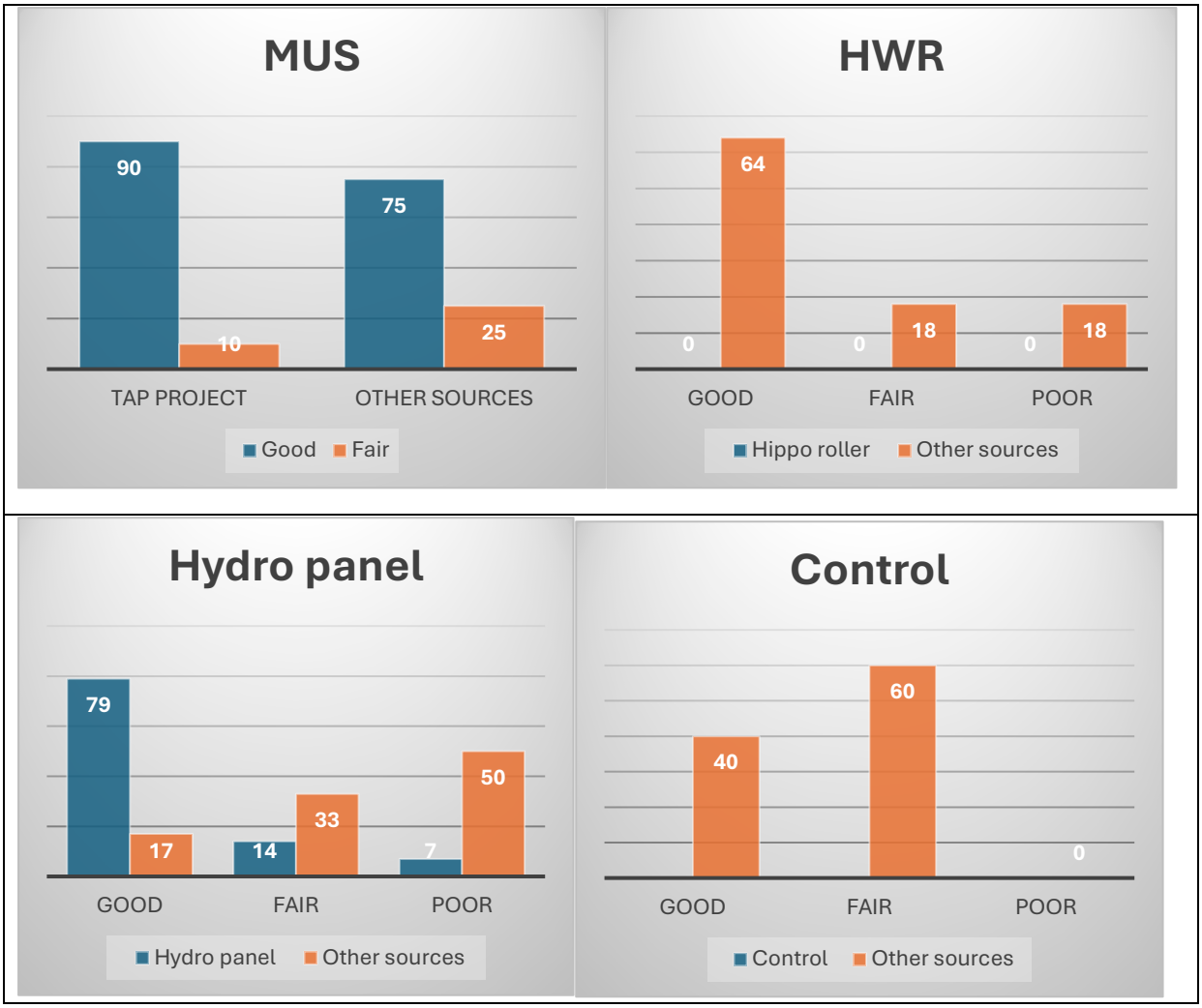



*Figure 43 – Water quality from available sources*

The interventions have also changed how water is handled (Figure 44). While respondents from the control group use containers to collect water, there is a lot more variability in project communities, including taps and wheelbarrows. The most innovative method yet is the HWR and hydro-panel projects.

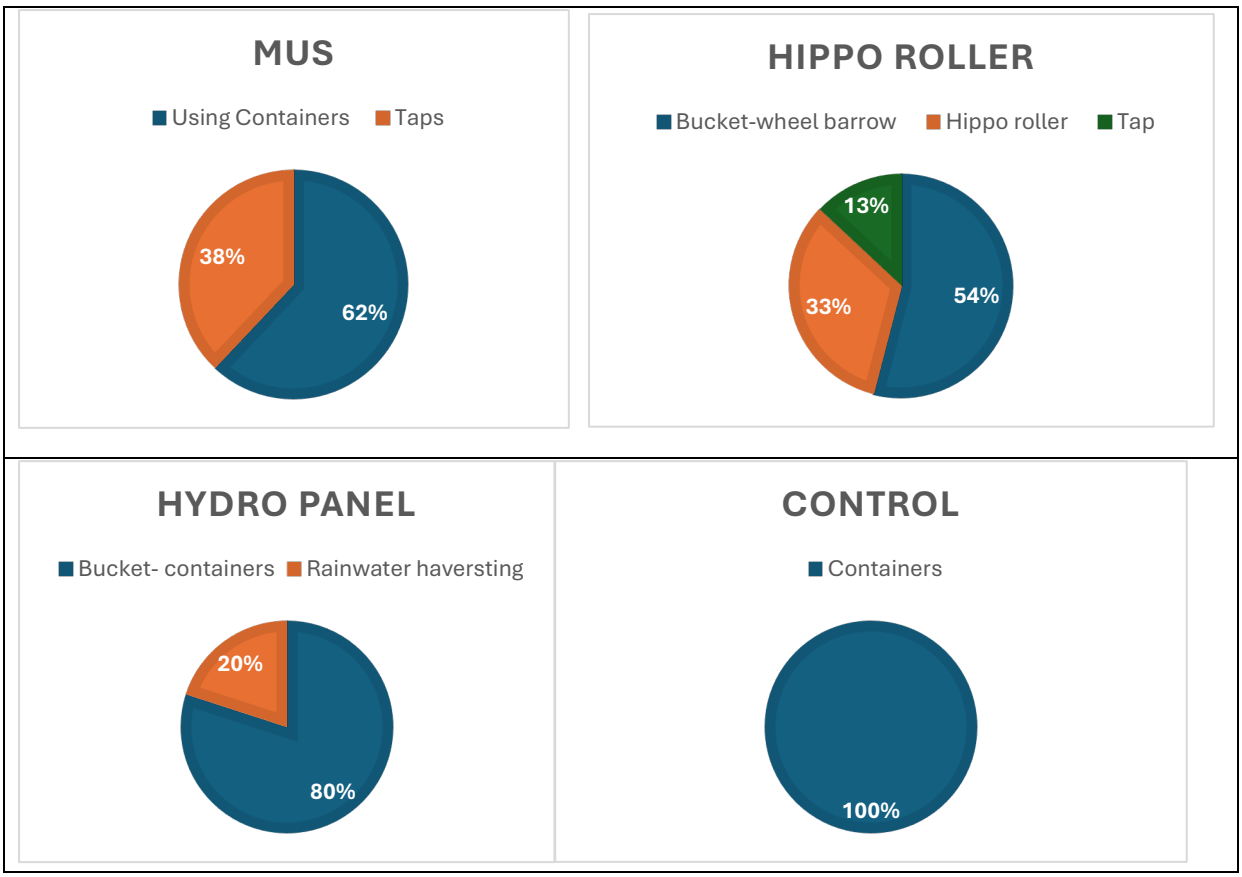



*Figure 44 – Methods of water collection*

The MUS project was the only project that included taps close to the property, the highest level of service. Hence, these participants had the least distance to walk therefore collecting water in containers was convenient. However, they are also the only group that contributed towards the maintenance of the infrastructure, with convenience comes expenses.

The HWR provided an inbuilt container in the system which was convenient for storage purposes. All members of the control groups said they used plastic containers to collect water.

In Figure 45, the distance travelled to water sources does not seem to be altered in any significant way as most people (76%) travel less than 500 metres to water sources.

As shown in Figure 45, only 6% of women in the hydro panel project and 12% in the MUS project travelled up to 2km to fetch water, compared to 33% of women in the control group. This may be regarded as a positive development, contributed to by various interventions. Women acknowledged this positive impact on their quality of life.

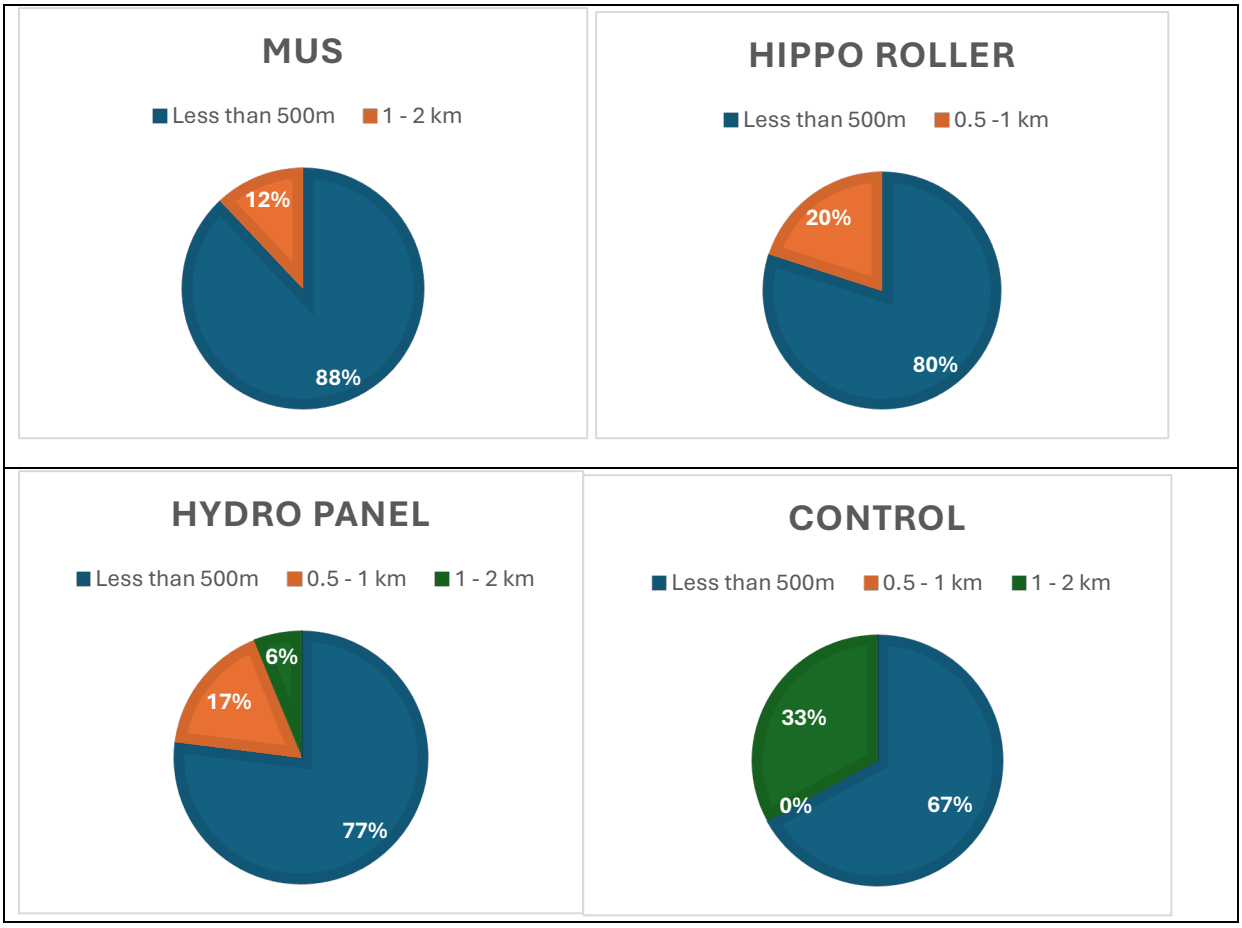



*Figure 45 – Distance to water source*

This is supported by the aggregate of 82% (18% strongly agree and 64% agree) of the women who affirmed that since the implementation of the project, they travel less distance to get access to water (Figure 46).

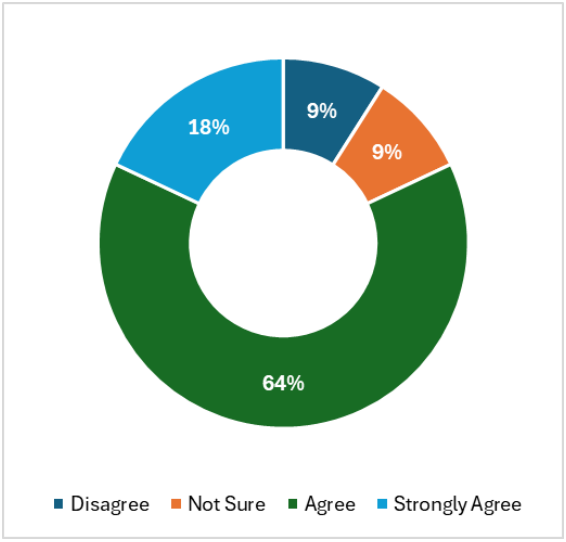



*Figure 46 – Since the implementation of the project, I travel less distance to get access water to water*

However, as indicated in Figure 47 below, there is a positive change in time spent collecting water before and after the implementation of the various interventions. Now more (57%) people spend less time (<30 minutes) collecting water compared with those (10%) who take longer (1 – 2 hours). In fact, 23.5% of the participants have now had their water collection time reduced to less than 1 hour per day. No participants spend more than 2 hours collecting water which is a significant achievement. Participants self-reported the benefits of having more time to invest in other productive activities.

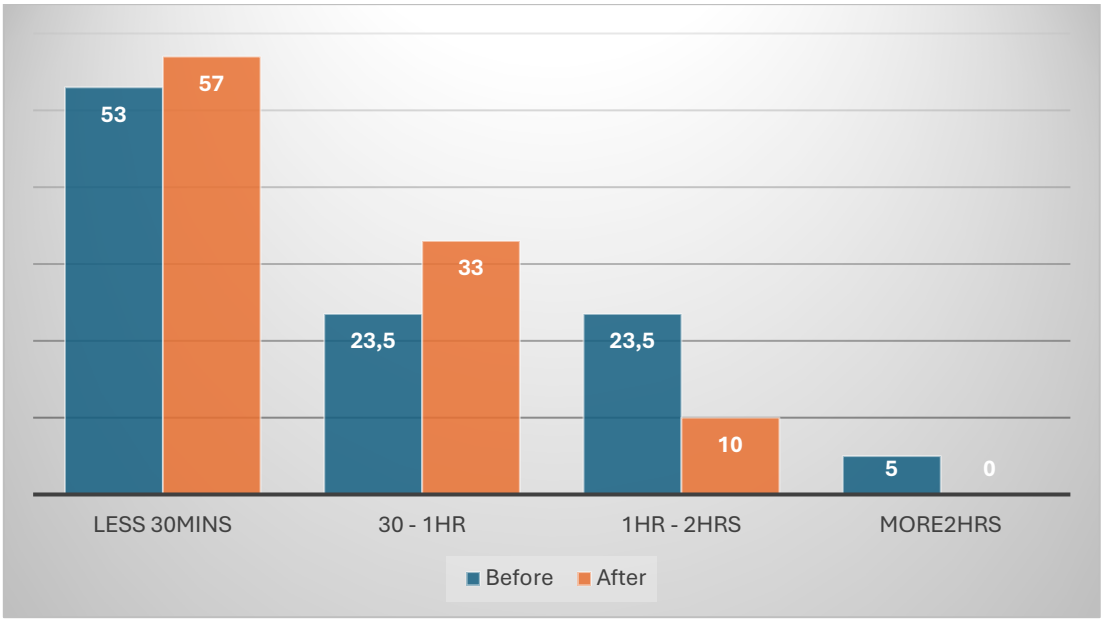



*Figure 47 – Changes in time spent collecting water*

37% of the women agree and 23 % strongly agree that since the implementation of the interventions they spend less time collecting water (Figure 48). This was also corroborated by an Implementing Agency who confirmed that through an internal evaluation process it was concluded that children (boys and girls) that were tasked with collecting water in the morning had more time to prepare for school since the introduction of the intervention.

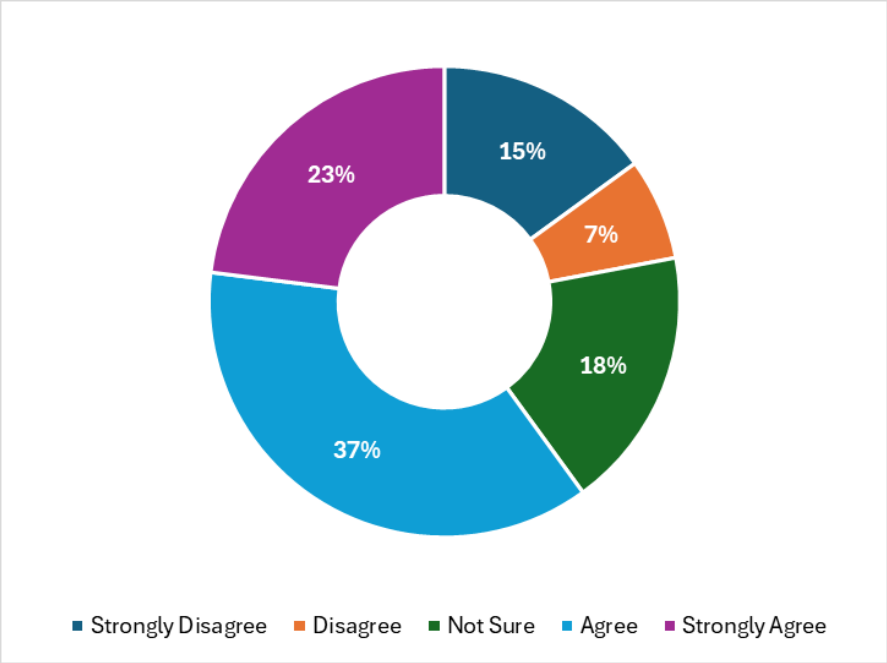



*Figure 48 – Since the implementation of the project I spend less time collecting water*

Moreover, 44% affirmed that they do not have to travel to access water every day (Figure 49). It is concerning that 39% of participants still fetch water daily.

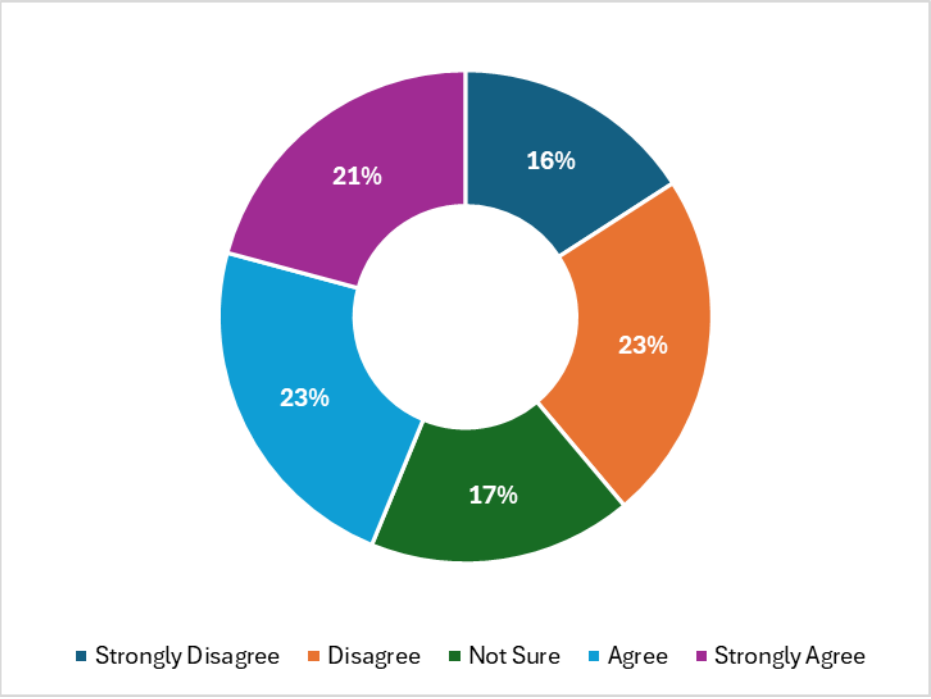



*Figure 49 – Since the implementation of the project, I do not have to travel to access water every day*

### 5.3.2 Effects of water access in domestic and extra-home livelihood for women

While there are no clear effects on the uses of water apart from the use of new sources of water to augment traditional domestic and farming activities in and around the home, according to participants more needs to be done in terms of infrastructure provision for meaningful changes in productive activities to be noticed. However, an increased access of potable water for use in domestic activities is itself a positive development.

Figure 50 shows that the hydro-panel and MUS projects are mostly preferred for domestic use. This in line with the good quality of water from these 2 projects. Given that the HWR is not a new water source but a means of transporting water, there are no additional benefits. However, the HWR does provide the benefit of transporting vastly more water than before the project was implemented hence the benefit is that more water is available for productive uses. The control group does not share the benefits of the additional water source and the additional volume of water for beneficial uses.

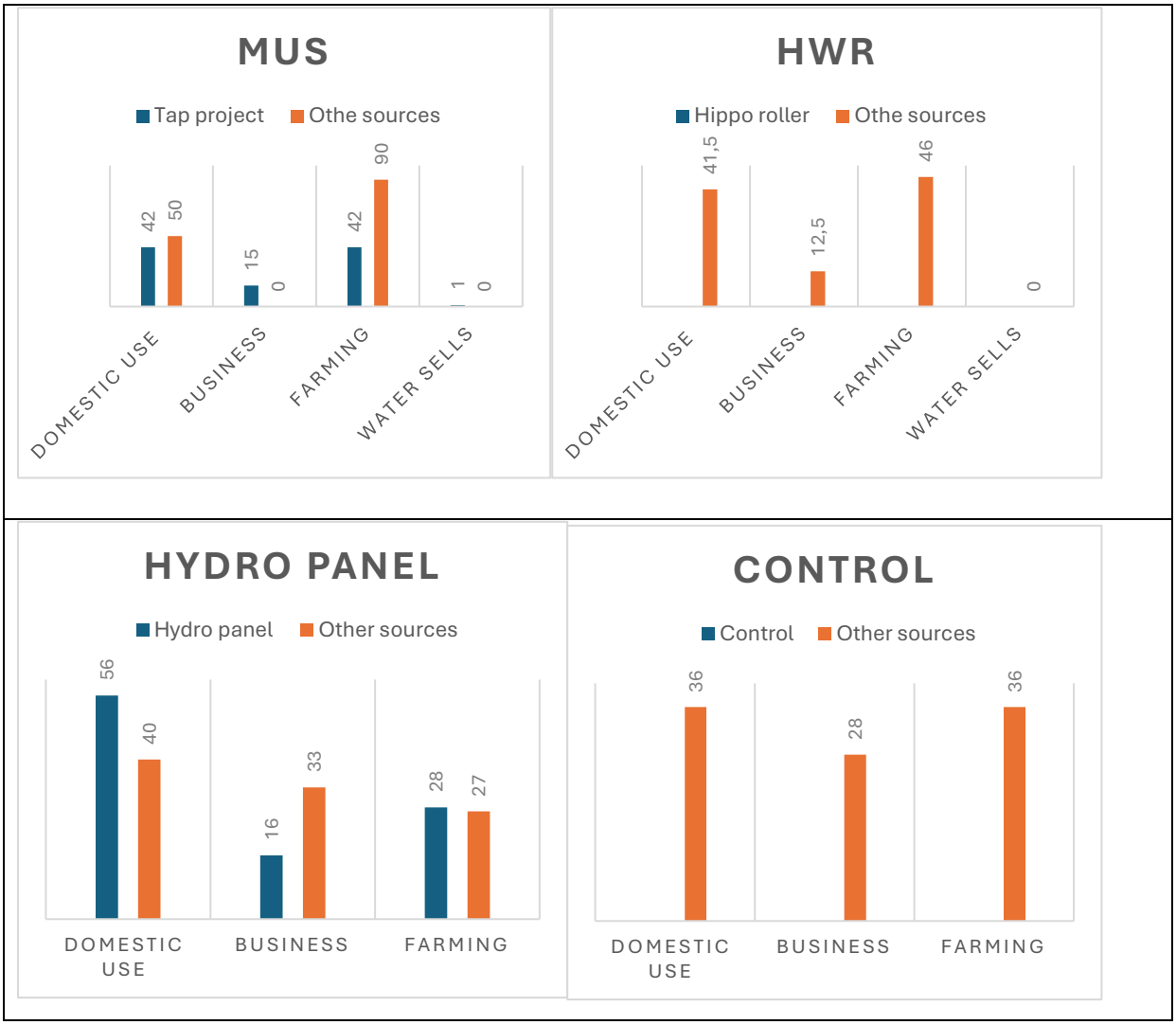



*Figure 50 – Uses of water from different sources*

The use of water to improve health and hygiene was emphasised by all participants. An overwhelming majority (86%) of beneficiaries claimed that better access to water has improved the health of their family while the control group reported no change. The same family health benefits were unfortunately not realised at an individual level with only 42% agreeing that access to clean water had improved their health. A staggering 58% did not see any change in their health. There is no rational explanation other than to observe that the population group that participated in the evaluation were young and therefore less prone to illnesses or women prioritise the health and hygiene needs of their families over their own needs. On aggregate, while it is difficult to attribute all the reported positive health outcomes to access to water in the project areas, it is also important to note that participants were unsure about the implications of water access on all aspects of health outputs. This sentiment is reflected in Figure 51 below, were almost 40% indicated that they were unsure if they got sick less or went to the hospital less since the implementation of the project. Although 43% agreed that they got sick less and went to the hospital less since the project.

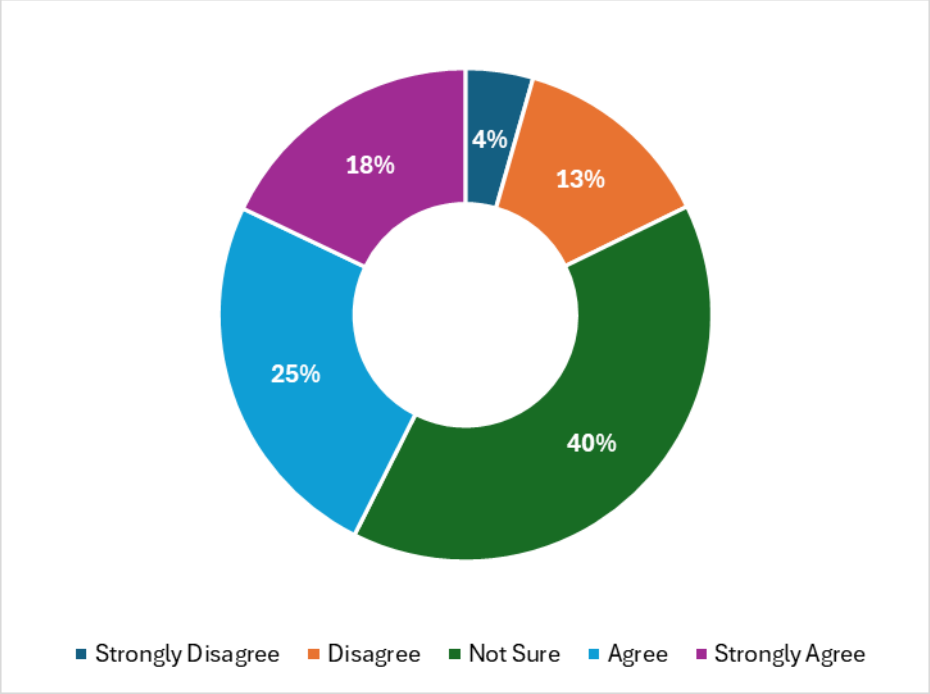



*Figure 51 – Since the implementation of the project, I get sick or go to the hospital less*

Access to sanitation is facilitated by water access. However, rural areas have lagged behind with WASH services. Until sanitation is improved, the correlation between access to water and improved health outcome will always be difficult to show. However, if improved access to water means more water is readily available for handwashing it will result in a positive impact.

In terms of correlation between water access and school attendance, most participants reported that there was no significant relationship between improved school attendance and less time spent collecting water. According to the literature, in many rural settings, school-age children are typically tasked with fetching water since many parents prioritise housework over

school attendance.  This widespread practice has a direct impact on children's attendance at school. However, the evaluation has found that access to water has not had an impact on a child's ability to attend school.

While the majority of respondents did not see any relationship between access to water and their ability to start or run a business, some reported improvements. In aggregate, 55% of all participants agreed that since the implementation of the project they had more time for income related activities, food gardening and washing clothes (Figure 52).

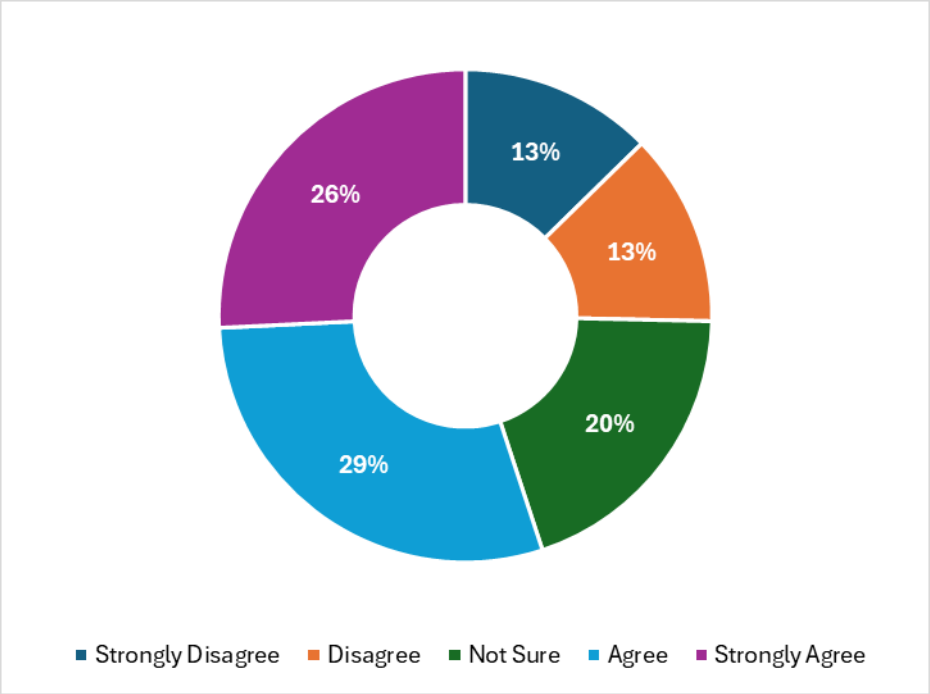



*Figure 52 – Since the implementation of the project, I have more time for income related activities, food garden and washing clothes, or running a business*

Nonetheless, the majority of respondents stated that having access to water enhanced their quality of life by cutting down on the time they needed to get water each day and increasing time for their daily household activities. This was true for the majority of cases, as well on aggregate. Participants explained that it is simple to collect water when there is a source near the homes.

From Figure 53 it can be seen that the benefits realised by the beneficiaries across all 3 interventions were not realised by the control group. This bears testimony to the overall positive impact that access to water has on the lives of women.

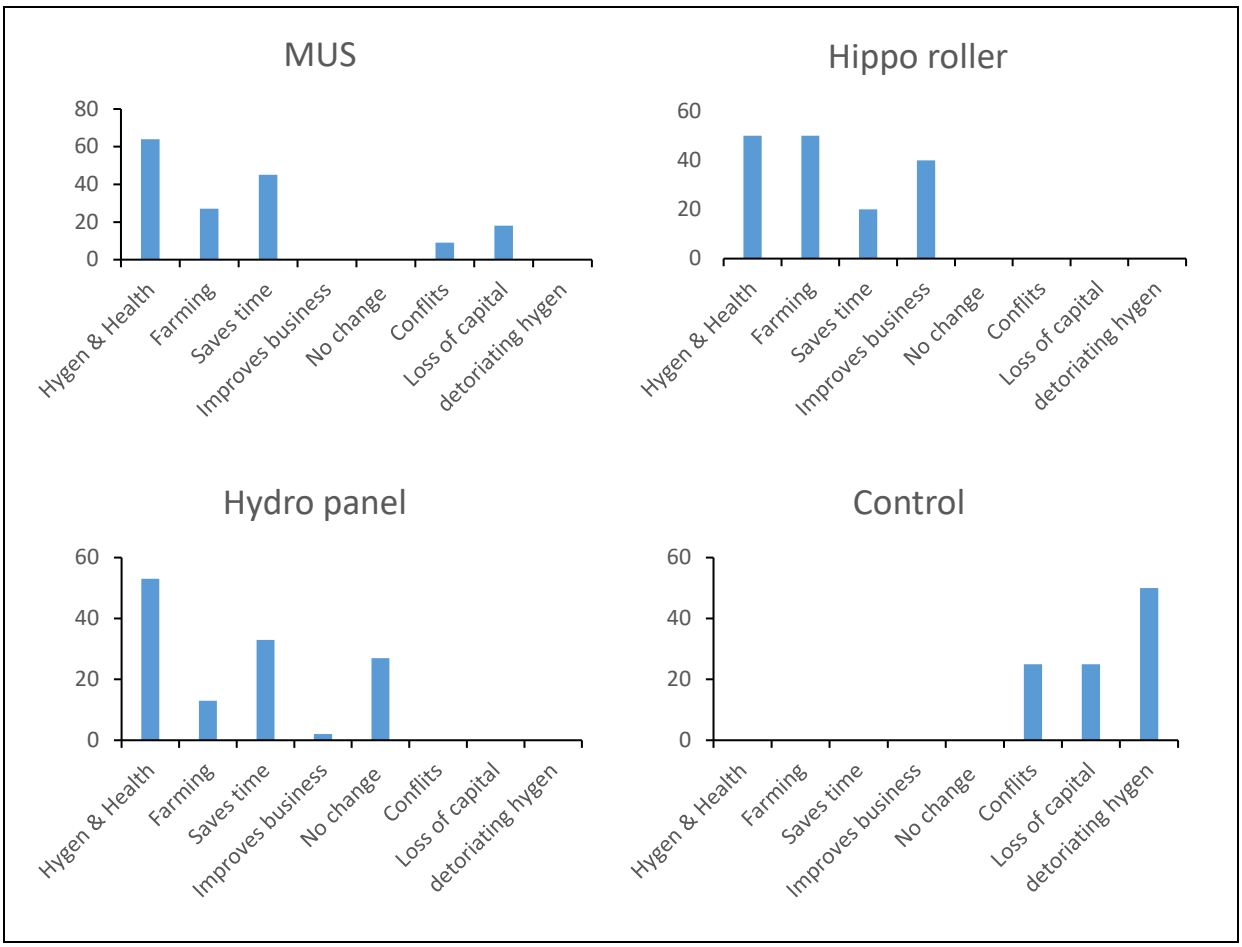



***Figure 53 – Effects of water access on daily livelihood***

Due to the simple access and availability of water, 13% of the hydro panel group, 55% of the HWR group, and 27% of the MUS project reported increased agricultural activities (crop production and/or animal husbandry). The majority of respondents — 64% of the MUS group, 50% of the HWR group, and 53% of the hydro panel group reported that having better access to water had improved their hygiene and capacity to perform household tasks. 25% of individuals in the control group expressed worrying about water availability, compared to 9% of participants in the MUS group who reported experiencing water conflicts.

As shown in Figure 54, less than a quarter of the beneficiaries did not have sufficient time for household activities (24%), while more that 76% were certain that various interventions for water access had improved the amount of time they spent on household activities, other than water collection and handling.

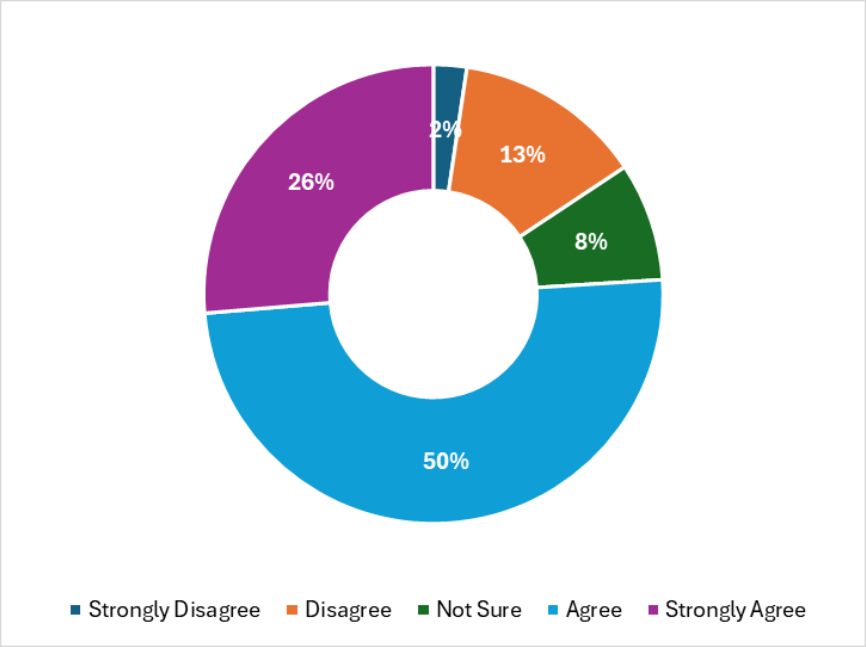



*Figure 54 – Since the implementation of the project, I have more time for household activities or school*

### 5.3.3 Empowerment levels associated with implementation of the interventions

In addition to the reported positive effects above, participants also reported changes in their capability levels in terms of safety and independence. The gift of time enhanced by ease of access to water was mostly reported. Having access to more water participants could achieve other affordances, such as starting food gardens income generating activities, church activities, social engagement and school activities (Figure 55). More than three quarters of participants reported that they now have sufficient water (76.2%) since the implementation of various interventions, this, notwithstanding some efficiency and technical challenges.

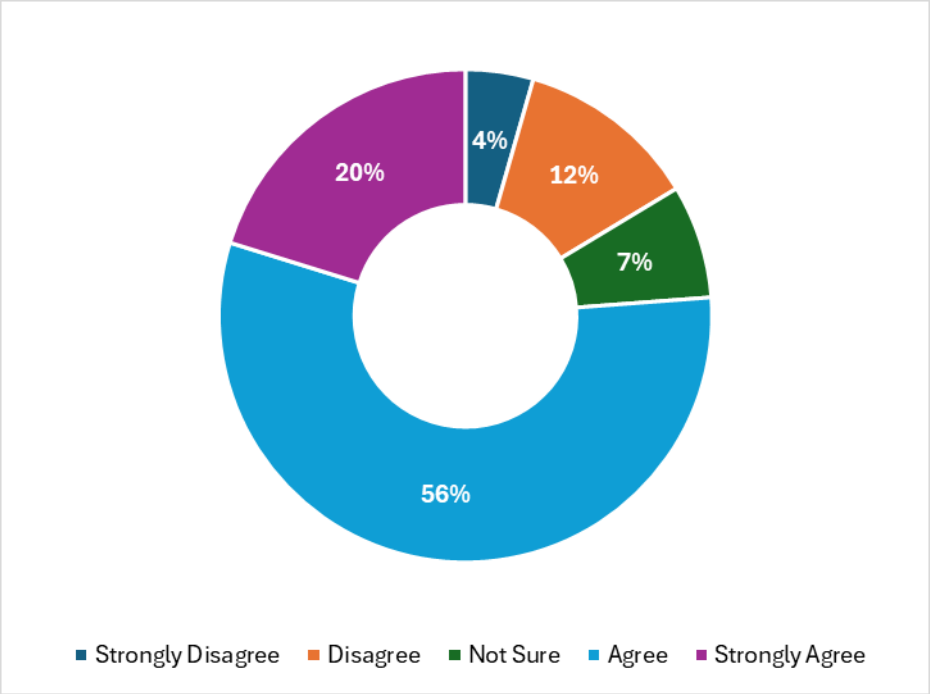



***Figure 55 – Since the implementation of the project, I have access to more water***

With sufficient water, participants could also take proper care of their livestock, a reality that was a challenge to some as the Water Service Authorities imposed stricter by-laws on using borehole water for other activities outside of domestic use. This was also reported by Tsogang Water and Sanitation officials, who are implementers of MUS project in Limpopo.

*When we said to them (Water Service Authority) these communities need water for their livestock and they need to water for their backyard garden, they said, no you can't use water from our boreholes for such activities. This meant for us we need to have an alternative source…*

With the provision of alternative water sources, multiple uses of water are now possible in some beneficiary communities, as indicated in Figure 56 below.

As shown, over 64% of participants reported that they can now grow their own food and water their livestock.

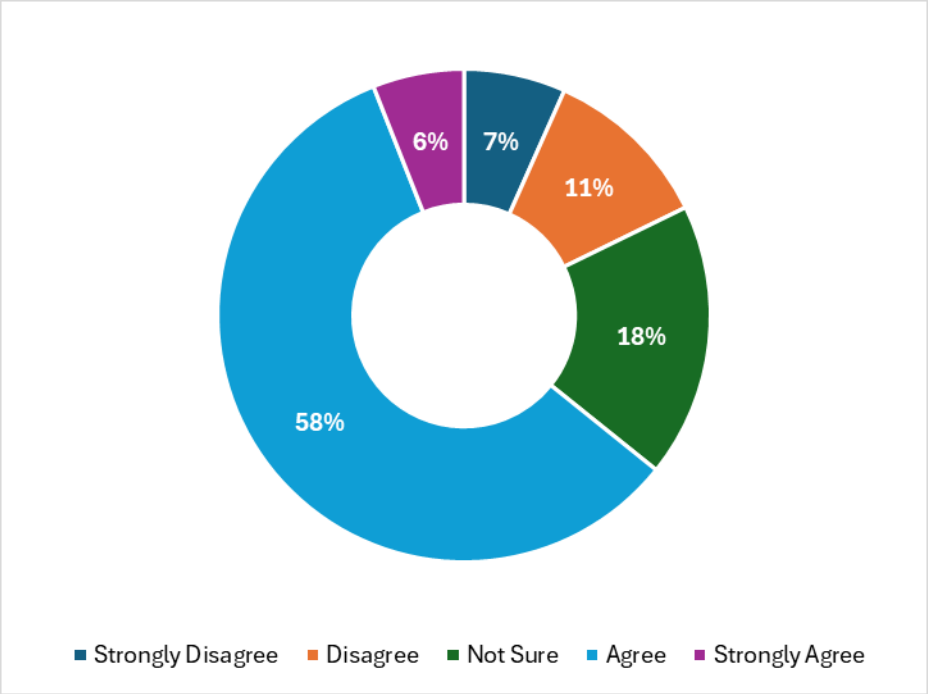



*Figure 56 – Since the implementation of the project, I can grow my own food and provide water for livestock*

In addition, 55% of the participants across the interventions contend that their general quality of life has since improved after the implementation of water access projects (Figure 57).

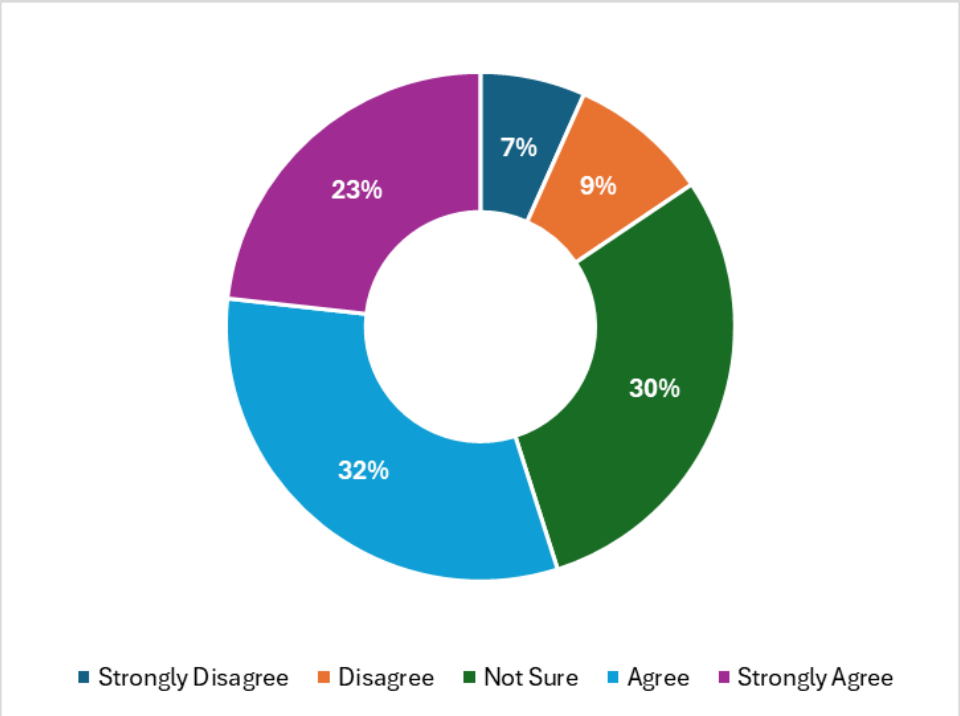



*Figure 57 – Since the implementation of the project, my quality of life has improved, and I feel safer to collect water (shorter distance, lower chance of injury)*

This may be due to shortened time and distances to water sources, that liberate a lot of daily time to achieve other activities, including selfcare. As a result, most (81%) participants reported feeling more independent and in control (Figure 58).

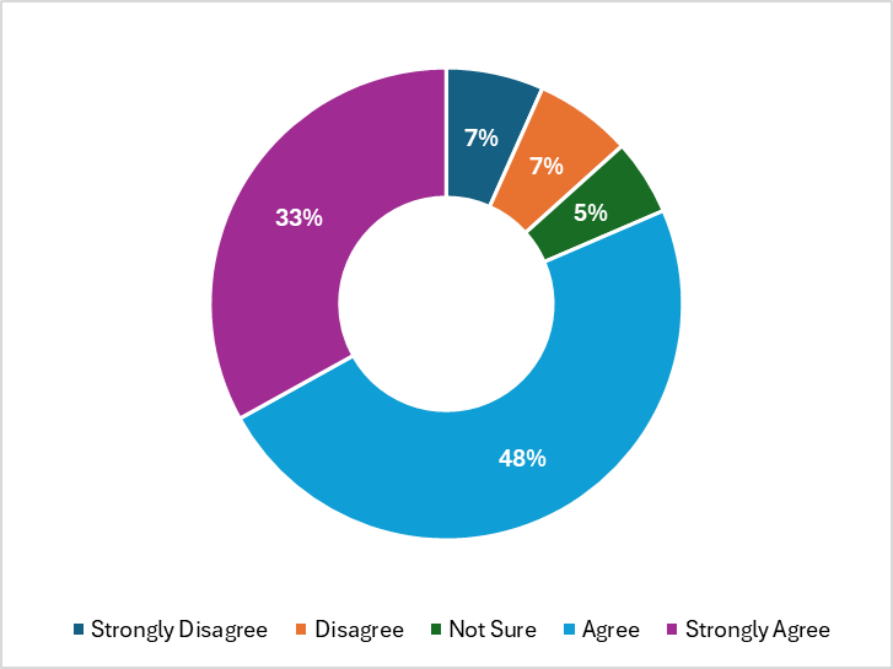



*Figure 58 – Since the implementation of the project, I feel more independent and in control*

While this may be due to increased access to water and its affordances, it may also be due to the collaborative methodologies used by most of the projects in implementing various interventions. As reported by beneficiaries and implementing agencies, there was a lot of collaborative effort during project implementation. This was aimed at creating a sense of local ownership.

### 5.3.4 Challenges, inadvertent results, and suggested improvements

Notwithstanding benefits, most of the interventions have several challenges that either impact their efficiency or their sustainability. Firstly, while many interventions enlisted cooperation of various stakeholders, including traditional leadership and communities, many had a challenge of 'government disinterest'. While government policy prioritises water resource (re)allocation or increasing access to water, of the four interventions assessed, three (HWR, MUS, hydro-panel) experienced the challenge of attracting the interest and active cooperation of local government structures. This makes sustainability of projects with expensive products such as hydro-panel and HWR questionable, after current funders terminate their funding. Further, monitoring and maintenance of equipment, while essential in effectiveness and sustainability, is not always done diligently. This is evident in Figure 59 below. These challenges include, unrepaired hydro-panel systems, poor road infrastructure, low quality of water in boreholes,

lack of transparency and poor communication, as well as lack of holistic improvements associated with water access and no plans for sanitation upgrades.

While community ownership is essential for the future of any project, it is not without its own challenges. In some interventions, Implementing Agents raised concerns about insufficient instructions on who should benefit from which resource resulting in conflicts and opportunistic crimes such as the appropriation of the communal equipment and the communal resource by private individuals.

*In one school, the school was not really providing access to the water to the community as originally intended, and they were managing it under lock and key and it's very specific about who could use it. So we weren't satisfied with the overall process* (KII, UJ-PEETS, Interview September 2024).

This was reported together with some beneficiaries who were misusing containers meant to collect potable water from the hydro-panels by collecting contaminated water from rivers, which led to contamination of the containers. In such cases more instruction and monitoring could assist resolve some asymmetries.

The other example was stated by implementers for the HWRs, who in their effort to build local ownership are leaving the distribution decisions to local structures.

*The challenge is that there is not enough for everybody, so that's why we need to partner with the local community leadership to keep control and they then decide who gets and who doesn't get* (KII, HWR Supplier, Interview September 2024(

Entrusting local structures with distributional discretion may have a downside of entrenching extant inequalities and elite capture. In many traditional structures, women are under-represented, as such using such structures to distribute resources may inadvertently result in entrenching the same inequalities. As such, local structures must ensure an intentional approach to addressing inequalities.

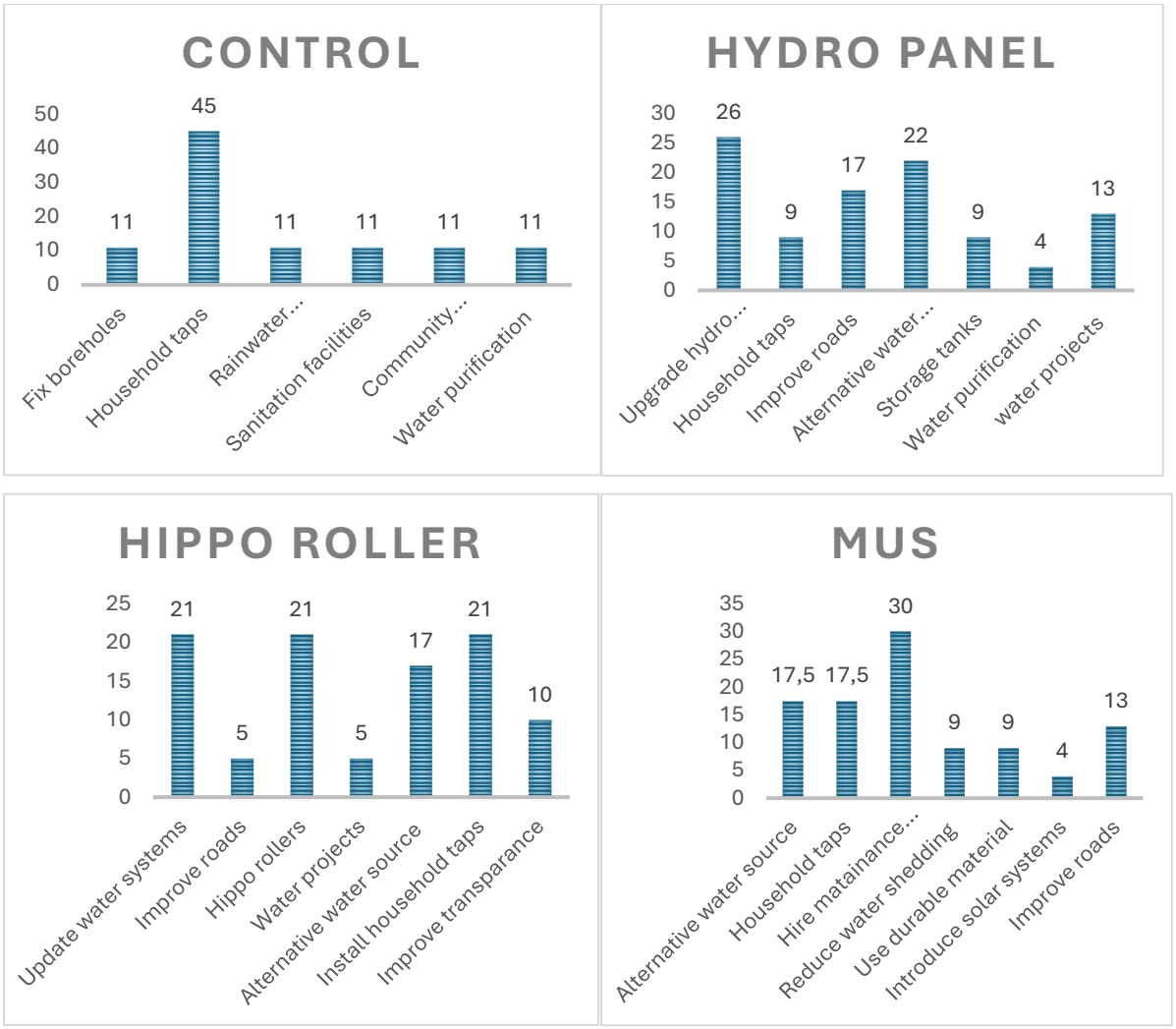



***Figure 59 – Suggestions that can improve water accessibility in the community***

All the group participants proposed to have taps connected to their homes. The control group had the largest number of participants wanting taps at 45% and HWR group at 22% and MUS at 18%. The hydro-panel group included 25% of the participants suggesting that the hydro-panel be updated in order to boost its water capacity and like other groups an alternative water source was also suggested. Every group reported that roads and other public infrastructure need to be improved in order to provide easy access to the water source, making this a pressing issue. Additionally, the participants recommended that they be given sanitary facilities with flushing systems and water filters for water purification. The hydro panel participants and the MUS project participants have requested the hiring of individuals to repair broken infrastructure and that authorities use durable material to construct.

However, despite all the challenges, respondents and project implementers and managers acknowledged that with several improvements the programme of social transformation through water access is likely to lead to positive outcomes. Some of those are captured in Figure 60 below, which include regular monitoring and repairs of various systems and

equipment, more financial investments in the broader WASH sector, roll-out communal and domestic taps, and increase political will.

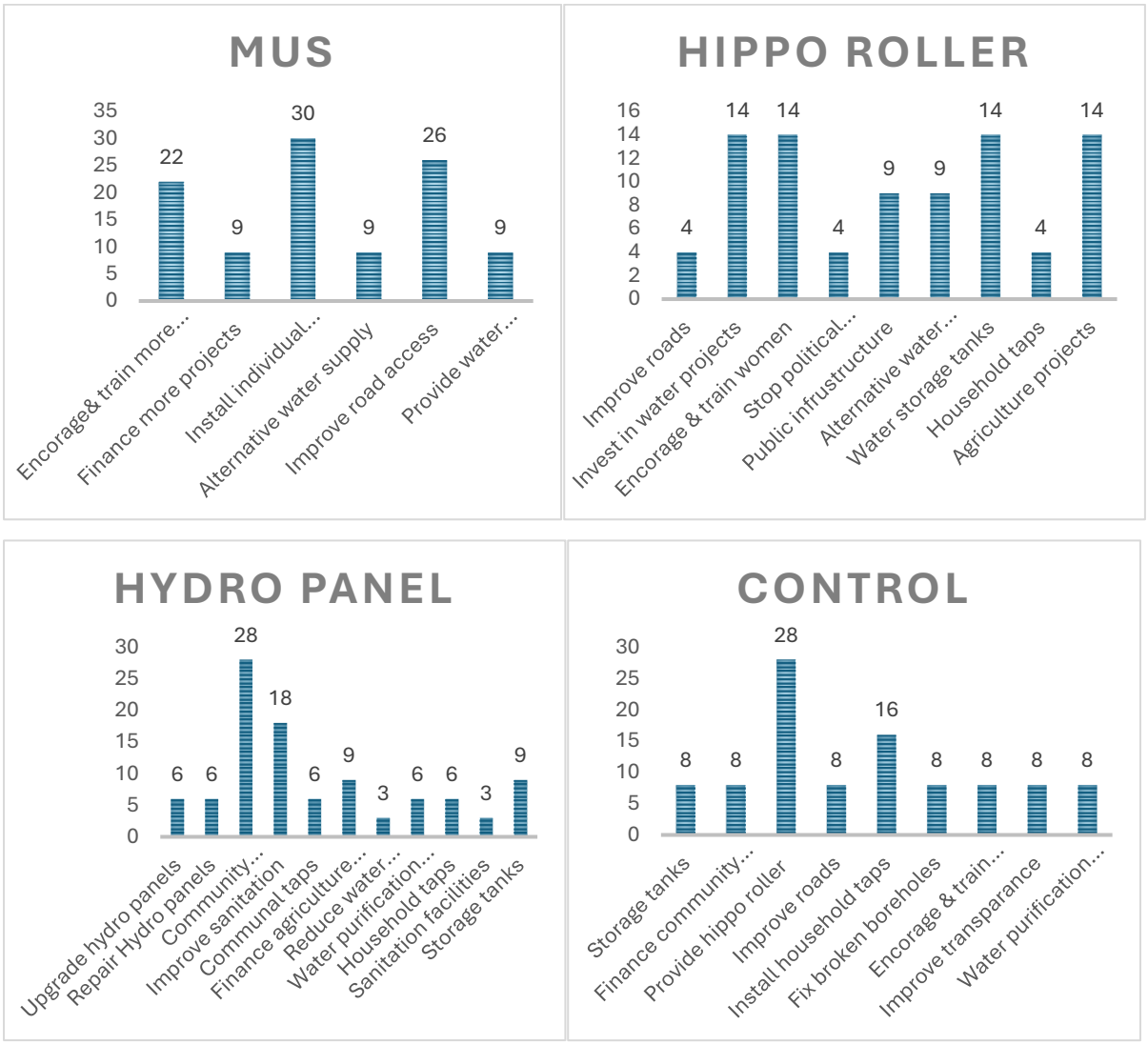



***Figure 60 – Suggestions on how the government can assist in improving the access to water***

About 30% of participants in the MUS project recommended having the government install taps directly, compared to just 4% of participants in the HWR group. This group's suggestions were nearly identical to those of the hydro-panel group, however, 17% of people recommended household taps. With the MUS having about 22% and the HWR group having about 14%, the participants also strongly suggested encouraging and training more women in water improvement initiatives. 9% of the MUS and 14% of the HWR group members, respectively, recommended that the government fund additional water and agricultural projects. In the control group, 27% of respondents proposed using the HWR as a substitute method of fetching water. Each of the four groups recommended safe and hygienic water sources. The control and the HWR participants, on the other hand, have advocated greater project transparency and the cessation of political meddling.

## *5.4* Sustainability of positive effects of the intervention

Most respondents acknowledged the positive developments achieved through efforts in water access and handling. However, a lot of concerns were also reported, ranging from ineffective mechanisms to need for more infrastructure and access to piped water. While the national priorities are aligned with such needs, the current positive developments need to be protected and perpetuated. Some positive practices in this regard were noted in a number of interventions. For example, there was positive collaboration between beneficiary communities and implementing agencies. This enabled local ownership of the infrastructure and systems. This was the case with MUS, where the implementing agent involved different community stakeholders in the whole process, taking on board communal concerns and priorities. This ensures that local beneficiary communities become real custodians of the developed infrastructure. In the Eastern Cape, the UJ-PEETS also trained local personnel to do repairs on the hydro-panel. However, the fact that this system may not be working as it should does not take away from the fact that such institutional arrangements are desirable and must be encouraged and improved. Lastly active participation by different spheres of government is indispensable to the realisation of the policy objectives of transforming the water sector in terms of race, and gender.

# 6 CONCLUSIONS

Based on the analysis of both secondary and primary data as well as the ToC in line with the objectives of the evaluation, the following conclusions are drawn.

## 6.1 To ascertain the extent to which these interventions are achieving their aims and objectives in providing access to water for women

**Conclusion 1:** The interventions studied under this evaluation are effective in increasing access to water for women in some remote areas in the Eastern Cape, Limpopo, and Mpumalanga. All interventions had the effect of increasing water access to women, through either (re)allocation of new water resources, construction of new and alternative sources, as well as enabling collection and storage of water in households.

**Conclusion 2:** Access to water improved the health of family members in the household but surprisingly access to water did not improve the health of women to the same extent as that of other family members in the household.

**Conclusion 3:** Contrary to the finding of the literature review, access to water did not have a significant positive impact on children's ability to attend school.

**Conclusion 4:** The evaluation did not identify any relationship between access to water and the ability to start or run a business

**Conclusion 5:** The sustainability of the hydro panels is in question due to unaffordable maintenance costs by community members. The high capital outlay and maintenance costs are a barrier to entry for the intervention and for the expansion the intervention. While the hydro panel mechanism is a green innovation, its water production capacity is insufficient in meeting all the drinking water demands of the beneficiary households in the village. While the system is apt for the mountainous terrain of the beneficiary communities in the Eastern Cape, more needs to be done to ensure that residents do not resort to contaminated river water to supplement the insufficiency of the system.

**Conclusion 6:** The hippo rollers are effective in shortening the time taken to collect large volumes of water, such interventions must go hand-in-hand with infrastructure development projects, to increase number of potable water sources in communities.

**Conclusion 7:** The MUS intervention has empowered community members in the self-supply of water by allowing community members to design, create and implement solutions relevant to their environment and challenges. By doing

this, it fostered a sense of ownership and accountability and therefore the community members will be more willing to look after the infrastructure built.

## 6.2 To ascertain which processes, methods or practices are working

**Conclusion 8:** All interventions that increase access to water to communities appeared to be appreciated by beneficiaries, however, political will and government collaboration is needed to enhance the effectiveness and sustainability of such systems and constant and regular maintenance is indispensable to any technological innovative project.

**Conclusion 9:** According to beneficiaries, while the received interventions shortened the time and distance spent on water collection activities, especially for women and children, more water infrastructure should be extended to remote areas, including piped water in residences.

**Conclusion 10:** The stakeholder engagement and collaborative methods used by different interventions are effective in building rapport, trust and local ownership. However, care must be taken to ensure that the structural arrangements and constraints that produced discrimination of certain groups, such as women, are not reproduced within the reform interventions.

## 6.3 To assess the impact of these interventions on women's access to water

**Conclusion 11:** The interventions had an aggregate effect of increasing access to water, as well as making it reasonably effective for women to collect, store, and use clean water.

**Conclusion 12:** The time and distance expended in water collection activities was reportedly reduced, re-allocating more time in other household activities, income generation and selfcare.

**Conclusion 13:** The gender divide in water collection roles is marginally impacted due to the introduced new and convenient means of collecting water. Men were reportedly increasing their water collection role due to the effectiveness and convenience of the infrastructure. However, while this may be few and anecdotal, there is potential to include men's participation in water collection as means of distributing domestic tasks within household members, thereby relieving pressure on women and children.

**Conclusion 14:** Whereas the correlation of water access to education, health, and business was affirmed in this evaluation, with most beneficiaries reporting positive outcomes, there is need for more inductive studies to ascertain/confirm the extent of the positive developments.

## 6.4 To better understand women's challenges in accessing water and the challenges of implementing such interventions

**Conclusion 15:** The main challenge identified was lacklustre involvement of government. Implementing agencies and local communities indicated challenges in getting districts and municipalities, as Water Services Authorities, involved in the various interventions. This was seen as essential since most of the funding instruments have a limited time-span, whereas the government does have the mandate and resources to sustain the initiated changes.

**Conclusion 16:** Another challenge is the need for effective and regular maintenance of the infrastructure. While the implementing agency for hydro-panels reported that the funder and the technology company have offered guarantees for fixing and replacing ineffective and inefficient hydro-panels, this has not been experienced on the ground. Instead beneficiaries resorted to supplementing hydro-panel water with river water due to faulty and inefficient hydro-panels.

**Conclusion 17:** There is need for specificity and intentionality in achieving gender transformation and empowerment within the water sector. Simply providing infrastructure or services without intentionally addressing the structural constraints that keep women in a subservient role may not realise intended objectives.

# 7 RECOMMENDATIONS

## 7.1 Policy and Legislative Framework

Recommendation 1: **Increase the Empirical Adequacy of the Theoretical Framework (ToC).** Workshop and encourage the adoption of the ToC to ensure shift in mindset from erstwhile practice and attitudes of either seeing access to water for women as an inconvenience or a charitable action, to viewing equitable access as a right.

Recommendation 2: **Ensure Accountability at All Levels of Implementation** - Although the water sector has impeccable legislation to support the equitable access to water, there is a need to develop specific accountability and responsibility measures by all including office bearers, civil servants, implementing agents and beneficiaries. These measures must be supported by enforcement measures.

## 7.2 Design and Implementation

Recommendation 3: **Encourage, Mandate and Expand Water Infrastructure** - Some of the challenges regarding poor planning, reporting and spending are consequences of short-termism. As such, it is important to acknowledge that building sustainable infrastructure is a process and a journey that requires time and considered planning. In addition to these interventions, there is need for a concerted effort by government to expand the water infrastructure to rural areas, including communal and in-residence taps. Further, sanitation projects must go hand in hand with water infrastructure projects to meet the needs of women.

## 7.3 Institutional & Governance

Recommendation 4: **Better Inter-governmental Alignment through Clear Lines of Communication** - the success of the implementation of gender transformation interventions in the water sector rests with clear and direct communication between the different spheres of government in collaboration with Implement Agencies and communities.

Recommendation 5: **Review Current Resourcing Strategies** - There is evidence of under-capacitation at different levels of government in implementing and maintaining gender transformation interventions. Some organizations need more staffing, while others need more skills. The role of the DWS, as sector lead, must be strengthened and capacitated to provide more guidance and support and not just limited to sector coordinator. Skilled resources are required for capacitating implementing agencies, and other levels of government, on various aspects of community engagement, social mobilization and facilitation.

## 7.4 Financial Management

Recommendation 6: **Develop Clear Guidelines and Inclusion Criteria of Beneficiaries**– all stakeholders must be aware of the criteria for gender transformation interventions to ensure gender sensitive budgeting. This should align with accountability measures and procedures to ensure that misalignment is not taking place and that the funds go towards its intended objective.

## 7.5 Stakeholder Engagement

Recommendation 7: **Reassess existing Stakeholder Initiatives in terms of Gender Transformation in the Sector** - While is it important that institutional arrangements within the IGR Framework are honoured for effective implementation of gender transformation interventions, building sustainable water infrastructure require several interlinkages with non-state actors. The work started by the Implementing Agencies of the various interventions in creating networks and fora for women to raise concerns and needs must find furtherance in different spheres of government and phases of the infrastructure projects.

Recommendation 8: **Develop and Implement a Comprehensive Awareness Campaign** - the campaign must address key issues around the prioritization, planning, implementation, and monitoring of interventions. Women must be consulted/engaged/involved at different stages of the design and implementation process.

## 7.6 Capacity Development, Knowledge Sharing and Strengthening Partnerships

Recommendation 9: **Strengthen Institutional Capacities of all Government Officials, Non-state Actors and Sector Stakeholders** - Stakeholders responsible for the implementation of gender transformation interventions should be trained on the ToC and on inclusive planning to foster ownership of the infrastructure.

Recommendation 10: **Use Existing Water Sector Forums to Share Information, to Encourage Collaboration, and to Share Lessons Learnt -** The lessons learnt and success stories should be shared systematically with a wider stakeholder audience, with regards to benchmarking and sharing best practices. To this end, there is a need for the DWS to include information dissemination processes in existing fora.

Recommendation 11: **Strengthen Partnerships with other Government Departments, Funders, and Key Stakeholders** – this will ensure the programmatic aspect of sustainability in terms of transfer of knowledge, institutional culture, and capacity building through professional and soft skills training.

## 7.7 Monitoring and Reporting

Recommendation 12: **Strengthen the Current Data Collection Methods, Mechanisms, and Storage Systems** - so that the quality of monitoring data is disaggregated, accurate and consistent for meaningful analysis. The monitoring and reporting system must adopt an evidence-based approach. Existing monitoring systems must be expanded, monitored and maintained, as well as sustained through extended partnerships, including and most essentially with government

Recommendation 13: **Develop Key Performance Indicators for Gender Transformation in the Water Sector** – using the GRES framework, key performance indicators should be identified to guide the development of future gender transformation interventions toward gender intentionality. The intention is to ensure that future programmes move away from gender negative and gender blind designs toward gender sensitive, gender responsive and gender transformation.

## 7.8 Areas for Future Research

Recommendation 14: The following research is recommended:

- Evaluation of the impact of sanitation interventions on women in the water sector.
- Evaluation of the impact of WARS.
- Research on the standardisation of gender transformation terminology in the water sector.

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# ANNEXURE A

Beneficiary Questionnaire

## 1. ***Introduction***

1.1. **Thank you** for finding the time to meet with me.

1.2. **Name & position:** I am a member of the Nemai Consulting team that was appointed by the Water Research Commission (WRC) to conduct an impact evaluation of gender transformation interventions to improve access to water for women in the water sector.

1.3. **Purpose:** The research will provide a categorical and evidence-based analyses of sector interventions to show what has worked, what has not worked and what can be improved to support change in the sector towards gender equality with specific focus on access to water. The findings of the research will inform the way forward on the design and implementation of programmes on the access to water for women. The study will build on the research previously commissioned by the WRC.

1.4. **Confidentiality:** This session will be recorded and transcribed to make sure that we capture your comments. Your responses will be shared internally with my team for analysis. Any information included in the evaluation report will not identify any of the participants.

1.5. **Questions:** Are you happy to be part of the interview? Do you have any questions before we start?

**Note** the interview date & time:

## 2. ***Demographic Information:***

2.1. Name (Optional)

| |
|---|
| |

2.2. Contact Information (Optional)

| | |
|---|---|
| Phone Number: | Email: |

2.3. How many people live/reside in your household?

- 1 – 3
- 4 – 5
- 6 – 10
- > 10

2.4. Age of Respondent:

- Under 18

- 18 – 25
- 26 – 35
- 36 – 45
- 46 – 60
- Over 60

2.5. Location:

- Urban
- Rural

2.6. Highest Level of Education attained by the respondent:

- None
- Primary
- Secondary
- Tertiary

2.7. Occupation (Can choose multiple):

- Student
- Employed
- Self-Employed
- Unemployed

2.8. How long have you been living in this community or village?

- < 1 year
- 2 – 5 years
- 6 – 10 years
- > 10 years

2.9. How does access to water effect your quality of life and ability to be productive? (Probe: safety/ income/ more time/ school/ work/ livestock/ independence)

## 3. ***Water Access and Use:***

3.1. What is your primary source of water? (Can be multiple answers)

- Municipal Water (Piped)
- Borehole Water

- River
- Rain water
- Other (Please specify)

3.2. How do you collect your water?

3.3. How far is this source from your home?

| **Project Scope:** | **Other Sources:** |
|---|---|
| ○ Less than 500 meters | ○ Less than 500 meters |
| ○ 500 meters to 1 kilometers | ○ 500 meters to 1 kilometers |
| ○ 1 to 2 kilometers | ○ 1 to 2 kilometers |
| ○ More than 2 kilometers | ○ More than 2 kilometers |

***If beneficiary benefited from project – ask both questions 3.3 and 3.4.

*** If not benefited from project – only ask 3.4.

3.4. Before this project was installed or implemented or started, how much time did you spend collecting water every day?

- < 30 minutes
- 30 minutes to an hour
- 1 to 2 hours
- > 2 hours

3.5. How much time do you spend collecting water every day? (hours)

- < 30 minutes
- 30 minutes to an hour
- 1 to 2 hours
- > 2 hours

3.6. How would you rate the quality of the water you are collecting?

| **Project Scope:** | **Other Sources:** |
|---|---|
| ○ Good (clean) | ○ Good (clean) |
| ○ Fair | ○ Fair |
| ○ Poor (dirty) | ○ Poor (dirty) |

3.7. What do you use the water for? Or how is your household using the water?

| **Project Scope:** | **Other Sources:** |
|---|---|
| ○ Drinking water | ○ Drinking water |
| ○ Household Activities (cooking, cleaning, bathing and washing clothes) | ○ Household Activities (cooking, cleaning, bathing and washing clothes) |
| ○ Business Activities | ○ Business Activities |
| ○ Hygiene purposes | ○ Hygiene purposes |
| ○ Livestock | ○ Livestock |
| ○ Grow food | ○ Grow food |
| ○ Sell water (if yes, how much do you charge per litre) | ○ Sell water (if yes, how much do you charge per litre) |

***4. <u>Health and Hygiene:</u>***

4.1. Has access to water improved your family's health?

- ○ Yes
- ○ No
- ○ Not sure

4.2. In the past year have you or anyone in your household experienced the following symptoms – diarrhoea, vomiting, nausea, stomach cramps, fever, headache, dehydration?

- ○ Yes
- ○ No
- ○ Not sure

4.3. Do you think your health has improved since having access to the project water?

- ○ Yes
- ○ No
- ○ Not applicable

4.4. Do you have access to sanitation facilities?

- ○ Yes
- ○ No

***5. <u>Education:</u>***

5.1. Has access to water affect your or your children's ability to attend school?

- Yes
- No
- Not Applicable

5.2. If yes, how has it affected school attendance?

- Improved attendance
- Reduced attendance
- No change

***6. Economic Activities:***

6.1. Has access to water impacted your ability to work or run a business?

- Yes
- No

6.2. If yes, how has it impacted your work or business?

- Increased productivity
- Decreased productivity
- No change

***7. Maintenance:***

7.1. How is the infrastructure maintained? (Probe: is it easy to maintain/ who pays for the maintenance/ who do you report to when it does break/ has your infrastructure broke/ what can go wrong with the project/ who pays for the maintenance/ do you have the money to maintain it?)

7.2. Have you been trained to maintain the infrastructure?

***8. Overall Well-Being:***

8.1. How has access to water affected your daily life? (please describe briefly)

8.2. On a scale from Strongly Disagree to Strongly Agree, can you determine how closely you identify with each of the following statements (Tick where appropriate):

| | **Strongly Disagree** | **Disagree** | **Not Sure** | **Agree** | **Strongly Agree** |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| **Since the implementation of the project, I spend less time collecting water.** | | | | | |
| **Since the implementation of the project I travel less distance to get access to water.** | | | | | |
| **Since the implementation of the project I do not have to travel to access water every day.** | | | | | |
| **Since the implementation of the project I have more time for household activities or school or social activities.** | | | | | |
| **Since the implementation of the project I have more time for other income related activities such as starting a food garden or washing clothes or running a business.** | | | | | |
| **Since the implementation of the project I get sick less often or go to the hospital less often.** | | | | | |
| **Since the implementation of the project I can grow my own food and provide water for livestock.** | | | | | |
| **Since the implementation of the project I have more access to water.** | | | | | |
| **Since the implementation of the project my quality of life has improved and I feel safer to collect water (shorter distance, lower chance of injury)** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **The implementation of the project has benefitted me positively** | | | | | |
| **Since the implementation of the project I feel more independent and more in control of where my water comes from and how I use it (empowerment)** | | | | | |

8.3. What are some of the challenges or problems you are experiencing in accessing water? (Is the project assisting with these problems or creating more problems/ what are challenges do you have more broadly in accessing water? Or what challenges do you still face regarding water access)

8.4. What improvements would you suggest to better access to water in your community?

8.5. How do you think government can assist women to gain more access to water within their communities?

# ANNEXURE B

Key Informant Interview Questionnaire

# Key Informant Interview Questionnaire:

***9. Introduction***

9.1. **Thank you** for finding the time to meet with me.

9.2. **Name & position:** I am a member of the Nemai Consulting team that was appointed by the Water Research Commission (WRC) to conduct an impact evaluation of gender transformation interventions to improve access to water for women in the water sector. We are interviewing a wide range of stakeholders as a part of this evaluation.

9.3. **Purpose:** The research will provide a categorical and evidence-based analyses of sector interventions to show what has worked, what has not worked and what can be improved to support change in the sector towards gender equality with specific focus on access to water. The findings of the research will inform the way forward on the design and implementation of programmes on the access to water for women. The study will build on the research previously commissioned by the WRC.

9.4. **Confidentiality:** This session will be recorded and transcribed to make sure that we capture your comments. Your responses will be shared internally with my team for analysis. Any information included in the evaluation report will not identify any of the participants.

9.5. **Questions:** Are you happy to be part of the interview? Do you have any questions before we start?

**Note** the interview date & time:

***10. Respondent Information***

10.1. Name of Organisation

| |
|---|
| |

10.2. Role within the Organisation

| |
|---|
| |

10.3. Name of respondent:

| |
|---|
| |

10.4. Project involved in:

| |
|---|
| |

***11. Questions:***

11.1. What is your understanding of the project/policy? Why was it developed? And for who was the project or policy developed – who were the intended targets that would benefit from the implementation of this project or policy?

11.2. What do you consider as the desirable outcome of the intervention, policy or initiative?

11.3. Is the design of this policy, programme or intervention appropriately designed, easily understandable and targeting the intended beneficiaries? (probe: who are the beneficiaries of this initiatives and how does it intend to reach the beneficiaries?)

11.4. What type of resources are being allocated to ensure that the policy, project, programme or initiative is being implemented to reach its intended beneficiaries?

11.5. To what extent has this project, programme, policy or initiative contributed to improving access to water for women within the water sector? (probe: What is the number of women who have benefitted from this programme?/ how did this project, programme, policy or initiative assist women in gaining more access to water?)

11.6. Since the inception of the project, policy, programme or initiative, has there been any unintended consequences (positive or negative)?

11.7. If this policy, project, programme or initiative is withdrawn or terminated, do you believe government would meet the goal of providing equal access to water for all?

11.8. What are some of the challenges faced in implementing these initiatives or policies and getting women more access to water?

11.9. What are some of the barriers or challenges in providing women with increased access to water? What do you believe is stopping women from having equal access to water?

11.10. How do you think government can improve the access to water for women within the water sector of South Africa?

11.11. How do you think government can assist women to gain access to more water resources within the South African water sector?