

# First Nationwide Rural WASH Sustainability Check in Mozambique: A Clear Pathway of Action for Improving Sustainability

## SUMMARY

Mozambique conducted its first Nationwide Sustainability Check between November 2021 and July 2022. The data collection was carried out between November 2021 and January 2022. This exercise sought to understand the different factors influencing the sustainability of rural water and sanitation infrastructure, services and behaviours in order to provide informed recommendations. In each of the three provinces - Inhambane, Zambezia and Nampula – three districts were selected to cover the northern, central and southern regions. A total of 195 community-managed hand pumps and 90 open defecation free (ODF) communities were assessed in the nine selected districts.

Regarding rural water infrastructure, the study has shown that:

- 86.6 per cent of water points were functional at the time of the visit. However, most water points visited (73.7 per cent) reported one to five breakdowns in the last 12 months, 43 per cent of these breakdowns lasted at least six days. Most of these water points were constructed 10 years ago.
- The overall sustainability score for rural water points across the country is 66.1, which ranks as average. Technical factors scored at the lowest level (55.6), followed by financial (65.8) and institutional (68.9) factors. Some variables that negatively influence these results are: only 34 per cent of District Planning and Infrastructure Service (SDPI) is providing post-construction support to the communities; only 45.4 per cent of communities have a system to report breakdowns; and only 36 per cent of operational water points have spare parts in stock.

Based on the study, key recommendations for actors involved in water supply are:

- At national level, under the responsibility of the National Directorate of Water Supply and Sanitation (DNAAS), integrate a sustainability analysis and establish a system to report breakdowns in real-time into the National Water and Sanitation Monitoring Platform (SINAS).

- At provincial and district level, under the responsibility of the Provincial Water and Sanitation Directorate (DPOP) and the District Planning and Infrastructure Service: 1) ensure the creation or re-vitalization of both Water Committees and Operation and Maintenance Groups, with at least 50 per cent of women in key management positions and train them on how to do minor repairs; 2) provide post-construction support; 3) promote hand pump spare part supply chains as close as possible to the communities, 4) regularly carry out financial audits of water committees to ensure transparency of financial management and create trust among users.
- At community level, sign contracts with locally trained mechanics to repair major breakdowns and appoint more women to leadership positions in water committees and maintenance groups.

In terms of rural sanitation and open defecation free communities, the study has revealed that:

- 92 per cent of the communities visited maintained ODF status after more than one year. Most of them (over 90 per cent) had obtained ODF status more than four years ago and 7 per cent before 2013. For those that did not maintain this status, the main reason was that during the rainy season toilet pits and infrastructure built with local materials collapsed.
- The overall rural sanitation sustainability score is 68.5 which is considered average. Financial factors scored at the lowest level (47.9) followed by institutional (63.5) and technical/environmental (66.1). Some variables that negatively influence these results are: only 10 per cent of households have access to community revolving credit ('Xitique'); there is no institutional loan/funding mechanism for sanitation; 90 per cent of districts do not have any budget to support communities in moving up the sanitation ladder.
- 36.7 per cent of District Planning and Infrastructure Services do not have a monitoring system to track progress towards the elimination of open defecation.

Based on the study, key recommendations for actors in charge of sanitation are:

- At national level, the National Directorate for Water and Sanitation (DNAAS) should include a sustainability analysis and establish and include an institutional system for monitoring ODF communities into the National Water and Sanitation Monitoring Platform (SINAS).
- At provincial and district level, under the responsibility of the Provincial Water and Sanitation Directorate (DPOP) and the District Planning and Infrastructure Service should: 1) allocate a dedicated budget for monitoring sanitation and hygiene promotion; 2) increase the number of health workers and sanitation activists involved in monitoring ODF and sanitation; 3) promote sanitation markets in rural areas, as well as train local artisans in the production of sanitation products.
- At community level, community leaders should be trained on how to develop a post-ODF plan for their communities and how to monitor sanitation, especially after the rainy season.

## Background

In Mozambique, 73 per cent (JMP, 2021)<sup>1</sup> of the population had access to improved drinking water services in 2020, primarily through piped water systems, water points constructed at community level, rainwater harvesting and delivered water. The country has strong disparities with regards to improved drinking water coverage between urban (94 per cent) and rural (62 per cent) areas. A total of 42 per cent (JMP 2021) of Mozambique's population has access to improved sanitation through sewerage systems, septic tanks and improved latrines. However, in 2020, 21 per cent of the population still practiced open defecation and 37 per cent of the population used unimproved facilities.

- The Government of Mozambique, with support from development partners including UNICEF, is implementing the National Rural Water Supply and Sanitation Programme (PRONASAR) for the period 2019- 2030, with the following objectives:
- Contribute to meeting basic human needs, improving well-being and fighting rural poverty through increase in access to and use of safe water supply and sanitation services.
- Ensure sustainable access to safe and sustainable water supply for at least 80 per cent and access to sanitation for at least 75 per cent of the rural population by 2024.
- Ensure universal and sustainable access and use of safe water supply and sanitation services in rural areas by 2030.

The PRONASAR programme is led by the National Directorate of Water Supply and Sanitation within the Ministry of Public Works and Housing. This Directorate is responsible for policy, strategies formulation, resource mobilization and sector oversight. At provincial level, the planning and implementation of rural WASH activities is

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<sup>1</sup> Progress on household drinking water, sanitation and hygiene 2000-2020: Five years into the SDGs. Geneva: World Health

carried out by the Provincial Directorate of Public Works. At the district level, the implementation of all rural WASH activities is done by the District Planning and Infrastructure Service.

In 2021, as part of the PRONASAR monitoring process, UNICEF supported the Government of Mozambique in conducting the first nationwide rural sustainability check with the objective of identifying key factors influencing the sustainability of rural water supply and sanitation infrastructures and to develop recommendations for improving the sustainability of rural water and sanitation services.

The concept of sustainability checks is not new to Mozambique, a total of eight sustainability checks were completed in rural areas and one in small towns between 2008 to 2017 in the provinces of Tete, Manica, Sofala and Inhambane.

## Methodology

A conceptual model for sustainability check analysis was developed that addresses water supply and sanitation separately. The conceptual model included social, financial, institutional, technical and environmental factors together with key indicators for water supply and sanitation (see *Table 1 below*). The factors and indicators were discussed and agreed with key WASH stakeholders through an inclusive process. Indicators included in each factor were given different weights. The indicators were based on the experience with previous sustainability checks and new indicators were included during the discussion with the key stakeholders.

Organization (WHO) and the United Nations Children's Fund (UNICEF), 2021. Licence: CC BY-NC-SA 3.0 IGO.

**Table 1: Sustainability factors**

	Factors	Key Indicators of the Study	Weighting
<b>Water Supply</b>	<b>Institutional</b>	Existence of a monitoring system and updated database at district level. Existence of a water committee with key positions (chairperson, secretary, treasurer, water tariff collector and hygiene promoter).	26.5
	<b>Social</b>	Existence of a conflict resolution mechanism at community level. Degree of trust of the community versus the community leader. Water committee and Operation and Maintenance (O&M) groups composed of at least 50% women. Presence of women in key committee positions (chairperson, secretary, treasurer, fee collector and hygiene promoter).	25
	<b>Technical and environmental</b>	Existence of post-construction services implemented by district authorities. Presence of a maintenance manager in the O&M group. Easy access to local mechanics. Water Committee and O&M groups are trained. Routine maintenance of the water point carried out in the last 12 months. Availability of spare parts in or close to the community.	33.5
	<b>Financial</b>	Existence of a dedicated budget for maintenance of water supply infrastructures at district level Existence of a transparent financial management system and record users' contribution to O&M of the water point at community level. Existence of financial savings mechanism at community level. Existence of an audit system for the water committees.	15
	<b>TOTAL</b>		<b>100</b>
<b>Sanitation</b>	<b>Institutional</b>	Existence of a monitoring system and updated database at district level. Existence of a sanitation costed plan and a post-ODF monitoring plan at district level. Presence of health workers or local activists promoting sanitation and hygiene in the district. Post-ODF monitoring conducted in the last 12 months by district authorities.	20

	Factors	Key Indicators of the Study	Weighting
	<b>Social</b>	<p>Community being properly involved during the CLTS triggering process: existence of a ODF plan and commitments at community level.</p> <p>Degree of trust of the community towards the community leader.</p> <p>Perception of the risks associated with open defecation in the community and awareness of the importance handwashing and having a sanitation facility.</p> <p>Sanitation is reported as a priority by the community.</p>	40
	<b>Technical</b>	<p>Access and type of materials used for latrines construction.</p> <p>Existence of a market for durable slabs and other materials for latrine construction and hygiene products.</p> <p>Presence of a protected water point.</p>	30
	<b>Financial</b>	<p>Existence of a dedicated budget for sanitation and hygiene promotion at district level</p> <p>Existence of a transparent financial management system and record users' contribution to O&amp;M of the water point at community level.</p> <p>Existence of financial savings mechanism at community level ('Xitique').</p> <p>Understanding of latrine construction costs by the communities.</p>	10
	<b>TOTAL</b>		<b>100</b>

## Sampling

Three districts were selected in each one of the three provinces - Inhambane, Zambezia and Nampula –with the objective of covering the northern, central and southern regions. Out of a total of 3,779 water points and 405 open defecation free (ODF) communities in the selected districts, 195 water points and 90 ODF villages were randomly selected using a simple random sample. Since the objective of the sanitation component was to verify whether communities were still complying with ODF criteria, about 10-15 per cent of households were randomly visited in selected communities.

## Data collection

A questionnaire, approved by key WASH stakeholders, was used for data collection. This was conducted using real time Kobo software and a digital platform which allowed geo-referencing of the water points and households visited in the ODF communities. The data collected was automatically sent to the national database where all information was stored, processed and analysed.

In the field a mix of techniques was used to fill out the questionnaires:

- Field observations were conducted to check the status of the water points and household latrines in certified open defecation free communities,
- Semi-structured interviews with district government staff – local leaders, heads of administrative posts, representatives of district health care, Women and Social Welfare Services and District Planning and Infrastructure Services.

<sup>2</sup> According to Fink et al, 2022, it is estimated that one in four (25 per cent) of the hand pumps are non- functional at any one time in Sub-Saharan Africa. Based on Kativhua et al, 2022, in

- Focus group discussions were held with water committees and community leaders.

## Data analysis

A quantitative data analysis was carried out using SPSS, Python, Excel and different factors were given different weights as per the table above.

To summarize the sustainability of rural water and sanitation, the sustainability scores were calculated based on the weights described in Table 1. Separate scores were calculated for technical, financial, social and institutional factors, as well as an overall sustainability score.

## Main findings

### Rural Water Supply Infrastructure

Box 1 describes the main typologies of rural water supply infrastructure in the selected districts. The study found that more than 86.6 per cent (Figure 1) of water points visited (n= 186) were operational on the day of the visit which is above the regional Sub-Saharan Africa performance (25 per cent)<sup>2</sup>. However, the study also indicated that most water points visited (73.7 per cent) reported one to five breakdowns in the last 12 months, Zambezia and Inhambane being the provinces with the highest number - 77 per cent and 77 per cent, respectively.

Out of the total water points visited, 43 per cent experienced breakdowns lasting at least six days and 95 per cent experienced at least three breakdowns in the last 12 months. On a positive note, 34 per cent of water points have never broken down or were non-functional for more than one day.

Sub-Saharan Africa, 30-40 per cent of hand pumps are non-functional every year.

### BOX 1.

#### TYOLOGY OF RURAL WATER INFRASTRUCTURE

- 100% of the rural water infrastructures assessed by this study were water points equipped with hand pumps: 93% were equipped with an Afridev pump which is the standard pump adopted by the Government of Mozambique for the entire country; 3% with Vergnet Hydro pumps and 4% with Blue Pumps at the time of the visit.
- 43% of the water points were located within 500 meters of the village centre.

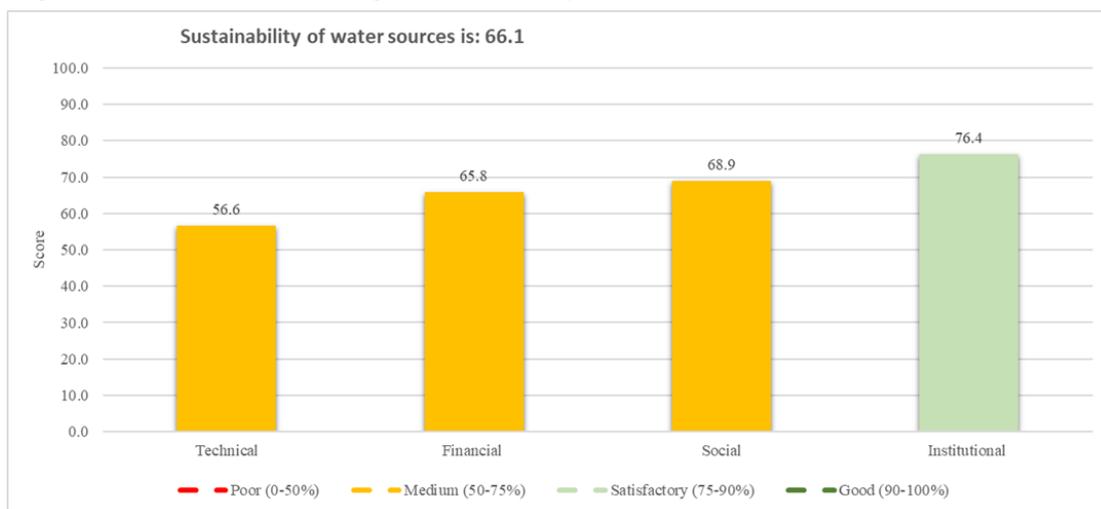
When applying the sustainability model, the study found that the overall sustainability score for rural water points across the country is 66.1, bringing the score to average. As explained in the methodology section, the water sustainability is the average weighted score given

Figure 1: Community water point in Zambezia Province.



to the different institutional, social, technical and financial factors. While the institutional factor scored 76.4, the rest of the factors - social, technical and financial - scored below 70 with technical being at the lowest level (56.6) followed by financial (65.8) and then social (68.9) (see Figure 2).

Figure 2: Factors affecting sustainability of water points<sup>3</sup>



<sup>3</sup> The sustainability results were classified into four categories: Poor when the score was below 50 per cent and average when the score was between 50 -75 per cent, satisfactory

when the score was between 75-90 per cent, and good when the score was above 90 per cent.

When looking at indicators for the factors that scored below 70, the study found:

#### **Technical factors:**

- Only 34 per cent of the District Planning and Infrastructure Service (SDPI) provides post-construction support to the communities to improve the management skills of the water committees, supports the establishment of a supply chain for spare parts at local level and resolves the major water point break downs that the maintenance group and local mechanics are unable to fix. The SDPI is the Government authority at district level responsible for planning and management of water and sanitation facilities.
- Only 45.4 per cent of the communities have a system to report breakdowns to the SDPI. Having a reliable reporting mechanism for breakdowns in the districts and the communities would allow communities to more rapidly mobilize a mechanic to repair the hand pump.
- About 33.3 per cent of the maintenance groups do not have a person in charge of routine maintenance. A trained and skilled person at community-level is key for preventive maintenance and reducing hand pump breakdowns.
- Only 19.4 per cent of water committees have a written or verbal contract with local mechanics for hand pump repair. As shown in several studies, the availability of local mechanics for major hand pump breakdowns is key for the sustainability of water points.
- About 57.4 per cent of water committees and 58 per cent of maintenance groups are not trained. The operation and maintenance of the water points could be done more efficiently and quickly if the communities have skilled members.

- Only 36 per cent of water committees with operational water points had spare parts in stock for preventive maintenance. Regarding the spare parts supply chain, 67.2 per cent of water committees in Inhambane and 53.4 per cent in Zambezia purchase their hand pump spare parts in district capitals, these are sometimes very far away given the vastness of these two provinces. Only in Nampula, 55.8 per cent of water communities reported purchasing their spare parts at sub-district level (Administrative Post).

#### **Financial factors:**

- 65.7 per cent of visited districts do not have a dedicated budget for post-construction technical support to the water committees.
- 90.8 per cent of the water committees have a system for collecting contributions from households and these water committees collect monthly contributions. However, the households contribute only 57.3 per cent of the total cost for operation and maintenance of the water points.
- Around 42.9 per cent of the water committees do not have a secure place to deposit the funds collected from the water point users. The contributions should be deposited in a bank or similar local financial institution to avoid the loss of community funds.
- Only 13.3 per cent of the water committees have a financial audit of their bank accounts. The auditing of water committees is key to ensuring transparency in the management of funds contributed by water point users.

#### **Social factors:**

- Only 19.5 per cent of communities' report that there is no system in place to resolve conflicts related to water supply at community level and 26.2 per cent of the communities do not trust the community leaders. All communities should

have a mechanism to resolve the conflicts that arise around water supply.

- Only 30.9 per cent of the water committees and maintenance groups have more than 50 per cent women in their respective water committees, which is low given that in most households, women and girls are responsible for collecting water in rural areas.
- About 68.8 per cent of the women that are on the water committees are responsible for hygiene promotion at community level. However, only 38 per cent of women in the water committees and 23 per cent in the maintenance groups hold leadership positions and this is due to prevailing social norms.

### **Institutional and Environmental Factors**

Only 23 per cent of the districts have a technician responsible for the SINAS database. The district technician is important for implementing WASH activities at the district level.

- About 65.7 per cent of the districts do not update the SINAS database related to water supply. An updated database would support equitable WASH planning and allocation of investments for the construction of new water points for the unserved population and sustainability of the existing water points at the district level.
- Approximately 44.4 per cent of the districts do not provide post- construction assistance to the water committees, which is important for sustainability of the water points.
- In only 16.4 per cent of the water committees not all key positions needed for a well-functioning water committee have been filled.

### **Sanitation**

Box 2 describes the types of rural sanitation facilities in the selected districts. The study found that from a total sample of 90 communities visited

in the three selected provinces, **92 per cent maintained open defecation free status after more than 1 year.** Most of them (over 90 per cent) had obtained ODF status more than 5 years ago. For those that did not maintain ODF status (n=9), the main factors were collapse of the toilet pit and infrastructure built with local materials during rainy seasons. The potential risk of latrine collapse due to heavy rains is higher in Zambezia province than in other provinces such as Nampula and Inhambane.

### **BOX 2.**

### **TYOLOGY OF RURAL SANITATION FACILITIES**

- *Out of the 922 households visited, 79.5% (n=556) had a latrine at the time of the visit. Of the households with latrines, 75.9% were traditional latrines; 2.2% unimproved latrines; 19% improved traditional latrines and 2.9% traditional improved latrines.*
- *In terms of models, 48.6% of households use grass, straw, sticks and zinc sheets for latrine roofing while 51.4% do not have roofing. All household latrines (100%) have walls made of grass or clay bricks and 3% use pieces of wood, pots, plastic bags, zinc sheets, buckets, coconut leaves or grass as latrine covers. 56.8% of the latrines have doors made of straw, cloths, bags, wood or zinc sheets.*

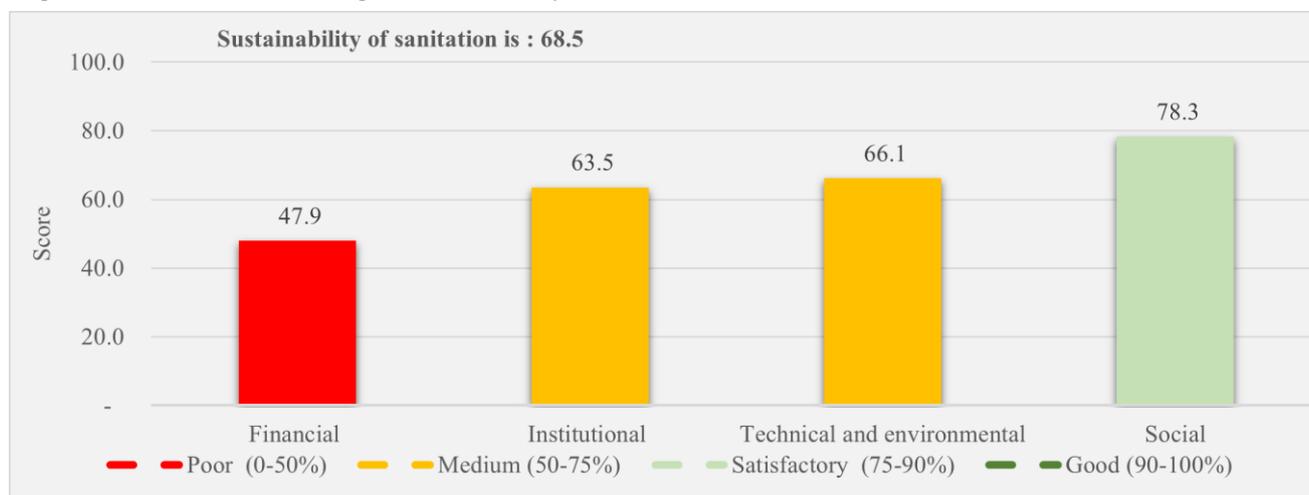
**Figure 2: Improved household latrine in Zambezia Province**



When applying the sustainability model, the overall sustainability score for sanitation facilities is 68.5 per cent which is considered average (the scoring is explained in the methodology section). While the institutional factor scored 78.3 per cent, rest of the factors - social, technical and financial - scored below 70 per cent with the financial factor being the lowest with 47.9 per cent, followed by institutional at 63.5 per cent and technical and environment at 66.1 per cent (see *Figure 3*).

- While the study showed that 76 per cent of households without a regular income or receiving less than US\$ 79 a month managed to build their own latrines after CLTS triggering, the absence of an institutional loan/financial system is a major factor preventing families from moving up the sanitation ladder. As shown by the study, only 10 per cent of households have access to the community revolving credit ('Xitique').

**Figure 3: Factor affecting sustainability of sanitation facilities**



Looking at some of the indicators for the factors that scored below 70, the study found that the score was mainly linked to:

**Financial factors:**

- Absence of an annual budget at district level dedicated to sanitation promotion activities.
- Once sensitized, the households have the capacity to construct their latrines based on the available local material. This also shows that income is not a critical factor for latrine construction in rural areas, however, household income is a determining factor in moving up the sanitation ladder.

**Institutional factors:**

- About 63.3 per cent of the districts do not update the sanitation database. This database is a key tool that the district should use to plan and monitor the elimination of open defecation practices and the sustainability of the ODF communities.
- About 25 per cent of the districts do not have an action plan or budget for the post-ODF community monitoring process and 54.1 per cent of the districts do not perform post-ODF monitoring at community level in the 12 months prior to the survey. Post-ODF community monitoring by the district authorities will ensure

that the communities reconstruct latrines and handwashing facilities after the rainy season.

- Only 23.3 per cent of communities do not have sanitation activists and about 15 per cent of communities do not have community health workers. Local activists and community health workers help sustain sanitation and hygiene behaviours at community level, particularly in the reconstruction of latrines after the rainy season and hygiene promotion initiatives such as reinforcing messages about handwashing at critical times.

#### **Technical and environmental factors:**

- Most household latrines (90.4 per cent) are constructed from locally available materials using the head of the household's knowledge of latrine construction. In Mozambique, the head of the household is responsible for the construction of the house and the sanitation facilities.

- 40 per cent of households have technical problems in getting an adequate latrine cover and 26.8 per cent in constructing an adequate door. Only 19.9 per cent of households have access to a market to buy concrete slabs. The country needs to develop a sanitation marketing strategy to help rural communities move up the sanitation ladder.

#### **Social Factors:**

- 20 per cent of the community members do not trust the community leader.
- 15.5 per cent of communities are unaware of the risk of open defecation and the importance of having a handwashing facility at home.

## **Recommendations**

- To mitigate the impact of institutional, technical, environmental, financial and social factors that
- negatively affect sustainability, the following is recommended:

**Table 2: Recommendations from the study**

	Entity	RECOMMENDATION	Implementation timeframe
Water Supply	National Directorate of Water Supply and Sanitation	<ol style="list-style-type: none"> <li>1. Integrate sustainability analysis into the National Water and Sanitation Monitoring Platform (SINAS).</li> <li>2. Establish a system to report breakdowns in real-time, integrated into the National Water and Sanitation Monitoring Platform (SINAS).</li> <li>3. Establish a community mechanism for resolving water supply conflicts in coordination with the provinces and districts, which should be led by local organizations.</li> </ol>	December 2024
	Provincial Water and Sanitation Directorate (DPOP) and District Planning and Infrastructure Service (SDPI)	<ol style="list-style-type: none"> <li>4. Ensure the creation or re-vitalization of both Water Committees and Operation and Maintenance Groups at community level and train them on how to do minor repairs.</li> <li>5. Ensure post-construction support for at least six months.</li> <li>6. Promote the location of hand pump spare part supply chains as close as possible to the communities (“posto administrative”).</li> <li>7. Regularly carry out financial audits of water committees to ensure transparency of financial management and create trust among users.</li> </ol>	Permanent
	Communities	<ol style="list-style-type: none"> <li>8. Sign contracts with locally trained mechanics to repair major breakdowns.</li> <li>9. Women should participate actively in the implementation of rural water supply activities and more women should be appointed to leadership positions of water committees and maintenance groups.</li> <li>10. Community leaders should promote participatory and transparent leadership on water supply issues, especially the selection of water committee and maintenance group members, governance of water points, location of water points, financial contributions from users for operation and maintenance of water points.</li> </ol>	Permanent
	Entity	RECOMMENDATION	Implementation timeframe
Sanitation	National Directorate of Water Supply and Sanitation	<ol style="list-style-type: none"> <li>11. Establish an institutional system for monitoring ODF communities integrated into the National Water and Sanitation Monitoring Platform (SINAS).</li> </ol>	December 2025

	Entity	RECOMMENDATION	Implementation timeframe
	<b>Provincial Water and Sanitation Directorate (DPOP) and District Planning and Infrastructure Service (SDPI)</b>	<p>12. Allocate a dedicated budget for monitoring sanitation and hygiene promotion at district level.</p> <p>13. Increase the number of health workers and sanitation activists that are involved in sanitation monitoring at community level.</p> <p>14. Promote household access to institutional loans/financial systems to allow low-income households to climb up the sanitation ladder.</p> <p>14 Promote sanitation markets in rural areas, as well as training local artisans in slab production.</p>	Permanent
	<b>Communities and households</b>	<p>15 Encourage households to create community financial support systems ('Xitique') and use them for sanitation.</p> <p>16 Train leaders on how to develop a post-ODF plan for their communities and how to monitor sanitation at community level, particularly after the rainy season and how to include new households into the monitoring system.</p>	Permanent

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## Acknowledgements

The authors would like to thank the National Directorate of Water and Supply, the National Institute of Statistics, the Provincial Directorates of Public Works and Housing of the provinces of Inhambane, Zambezia and Nampula and the District Planning and Infrastructure Service of the districts of Morumbene, Zavala, Mabote, Gurué, Mopeia, Mocuba, Angoche, Monapo and Ribáué for supporting the data collection for this study.

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Based on Geo Management Services and Consultancy (GMSC) Reports, 2021: "Estudo de Verificação de Sustentabilidade das Infraestruturas de abastecimento de água e saneamento e higiene no âmbito do Programa de Abastecimento de Água e Saneamento Rural"

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