



## **Terms of Reference for assessment of the sustainability of the Arusha Five Villages Water Supply Scheme in Tanzania**

### **Introduction**

WaterAid is an International NGO established in 1981. It has been working in Tanzania since 1983 with a vision of creating a world whereby everyone, everywhere has access to clean water, sanitation and hygiene. We work in partnership with communities, civil society and government at all levels to achieve this vision and effectively contribute to the achievement of targets set nationally (WSDP II – see Annex 1) and globally (SDGs).

This document sets out terms of reference for assessment of the sustainability of the Arusha Five Villages water supply scheme implemented in Tanzania under the FCDO funded Five Villages Project 2017-2021. The assessment will also review the decision making process used to select the water supply service options implemented. The WaterAid East Africa Regional Team wishes to hire two experienced consultants to undertake the assessment and produce a report featuring insights about:

1. The appropriateness and efficacy of the Five Villages water supply service option in terms of providing safe water for poor and marginalised households.
2. The current sustainability of the scheme.
3. The decision-making process used to select technologies and water supply service options deployed as part of the scheme, looking at WaterAid processes, external influences and power dynamics.
4. Recommendations for strengthening the sustainability of the scheme in the future.
5. Recommendations for strengthening processes and controls governing technology and service model selection (taking into account existing work to strengthen these processes)

We will use this report to inform how we further support the Arusha Five Villages scheme and how we approach implementation of large-scale water supply programmes in the future.

### **Background**

The Arusha Five Villages water supply scheme provides 2.3 million litres of water per day, serving 50,000 people in Ngaramutoni town, its three sub villages (Ekwenywa, Seuri and Ngaramutoni) and two rural villages (Olkokola and Lengijave)<sup>1</sup>. The scheme uses water supplied by Emurtoto spring and two deep boreholes. Some of

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<sup>1</sup> Arusha water scheme Project brief-WaterAid Tanzania (undated)

these water sources contain high levels of fluoride. Two reverse osmosis plants have been installed that aim to achieve a 97% reduction in fluoride levels. The scheme is powered by a dual grid-solar system. E-Water Pay technology has been installed at water distribution points to collect fees from users. Project partners include: WaterAid Tanzania, Nelson Mandela African Institution of Science and Technology (NM-AIST), e-Waterpay Ltd, Arusha District Council and Tumaini Jipya - New Hope. The project has received technical support from Arusha Regional Administrative Office, the Ministry of Water and Irrigation and WaterAid East Africa Regional Office. Management of the scheme now comes under the responsibility of the Arusha Urban Water Supply and Sanitation Authority (AUWSA).

## **Objectives**

The overall objective of the assignment is to:

- a. Undertake an assessment of the appropriateness and efficacy of the Five Villages water supply service option in terms of providing safe water for poor and marginalised households
- b. Undertake an assessment of the sustainability of the Arusha water supply scheme
- c. Undertake a review of the decision-making process used to select technologies and water supply service options deployed as part of the scheme
- d. Make recommendations for strengthening the sustainability of the Arusha water supply scheme in the future
- e. Make recommendations for strengthening processes and controls governing technology and service model selection

A learning document should be produced that enables WaterAid to gain an understanding of the following:

1. The performance of the Five Villages water supply scheme (in terms of service levels - quantity, quality, reliability of service, accessibility) and how performance can be optimised from an engineering/design perspective
2. The efficacy of the reverse osmosis component in terms of fluoride removal and provide a view on whether this is the most appropriate and cost-effective means of reducing fluoride taking into the account other possible solutions for fluoride reduction and the volume of water that must be treated
3. How viable the Five Villages scheme is (particularly with regard to the RO component) in the Arusha context from a sustainability perspective (social, political, financial, environmental, institutional, legal, capacity, technical/supply chain)
4. The most appropriate operation and maintenance protocols that need to be in place to maintain scheme performance
5. The extent to which the Five Villages scheme is enabling poor and marginalised people to access water in the communities served

6. The most appropriate financing/business model for the Five Villages water supply scheme to enable long term provision of inclusive, lasting services which will involve looking at the Wider Arusha Water Utility
7. The most appropriate management arrangements for the Five Villages scheme taking into account available capacities and recent institutional changes in the Arusha area
8. The social and environmental impact of the Five Villages scheme and any steps that need to be taken to mitigate impact
9. Any risks and threats that might impact on the long-term running of the scheme (for example water resource availability) and any steps that need to be taken to mitigate these
10. Any process changes needed when selecting technologies and service options as part of large scale water supply projects

### **Scope of work and approach**

The scope of this assignment covers the Arusha water supply scheme, the communities it serves and the institutional, financial, social, environmental and legal setting in which it has been implemented.

What follows below is a suggested methodology but we invite the consultants to propose exactly how they will approach the study.

This assignment will be undertaken by two consultants.

Both consultants will:

1. Divide the tasks between them in terms of who is best placed to undertake them taking into account the skills they bring
2. Ensure that they coordinate and work closely together as a team to arrive at mutually agreed conclusions
3. Undertake a review of relevant project documentation supplied by WaterAid (desk based)
4. Undertake an on the ground assessment of the Arusha Water Supply Scheme
5. Undertake key informant interviews with relevant stakeholders
6. Examine AUWSA and scheme finances and the financial environment in Arusha in terms of ability/willingness to pay before making conclusions about possible business models
7. Review relevant email conversations about the project, programme documents and other relevant communications between WaterAid Tanzania, the Programme Support Unit (PSU), East Africa regional office, project partners, suppliers, local government/municipal authorities and the water utility

### **Qualifications and experience required**

This assignment will be undertaken by two consultants.

Consultant 1 should be a qualified, accredited Civil Engineer with proven experience of designing and implementing large scale water supply schemes that involve use of

reverse osmosis treatment technology. The consultant should have extensive experience of working in low-income settings in Sub-Saharan Africa. The consultant should be aware of water resource sustainability issues and how to mitigate them. Proven experience of producing clearly written and concise evaluation reports is also essential.

Consultant 2 should be a qualified, accredited Civil or Environmental Engineer experienced in designing management, financing and maintenance protocols for water supply schemes in low-income settings. The consultant should have extensive experience of working on rural water supply and Water Utilities in Sub-Saharan Africa. Proven experience of producing clearly written and concise evaluation reports is also essential.

### **Deliverables**

The consultants will produce a report containing useful learning about the appropriateness of the current service option and recommendations for the future sustainability of the Arusha scheme with supporting annexes. The report should also make recommendations for strengthening processes for technology/service option selection. The main body of the report should be no longer than 50 pages. The report should feature an overview of the scheme (map) and sections relevant to the objectives set out above. Recommendations should be summarised in the executive summary along with a commentary on the current prospects for sustainability of the scheme if no further action is taken. Recommendations on what WaterAid has to do at global, regional and country level to control risks associated with large scale scheme implementation in the future should also feature in the executive summary.

### **Time frame**

This assignment will begin in July 2021 and must be completed by the end of August 2021.

We anticipate the assignment will involve the following:

<b>Task</b>	<b>Duration (total number of days for both consultants)</b>	<b>Notes</b>
Compile all relevant literature	4	WA to provide some relevant project documents, communications etc.
Review relevant literature	8	
Visit scheme and assess it	14 (7 days per consultant)	Including travel – WA to facilitate visit
Key informant interviews	14 (7days per consultant)	WA to facilitate connections with key informants
Prepare draft report	12	WA to provide feedback on draft
Revise and provide final draft report based on WA feedback	6	

<b>Total</b>	58	
<b>Total cost</b>		

## Application procedure

We request interested consultants to send a CV and covering letter to [EArecruitments@wateraid.org](mailto:EArecruitments@wateraid.org). Please be sure to highlight how your qualifications and previous experience lend themselves to the task outlined above. Please also provide details of how you would approach this task in your covering letter.

**Deadline for applications** is on the 23<sup>rd</sup> July 2021, at 17:00hrs EAT.

## Appendix 1

The Government of Tanzania and its development partners are currently implementing the 2<sup>nd</sup> phase (2016-2021) of the National Water sector Development Programme (WSDP II) as part of the 2025 National Development Vision. This programme aims at ensuring that under this phase, the government has committed to achieve 75% and 80% water access and sanitation coverage respectively for the rural population. In order that the above targets are reached, deliberate efforts will have to be deployed to overcome key sector and operational challenges to the effective delivery of the programme. As of the end of 2015 access to safe water in rural areas stood at 46%, which represented just 1% increase over a period of 15 years (1990-2015). This clearly indicates that the investments made in the sub-sector over the MDG era only managed to keep pace with population growth rather than expanding access to the new population. Access to basic sanitation is still trialing at 16%, pointing to a high prevalence of the rural population either using unimproved toilets or practicing open defecation.

There are a number of blockages, which are holding back the progress, despite the Government efforts and good plans. Among issues highlighted in different reports includes

- (i) Capital-intensive technologies that, the rural community cannot adequately manage, especially in low income rural settings. This results to prolonged cost recovery and inability of the communities to cater for O&M costs
- (ii) Low technical capacity of water schemes/services which results to systems failure
- (iii) Poorly managed water schemes due to weak financial accountability resulting in low water user collections and misappropriation use of even the little collected
- (iv) Inadequate technical and management backstopping to Utilities by the local Government authorities impacts negatively on their capacity to maintain viable managerial capacity to sustain water schemes and hinders scalability to reach more underserved communities
- (v) Interference by some leaders, especially politicians, with implementation and management of water schemes, leading to misappropriation of collected funds or convincing communities not contribute financially for water and to pay for water and
- (vi) Communities' ability, attitude and willingness to pay for water is one among major challenges requiring changing, especially in rural areas.

Sustainability remains an overarching challenge for the rural water sub-sector in Tanzania resulting to only 54% water points functioning, 7% needed repair and 39% non-functional<sup>2</sup>

<sup>2</sup> **Tanzania:** Water point mapping survey (2015).

Arusha district council as the target council for this project is among the two councils that forms Arusha district. Administratively, Arusha district council has one township authority located at Ngaramtoni. It is divided into 3 divisions, 27 wards, 67 Villages, 256 sub-villages; and 72,289 households and occupies an area of 1,446.7 square kilometers. According to 2012 population and housing census, the council had a population of 323,198 being 154,301 males and 168,897 females with a population growth rate of 3.4%. Population density is 227.4.km<sup>3</sup>

The District is located South of the equator in between Latitudes '3°10- 4°00' and Longitudes 34°47'-35° 56' East. It is boarded by Meru District to the East, Monduli District to the West, Longido District to the North West and Simanjiro District to the South. It surrounds Arusha City in both sides.

Access to safe Water is still a challenge in the region. Water point mapping data shows that the region has a non-functionality/functional need repair at 28.9%. Arusha and Meru district councils are the leading contributors with 22.9% and 44.6%.<sup>3</sup>

Respectively. The causes of this status are not far from the above mentioned, mostly technical and institutional issues which have not gained much attention during the phase I of the

**Water point status for Arusha region**

Name	Total Water point Num	functional	functional needs repair	non functional
Arusha	1,554	1,197	28	329
Arusha Urban	180	136	16	28
Karatu	462	445	1	16
Longido	432	280	15	137
Meru	1,380	764	246	370
Monduli	278	255	5	18
Ngorongoro	278	169	36	73
<b>Total Arusha region</b>	<b>4,564</b>	<b>3,246</b>	<b>347</b>	<b>971</b>

Ministry of Water: <http://wpm.maji.go.tz/?x=oFy3ZAWCqrb186CTfdps4g>

WSDP implementation. The water supply project has been implemented in five villages of Lengijave, Olkokola which are in Lemanyata and Olkokola wards and Muklat division, Seuri, Ekenywa and Ngaramtoni villages which are in Olturumet and Olmotony Wards, Muklat division. The project area is about 30km from the Arusha city center and is among of the villages with poor water supply and sanitation coverage as well as poor hygiene practices, which are strong basic poverty indicators.

WaterAid Tanzania (WAT), Nelson Mandela African Institution of Science and technology (NM-AIST), eWATER and the Arusha District Council (ADC) have secured funds from the UK Government through DFID to implement water, sanitation and hygiene project in the for mentioned villages in the ADC with a target of reaching 50,000 people.

Arusha region is prone to fluoride, and many sources of water either have fluoride contaminants above or slightly lower the recommended levels. Analysis has indicated a fluctuation of fluoride levels over time, and means that the water cannot be guaranteed safe

<sup>3</sup> Tanzania water point mapping database (May, 2017 update)

for human consumption. Following a thorough assessment and designing process, WaterAid Tanzania and project stakeholders chose to go ahead with two RO defluoridation plants to ensure that the water received by communities will be clean and safe for consumption, with the aim of reducing fluoride concentration to below 1.5 mg/L.

Two plants have been completed: Ngaramtoni and Hazina Plants, which have similar RO arrangements. The Ngaramtoni plant has two trains with the capacity of receiving a pumped groundwater feed of 30 to 35 m<sup>3</sup>/hr, with a permeate flow of 27 m<sup>3</sup>/hr. The Hazina plant is a gravity-fed plant with a similar arrangement to Ngaramtoni. It has a capacity of receiving about 40 m<sup>3</sup>/hr and a permeate of 30 m<sup>3</sup>/h. Both facilities have a hybridized source of power through grid supply and solar energy.