

Community Participation and Non-Governmental Organizations-Funded Rural Water Projects' Sustainability: A Case of Chamwino District, Dodoma Region, Tanzania

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ABSTRACT

Introduction: Every year, two million people die because of unsafe water, sanitation, and hygiene. Children and young women living in rural communities are the most affected groups. To address this problem, NGOs have implemented various water projects across the country but their sustainability is questionable.

Objective: To assess community participation and rural water projects' sustainability in Chamwino District, Dodoma, Tanzania.

Materials and Methods: The study was exploratory in nature, employing a qualitative approach. In-depth interviewing and focus group discussions methods were used to collect data from the participants. A purposive sampling technique was used to select participants to get their insights on community participation and the sustainability of rural water projects in Chamwino District, Dodoma Region, Tanzania. Thematic analysis was used for data analysis, to embrace community participation in the rural water projects, which can affect their sustainability.

Results: Findings show that lack of community participation, lack of community support, and involvement at various stages of project implementation from the designing, implementation, operation, and monitoring and evaluation through various village water committees are key factors negatively impacting sustainability of rural water projects implemented in Chamwino District.

Conclusions: Effective community participation, community support, and participation from the designing, implementation, operation, and monitoring and evaluation through water committees are key factors to be adhered to for the sustainability of rural water projects in Chamwino District and other areas in Tanzania.

Keywords: Effective community participation, NGO-funded projects, project sustainability, rural water projects, qualitative research, Tanzania.

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I. INTRODUCTION

According to the United Nations International Children's Emergency Fund (UNICEF) and the World Health Organization (WHO) Report of 2019, billions of people around the globe have poor access to water, sanitation, and hygiene. About 2.2 billion people have limited access to safely-managed drinking water services, 4.2 billion people do not have safely-managed sanitation services and 3 billion lack basic handwashing facilities [1].

In recognition of the limited capacities of governments in meeting all the essential service needs of their citizens, various non-governmental organizations (NGOs) have been involved in the provision of a wide range of social amenities

including water and sanitation in rural areas. NGOs have established a strong link with these communities in crucial areas that are proving to be of greater impact and influence on poor communities' livelihoods [2]. Thus, active, and effective community participation in water projects is essential in the sense that individuals, families, or communities assume responsibilities for water-related problems on the ground and develop capacity to contribute to their community development [3].

Furthermore, effective community participation in the rural water sector may include expressing demand for a water source, provision of free labor, selection of technology, and attending meetings [4]-[6]. Despite the existence of different forms of participation, Harvey & Reed [7] argue that community participation should not be

tokenistic to achieve sustainability. Instead, the promotion of effective community participation should be encouraged as early as possible, during problem identification.

Moreover, [7] indicated that effective community participation can be stimulated by the community itself or by other stakeholders. Effective community participation begins with dialogue among members of the community in the whole process of decision making about their lives. Reference [8] revealed that projects involving the widest possible participation of people are most likely to be sustainable. Also, inadequate consideration of contextual issues, such as a lack of infrastructure and financial services, has led to the development of market-driven project designs that might not be sustainable.

Similarly, [7] reporting on the sustainability of projects in rural areas of Limpopo Province, South Africa, stating that projects cannot be implemented and sustained without active community participation. Reference [7] emphasized that such projects will collapse leaving the communities trapped in abject poverty. Also [9], noted that lack of education and skills to run the projects is likely to affect the project participants negatively as they will make mistakes and blunders, which hamper the sustainability of the projects.

In Malawi, a detailed analysis of sustainability issues revealed inconsistent formation, training, support, and development of water point committees as barriers to projects' sustainability in that country. Many committees were found to be ill-equipped for the tasks they were assigned: the operation, maintenance of water points, and the collection and deployment of maintenance funds [10]. In Uganda, [11] noted that donors need to carefully involve project beneficiaries in designing and implementation of community development projects. He added that this would go a long way to achieve project ownership by the beneficiaries and the local governments. Reference [11] further suggested that if NGOs and governments co-financing is achieved, the continuity of the project might be achieved. Another study on rural water supply sustainability in Mozambique found that lack of community involvement and financial support compromised sustainability of rural water supply. Most of the projects did not have any savings or monthly collected contributions for operation and maintenance [12].

Reference [13] study in Kenya found that effective community participation, project financing, project management practices, and community training influence the sustainability of water projects. Poor financial management in some of the projects, lead to ineffective implementation management of projects, poor project sustainability and ineffective community participation [14]. Therefore, this study was designed to assess (effective) community participation and the sustainability of water rural projects in Chamwino District, Dodoma Region, Tanzania.

II. MATERIALS AND METHODS

A. Study Design

This was an exploratory study (design) in nature, which aimed at understanding the in-depth and detailed information about community participation and the

sustainability of rural water projects in Chamwino District, Dodoma Region, Tanzania.

B. Study Area

The study was conducted in Chamwino District, specifically in two wards, Mvumi and Chilonwa. Chamwino District was selected due to the availability of ongoing water projects implemented by Water Aids, Korea International Cooperation, Innovational Africa, and Water Mission. Mvumi ward has ongoing water projects that are well implemented and Chilonwa ward has ongoing water projects that are not well-implemented or proved failure. Chamwino District is one of the seven districts of the Dodoma Region, Tanzania. It is bordered in the North by Chemba district, Manyara Region, Kongwa and Mpwapwa Districts in the East, Iringa Region in the South, and Singida Region, Bahi and Dodoma Districts in the West. According to the 2012 Tanzania National Census, the population of Chamwino District was 330,543 people.

C. Study Participants

The participants for this study were women and men aged 18 years and above who were potential beneficiaries of water projects implemented by Water Aids, Innovation Africa, Korea International Cooperation and Water Mission, influential persons, water committee members, water system operators, and community health workers. Community members such as Local Government Leaders and community leaders were also included to get information regarding community involvement and water project sustainability. Purposive sampling was used to select key informants for this study.

D. Data Collection Methods

1) In-Depth Interviewing (IDI)

In-depth-interviewing was one of the data collection methods used involving conducting face-to-face interviews with selected study participants. For ensuring the interviewer collects information that corresponds to the objectives of the study, an interview guide was developed and used. This interview guide was developed to ensure that the same information is collected from all participants, systematically and comprehensively, good use of limited time, and keeping interactions focused [15]. The interview time ranged from one hour to one hour and a half. However, some IDIs took longer or shorter time depending on the participants' engagement. With permission from the participants, the researchers audio-recorded the IDIs to capture information, and the audios were saved in a password-protected computer for further analysis. We conducted IDIs with a total of 10 informants. Three informants with rich knowledge on the implementation of water projects in their areas were interviewed twice.

2) Focus Group Discussion (FGDs)

FGDs were the second data collection methods used, which involved face-to-face discussions with the village development committees and Ward Development Committees, who are also the water project beneficiaries. The FGDs mainly focused on the discussion about the status of the ongoing water project in their communities, how the community is being involved, and why do many water

projects fail in terms of their implementation. FGDs involved a group of relatively similar 12 participants. Each group discussed the issues of interest to this study to explore the perspectives on a particular idea or situation such as community participation and program sustainability [16] of water projects interventions in Chamwino District, Dodoma Region, Tanzania. We conducted a total of four (4) FGDs: two with water committees and two with community members (one with the males and one with the females).

3) Pre-Testing of Data Collection Instruments

IDI and FGD guides were pre-tested in Kongwa, district in Dodoma that was not included in the study. The pretesting of the study tools was conducted before data collection to ensure reliability and trustworthiness of the tools by checking each question against the overall study questions. Following the pretesting results, we dropped questions that appeared irrelevant and were not clear to the interviewees. Pretesting of the tools helped to improve the validity and reliability of the data collected.

E. Data Management and Analysis

Data were analyzed using a thematic analysis approach, focusing on examining themes within data. Thematic analysis was used in this study because it provides a highly flexible approach that can be modified for the needs of many studies, providing a rich and detailed, yet complex account of data. Thematic data analysis offers a more accessible form of analysis and is a useful method for examining the perspectives of different research participants, highlighting similarities and differences, and generating unanticipated insights [17]. Thematic analysis is also useful for summarizing key features of a large data set, as it forces the researcher to take a well-structured approach to handle data and helping to produce a clear and organized final report [18]. Thematic analysis process started from familiarization with the data, generating initial codes, integration of codes into descriptive themes, synthesis of descriptive themes into analytical themes and finally producing the report.

III. ETHICAL CONSIDERATION

Permission to conduct this study was sought and obtained from the Muhimbili University of Health and Allied Sciences (MUHAS) Institutional Review Board (IRB). Permission to conduct the study was requested and obtained from all appropriate authorities: Dodoma Regional Administrative Secretary (RAS), Chamwino District Administrative Secretary (DAS), and Ward Executive Officers. Due to the fact that some members of the community could not write, both oral and written consent were obtained from the study participants.

Voluntary participation was encouraged, and the participants were assured of confidentiality. Privacy and confidentiality were highly maintained by avoiding unauthorized persons from accessing study information. Anonymity was maintained by using participants' unique identifiers (IDs). No name was recorded in IDIs, FGDs, or any document review. The detail of the study was clearly explained to the participants. Also, participants were told

about their rights to quit the study at any point without penalty. The results of this study were saved in a password-protected computer to avoid access from unauthorized personnel.

IV. RESULTS

A. Demographic Characteristics of the Study Participants

A total of 58 (10 for IDIs and 48 for FGDs) study participants were interviewed in this study. The majority of the participants were aged between eighteen (18) and sixty (60) years old. Majority of these were married and water users. Many of the participants had education ranging from primary education completed to university levels. The participants' roles in water projects included water committee members, water engineers, community development officers, village development committee members and village administrative officers

B. Communities' Participation in the Planning of Water Projects in Chamwino District

Most participants were of the view that failure to effectively involving communities in the planning of water projects has led to the failure of some of the water project previously implemented in the study area. Some participants observed that lack of effective community participation in the planning of water projects leads to failure of the project because of a lack of sense of ownership among individuals, families, and communities utilizing water services. Discussing this issue an Engineer interviewed had this to say:

Previously, in our village we had water project under World Bank, where all the planning and designing of the project was supervised by the project funders by employing few community members and pay them small amount of money ... The community members were not actively involved just partially and paid ... The community found project already implemented and handled to them as final project users ... However, due to poor community participation and lack of sense of ownership, the projects operated for short time and later collapsed ... After the arrival of the Water Mission Organization, members of the community were fully engaged from the inception of the project, designing, and planning phases The community members were involved from the selection of the water points, preparing ditches for water pipes, manpower, proving building blocks and sands, while Water Mission as project funders, supplied water pumps, solar systems, water treatment plants, and technical personnel to install all necessary water facilities ... By involving the community effectively at all stages of rural water project implementation, sense of ownership among families, individuals, and community was developed and this led to the sustainability of rural water project. (IDI, Water Mission Engineers).

Some participants noted that appropriate forms of community participation should be maintained for sustainability to be achieved. Thus, there should be effective

community participation in the management of related decisions. For example, a Community Development Officer interviewed noted that effective community participation has a positive relationship to water projects' sustainability. Adding:

The rural water projects implemented in Msamala village are operating smoothly, because community members fully participated from designing of the project, selection of the water points, how the project was to be implemented and setting water price ... To ensure rural water project sustainability, water committees were formed and trained to supervise daily project operations and mobilize funds from community contributions [paying for water fetched] ... The collected amount is used for maintenance in case there is a technical problem such as pipe leakages and so on. (Community Development Officer, IDI).

Several participants reported that previous water project implemented by the Diocese of Central Tanganyika (DCT) and the World Bank, the community was partially involved in the implementation of the project. One participant in the FGD, for instance, reported that the community members effectively participated in the water project implemented by the Water Mission, from the designing of the project up to when the project is handed over to them. Another FGD participant reported:

For all the water project implemented by DCT and World Bank, the communities were partially involved. This led to failure of the water projects ... However, all water projects, implemented by Water Mission, were successfully implemented because community members were involved at all stages of implementation from the selection of the water points, preparing ditches for water pipes, manpower, providing building blocks and sand, and any other activities assigned to community groups ... We were also involved in safeguarding the projects, mobilizing funds collected from water bills and encouraged fellow community members to utilize water service and pay the agreed price to cover the project operation costs ... We were also involved in setting the water price, that is, TShs 50 per 20 liters (Water User, FGD).

Another participant added:

Despite the challenges where some community members do not show up in the implementation of water project, as village leaders, we called for village meetings and selected water committee members and officials from Water Mission were invited to sensitize and create awareness among community members on the importance of community participating in the implementation of the rural water projects. (Village Administrative Officer, IDI).

C. Contributions Provided by Communities in the Project Area

Participants reported that in some water projects, especially those implemented by DCT and World Bank, the contribution of the communities was very low. In these

projects, some villagers were even paid after they worked. The water project implemented by World Bank were handed over to the community after they were completed, without involving the community in the designing, and implementation. Failure to involve the community in the implementation of these projects, the project did not sustain for a long period and finally collapsed. One participant had this to say:

For all previous water projects funded by World Bank, the community members were not effectively involved during the implementation ... These projects lasted for a short time and eventually collapsed ... But for all the projects currently running, sponsored by Water Mission and Innovational Africa, the community is well involved from the identification of water points, providing manpower such as preparing ditches for water pipes, fetching water, and providing building blocks and sand ... By so doing, the sense of project ownership is created among the community members and this helps to ensure project sustainability. (Chamwino District Engineer, IDI).

Several participants reported that current projects are delivering quality services to the community because community members were involved in the designing, assessment, and implementation of the project. One participant, for example, stated:

As a community member, together with my fellows, I have been involved in the implementation of the project from the selection of water points, protecting water project, fetching water during project implementation, preparing ditches, providing manpower, collecting building materials on site of operation such as building stones, sand and other activities assigned on the site. We also participated in the selection of water committee members and the committee became responsible for all day-to-day operations of the project including mobilizing funds for covering project running cost, which ultimately ensures project sustainability (Chamwino District, Community Member, IDI).

D. How Different NGOs Involve Community Members in the Implementation of Water Projects

One of the aims of this study was to understand how different NGOs involved community members in the implementation of water projects they funded. A Water Mission Engineer interviewed reported:

Water Mission, we have learnt from the failure of the previous water projects ... We have come up with various ways for ensuring water project sustainability including installation of cost effective water pumps which uses solar energy instead of those using fuel [diesel] previously installed, installing water treatment plant which ensures clean and safe water and emphasizing the communities to highly utilize water from these facilities and contribute by buying 20litres bucket for a minimum price of Tshs 50, which is mobilized by the water committees and used to

cover some operational cost such as when water pipes leaks or need maintenances (Water Mission Engineer, IDI).

Other participants reported that it is important to effectively involve the community in the implementation and monitoring of the water projects and build sense of ownership and they have an obligation to ensure projects' sustainability. A male participant and a Community Development Officer had this to say:

To ensure sustainability of water projects, the community is involved in all stages of project implementation such as the selection of the project implementation site, assessment of the project, implementation of the project such as manpower contribution, participating in the registration of the water project, setting the prices of water based on the individual's income, the formation of the water committee, which is responsible for the day to day project operations (Community Development Officer, IDI).

Another participant commented:

To ensure sustainability of the water project, as a community member, I participate in decision-making about our water projects ... For example, we have been involved and participated in making various decisions such as setting the water price, selecting community members, being part of the committee such as a Chairman, Secretary, Accountant, and Technician ... The selected committee is responsible for ensuring financial resources are mobilized and cover the project running costs ... Through village meetings, we are told everyone is responsible for the project and has to ensure he/she protects the project for its sustainability; even for future generations (Community Member, IDI).

Few participants believed that capacity building, through training and workshops was key to ensure sustainability of rural water projects. A male participant interviewed, for instance, reported:

In my view, to ensure the sustainability of water projects, building capacity for the community members to effectively operate and supervise water projects themselves is important ... For example, under the Water Mission Project, they provided training to water committee members on how to effectively ensure the smooth running and sustainability of the project ... The training provided is categorized based on the role and responsibilities each member of the committee has to fulfil ... For example, for the Chairpersons and Secretaries, were trained on the principles of administration; the accountants were given training on the principles of accounts; and technicians were trained by Water Mission on how to effectively perform project maintenances and services ... Therefore, building capacity through training has enabled project under Water Mission to be sustained for the extended period of time (Water Mission Engineer, IDI).

Another participant commented that recognizing gender balance between the males and the females in the project implementation is key to ensure sustainability of rural water

projects. A female participant had this to say:

If women are involved and participate at all stages of project development especially from the designing, assessment, monitoring, and implementation of the project, probably, their ideas could contribute towards sustainability of the water project implemented in our villages ... Currently, women are involved but mostly in the implementation phase only ... Women need to be involved from the planning phase since they are the group, mostly affected when there is water shortage. Therefore, their ideas and contributions could facilitate the sustainability of water projects (Community Member, IDI).

V. DISCUSSION

In this study, effective community participation and involvement in the planning, designing, and implementation of the water project from the selection of water points, protecting water project, fetching water during project implementation, preparing ditches for water pipes, providing manpower by collecting building materials on site of operation such as building stones, sand and other activities assigned on the site, forming community water committee were the key factors that highly supported water project implementation and sustainability. The findings from this study are supported by the previously reported results, which emphasized that effective community participation is a critical factor influencing the sustainability of development interventions [19]. These findings indicate that there is a need for water project implementers to effectively involve members of the community in all stages of project planning, designing, decision, and implementation to ensure project sustainability.

Majority of water projects in rural communities in developing countries come in the form of one-off investment programs with a specified duration such as three to six years. This contributes much to the prevailing pattern where NGOs ultimately hand over the management, operations, and maintenance functions entirely to the beneficiary communities. Therefore, for the project to be sustainable, even after the hand over all the management, operations, and maintenance functions to the beneficiary communities, the communities should entirely contribute from the designing, assessment, analysis, implementation of the project, security of the completed project, maintenance, and servicing of the project. The purpose of community contribution is to build capacity and a sense of ownership, where communities feel that the implemented water project is their property and once projects fail to operate, it is the communities themselves who will be affected. The level of community participation was assessed in this study through interviews with different stakeholders such as water engineers from the Water Mission, community members, community development officers, and village administrative officers.

Various strategies were found to be implemented by NGOs and community members to ensure the sustainability of water projects. The mostly identified strategies were cost-effective technology of water pump using solar powered pumps, low price of water per one 20 liters bucket, which

was decided by community members under the supervision of Rural and Urban Water Supply and Sanitation (RUWASA) officials and community development officers.

In this study, various reasons for the failure of different implemented water project were identified: unequal project participation and involvement between women and men; lack of water project development reports to the communities; poor water quality; the unacceptability of the water project by the communities; lack of sense of project ownership among community members, the high running cost for the project; and unavailability of water committees. These were perceived and reported key factors leading to project failure and, hence, poor projects' sustainability. The findings from this study are supported by the study conducted in Mozambique, which emphasized that a lack of community involvement and financial support compromised the sustainability of rural water supply [12]. These findings are also similar to findings from the study conducted by [13], which emphasized that lack of community participation in the projects, lack of community workshops and trainings, and poor project financing and management practices lead to the failure of the implementation of different water projects and thus, affecting projects' sustainability [20].

VI. CONCLUSION AND RECOMMENDATION

Our study has vividly demonstrated that effective community participation is cardinal for rural water projects' sustainability in the study area and beyond. Community members, the women in particular, should be fully engaged at all stages of water projects implementation process to ensure their sustainability. It is recommended that NGOs and funders of the water project to effectively involve all community members not neglecting women from the project assessment because they are, the key stakeholders for the successful implementation of the projects. Project funders are recommended to ensure the implemented project are cost-effective especially water pumps using solar power to cut the high running costs of the projects.

After the project is completed, village leadership are recommended to include community members to set water prices so that is not a burden to the community. Village leaderships also should form community water committees to ensure smooth project implementation and operation and mobilizing fund to cover the project running costs. Authorities such as water project implementers, should provide training and run workshops for water committee members to build their capacity and ensure they effectively manage the water projects and guarantee their sustainability.

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