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Full Length Research Paper

Significance of local sustainability of water projects and local maintenance of community water projects

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The importance of water projects is mostly documented; however studies on importance of local sustainability of water projects are limited. The study assessed local arrangements in the management and maintenance of community water projects. The study was conducted with thirteen Water and Sanitation Management Teams (WSMT) and community members. Questionnaires and focus group discussions were used for data collection. The finding of the study shows that non-governmental organisations (NGOs) played a significant role in the training and retraining of WSMT in rural communities. Assess to spare parts and availability of mechanics for repair of broken pipes also took much time which compelled beneficiaries to collect unsafe water. The study shows that women representation in WSMT adhered to the national policy of thirty percent. The study also maintains that financial records of the water projects are well kept and shared with community members. Members of WSMT were also frequently replaced because of their lack of interests and the frequent transfer of members who are workers.

Key words: Community, water, sustainability, beneficiaries and participation.

INTRODUCTION

Increasing access to clean water to the people of developing countries is one of the Millennium Development Goals (MDGs) now Sustainable Development Goals that have attracted attention of governments and development practitioners. It is estimated that half of the people who lack access to safe drinking water and sanitation should have access by 2015 (UNDP, 2005). Sutton (2008) however, anticipated that Africa , south of the Saharan countries might not meet the target till by 2040. To partly achieve the goal of accessibility of water,it is important to involve stakeholders especially beneficiaries active participation in planning, implementing and managing water and sanitation projects (Perkins, 2004).

Rogers and Hall (2003) also maintain that there is the need for effective participation of users in planning, implementation and management of water projects. Providing safe drinking water in rural areas is a major challenge because it is not easy to establish institutional arrangements that will ensure that drinking water facilities

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are provided, maintained, and managed in an efficient, equitable, and sustainable way. In rural settings, the capital investment in water system is usually provided by the government and/or non-governmental organizations (NGOs).

The study of Arku (2010) indicated that easy access to clean water in rural communities enabled women directly and men indirectly to save a considerable amount of time which they used in activities that supported their subjective well-being indicators. In the planning and designing of water projects it is important to ensure the needs and interest of both men and women. Guerquin et al. (2003) however maintains that women are largely excluded from local management of water projects.

Ghana was one of the first countries to introduce community-based approach to rural water supply on a large scale, which is in line with current drinking water policies in many countries. This approach involves the formation of local teams to plan, implement and manage the projects, and is significantly cheaper than those provided by government departments.

Analysing the performance of water systems in six countries in Benin, Bolivia, Honduras, Indonesia, Pakistan, and Uganda, Katz and Sara (1997) found out that the community-based approach significantly increased sustainability of water systems. Narayan (1995) research on 121 rural water-supply projects funded by different agencies in 49 developing countries indicates that participation of local communities is an important factor for project effectiveness and community empowerment. According to Fry (1993) sustaining improvements also means a community must pay for operations and maintenance, reimbursements for a pump mechanic, spare parts, and outside repair people, Fry (1993) further shows that effective management of these systems, however, means more than just agreeing to pay for different items but also being able to manage the cash from the sale of the water so that enough is available to repair the system and pay the caretakers.

A study by Arku et al. (2011) on Water and Sanitation Management Teams (WSMT) in Konko, Ghana states that some community members failed to pay their yearly maintenance fee which affected maintenance of their water project. It requires having in place an organization and individuals, such as treasurers, who take care of these matters, who can make good decisions about acquiring and spending money, and who work for the community. The team is to have at least a President, a Secretary, and a Treasurer and in some cases there may also be positions for a Vice-president, hygiene education and operations and maintenance (Fry, 1993).

The WSMT in Ghana was used as a study case of whether local structures can ensure local managements of water projects. The WSMT is a local team that ensures sustainability of water projects in small towns and villages. The teams plan , construct and manage the water facilities. In Ghana, about 30% of WSMT are to be made up of women. The team is monitored and regulated by the District Water and Sanitation Management Team (DWSMT).

Problem statement

Generally, some studies have been done in planning and implementation of water projects but not much literature have been generated on local institutional management of rural water projects and the gender composition of the team members. Local projects have not been able to stand the test of time because of poor local institutional framework to manage projects which has affected societal wellbeing. Ademun (2009) maintains that water crisis has resulted in millions of women and girls in developing countries spending enormous time looking for water to meet their households' water needs. Specifically, the study objectives were:

1.To determine gender distribution of WSMT formation
2.To assess the management of records of WSMT
3.To determine mode of operations of WSMT.

Conceptual framework

The theoretical framework that guided the study was Community Development with gender participation (Abu-Zeid, 1998; Pearl, 2003). From Horton (2005) Community Development theorist maintained that both local and external resources can be used in development intervention. Rural communities and development actors are to collaborate in planning and implementation water project. The study of Schouten and Moriarty (2003) also emphasised that rural communities must be represented by both men and women in decision making bodies of water teams.

Planning, implementation and management of projects in rural communities involves three main stakeholders thus beneficiaries, development agencies/governments and local teams. Local communities serve as a binding between implementation agency and society (beneficiaries). The need to demonstrate a greater effectiveness and accountability through monitoring and evaluation approach of the three main stakeholders is emerging as a key framework for project planning, implementation and management. Since people are to plan, implement and manage their own projects, it is important for both men and women to take part.

MATERIALS AND METHODS

Study method

The case study approach was used in the study as the most useful

compared to other strategies. Yin (2003) a case study approach investigates a contemporary phenomenon within its real context, especially when the boundaries between the phenomenon and context are not clearly defined. Benbasat et al. (1987) identifies three strength of the case study approach:

1. The phenomenon can be studied in its natural setting and meaningful, relevant theory generated from the understanding gained through observing actual practice
2. The case method emphasised on questions of why, rather than just what and how, to be answered with relatively full understanding of the nature and complexity of the phenomenon and
3. The case method lends itself to early, exploratory and investigations where the variables are still unknown and the phenomenon not all understood.

Both qualitative and quantitative data were produced for analysis. This is because Yin (2003) and Meredith (1998) maintain that both qualitative data collection analysis methods (which are concerned with words and meanings) and quantitative research methods (concerned with numbers and measurements) can be used in a case study research.

Study communities

Gefia Area Council in the Akatsi South District of Volta Region served as the case study area. Gefia Area Council is located in the north east part of Akatsi South District of the Volt Region of Ghana. It is six kilometres from Akatsi South District capital. The study was designed to cover thirteen WSMT's within the Gefia Area Council.

Data collection techniques

Focus group discussions and questionnaire were used for data collection from thirteen (13) WSMT and community members with the aid of purposive and accidental sampling techniques. Questionnaires were used to gather information from WSMT. To triangulate some of the information gathered through questionnaires, one-on-one interviews were conducted. Focus group discussions were also used within all the 13 communities to augment information from community members and WSMT. In the focus group discussion, men were separated from women on the assumption that women might have different concerns from those of men. Also, women might not be comfortable talking in the presence of their husbands as is the case in many developing countries. The questions were structured, a few questions were asked, the questions were clear, one question was asked at a time, and the interaction among the group was highly controlled. Statistical package for the social sciences (SPSS) version 16 was used to analyse the data. In addition, some of the interview responses were included verbatim to support study participants view on some issues.

RESULTS

The study was conducted with thirteen (13) WSMT of eighteen membership and ninety-eight (98) community members. From the study, 54% male and 46% female of WSMT and community members participated in the study. The highest female representation in WSMT was 67%, and the lowest representation was 29%.

Table 1. Initial training was undertaken by whom.

Response	Frequency	Percentage (%)
District Assembly	1	6.0
NGO	17	94.0
Total	18	100

Records management

The majority (85%) of WSMT participants shows that accounts are kept for cash generated from the water facility, and the same percentage of the community member's participants also accepted the fact that financial accounts are kept up to date. Seventy-seven (77%) of the WSMT shows that financial accounts prepared are shared with community members.

Mode of operations

About 18% of the WSMT participants maintain that there has been initial training for the WSMT, and 82% shows that there has not been initial training for the team members. The initial trainings are conducted to ensure that administrative and minor repairs are conducted according to the standards of the DWSMT. This is an indication that the majority of the WSMT are not given initial training which might affect the maintenance, and sustainability of the water projects.

From Table 1, 6% of the WSMT participants indicated that initial training was conducted by the District Assembly, and 94% maintains that NGOs did initial training for them. This point to the fact that decentralised institutions, for example, the local institutions representing national bodies which are responsible for the initial training of WSMT for effective administration and maintenance of the water projects are not performing their roles.

About 38% of the WSMT emphasised the fact that there had been change in membership, and 62% maintains that there had not been changes in the team. A check from the DWSMT shows that team members are determined by the community, and also membership is permanent. However, there is replacement of membership in situations of misconduct, transfer or the will of a member to exit. This is to ensure that at any moment there would be at least a trained person in the team to ensure the maintenance of the water facility.

According to Table 2, 8 of the community respondents indicated that lack of interest in the team has been the major cause of exit of members representing 44%. In one of the focus group discussions, it was discovered that the WSMT's memberships were low and members were not interested to be secretaries of the team. One of the

Table 2. Causes of the change in WSMT.

Results of change	Frequency	Percentage (%)
Lack of interest	8	44
Transfer of workers	3	17
Death of members	2	11
Transfer of members and splitting of old WSMT	5	28
Total	18	100

respondents in the focus group discussion said that:

"when the educated ones are trained to manage the water facility, within a short time, they are transferred by the government to work at other places and we find it difficult to get other people to replace them"

69% of WSMT participants maintained that there is delay in acquiring spare parts. This was confirmed by majority of the community participants that it takes 2 weeks to acquire spare parts for repairs because of inadequate petty cash. One opinion leader who is a member of the WSMT in one of the focus group discussion maintains that:

"it is difficult to raise cash to purchase spare parts when there are problems with the water facility which delays repair works, even in situations that there is money it takes about 2 months for the mechanic to come and assess the problems. In this situation of delay in repairs we have only one option that is to go back to our unsafe source of water"

On the frequency of monitoring, the majority (92%) of the WSMT participants noted that the District Water and Sanitation Team (DWSMT) monitored the technical operations and the administrative management of the water facility. This may guarantee that team members adhere to standards to ensure the maintenance and sustainability of the water projects.

DISCUSSION

From the findings of the study, there is no gender disparity in the formation of the WSMT as the highest female representation was 67%, and the lowest was 29% which is consistent with national policy of 30% female representation. This result is contrary to Guerquin *et al.* (2003) that maintains that women are largely excluded from local management of water projects.

From the study, majority of the participants indicates that financial records are kept, and also the findings attest to the fact that financial records are shared with the community members. According to Fry (1993) water sustainability also includes that funds generated from the project are properly managed. This practice could ensure that funds are properly utilised and community members' access to financial accounts could help to monitor revenue and expenses of the team. In one of the focus group discussions, a community member indicates that:

"they were interested in account sharing because it ensured transparency and trust among the team members and the community members at large. She also added that it guarantees proper utilisation of funds and the willingness to pay for water services provided for them".

From the study of Sarin (1999) rural people participation in planning and implementing of development projects increases success and the sustainability of the projects implemented. Lack of adequate community participation in financial management of water facilities might cause mistrust between the team and community members which might also result in poor revenue mobilisation for the sustainability of the water projects which will affect community welfare.

Although some community members affirmed that financial accounts were kept, 85% confirmed that no petty cash was kept for maintenance of the water system. This can mean that there are no readily available funds that can be used immediately to purchase spare parts for minor and major repairs. This might be a major factor that can delay repairs even if the mechanic is readily available. This suggests that the lengthy period in getting a mechanic might force water users to go back to their unsafe water source. This might result in water users to get in contact with water borne diseases that might increase health cost on the community members. The 2003 UNESCO report (*Water for People, Water for Life*) confirms that 2.2 million deaths annually, mainly from diarrhoea due to the lack of safe drinking water in the developing world.

The benefits of partnering is emphasised by Frederiksen (1992), and that sound water resource management is the responsibility of various institutions, for example, government and non-governmental organisations. From the study, it shows that initial training and retraining are not adequately organised for WSMT. The majority maintained that training are not organised for WSMT.

With regards to initial training, majority shows that no initial training was organised, and most of the participants also said that initial training was carried out by NGOs.

These points to the fact that decentralised institutions that are responsible for the initial training of WSMT for effective administration and maintenance of the water projects are not performing their roles. This confirms that team members do not have the required skills to do administrative work, and also to fix minor breakdowns to ensure constant water supply. This affirms the Community Development theorist, for example Horton (2005) that Community Development is highly dependent on both local and external resources.

From the finding of the study majority participants also shows that frequent exit from the membership of the WSMT also affects the management of the water project. The majority of participant's from community members and the WSMT indicate that lack of interest was the main cause of withdrawal from the WSMT. When further asked during the focus group discussion to give reasons for the lack of interest, the results points to lack of monetary compensation for their commitment to their water project.

Transfer of workers from one working space to another also causes frequent changes in the membership of WSMT, a frequent change in team members means frequent initial training and re-training for team member's responsible for minor repairs, hygiene promotion, meeting and administrative procedures and financial book keeping. The rapid turnover of knowledge might affect the competency of WSMT which in the long term might affect the operations and maintenance of water project. On the contrary, a frequent change can also ensure that effective and efficient community members are added to the team for effective management of water projects.

CONCLUSION

Addressing water issues, particularly management of water facilities is important to national governments and the international community, as we seek to realise potable water for all. This study shows that management of water facilities is still a major problem in rural locations. Several steps are necessary to address the gap between water planning, implementation and management. An understanding of the barriers to establishing strong local institutions through WSMT and DWSMT is necessary in guiding the appropriate policy response in order to encourage management of water facilities. The study has demonstrated that management of water facilities is a challenge for rural dwellers, the timely intervention, and access to spare parts, initial and retraining, financial records keeping need to be understood from the local and national perspectives, warranting more research in this area.

Based on the results of this study, the study recommends the need to encourage training and retraining of managers of local water facilities through the appropriate structures to ensure sense of ownership and maintenance of water projects. Governments and development partners must also harness the enthusiasm of the people into their own development process in planning, implementation and management of water projects. Policymakers and researchers should also connect in efforts to plan, implement and manage the supply of potable water facilities to meet existing and budding needs of communities.

Conflicts of interest

The authors have not declared any conflict of interests.

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