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## AN ASSESSMENT OF COMMUNITY PERCEPTION TOWARDS OWNERSHIP OF WATER PROJECTS IN TANZANIA

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### ABSTRACT

This paper aims to deliver empirical evidence on community perception towards ownership of water projects in Tanzania. The study was conducted in Mabokweni and Marungu wards in Tanga urban. Data were collected from 60 respondents. Descriptive statistics were used to assess safe and clean water accessibility and availability to the community. Factor and regression analyses were used to analyze the community perception and factors influencing perception towards ownership of water projects. Results show that access and availability of safe and clean water were still problem compared to community's water demand, whereby people took long time to find and queue for water in water taps. There is positive perception of the community towards ownership of water projects, community was ready to conserve, prohibit water source pollution and ready to contribute money for water taps construction and community perception was influenced by the education level and total water use.

*Keywords:* Community Perception, TASAF, Factor Analysis, Community Projects

### 1. INTRODUCTION

Water is crucial for sustainable development. Freshwater is a basic natural resource, which sustains life and provides for various social and economic needs. In its natural state, water is an integral part of the environment whose quantity and quality determine how it can be used. Safe drinking water and good sanitation practices are basic considerations for human health (URT, 2002). Despite its importance to our lives and development, water is unevenly distributed in time, space, quantity and with great variations in quality. Furthermore, water is a finite and a vulnerable resource.

However limited access to clean and safe water associated with poor water supply hygiene and sanitation at the household level is widening the poverty gap gender inequalities and the prevalence of water born disease, (Gender and Water Alliance, 2006). The world's supply of fresh water is running out. Already one person in five has no access to safe drinking water. The World Health Organization (WHO) estimated that in 2003, approximately 1.1 billions people had no access to safe and clean water and 2.4 billions had no basic sanitation (Snyder, *et al.*, 2008). Three hundred million people in sub-Saharan Africa currently do not have access to clean water. After independence of different African countries, the central governments and external support agencies were responsible for planning, constructing, and

maintaining of the rural water supplies (Salim, 2002), with little or no involvement at all of the beneficiary rural communities.

The government of Tanzania with such external agencies had also been establishing water service projects in rural and urban areas in the same manner. The central government decided to meet the cost of operation and maintenance of urban and rural water supply the step which made the central government responsible for both capital and recurrent costs of all urban and rural water supply projects. This was the time for "free water era" to rural dwellers and in urban canters customers who obtained water from metered public kiosk or those with house connection continues to pay. So, the government was considered as the owner of such projects. This results to most of such projects to collapse because the community did not take care for these projects.

Despite significant investment in the Water Supply services since the early 1970s, water supply coverage is not satisfactory. The 1991 National Water Policy set a goal of providing clean and safe water to the population within 400 meters from their households by the year 2002. However, about 50% of the urban population and 70% of the rural population in Tanzania have access to reliable water supply services (URT, 2006). Overall, some 48 percent of all Tanzanian households, and 60 percent of the population in rural areas, depend on an unprotected source of drinking water. Almost 34 percent of households have use of piped water and another 18 percent use a protected well or spring. As would be expected, use of a piped source is much more common in urban areas (NBS, 2007).

The main shortfall in the National Water Policy of 1991 can be identified in the implementation strategies, which emphasized that the central government is a sole investor, implementer and manager of the projects, both in rural and urban areas. The Policy also emphasized that the Central Government has a responsibility of protecting water sources while environmental protection was not accorded its due importance (URT, 2002).

After many years of failure of top-down or centralized planning and provision of such services, the emphasis has shifted to a decentralized community-oriented approach. Moreover, it was realized that community participation in water programs was limited to mobilization of self-help labor or the organization of local groups to ratify decisions made by project planners outside the community (Laryea, 1994). This narrow conception had inherent limitations to the successful implementation of rural water programs. Thus, the emphasis was again shifted to community management. Presently, drinking water and sanitation policies assume that the facilities can and should be best managed by local user communities. It is expected that the so-called "communal management" will guarantee the technical sustainability of the facilities needed to maintain access to the facilities provided (Eguavoen, 2006).

Due to such challenges, the government had to revise her National Water Policy in 2002 aiming at developing a comprehensive framework for sustainable development and management of the Nation's water resources, in which an effective legal and institutional framework for its implementation will be put in place. The policy aims at ensuring that beneficiaries participate fully in planning, construction, operation, maintenance and management of community based domestic water supply schemes. This policy seeks to address cross- sectoral interests in water, watershed management and integrated and participatory approaches for water resources planning, development and management.

The new Water Sector Development Programme promises positive change in the water sector, but improvements in water coverage are not yet evident. The latest survey data show a downward trend in access to clean and safe water in both urban and rural areas. At the current rate of progress MKUKUTA and MDG targets for water supply are out of reach. The Household Baseline Survey of 2007 data also show that poorer households are paying more for water than wealthier households as a proportion of total household expenditure (NBS, 2007).

According to RAWG (2009) in rural areas, there is little or no increase in coverage over the past seven years while in urban areas, survey data show a declining trend, particularly in piped water supply. This likely reflects the failure of network expansion and service delivery to keep pace with urban population growth. Based on these estimates, neither rural nor urban coverage targets under MKUKUTA a Kiswahili acronym for the National Strategy for Growth and Reduction of Poverty will be met.

To implement the policy the government launched Tanzania Social Action Fund (TASAF). TASAF is a government of Tanzania funding facility organization that provides a mechanism that will allow local and village governments to respond to community demands for interventions that will contribute to the attainments of specific Millennium Development Goals. Towards this endeavor, TASAF contributes to achieving the goals of Tanzania Poverty. TASAF was established in the year 2000 as a Social Action Funds (SAF) to operate within the context of a Community Driven Development (CDD) Approach. The CDD Approach is a mechanism for enhancing sustainability, improving efficiencies and effectiveness, allowing poverty reduction efforts to be taken to scale, making development more inclusive, empowering poor people, building social capital, strengthening governance complementing market and public sector activities.

It is through such approaches the sense of community ownership to such projects has been introduced using various methods as Participatory Rapid Appraisal (PRA), Opportunity and Obstacles to Development (O&ODs). However there is little empirical evidence on how the community (people) perceive on the ownership of community projects as safe and clean water, roads, schools and other projects which directly or indirectly serve the community. Despite of all these initiatives of the government, water agents and other stakeholders the problem of supply of safe and clean water is still a challenge to rural and urban communities. We are also not well informed of the factors which can influence peoples (community's) attitude towards ownership of the project. Hence, it is from these grounds the paper is set.

## 2. MATERIALS AND METHODS

### 2.1 STUDY AREA

The study was conducted in two wards namely Mabokweni and Marungu in Tanga Urban in 2010, whereby two villages were selected randomly. Tanga urban was chosen because is one of the fastest growing city in Tanzania, hence there is a problem of service provision.

### 2.2 RESEARCH DESIGN

This study employed cross section research design which forms a class of research methods that involve observation of all of a population, or a representative subset, at one specific point in time (Olsen and George, 2004). The design was often used to assess the prevalence of acute or chronic conditions of water shortage, and answer questions on the results of bottom-up approach intervention to the ownership of water projects. The design consisted of interviewing respondents in a single point in time where the main tools and methods were questionnaire and interview.

### 2.3 SAMPLING AND PROCEDURE

The respondents in this study were actually community members in the study area whereby a sample of 60 households was drawn from the two villages. The respondents were sampled randomly from a list villagers provided by the Community Development Officer as members of

the two villages. Moreover, the study sampled one TASAF project manager and two village executive officers as key informants using purposive sampling.

## 2.4 DATA COLLECTION

This study used both primary and secondary data for collecting information whereby interview, observation and documentation were used as tools for data collection. A self structured interview was administered by the research assistants to 60 households so as to collect information on the households' socio economic information, household water use, water collection and attitude towards ownership of water facilities. Likewise, a semi structured interview was conducted to the key informants' management team and village executive leaders from the two sampled villages. The interview method through checklist collected information on the water sub projects administered at the regional, district and village levels, cost sharing and the general community response to ownership of water projects. The researchers also observed the conservation of the sources of water, water fetching points (sale points and public taps).

## 2.5 DATA ANALYSIS

Descriptive statistics was used to assess safe and clean water accessibility and availability to the community. Factor analysis was used to analyze the community perception towards the ownership of water projects. This is a technique that is used to reduce a large number of variables into fewer numbers of factors. Factor analysis extracts maximum common variance from all variables and puts them into a common score so as to get a small set of variables (preferably uncorrelated) from a large set of variables (most of which are correlated to each other) and create indexes with variables that measure similar things (conceptually). The index of the variables, we can use this score for further analysis. Factor analysis is used mostly for data reduction purpose (those interested can read Zeileis *et al.*, 2008; Zapata *et al.*, 2007; Field, 2005). Regression analysis used to analyze the variables which influence people's perception whereby the scores (index) from the Linkers scale were regressed by the variables which were behind the index (perception). This can be specified as  $Y = X_1 + X_2 + X_3 + X_4 + \varepsilon$

Where:

$Y$  = Score (index) on perception

$X_1$  = Age

$X_2$  = gender

$X_3$  = Education level

$X_4$  = Main occupation

$X_5$  = Total litres used per day

$\varepsilon$  = constant term

## 3. RESULTS AND DISCUSSION

### 3.1 SOCIO-ECONOMIC CHARACTERISTICS OF THE RESPONDENTS

Table 1 shows that 60% of the 36 respondents out of 60 were female while 40% of the 24 respondents were male in the study area which gave the total of 60 targeted respondents. About 55% of the respondents were aged 21 to 40 years old while 28.2% were between the age of 1 to 20 and 16.9% were between the age of 41 and above (Table 1). Results from the Table 1 show respondents' characteristics in terms of gender whereby 60% of the 36 respondents were female and 40% of the respondents were male and that's gave 100% of the 60 targeted

respondents in the study area, and most of them were women because they are the one responsible for fetching water in wells, ponds and water taps. Table 1 indicates that 68.3% of the respondents got the primary education, 20% of the respondents out of 60 got the secondary education while 11.7% of the respondents out of 60 did not attend to school. Therefore most of respondents were primary school education level. The results also reveal that most of the sampled population depends on farming as their main occupation (33.3%).

### 3.2 ACCESSIBILITY AND AVAILABILITY OF SAFE AND CLEAN WATER

Access to safe water is essential for addressing poverty and health problems in the community. In the study area 32.2% of the sampled households used 41-80 minutes (average of 1 hour) to access to clean and safe water, while 27.2% of them used an average 20 minutes. Results also reveal that 27.1% of the sampled households used 81-120 minutes to access to clean and safe water (Refer Table 2). This implies that most of community members in the study area have limited access to clean water for domestic use and crop production and adequate sanitation. Economic benefits are achievable indirectly through improved health and time saved from the drudgery of carrying water overlong distances. Hence it is difficult for the community to achieve economic benefit if the situation persists. Existing data on the incidence of water-borne, water-related and water-washed diseases indicate that these are mostly widespread where people use contaminated water or have little water for daily use.

The table also indicates time spent for queuing (availability of water) by the sampled households on the water sources to get safe and clean water; whereby 44.9% of the respondents took the range of 41-80 minutes (average of 1 hour) to get clean water, 34.5% used 1-20 minutes to queue for fetching water. In dry season each household spends about 3 - 4 hours per day fetching water. This suggests that even in urban areas, the water sources are not reliable especially in dry season therefore, people (majority being women and children) have to spent a lot of time to fetch water, instead of utilizing this time for productive activities and studying (children). This affects not only the economic status but also the children's academic performance.

### 3.3 AMOUNT OF WATER USED BY HOUSEHOLD PER DAY

The study also analyzed the amount of water needed by the household per day. Results from Table 3 below show the amount of litres used for various purposes by the sampled households varied accordingly; whereby for washing purpose, 40% of the respondents used 1-40 and 41-80 litres of water per day, 8.3% used 81-120 litres, 11.7% used more than 120 litres per day. Table also shows uses of water bathing whereby 65% of the sampled households used 1-20 litres per day and 25% used 21-40 litres per day. Furthermore, the Table also indicates litres of water used for cleaning and livestock per day whereby 46.7% of the respondents used 11-20 litres per day while 33.3 % of the respondents used 1-10 litres used by the respondent per day, and 20% used more than 20 litres per day. Results also indicates that 56.7% of the respondents used 1-40 litres per day for animals per day, 26.3% used 161-200 litres per day, 23.3% of the respondents used 41-80 litres of water per day. This suggests that more people in the study area used 1-40 litres of water for animal purposes per day.

### 3.4 WATER RESOURCES

Water resources in Tanga district include rivers, springs and ground water aquifers. The river Ziggi is the main source of water for the population of Tanga district. It serves 70% of the total population. Ground water is a supplement of surface water for many parts of urban population although water quality and quantity is a problem in terms of salinity, thus not

saleable and sufficient for human use. However, in the study area the community fetches water from ponds, wells and standing water taps (Table 4). The community members fetch water from such source using different means, whereby 37.3% of the respondents use bicycle to get safe and clean water, 23.7% of them use wheelbarrow. The same number of sampled households fetched water on foot and 13.6% of the respondents use animals (especially donkeys) to get safe and clean water (Table 5).

### 3.5 PERCEPTION TOWARDS OWNERSHIP OF THE WATER PROJECTS

As have been pointed out in the methods the researchers intended to assess whether the community (people's) mindsets towards ownership of community projects have changed or not. The researchers made several assumptions which could help to measure perception. At first they (researchers) assumed that the community would disagree that they are responsible to control water project since this was formerly the duty of the government. However the assumption was contrary to that of the respondents who agreed that it was their duty to control the water project as long as they can get clean and safe water nearby their residents.

The community is responsible for contributing money for rehabilitation of the water infrastructures. The researchers assumed the community would not agree because of the cost implication. But results from Table 6 clearly shows that the community agreed to contribute money for rehabilitation of water infrastructures long as they can get safe and clean water. Another assumption was that the community is responsible to donate resources in terms of land, labour and time, for digging gutters for laying water pipe. The researchers assumed that the community would not agree with this assumption because of cost implication which amounted to sacrifice and also water provision was considered as a responsibility of Government. However the community was ready to contribute to use the resource they have for water development projects.

In addition to the above statements, there was another statement that stated that any community member is ready to offer her/his place for water pipe to pass through and for water station. Here the researcher assumed that the community members would not be ready to offer any place since land is among the natural resources which are scarce especially in towns. But results from Table 6 reveals that the community agreed to offer their places for construction of water pipe stations as long as they can get safe and clean water for their daily use.

The researchers theorized that the community would not be ready to take their time which they would use for other productive activities and for leisure and use it for planting tree in the water sources. Nevertheless, the community agreed to plant trees to the water sources (Table 6) because they know the important of environmental conservation and conservation of water sources. The researchers also proposed that the community would not be ready to sue anybody who pollutes water source even a bloody relative. However, Table 6 shows that the community outcome was contrary to the researcher's postulation. The community was ready to sue anybody who pollute water source. This may be due to awareness of the community in not only on the importance of water and its conservation but also the community regards and take such community projects as water as theirs.

### 3.7 INFLUENCING FACTORS TOWARDS OWNERSHIP OF WATER PROJECTS

The model results from regression presented in Table 7 revealed R-square being 0.74 meaning that the independent variables were able to explain the dependent variable by 74%. This implies that the regression model was strong to explain the relationship between dependent and independent variables.

Total use of water by the respondents has a positive effect of the perception towards ownership of water project and was significant at  $p < 0.1$  (Table 7). This means that increase in total use of water by one unit causes an increase in score of perception by 0.6%. This situation might be accelerated by the increase in water uses such as irrigation, livestock keeping, gardening, washing and other related uses.

Table 7 indicates that education level and attitude towards ownership of water projects are positively related and the factor (education level) was significant at  $p < 0.05$ . This means that as the level of education changes by one unit, the perception score increases by 10%. This score due to education level might be due to the level of understanding and trainings as well as Participatory Rapid Appraisal (PRA) exercise and knowledge imparted in the community.

#### 4. CONCLUSION

The preceding analysis determined the community perception towards ownership of water projects. The revealed perception is that most of the community members have positive attitude. The factors or variables that influence this attitude are education level and total use of water. The empirical findings strongly suggest that community development policy's measure should be focused to training on Participatory Rural Appraisal (PRA) and mobilize the community in participating in various community projects such as water, roads, open spaces, water bodies, forest protection and conservation. This will create the sense of ownership to such projects which finally ensures project sustainability.

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## APPENDICES

Table 1: Socio-economic characteristics

Gender		Frequency	Percentage
	Male	24	(40%)
	Female	36	(60%)
	Total	60	(100)
Age			
	1-20	17	(28.%)
	21-40	33	(55%)
	41-above	10	(17%)
	Total	60	(100)
Education level			
	Primary	41	(68%)
	Secondary	12	(20%)
	Not attended	7	(12%)
	Total	60	(100%)
Main occupation			
	Farming	20	(33%)
	Livestock keeping	12	(20%)
	Housewife	10	(17%)
	Unemployed	10	(17%)
	Student	7	(13%)
	Total	60	(100%)

Table 2: Accessibility and availability of water in minutes

Accessibility of water		Availability of water	
Minutes	Frequency	Minutes	Percent
1-40	16 (27.2%)	1-20	20 (34.5%)
41-80	19 (32.2%)	21-40	6 (10.3%)
81-120	16 (27.1%)	41-80	26 (44.9%)
Above 120	8 (13.5%)	Above 80	6 (10.3%)
Total	59 (100%)	Total	58 (100)

Table 3: Various uses of water in litres

Washing	
Litres	Frequency
1-40	24 (40.1%)
41-80	24 (40.1%)
81-120	5 (8.3%)
Above 120	7 (11.7%)
Total	60 (100%)
Bathing	
Litres	Frequency
1-20	39 (65%)
21-40	15 (25%)
41-60	5 (8%)
Above 60	1 (2%)
Total	60 (100%)
Water for cleaning	
Litres	Frequency
1-10	20 (33.3%)
11-20	28 (46.7%)
Above 20	12 (20.0%)
Total	60 (100)
Water for animals	
Litres	Frequency
1-40 litres	34 (56.7%)
41-80 litres	14 (23.3%)
Above 80	12 (20.0%)
Total	60 (100%)



Table 4: Sources of water

Source of water	Frequency	Percent
Ponds	25	41.7
Wells	12	20.0
Pipe, water ponds	13	21.7
Ponds, wells	10	16.7
Total	60	100

Table 5: Means of fetching water

Means	Frequency	Percent
Wheelbarrow	14	23.7
Bicycle	22	37.3
By foot	14	23.7
By animal	8	13.6
Total	58	100

Table 6: Measurement of community perception towards water project ownership

Item	Researcher's Hypothesis	Community's outcome	Factor loading
I am responsible to supervise the water project	Disagree	Agree	0.627*
I am responsible for rebuking misuse of water	Agree	Agree	0.582
I am responsible for contributing money for rehabilitation of the water infrastructures	Disagree	Agree	0.716*
I am responsible for water sources conservation	Agree	Agree	0.578
I am ready to give my resources digging gutters for laying water pipe	Disagree	Agree	0.686*
I am ready to offer my place for water station and water pipe to pass through	Disagree	Agree	0.629*
I am ready to plant trees in the sources of water	Disagree	Agree	0.834*
I am ready to sue anybody who pollutesZ water source	Disagree	Agree	0.585*

Table 7: Regression model of the attitude towards projects' ownership

Variable	$\beta$	Std. Error	T	Sig. level
Constant	82.676	20.712	3.992	0.03
Age	-0.541	0.468	-1.157	0.274
Gender	2.120	6.212	0.341	0.740
Education level	10.284	3.518	-2.923	0.015*
Main occupation	-4.829	3.755	-1.286	0.227
Total Water Utility	0.064	0.032	-2.008	0.072**

*R-square = 74%, \*and \*\*significance at p-value < 0.05 and 0.1 respectively*

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