

Water Resource Management in Sathanur Command area, Tiruvannamalai District, Tamilnadu: A Perception Study

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ABSTRACT: *This study analyses the water resource management in Sathanur Command in Tiruvannamalai District, Tamilnadu. Participatory irrigation management not only enhances the equity and water use efficiency in agriculture practice and also socio-economic conditions of the farmers. This has been proved with Interviewing of farmers, members of Water User Association and irrigation officials. The study has successfully use the perception levels of the farmers to bring out the awareness and effectiveness of Participatory Irrigation Management (PIM) activities.*

Key Words:

Introduction

For every civilized society, in one way or other, there is an organization to look into their day to day affairs. From time immemorial, organizations like Kudimaramath has been in practice to take care of the distribution of water and maintenance of water bodies in India. During 80s, farmers has been motivated towards "participation in water distribution and management by Ministry of Water Resources, Government of India under the Centrally Sponsored Command Area Development Programme (CADP). Recently, PIM activities has become part and parcel of World Bank projects like Water Resource Consolidated Project (WRCP) and Tamil Nadu Irrigated Agriculture, Modernization And Water-Bodies Restoration and Management(TNIAMWARM) Project-I & II. Concept of involving the farmers in irrigation management ie., Participatory Irrigation Management (PIM) has been accepted as a policy of the Government of India and has been included in the National Water Policy adopted in 1987. The same has been inherited by the State Government. Provisions made in the National Water Policy of 1987 were as under: "Efforts should be made to involve farmers progressively in various aspects of management of irrigation systems, particularly in water distribution and collection of water rates. Assistance of voluntary agencies should be enlisted in educating the farmers in efficient water-use and water management."

In any irrigation system, the final outcome in terms of crop productivity depends upon how best the irrigation system and its distribution networks are maintained and water distribution is effectively managed in all parts of the command. The responsibility of water allocation up to main/branch canal is vested with the Public Works Department (PWD). Within each distributary, the right for maintenance of channels and distribution of water solely rests with the WUA. The quantum of water supply required is decided by the PWD officials and the office bearers of the WUA considering the total command area under all sluices in a distributary. Throughout the length of each distributary, several sluices are located. Each sluice serves many blocks under it. Based on the total command area available in each block and the number of days of water release from the main/branch canals to the distributary, suitable rationing system is followed. This is mostly based on the number of hours water could be supplied per acre in a day.

Main reasons for the introduction of Participatory Irrigation Management (PIM) is deteriorating performance of publicly funded irrigation sector (GOI, 1992, Gulati et al 1994; Vaidyanathan 1999). And also water use efficiency is low ranging from 30 to 40 percentage under surface method of irrigation in India compared to other countries (Rosegrant 1997). Above all poor participation of farmers in the irrigation management is noted as a major reason for the declining performance of irrigation sector in India. Researchers of irrigation sector belonging to various countries suggests that a phenomenal improvement of irrigation sector can be brought out by extensively involving the users in the management activities (Brewar et al, 1999).

Aim and Objectives

The present study aims to carry out an in-depth assessment of the water resources management in the study area with special references to people's participation on resource utilization, conservation and management in the Sathanur command of Tiruvannamalai district, Tamilnadu, India.

Objectives

The specific objectives of the study are:

- To examine the nature and extent of Water resources management in Sathanur Command.
- To evaluate the role and contribution of Water User Association in Water resources management through Participatory irrigation management (PIM) activities.
- To analyse the impact of Water User Association on agriculture and livelihood of farming household of Sathanur Command of Tiruvannamalai district, Tamilnadu, India.
- To suggest and recommend means and strategies for efficient and Sustainable Water Resource Management.

The Sathanur Command:

Sathanur command (Fig: 1) lies on both sides of the river Thenpennai which originates in Nandhidurgam mountain in Karnataka state and enter into Tamilnadu at Paagalur near kodialum anicut, Krishnagiri district. The river runs for about 320 km in Tamilnadu, irrigates 15385 ha in Krishnagiri district 2530 ha in Dharmapuri district, 7279 ha in Tiruvannamalai districts and about 10121 ha in Villupuram district. This river is also called as Ponnaiyar. The river also serves as the main source of drinking water for more than 100 villages.

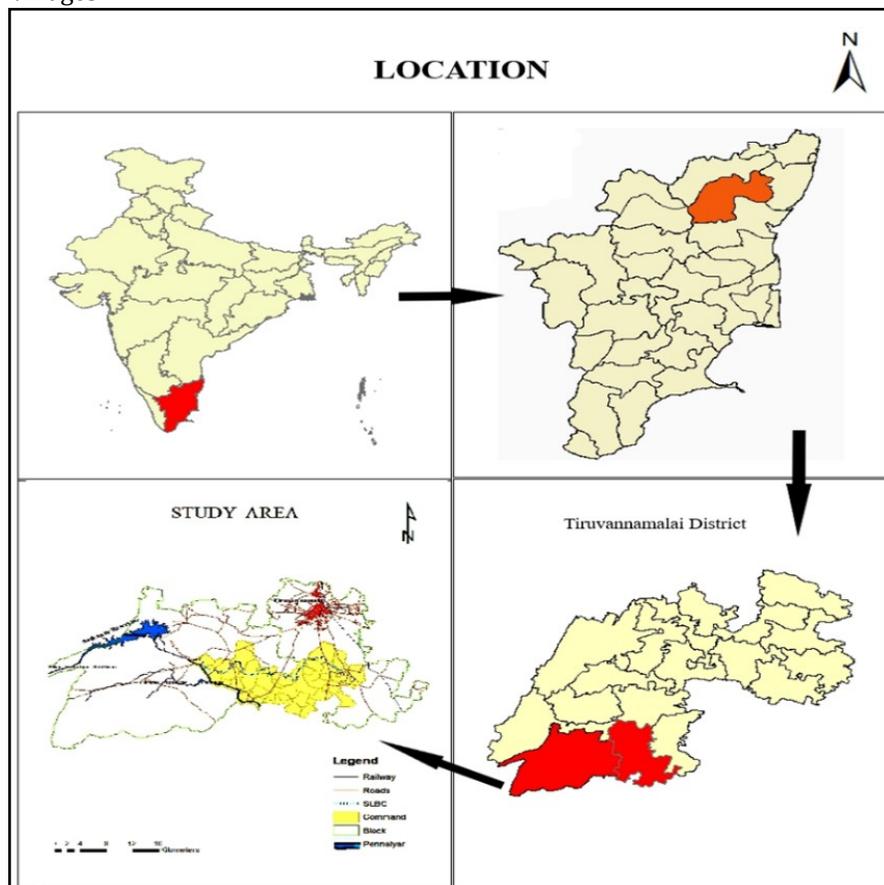


Figure 1: Sathanur Command Area, Tiruvannamalai

Sathanur dam is built across river Thenpennai in 1958 which is a big boon for Tiruvannamalai and Villupuram districts. About 7 Km from the Sathanur Dam, there is Pickup anicut, from where both Sathanur Left Bank Canal (SLBC) and Sathanur Right Bank Canal (SRBC) are originated. The Pickup anicut is 122 m length and its maximum height above the foundation is 7.60 m and it is designed to discharge a maximum flood of 2,80,940 cusecs.

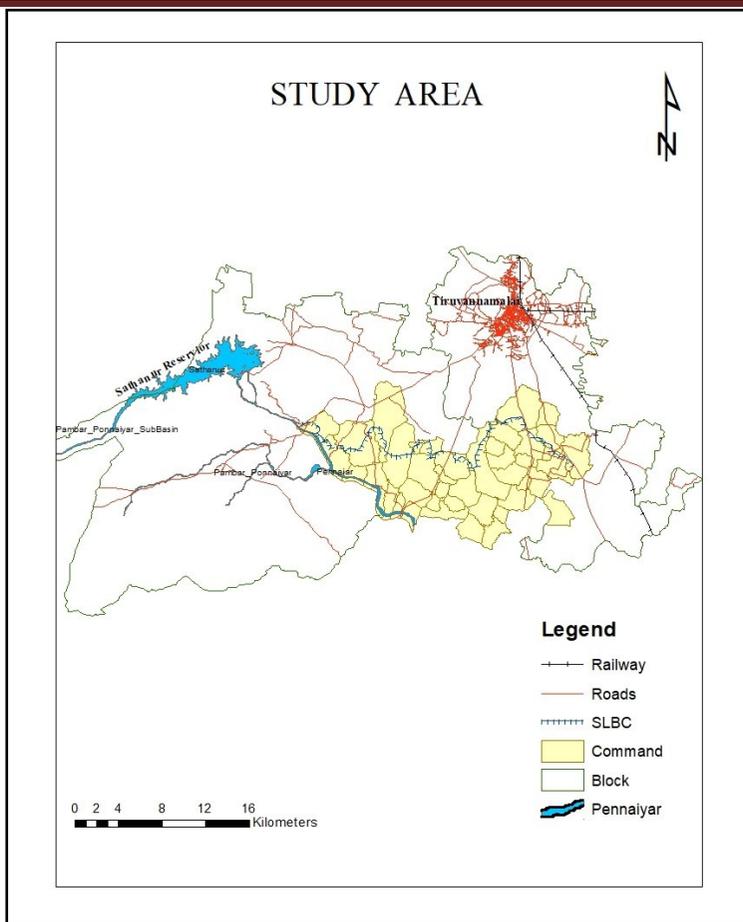


Figure 2:Sathanur command

Sathanur Command (Fig: 2) lies between 12.05° and 12.15° North latitude and between 78.55° and 79.05° East longitude. The SLBC is 35.2 km long which irrigates about 9717 hectares of agriculture land in Tiruvannamalai and Villupuram (previously North Arcot and South Arcot) districts. The SRBC is 28.6 km long which feeds about 8,499 hectares of agriculture land in Villupuram District.

The Sathanur Left bank Command Area is agricultural dominant area with few mining operations (Quarrying) and allied activities. The Command has 40 revenue villages along the entire length of the canal. Left bank Command Area is sandwiched between the main river and the left bank canal. The Command has been delineated using the boundaries of the village where the canal water are being used for irrigation. The Sathanur Left Bank Canal was excavated during 1954-58, the same period of construction Reservoir. The left main canal takes off from the Pickup anicut on its left flank. The SLBC has 25 direct irrigation sluices and 15 Distributaries. The total length of distributaries are about 69.72 Km. The command area under the SLBC is 9717 Ha in which 8531 Ha is comes under direct ayacut and the balance 1186 Ha is wet ayacut fed through 40 System tanks. Initially the main canal and branch canal were excavated earthen

Water User Association (WUA):

Water User Association (WUA) is a democratically elected body for the equitable distribution of water for irrigation and maintenance of irrigation infrastructures. In other words, Tamil Nadu farmer’s Management Irrigation System Act 2000 defines WUA are democratically elected bodies representing farmers, through election conducted by district collector. There is three-tier structure of WUAs (Table: 1). They are as follows:

| Name of WUA | Functions of WUA |
|-----------------------|--|
| Project Committee(PC) | The PC is at apex level and involved in the policy decisions like release and closing of water, duration of supply, cropping pattern in consultation with government officials. It is also the responsibility of PC to arrange field visit and to attend training programmes on water management and functioning of WUA. |

| | |
|-----------------------------------|---|
| Distributary Committee(DC) | The second one is at distributary level. Negotiating with the officials for the quantum of water to be released and distributed is the main function of DC. |
| Water User Association | The last one is at sluice. Maintenance of ayacut is the responsibility of WUA |

Table No: 1 - Water User Association

Prior to formation of Water User Association (WUA), Farmers themselves formed the group called Ayacutdhar Association consisting minimum of 25 members under the Co-operative Societies Act. Rs.15.00 was fixed as membership fee for becoming members of Ayacutdhar Association. In 1998 for the implementation of WRCP, WUA was formed at the initiative of the Government of Tamil Nadu. Farmers were given training by the water experts from Anna University, Chennai. Farmers were also taken to Andrapradesh in 2009 for acquiring knowledge about successful WUA. Maximum water charges of Rs.480/- per acre was collected from the Farmers. The water charges was pooled together as corpus fund and same was distributed to the 49 Distributary Committees [27 D.Cs in SLBC, and 22 D.Cs in SRBC]. The WUA was not fully useful to the farmers. Because, no power as contemplated in the official documents was delegated to the farmers. Neither officials nor Ministers concerned have shown interest to delegate the powers. NGOs are not helping the farmers for forming any farmers associations in the Command area. Agriculture Engineering Department, Government of TN has helped the farmers in giving seeds and sanction subsidized Solar Power pump sets.

Methodology:

Three groups of people that is, members and non members of WUA, Officials and Politicians have been interviewed for the study. Fifty farmers members of WUA, 45 non members of WUA, 11 government officials of public work department (PWD) and 10 politicians in the command area was interviewed with semi structured schedule of question during the field work (2017-18). The data collected from them are qualitative and the information are gathered for a period of three months. This interview is not for conspicuous and also unorganizational.

A well structured questionnaire has been used to collect data from the farmers. The sample farmers has been selected using proportionate sampling. A sample of 100 farmers has been chosen from 8 villages in the Command. All the farmers have been distributed with the questionnaire, orally explained by the scholar and the interview is done with one to one so as not to get influenced by others idea. Most of the replies are verbal. Hence, they have been coded and analyzed for their content.

Sample Characteristics:

Of 100 samples from 8 villages (Thenmudiyanur, Agarampallipattu, Thenkarimbalur, Edathanur, Allapanur, Kottaiyur, Serpapattu and Athipadi), 93 sample respondents are married, 5 are unmarried and 2 widows. Only 7 of the respondent are female. 51 respondents are educated upto the higher secondary, while 11 are graduate, 20 respondents are upto primary, and the remaining (18) are illiterates. 90 percentage of the respondents are indulged only in agriculture whereas 10 percentage of the people do agro-businesses and hold government jobs. 48 of are marginal farmers with land holdings of 0.8 ha, 33 small farmers with 0.8-2.0 ha and 19 of them are big farmers with more than 2 ha of land.

Ninety four of the respondents have wet land and majority of them are marginal and small land holders. Only six of the 100 farmers has both wet and dry land and they are small farmers. Seventy of the 94 wet land farmers are paddy growers, Eight of them both paddy and Sugarcane and 7 of them exclusively sugarcane growers. The farmer who owns both wet and dry land grows paddy and gingerly, which is a commercial crop fetching good income. Paddy is however grown substantially in this region, which every farmer grows because it is also a staple food. This makes all of them very concerned about the quantum of water required for irrigation. Sugarcane, a cash crop, is also a water consuming crop.

The average annual income of the farmers from agriculture under study is Rs.85,000 p.a. The average income for small farmers is Rs. 55,000 per annum and Rs.45,000 for marginal farmers. Only 20 farmers were ready to reveal about their income. Most of the farmers in the Command have open well and follow conjunctive irrigation where as the 20 percentages of marginal farmers who do not have well depend exclusively on canal irrigation. Almost 95 percentages of the farmers in the command use the canal water

for irrigation.

Forty percentages of farmers have no knowledge of the existence of such Water User Association. Twenty percentages of people have heard about the Association but they are not aware of the function, activities and benefits of the association. Remaining farmers are aware of the PIM activities and most of them are the active members of the association.

The perceptions:

Officials: 11 officials at District headquarter, Tiruvannamalai and Division office at Vanapuram and Sathanur have explained that based on Tamil Nadu farmer's Management Irrigation System Act 2000, WUAs was effectively formed in Sathanur command as being formed in neighbouring states. The leaders and members of three tier of WUA were elected by an election conducted in a democratic way during the year 2004. The Division Assistant Engineers are of the views that the WUAs were formed at the initiative of the World Bank officials and not out of personal interest of the farmers and local leaders. As such, until the completion of WRCP sponsored by World Bank, the WUAs were functioned. As soon as the said project was completed the Project leader and some members of Distributary Committee are alone active and participated in the periodical meetings organized by the officials in irrigation department and District Collector. Though there is a provision for the delegation of powers to the WUA, due to change in Government, elections in the subsequent years was not able to be pursued. And due shortage of funds, incentives was not able to given to the WUAs as stipulated by the Tamil Nadu farmer's Management Irrigation System Act 2000. Further, Executive Engineer, Water Resource Department(WRD), Tiruvannamalai is of the views that as most of the farmers are conservative and not technically sound, transfer of powers of Operation and Maintenance (O&M) is not at all possible. Farmers are not aware of the importance of water during the flow in canal and blaming the government during summer. Besides, some Political influence not only affects the democratic functioning of WUA but also leads to encroachment of field channels. Moreover, due to caste systems, members' social outlook is rigid and they did not have in-group feeling which also affects functions and intra relationship of WUA. However, the newly formed WUA under Kudimaramath is showing some positive reaction towards government initiative on PIM activities. As mandated under the Kudimaramath guidelines, 10 percentage of project work are contributed and the works are also taken up by the farmers themselves on nomination basis. So far, about 11 Public Work Department (PWD) system Tanks have been rehabilitated and de-silted by WUAs under Kudimaramath scheme in the Command area. More importantly, the tail end farmers has to be educated to cultivate the crops that requires less water, and also to go for certain modern irrigation techniques like drip irrigation, sprinkle irrigation etc.

WUA members : About 55 member including two female member of WUA were interviewed. They are of the views that the certain farmers having political influence in head reach of the channel have encroached upon the channel which in turn affects the interest and privileges of tail end farmers. the Luskar, during water distribution, is more biased towards head reach farmers and the tail end farmers are fall at the mercy of head reach farmers and Luzkar. In most of the place, lining of field channel are damaged and left unattended by the field engineers even after repeated complaint. Damages in the structure causes leakages of water. Hence, there was the problems of water logging in the head reach and shortage in the tail end. Due to water leakages and water logging, the standing crops were damaged which causes heavy loss to the farmers. One female member said that influencing the Luzkar, some farmers have obstructed the flow of water by putting the stones across the channel in such way that more water flow to their field. In the present circumstances, sever inadequacies in both input supplies and marketing facilities, farmers unable to get returns to sustain their investment. Increasingly farmers feel in addition to water as one input WUA should take care of crucial aspects like other inputs (fertilizers, pesticides, quality seeds) and forward linkages (including assistance in procuring food grains and vegetable, marketing and storage facilities). This would enable WUA to effectively collect water price from the users. Project level grievance cell is not available either in the division level or in the District level.

Farmers who are not members of WUA: About 45 farmers including five female farmers who are not members of WUA were interviewed . Two Granite companies in Agarampallipet and Sadakuppam have dumped the derbies in the canal and blocked the passage of water downstream. Hence, the tail end farmers are deprived of their due share of water. Due to quarry operations, water table has also been depleted. As a result, some farmers have sold their lands to the quarry. Some farmers presently are not the members of WUA, but they are aware of activities of the Project president and eager to participate in the WUA if any formed in future. They feel that Party affiliation plays major role in the WUA. Members of ruling party is always takes the lead role unanimously. Farmers of Agarampallipattu says that they are gifted by former

Lok Sabha MP, whose land is in the tail end. Hence, all the land owners received sufficient water all along the way to MP's land. In certain areas, farmers in the head reach have either destroyed the canal or encroached the channel and so tail end farmers are deprived of their share of water. If the tail end farmers want to take water, they have to invest more money for digging the distributaries afresh without the cooperation of head reach farmers the irrigation activities has become tedious and burdensome.

Politicians: About 11 politicians including Project leader were interviewed. They said that the farmers are not organized and they are caste bound and party bound. Under WRCP and TNAIWARMA projects, farmers expect more incentives for their participation in WUA. Farmers in WUA were given training by the water experts from Anna University, Chennai. But there was no voluntary organizations to play hand-holding role to facilitate course-correction measures during the initial years of WUA in the command as done by Water and Land Management Institute (WALMI) in Bihar. Inadequate capacity building and suitable training on time for WUA members and field staff of WRD and hence some of the WUA has become dormant. But farmers in the newly formed WUA under Kudiamaramath scheme, are contributing 10 percentage of the project cost. Under Kudiamaramath, the irrigation infrastructure are taken up on nomination basis and the farmers are the executors and WRD officials are technical advisors.

The solutions:

In sum, 5 ideas emerged as the most important sets of solutions for the problems faced by the WUA in Sathanur Command. They are as follows:

1. Farmers have suggested that 'Encroachers pays' principle by way of fine has to be accepted by the farmers not only to solve the problems of encroachment at the head amicably but also to make the water supply to the tail end farmers. The amount accrued from the fine has to be kept in a corpus fund which will be used as incentives to the WUAs. The WUA need be empowered to suspend irrigation service to defaulter. That would be most efficient measure to collect water charges. As the farmers use well water by using free current even during the water supply in the canal, rationing of three phase Electricity to the farm pump sets must be implemented during the regular supply of water in the canal from the Dam. This will not only facilitate the farmers for the fullest utilization of water from the canal but also to keep the field channel to neat and clean. Moreover, Project level grievance cell would be available either in the division level or in the District level. Complaint register must be maintained at each Division office under the control of Assistant Engineers so that we can watch the problems are addressed then there. The Grievance Cell should be under the control of District Collector. Increasingly farmers feel in addition to water as one input WUA should take care of crucial aspects like other inputs (fertilizers, pesticides, quality seeds) and forward linkages (including assistance in procuring food grains and vegetable, marketing and storage facilities). This would enable WUA to effectively collect water price from the users. Female farmers have suggested that empowerment of women by focusing on the involvement of women farmers should be done as emphasized by the World Bank guidelines for TNAIAMP-II. The irrigation systems would be complemented only with the analysis of women's role to determine labour and time requirements to introduce time saving technologies.
2. Politicians have opined that delegation of powers to the Water User Association coupled with some financial incentives to all the Distributary Committees and sluice level WUA will definitely make the WUA active for their common cause and to maintain the irrigation infrastructure with technical assistance from the irrigation Engineers.
3. Officials are of the views that necessary periodical training programs and workshops on WUA should made available to members of WUA as done in Andrapradesh. All the provisions in respect of penal actions for misuse of canal water, have been vested with the irrigation officials. There is hardly any single provision by which WUA can exercise such powers. By having such penal powers, the WUA can motivate, persuade, pressurize the farmers for bringing better mechanism for efficient management.

Conclusions:

1. There is good awareness about WUA among the head reach farmers. But awareness is lacking in the tail end and new generation farmers.
2. Delegation of powers must be well defined and made possible step by step and should have legal protection.

3. Work burden of the irrigation officials has become lesser.
4. Technical assistance and financial incentive is mandatory.
5. Regular monitoring system to evaluate the function of WUA should be evolved.

Transparency, accountability, improvements, adjustments and periodic review on capacity building will take this programme successfully through its teething period. Government giving high priority to PIM activities, wholehearted acceptance of stakeholders and suitable methods for implementation will strengthen the PIM activities in the Command and raise to a height as role model.

References:

1. Ailawadhi. R.K (2001) PIM case study India' Participatory Irrigation Management in Haryana', Pp:11-19.
2. Brewar, .Kolavalli,A.H..Kalro,G.Naik,S.Ramswamy,K.V.Raju,R.Shakthivadivel 1999,Irrigation Management Transfer in India : Policies ,Process and Performance,Oxford and IBH Publishing Co. Pvt.Ltd.,New Delhi.
3. Degol Fissahaye ,et.al.,2017.Irrigation water management: "Farmers' practices, perceptions and adaptations at Gumselassa irrigation scheme, North Ethiopia".Agricultural Water Management · September ,Vol 191:16-28.
4. Deepak Chouhan 2013, "Comparative Study on Canal Water Management through Water User Associations (WUA)". Ph.D. Thesis,Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur , (M.P.).
5. Final Reoprt on Consultancy Project on "Planning and Mobilisation of Farmers Organisation and Turnover ,Tamilnadu Water Resources Consolidation Project".1997 Pp:1-210.
6. Gulati et al 1994; "Major and Medium Irrigation Schemes:Towards Better Finanancial Perforence",Economic and Political Weekly,Vol .29,No.26,Pp:A72-A79.
7. GOI, 1992,Report on Committee on pricing of Irrigation Water Planning Commission,Government of India,New Delhi.
8. Giacomo Giannoccaro ,et.,al,2016,Factors influencing farmers' willingness to participate in water allocation trading. A case study in southern Spain"Spanish Journal of Agricultural Research,Vol 14,No :1,(2016).
9. Maria Nehlin,2016," Management of local irrigation systems and stakeholder perceptions in southern Tamil Nadu, India" Master's thesis in Environmental Management and Physical Planning at the Department of Physical Geography, Stockholm University.
10. Mustafa H. Aydogdua,2015. The farmers' views and expectations to the Water User Associations; GAP-Harran plain sampling, Turkey. Global Advanced Research Journal of Agricultural Science (ISSN: 2315 -5094) , January, 2015, Vol. 4(1) pp. 033-041
11. Ngoja, T.(2015). Community Perception of their Participation in the implementation and sustainability of Rural Water Projects in Morogoro Rural District Council. Ph.D.Thesis.Mzumbe University. Tanzania