

A Review of Tanzania's Water Resources the Quality and Management with Particular Focus on Fresh Water Resources Management

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Abstract - *The aim of this study was to access the quality of fresh water in Tanzania. The research was undertaken in Tanzania particularly in water basin. The essence of taking Tanzania as my case study first because it one among the African countries and worldwide countries with problems to water basin but also it is in high risk of experiencing drought in more few years to come. Data were collected through documentary review and summarizing whatever different articles were saying about Tanzania fresh water situation.*

The specific objective of this research were first to know the water basin available in Tanzania and the quality of fresh water ,second to examine the practices and mechanism of fresh water resources management in Tanzania and there to explore challenges facing different Tanzania water basin and different ways to overcome them ,these objectives had place in this research as the findings come out with the position on the same respectively On the first objective I have identified the seven water basin in Tanzania which are Lake Tanganyika ,lake Victoria ,lake Nyasa ,River Rufiji ,Pangani ,Ruaha ,Ruvu and Wami. And secondly, I have analyzed different mechanism used to manage these rivers including different structures of management in Tanzania and lastly, I have relationship between formal and informal institutions in managing these water basins and the challenges they face.

Integrated water resources management (IWRM) it's not an issue of one person this is something that involves everyone including the government, non-governmental institutions, local people and all

stakeholders from different side.

Key Words; water, water integrated management, fresh water, water quality

1.INTRODUCTION

1.1 Background information

Water is life, and it's the best thing for not only human being but even other living organism such as animals and even plants. Water controls everything in our daily life, there are several sources of water like underground, surface water, sea water which must go through desalination process to be ready to be used so as to remove the salt in the water and so many other sources.

Tanzania is one among the countries worldwide which face terrible water problems in many areas, there are so many people in Tanzania which lack water and this is due to the fact that still Tanzania is a developing country and they are still struggling with balancing their economic growth and hence it is not easy for them to balance and supply water in all the necessary and required areas.



Figure 1; Tanzania map

Tanzania is located in east Africa near Kenya, Uganda, Rwanda, Burundi, Somalia. Tanzania which its capital city is Dodoma and its famous Dar es Salaam, has an altitude of over 100m (600ft) a plateau 900-1800 (3000-6000). Tanzania is the 6th leading country in population at Africa after Nigeria, Ethiopia, Egypt, DRC Congo and South Africa

Its population is 59 million

29 million people do not have access to improved water sanitation

And 36% of all the population lives less than US dollar 8.3 per day

Every year 200,000 get contaminated water borne diseases



Figure 1, Tanzania water situation

1.2 Objective of the study

General objective

The research targets at accessing water resources management in Tanzania

Special objective

1. To know the water basin available in Tanzania and the quality of fresh water

2. To examine the practices and mechanisms of fresh water resources management in

Tanzania

3. To explore how different challenges affect water basin and their ways of solving them.

1.3 Significance of the study

Through this study i want people to be aware on the importance of conserving the water basin in Tanzania and this is by emphasizing the importance of cooperation between formal and informal sectors by allowing local people to practice the different indigenous knowledge on conserving the environment specifically the water basin around them so as to avoid unnecessary man-made disasters which lead to different big impacts.

1.4 importance of water and the effects of not conserving the water basin in Tanzania

Water is LIFE, there is no life with water, water covers all the requirements of human being.

Agriculture depends on water, where people get food, irrigation requires water, industrial and almost household's chore requires water and hence there is no life with water.

When water is missing it can affect the agriculture sector which is the economic backbone of Tanzania economy but also other major economic activities such as industries can manufacture anything with water

But the same water can be available but if its polluted in any way it can be dangerous to human health and other living organisms, there so many cases of water contaminated diseases like cholera and this is due to the rate of people who pollute different water sources such as river basin.

2 LITERATURE REVIEW

Water is a worldwide daily concern ,different scientist are daily putting a great effort in making sure that the world getting safe water in places and at the required period of time.

2.1 Water quality in Tanzania

The effects of human activities can affect water quantities and qualities at the same time for example human activities which lead to pollution .Pollution comes from different sources such as agricultural, fishing, industrial, mining and other daily human activities, this all influences to reduce the quality of water due to different chemicals used in different process and sometimes this water can even be toxic not only quality reduced but it can be dangerous.

Water lakes in Tanzania they don't differ like other lakes in the World thou every lake temperature in a certain country depends with the season they are experiencing in terms of rainfall and temperature.

The following is the graph that shows the average sea surface temperature from 1880 to 2015


	Average Temp [High / Low]	Average Rainfall
January	82° / 55°	2.6 in.
February	82° / 57°	3.0 in.
March	81° / 59°	5.4 in.
April	77° / 61°	8.8 in.
May	73° / 59°	3.3 in.
June	72° / 55°	0.7 in.
July	72° / 54°	0.3 in.
August	73° / 54°	0.2 in.
September	77° / 55°	0.3 in.
October	81° / 57°	0.9 in.
November	81° / 57°	4.7 in.
December	81° / 57°	4.1 in.

Table 1; Tanzania rainfall and temperature chart

2.2 River basins in Tanzania

Tanzania is blessed with seven big river basin thou to some extent there are some which they share with different near countries ,for example lake Tanganyika water basin which is the lake with the deepest depth in the entire Africa and number two in the world is shared between Tanzania, Congo and Zambia. but also we have lake Victoria which is the largest in Tanzania and it is also shared with Uganda, but also Lake Nyasa which is located between Malawi, Mozambique, Tanzania, we also have other water basins like pangani river basin, Wami river basin which also drains water in Indian Ocean and Rufiji river basin which is the longest and largest river valley in Tanzania.

2.3 Management of water basins in Tanzania

Tanzania what basin is managed different depending on the nature of the location and the size but all of them have similar format structure of management. The formation of water integrated structure is very important for any country, with the presence of this, it is always easy to get to know who is supposed to do what and what time and if something went wrong it is easy to give out the punishment accordingly.

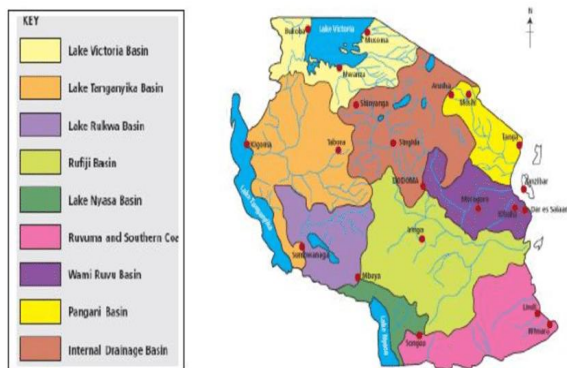
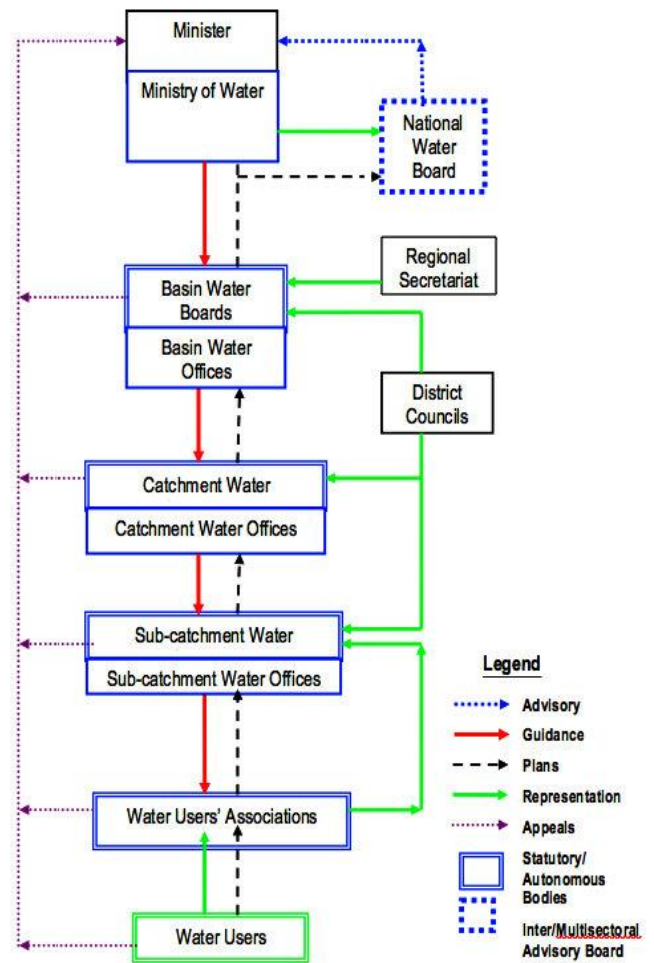


Figure 02, The map of Tanzania showing all the water basins in it.



The water management structure of Tanzania water basins

2.3 Empirical review

This part identifies different researchers that were taken by different people about water resources management in Tanzania. Kathori (2009) posits that the empirical research relies on experiences or the observations often due to regard for theory, It is based research coming up with the conclusions which are capable of being verified by observation or experiment.

Sokile & van Koppen (2003,2004) they conducted research about interface between formal and informal institutions in water resources management in Tanzania and in their own article they emphasized on the role and importance of cooperating between this two important sectors i mean formal and informal sectors, they both play a vital role in making sure Tanzania regions gets enough and quality water and for them to cooperate it will make the job easy since they both share the same goal.

Tanzania Journal science of agriculture sciences (2005); They conducted research on water resources management In Tanzania trying to identify research gaps and needs and of the sector of water in Tanzania, that for the sector to be perfect it needs new more things and corrections on different scenarios so as to make the process of water integrated to be more smooth and realistic .and they also emphasized on the importance of conducting research ,for a problem to be solved and hence a very deep research should be taken to come out with the problems and solutions towards it.

3 RESEARCH METHODOLOGIES

3.1 Area of conduct

The research was conducted in Tanzania which is one of the developing countries worldwide which are affected by water problems. The research will involve different stakeholders including legal professionalism, academicians and government officials from non-governmental organizations (NGO's), water experts and common people who are directly affected by water integrated management.

Research design of this research will base completely on the case study and its data collection will be done through visiting online libraries and reading different books.

3.2 Methods used

Documentary review

In collecting data the research used the method of reviewing documents from different sources such as Near east university library ,on line libraries and going through different publication ,the method was choose due to limited of time and also it saved cost but also it easy very effective and more realistic, and all the publication and books visited are specifically on water basins in Tanzania, different problems facing them and different ways to overcome them.

4 RESEARCH FINDINGS

For a very long period of time Tanzania has been considered as one among the countries with poor water supplying to its citizen most especially i people living in different rural areas, this article will evaluate different challenges that face Tanzania as country specifically when it comes to water resources management.

Population growth, Tanzania as other developing countries it is affected by the population growth ,it is even in the high risk of being over populated in the next coming 10 years, by the growth of population the demand of water is becoming so high to the extent it is not easy to supply the water to all the parts that requires the water but also the pressure becomes so big on the available water basin for example lately we have witnessed some of the water basin such as Pangani river starting to dry due to the high demand and high usage of the water and hence we are in a very high risk of making the world our own hell due to the scarcity of water which is highly caused by the population growth.

Internal and external conflicts over water bodies; Tanzania is one among the countries in Africa with a lot conflicts both internal and external conflicts ,internal conflicts are mostly occurs in Arusha, and this is between farmers and pastrolist fighting each other for water ,the farmers want water for their crops and pastrolist wants water for their livestock which gives too much stress on the water basin ,but also there have been several conflicts identified between countries like that one of Malawi and Tanzania. All of these conflicts do not help the water basin they only bring stress to the water sources, instead of investing in the water basin people are investing money and strength on the conflicts.

Ideologies that women are responsible in water conserving than men; This ideology has totally dominated Tanzania that women are the one who should take care of water issues in the house ,sometimes men are in the position to help women in different cases like even digging wells or even carrying water from one place to another but yet they do not help women at all ,men do anything in water in terms of pollution and later depend to get clean water from women , if only women and men were cooperating to conserve the environment in terms of water ,we could have better place.

Low budget allocation on water resources, Tanzania government still allocates low amount of money to the water industry and hence it's not easy to supply water in rural areas in terms of supplying infrastructure in areas that are in need of the importance infrastructures to make people get water ,and even allocation of high budget can enable to build different wells and make people not to depend on water basin. Hence low budget makes the stress increases.

5 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The research was undertaken in Tanzania specifically dealing with the water basin in Tanzania. The essence of taking Tanzania as the case study is because it's my home place and second, it's because it's blessed and surrounded by different big water basin which hold different records Worldwide. For example, Lake Tanganyika and Lake Victoria which are among the deepest lakes worldwide. The research comprises of five chapters in which chapter one provided a general introduction of the research and other methodological issues such as background of the problem, objectives of the study, significance of the study and research questions.

Chapter two comprised of literature review, concepts on solid waste management and briefly explanation of the water basin available in Tanzania. Whereas chapter three described the scope of the study and research methodologies.

Moreover, chapter four analyzed the findings gathered from field and chapter five summarized the key findings of the research, recommendations and conclusions.

5.2 Conclusions

Water integrated management depends upon on different functions and different people both multi sectoral ,individuals ,different organizations both internal and external , government and private sector in provision of knowledge ,capital ,support to each other so as to make sure and enable the well growth of the management.

Funds to support the management can be raised on different occasions such as celebration, conferences, outreaches and charity donation but also cooperation is the key.

Normal people are the crucial people in this process ,they always have extra knowledge most especially tradition knowledge which can help to get solution to different problems that affect them in different ways all the need is someone to support them and make them believe in those ways of theirs.

5.3 Recommendations

The situation of fresh water resources in Tanzania is getting worse every day. This research despite going through different people's opinions and suggestion on the situations, here are some of the recommendations which can help in solving different challenges

1. Recommendations to the central government

The central government should fight to raise the budget allocation on water resources, and this is by creating different options for water most especially in rural areas of Tanzania, this is by digging different wells, but also support indigenous knowledge of harvesting water but also buy and building different water saving tanks. But also supporting different concepts created by different farmers and pastoralist in Tanzania with aim of harvesting water for example that concept of "Mashamba ya Mbugani" practiced by many farmers in semi-arid areas of Tanzania with the aim of reducing the dependency rate on the water basin found in Tanzania. And hence the government should support such project by giving them loans, awards which motivate them to keep moving and preserving the water resources.

2. Population growth

For any country specifically Tanzania it's very important to control the population since the more population increases the more the demand for different things including safe water increases and it's not easy to supply enough to everyone. Hence, it's high time we start to implement different population policy that were created and maybe we should create more string policy like the one practice in China two child policy which help and limit people to have only two kids which can be able to have all the requirements. This will help to reduce the tension and pressure on the available fresh water resources.

3. Environmental Education

Conserving the environment but avoiding too much of human activities which can trigger too much of dangerous gases such as ozone layer depletion gases in which might lead to direct penetration of sun rays to the earth surface and hence affect the sources of water. We have already started experiencing high rate of climate change in Tanzania and this is due to technological advancements like growth of industries which are the biggest source of pollution, by doing so we will be in a position of reducing

our chances of being among the countries which might experience drought in nearly coming years.

4. Cooperation between formal and informal institutions and local people

Tanzania is one among the counties which have big problems when it comes to cooperation between formal and informal institutions and people ,laws are created from up and they just leave them like that thinking that they will just implement themselves, people need to be educated about the environment most especially water resources and this can only be done by giving strength to non-governmental who can easily volunteer in proving education to people ,setting examples ,creating different campaigns and debate on environment to make people aware on what to be done and what not to be done pertaining the environment, But also through strengthening the bond between government ,people and non-governmental institutions it will be easy people to contribute their indigenous knowledge on what to be done also in conservation of water basin around Tanzania. A good example is Mtumba approach which was a campaign started by non-governmental in Mtumba village with the help of the government and people, Mtumba approach was all about creating and build toilets for each house so as to avoid urinating and doing other stuffs near water basins and the campaign was successful in high rate since it involved cooperation between this three parties, Therefore we need more of such projects in Tanzania so as to make the conversation of fresh water resources easy.

5. Gender Equality

Tanzania is one among the African countries who still believe that the role of conserving the environment specifically water resources if for women ,that women are the one responsible in fetching water ,so whether the water is polluted it's not men concern or when there is drought it's not men issue it's women to figure out where they get water even if they have to walk a very long distance to such for this water ,And hence it's high time we balance that the issue of water conservation does not involve any gender that this gender is responsible in conservation and this one is not, it's everyone responsibility to conserve their environment especially water because water is life. When everyone takes the responsibility of conserving water sources it will be easy to avoid any risk activities across the water basins because everyone cares and is concerned.

6. Role of Water Clubs

Tanzania still needs more environmental clubs which will help in emphasizing the conservation of water, we have a lot of clubs which deals with environment as general and it not easy for them to dig more into water comparing to the fact if we could have clubs which deals with water specifically. Am making a call to all water lovers to extend their passion by sharing it to other people so that it can help us all to develop the passion in conserving water sources. Students at schools and colleges can play a vital role in emphasizing water management by formulating their water clubs and looking for different stakeholders who are willing to volunteer and support them in any ways that they need help. I believe this clubs can be of great help in reaching different people of different age, languages and cultures. But also, for students themselves and other stakeholders it will help them to add more knowledge about water and how to conserve them. Dependency rate on the water basin found in Tanzania. And hence the government should support such project by giving them loans, awards which motivate them to keep moving and preserving the water resources.

7. Population growth

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