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Contents

Editorial

Dear Readers,
Welcome to the first issue of volume five of the African Resources Development Journal. This Journal continues to be an international forum engendered to publish articles which expose potentials and challenges available in Africa in the exploitation and fully utilization of its abundant natural resources for sustainable development of the continent. Interestingly, the editorial team continued to receive several manuscripts from different parts of Africa addressing the utilization of the African natural resource potential. After passing through a double-blind independent peer-review, nine articles were approved for publication in this issue.

Abdul Kasukari and Deus Ngaruko assessed perception of refugees on food availability, accessibility, and utilization, forms of food rations and how they coped with the situation in Nyarugusu Refugee Camp in Kasulu district, Kigoma region in Western Tanzania. Data were collected through interviews using structured questionnaires administered to 395 randomly selected refugee households. Data were analysed using SPSS software. The results were presented using descriptive statistics. They showed that, food rationing prevailed both in-kind and cash but in either case was not adequate to meet food requirements especially for low income large families compounded by unaffordable food prices in markets inside the camp. It compelled them to buy food from markets outside the camp where it was relatively affordable. The study concluded, among others, food quality and quantity were inadequate in the camp; refugees preferred cash to food rationing because it enabled them to buy food outside the camp market where it was relatively affordable but also to use money as a medium of exchange to buy other essentials besides food. They came up with recommendations in favour of the conclusion.

Z. J. Mchitika evaluated the effects of households' fuel wood energy dependence to the physical environment in Ruangwa District, in southern Tanzania. The study sample constituted 96 households' who were dependent on local forest resource for energy consumption. Purposive and non-probability sampling techniques were employed in data collection. Both quantitative and qualitative methodologies were used in data collection, complemented with secondary data related to village forest resource production, sales patterns, and resource control. Data were analysed by using SPSS package. The results showed that, charcoal and firewood were the primary sources of cooking energy. The study established that, the experienced rampant tree cutting for domestic energy use was fueled by household poverty and lack of participatory forest management and control. The study concluded that, poverty was a driving force for household reliance on charcoal and firewood compounded by general lack of local community involvement in planning, decision making in sustainable use and control of forest products; and lack of education on the importance of conserving trees in the local environment. Recommended that, local communities should be involved in all processes included in forest products, consumption, conservation and control.

Elizabeth Ochola and Marygorety Akinyi critically reviewed the impact of floods on Kenyan Women in various aspects and consequent gender responsive mitigation. They selected floods, unlike other natural disasters; they frequently occurred mainly in Western Kenya and threatened human life and livelihoods mostly of women who often are engaged in vital roles in the rural economies, the informal sector and household survival. The media as a powerful weapon ought to expose such calamities which befell rural women with a view of strategizing mitigation measures. The authors wanted to testify whether the media adequately covered women who adversely suffered from such catastrophes and given the deserving intervention by various stakeholders. Methods used included reviews of existing institutional literature and media coverage reports to examine the specific flood related vulnerabilities among women in Western Kenya in order to identify existing gaps. Results revealed that, mostly women were vulnerable to various social economic sufferings partly because they were not involved in decision-making forums where Disaster Risk Reduction was discussed leading to lack of prioritization of their specific needs. The study drew several recommendations for improvement for the welfare of rural women against floods.

Ayadi, Folorunso Sunday and Akoka-Yaba researched on relationship based on commercial natural oil between economic growth, energy consumption, trade openness and environmental pollution in the context of rapid urbanization taking place in nine West Africa countries from 1990 t0 2018. Although natural oil has energy and economic importance, its rapid consumption results in critical environmental pollution. The study aimed at examining the interrelatedness of energy consumption, environmental pollution, international that, trade openness linked to economic growth. The method used was two stage least squares (2SLS). Results showed the economic growth and international trade over oil as such had no significant impact on carbon dioxide emissions in West Africa but it was trade openness under rapid urbanization which significantly increased emission in the West African countries. They argued that trade openness stimulated largely by foreign direct investment triggered significant increase in energy consumption and economic growth leading to increased carbon emission in West African states. This is a paradox built on controversial economic growth- increased energy consumption- environmental pollution pillars. It is a benefit-cost issue that requires governments to de-link oil energy consumption to reduce environmental pollution at the expense of economic growth. Or; increase economic growth at the expense of environmental quality. The study concluded that, increased trade openness and energy consumption in the context of urbanization were the driving factors towards increased economic growth contrasted by increased air pollution through industrial emissions respectively. It recommended a switch to more renewable and clean sources of energy as opposed to the fossil-based energy sources in order to de-link energy demand from emissions in their countries.

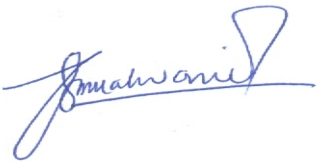
Flora Kiwonde and Newton Kyando analysed the contribution of education policy reforms in Tanzania towards gender dynamics specifically on the formalization of domestic-work sector using a case of Mafinga town council. It is a worldwide catch-phrase topic as domestic servants fall under the vulnerable groups supplying cheap labour often to the informal sector. Mostly, they form the majority of children deprived of the right to attend primary education at school entry age as were forced by poverty and ignorance to enter the domestic servant sector at a tender age. The study aimed at analyzing the influence of the current educational policy towards the formalization of domestic sector. Qualitative methods of data collection were used by interviewing randomly selected 30 domestic workers, 10 employers and 5 individuals from workers' union. Collected data was analysed using descriptive analysis. Results showed that, the policy's emphasis on mass education for children in the school age entry explained the increase of the age of domestic sector from 12 years to 17 years. Other positive results included; the number of daily routine workers has increased as opposed to residential workers; currently domestic works are gender inclusive i.e. both males and females unlike the in past where it was exclusively female from the study area to other destinations in the country; it has increased awareness among domestic workers who now demand their rights including vacation and increase of salary from their employers. Moreover, the increase in number of day care centres has automatically reduced the supply side of domestic workers to other destinations in the country. To conclude, the new education policy reforms in Tanzania has contributed immensely not only in the formalization of domestic-work sector but also preventing school age entry children particular female from succumbing into vulnerable groups of domestic servants at the expense of schooling. The study recommended improvement in the education sector among school age females should be enhanced in order to minimize their involvement in the informal sector as domestic servants.

Harrieth G. Mtae, Deus D. Ngaruko and Gosbert B. Kaserwa assessed the effect of borrower qualities on business performance of Rural Based SMEs in four districts of Kagera Region, Tanzania. The Study was guided by the theory of Group Based Micro-financing (GBM) model. Methods included the use of structured questionnaires with a five-point Likert Scale as well quantitative and regression research approach. A sample size of 279 group borrowers of two commercial banks and two MFIs was used to collect primary data from June to August, 2020. The regression analysis was done between three independent variables of Borrower's qualities against three dependent variables of Business performance. Those who said had increased knowledge, family income and household assets as a result of borrowing money and performing business from Rural Based SMEs formed 98.5%, 96.4% and 96.0% of the respondents. Hypothesis testing confirmed that Borrower's qualities impacted positively on business performance of rural based SMEs in Kagera region. On the basis of the results, the study concluded that Borrower's qualities under GBM model had a big positive contribution to the business performance of rural based SMEs. It recommended that they should be adopted and promoted as a tool for fighting poverty as a result of increasing borrowers' abilities to engage in prosperous income generating businesses.

Elisante Marko Msuya and Jumanne Daudi Kalwani assessed demographic impacts on accessibility to potable water: A case study of Mwanga District, Tanzania. The objective was to determine the effects of large populations, among other factors, on resources consumption specifically potable water in the study area for the purpose of advancing possible strategies through respondents participatory problem-solving approach. The study was largely qualitative using a case study approach complemented with quantitative methods by interviewing 120 respondents whom 70 were women and 50 men; including key informants and FGD participants. Quantitative data were analyzed using Statistical Packages for Social Sciences (SPSS version 20); and content analysis for qualitative data. Findings showed that, high population increase inter alia led to scarcity, consequently, decreased accessibility to potable water for domestic uses. The study concluded that, population increase negatively corresponded with accessibility to potable water compounded by climate change. Recommended the formation of village water committee to supervise and, in consultations with other stakeholders, find alternative ways of getting potable water for the growing population such as drilling water, protection and conservation of catchment areas; and fund raising to initiate community water projects.

Sabas John Gara and Emanuel Patroba Mhache examined women participation in tourism entrepreneurial in Minjingu Village, Manyara Region**.** The study aimed at identifying tourism opportunities found in Minjingu Village by examining factors which affect women participation in tourism business opportunities with a view of providing ways for improvement and whether they access microfinance credit services for capital. Methods involved. Quantitative and qualitative data collection from a sample 327 of which, 317 were women entrepreneurs; and 10 were women leaders, village executive officers, hotel operators and tour operators. Data were analyzed using Statistical Packages for Social Sciences (SPSS version 16.0). The findings showed that, the presence of tourism activities in the area offered valuable business opportunities for enterprising women to selling their various items to tourists. However, the limiting factors included lack of financial capital and business skills, unstable market due to COVID-19 pandemic; and business competition significantly affected women participation in tourism business. They concluded that, women required financial empowerment and capacity building in various social economic aspects to enable them participate fully in tourism entrepreneurial activities for income generation. It recommended tourism stakeholders should establish centres for business skills training and provide financial support to improve women active participation in tourism business

Finally, the ARDJ Editorial thanks and congratulates all authors who submitted their manuscripts which were processed and eventually published in the ARDJ. Besides, the Editorial registers a vote of thanks to reviewers of the manuscripts. We hope that the general public will gain knowledge by reading the articles in the spirit of sharing information and experiences on various resources yet to be fully exploited for sustainable development of Africa. You are most welcome to submit your researched paper and book reviews to the ARDJ for publication in the upcoming issues.



Prof. Jumanne Daudi Kalwani
Chief Editor
The African Resources Development Journal

Refugee Food Security Perceptions on Food Rationing Practices in Refugees Camp in Western Tanzania

Abdul Kasukari[1] and Deus Ngaruko[2]

Abstract

This paper is based on the study on perception of refugees on food availability, accessibility, and utilization, forms of food rations. It assesses coping strategies on reduced food rationing and food security for refugee in Nyarugusu Refugee Camp in Kasulu district, Kigoma region in Western Tanzania. Data collection involved a total of 395 refugee households in the study area who were interviewed using structured questionnaires. The collected data were processed and analysed using SPSS software in which descriptive statistics, mainly frequencies were produced and the results presented in bar charts. The study revealed that, the common form of food rationing in practice was in-kind food ration, the most preferred form was a combination of both In-kind food ration and Cash. It was also revealed that the existing food aid ration was not satisfactory for family use. The food prices in the camp market were not affordable for the family food consumption especially for the majority with low incomes compounded with large families. As a result, upon receiving rationed food they partly sold it in order to get cash which they used to buy other basic goods in the market; or simply exchanged goods in- kind in order to meet human wants.

Keywords: Refugee food security, food ration, refugee camp, Tanzania

1.0 INTRODUCTION

Western Tanzania is currently hosting refugee in three camps - Nyarugusu Camp (houses 156,464 refugees); Nduta Camp (hosting 115,726 refugees); and Mtendeli Camp (accommodating 44,712 refugees) (UNHCR, 2018). These camps are overcrowded and the services are overstretched (Obodoruku, 2017). Political instability and violence in neighbouring Burundi and the Democratic Republic of the Congo (DRC) have driven thousands of refugees into Tanzania. The Office of the UN High Commissioner for Refugees (UNHCR) estimates that nearly 243,000 Burundians have taken refuge in Tanzania since conflict broke out in the capital of Bujumbura in April 2015 (URT, 2019). According to Obodoruku (2018), the continuous inadequacy of food for refugees has been a pattern, this is evidence from 2010 a study conducted by Community and Household Surveillance (CHS) in northwestern Tanzania, on a Programme Outcome Monitoring in Nyarugusu Refugee Camp in collaboration with

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World Food Programme (WFP), as well as the UNHCR stated that there was lack of sufficient food for refugees. While conducting interviews with refugees in Nyarugusu camp, they voiced their concerns of the inadequacy of food supply by UNHCR and MHA (Obodoruku, 2017). While in 2016, the WFP noted that the Super Cereal that was shared for refugees in Nyarugusu camp was temporarily reduced in the months of March, June, July, October, November and December 2015 as a result of the pipeline breaks [deficiency of consistent or adequate distribution of food because of the gap/lack of subsidies (WFP 2016), (Obodoruku 2017).

Refugees in Nyarugusu camp lack sufficient food (UNHCR, 2017); their maize's rations were reduced 70 percent predominantly in the July 2017 distribution (WFP, 2017). It is fundamental to note that refugees depend on food assistance predominantly from the WFP (Obodoruku, 2017 and 2014) and the international community (UNHCR, 2016). UNHCR (2017) reported that there has been inadequate food for refugees due to the lack of fund constraints. Refugees in Tanzania camps have uncounted constant food reduction constantly for months and years (Obodoruku, 2014). WFP (2017) dispenses food such as pulses, vegetable oil, Super Cereal (SC) and salt in order for refugees to meet a minimum necessary dietary intake of 2,100 calories for a person daily (WFP, 2017). Nevertheless, UNHCR (2017a) stated that, as of March 31, 2017, the proposed 100 percent once-a-month food aid to refugees in camp was met. On the other hand, in August, the UN News Centre (2017) reported that the funding shortage had resulted in the reduction of food rations for approximately 320,000 refugees in northwest Tanzania. This could lead to longstanding, life-changing effects, such as severe malnutrition or rising susceptibility to disease. UNHCR (2018) noted that the continuous magnitudes of refugees from Burundi to Tanzania had led to food shortages and rations being cut because the Burundian situation is underfunded.

2.0 LITERATURE REVIEW

The process of community empowerment has been used to inform empowerment theory, which recognizes community members as experts of their environments while exploring key challenges within them in order to uncover solutions to the barriers they identify, underscoring their ability to navigate such identified challenges (Hatfield, 2012). A study by Hand and Kaiser (2019), showed that it is important to note that when using this framework, the purpose of empowerment is not to teach participants new information, but to support them, which begins by first learning what they already know (Hatfield, 2012). Thus, not only has empowerment theory been used to address limited agency among refugee populations as they are disproportionately vulnerable, particularly to issues of food insecurity (Hatfield, 2012), but it also supports the promotion of greater wellness and social justice by facilitating social change through working to address structural barriers to individual and community agency (Whiteside, 2009).

Food security interventions in camps aim to prevent malnutrition in the population, especially among women, young children and other vulnerable groups, and to stabilise their food security situation, mainly through food assistance. If markets are well established and accessible, it is particularly important to choose the most appropriate form of food assistance (in-kind food, cash, vouchers, or combination). Interventions are also organised to assess and monitor the food security and nutrition status of the population. In addition, food security programming promotes food security by means of longer-term interventions that, for example, seek to increase food production. Food security programmes work closely with livelihood programmes to provide longer term solutions and to promote self-reliance (UNHCR, 2018).

A study by Whitaker (2008), the effort to increase overall compliance may require an exchange of ideas and discussion of new proposals to ensure minimal standards of refugee protection around the world. As indicated by UNHCR (2019), the impact of underfunding is felt acutely in all areas of the Tanzania refugee response. With inadequate funding for the operation, RRP partners have had to divert the already limited resources leading to major gaps in the response. By the end of 2018, funding for the Burundi and DRC inter-agency refugee response in Tanzania stood at, respectively, 36 and 30 per cent. Specific impacts of chronic underfunding include a reduction in food rations below the minimum standard of 2,100 kcal per person per day for most of 2018.

Refugees in Nyarugusu camp unceasingly confront food scarcity. As of January 2018, WFP reduced food rations for refugees in Tanzania. WFP delivered simply 72 percent of the required 2,100 kilocalories (WFP, 2018). According to Bruin & Becker (2019), in Nyarugusu Refugee Camp the Refugee situation almost all of the respondents describe life in the camp as difficult. Based in all villages surrounding Nyarugusu Refugee Camp the respondent's and from local government stated that crime rates have increased since the establishment of the camp, rising further with the arrival of Burundian refugees in 2015, and that refugees may come to Tanzanian villages to steal and take things from villagers' belongings. The refugees are like robbers and may forcefully robe foodstuffs and other household items on the grounds that life in the camps is unbearable (Bruin & Becker, 2019). It is from this background that this study assesses the Refugee's Food Security Perceptions on reduced food rations in Nyarugusu Refugees Camp in Western Tanzania and recommends options for improved food rationing policy for refugees in camps.

3.0 MATERIALS AND METHODS

This study was conducted in Nyarugusu Refugee Camp located in Kasulu District of Kigoma in Western Tanzania. This camp was selected due to the presences of many refugees with food insufficient claiming. The Refugee Food Security in refugee camp is very important. The surveyed population was 33,884 household's refugees in Nyarugusu Refugee Camp at Kigoma western Tanzania (URT, 2020). The sample size of 395 was picked out of 33,889 household's refugee's population purposively. This study used a descriptive research design because the overall objective was to establish whether significant relationship among variables exist at some point in time. There structured questionnaire was adopted to collect data from the heads of households. The questionnaire was administered through interview schedule where by respondents were visited in their homes and some cases in their workplaces. Likert-like Scaled questions were included in the questionnaire. The collected data were processed and verified prior to analysis. Descriptive statistics, mainly frequencies were main data analysis methods and results were presented in form of bar charts for each theme of the study.

4.0 RESULTS AND DISCUSSION

Seven main thematic findings are briefly described based on frequency charts in Figures 1-7. Generally, the results revealed presence of challenges on reduced food rations in Nyarugusu Refugees Camp. This has resulted to grievances among refuges due to the resultant prolonged refugee food shortages.

4.1 Refugee's Perception on Food Availability

Based on the findings of present available food aid ration is satisfactory for the household: 74.6% (majority) of respondents disagreed, 15.5% somehow agree; while very few 2.5% highly agreed. On whether the available food price was affordable for the individuals or family food capacity; 60.6% being the majority disagreed while 27% strongly disagree. This implies that the present available food aid ration isn't pleasant the individuals or circle of relatives use for entire forty-two days for one man or woman as shown in figure 1.

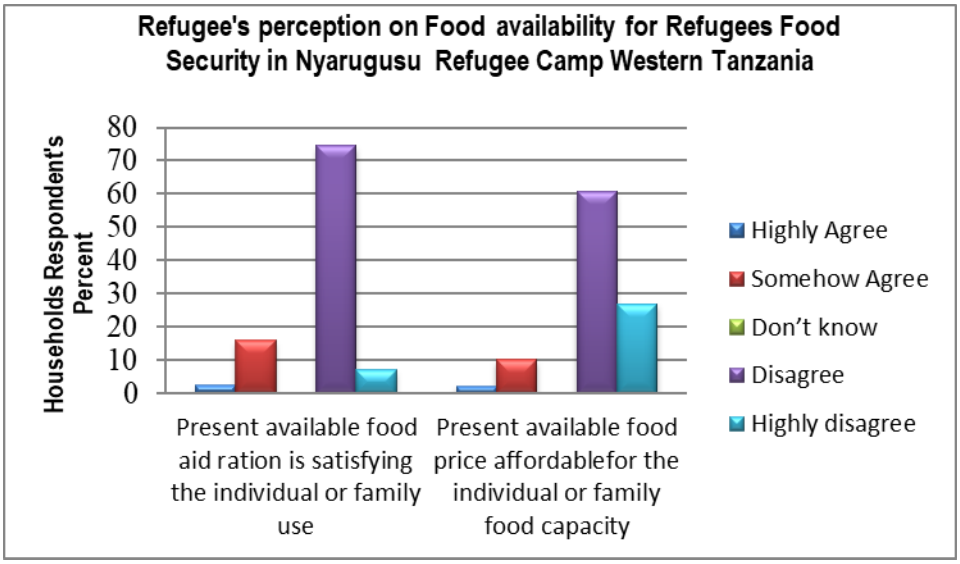

Figure 1: Food Availability

4.2 Refugee's Perception on Food Accessibility

The study wanted to establish on the availability and accessibility to food on daily consumption basis: 60.7%, the majority disagreed, 28.5% highly agreed, 10.1% somehow agreed; and 0.7% highly disagree. Those who commented on whether accessibility of food through markets was affordable for low-income individuals or family of refugees were as follows: 45.3% disagreed, 43.7% highly disagreed, 8% somehow agreed; and 3% highly agreed. It implies that, the majority of the respondents disagreed both on the availability and accessibility to food on daily basis; and they could not afford to buy it through markets due to their low incomes. Therefore, it showed the need for the government and other stakeholders to intervene in order to solve the frequent food shortages facing the majority of the refugees who earn low incomes.

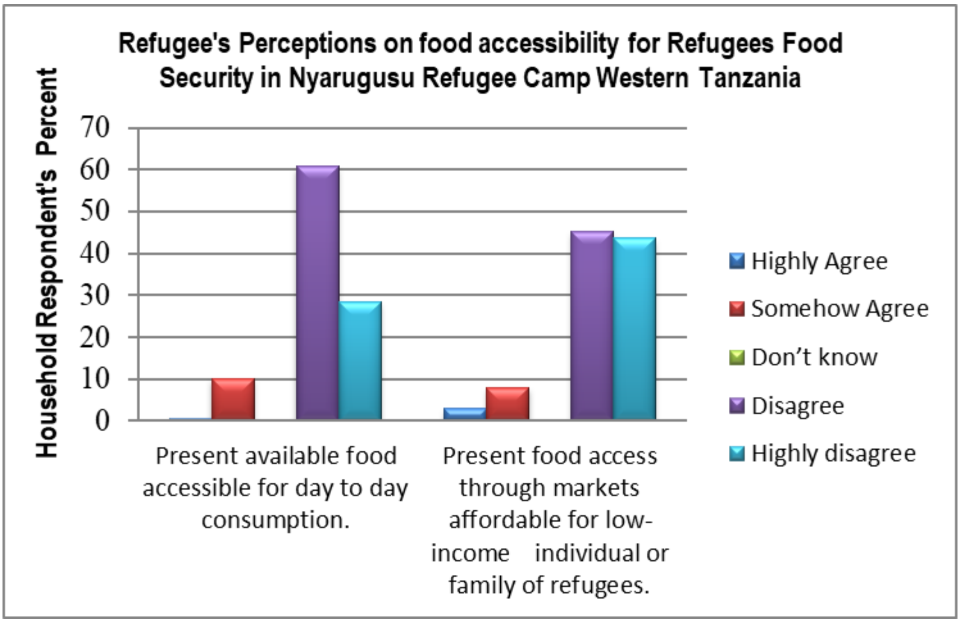

Figure 2: Food accessibility

4.3 Refugee's Perception on Food Utilisation

The findings on present received food for dietary intake: 71% disagree, 18.9% somehow agree, 8.1% highly disagree and 2% highly agreed. On quality and safety of received food; 99% somehow agreed, 0.8% highly agreed, and 0.2% highly disagree. Regarding part of food being utilized on selling to get money for other needs: 54.7% somehow agreed, 35.3% disagreed, 9.8% highly disagreed and 0.2% highly agreed. The end result implies that food utilization desires intervention for refugees to acquire quality food for proper consumption. It will also reduce refugees' tendency of selling part of food aid to get money in order to buy better food and other basic needs (see Figure 3).

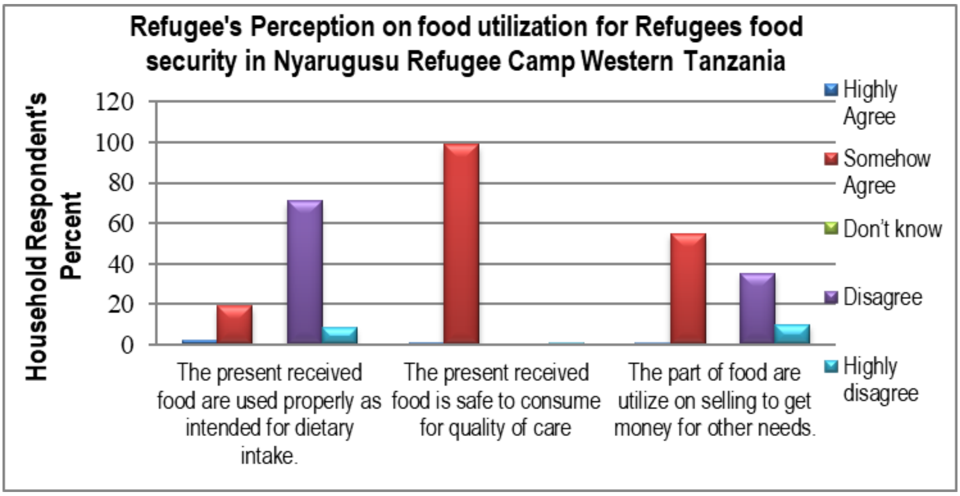

Figure 3: Food Utilization

4.4 Refugee's Perception on Form of Food Assistance

Regarding perception on preferred form of food assistance in Nyarugusu Refugee Camp Western Tanzania; the study established that 59% of respondents said that, cash was most appropriate; while 11% preferred to be given food in-kind; and 23% preferred a a combination of food in-kind and cash (Figure 4).

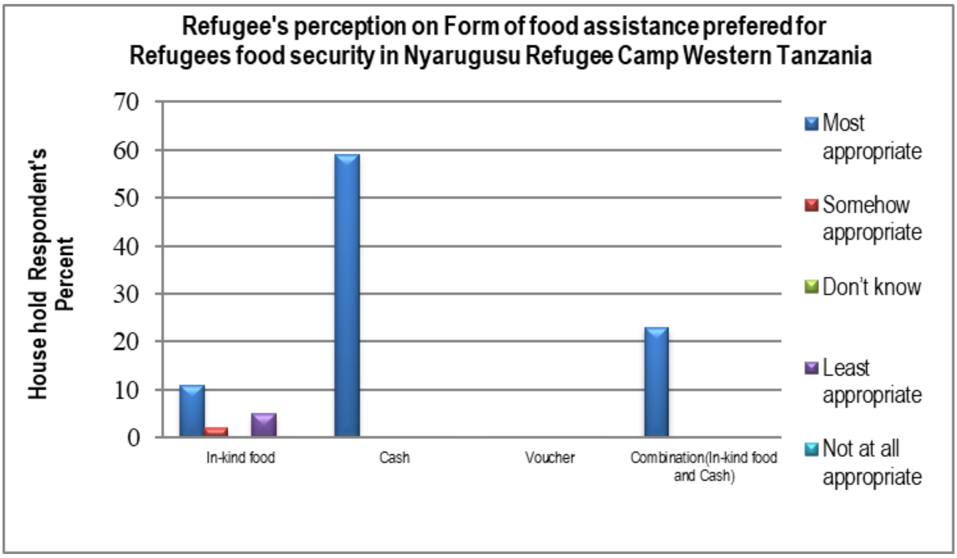

Figure 4: Refugee's Perception on form of food assistance preferred for Refugees food security in Nyarugusu Refugee Camp Western Tanzania

4.5 Factors Affecting Implementation of Coping Strategies on Food Rationing

Five factors were employed to assess the extent they affected implementation of coping strategies as far as food rationing was concerned as follows. Firstly, the assertion that implementation was affected by lack of political good will from the government constituted 98.2% and 1.8% highly agrees responses respectively. Secondly, it was affected by restrictions of refugee accessing community market; 94.2% highly agreed and 5.8% agreed. Thirdly, responses for those who said it was affected by denial of permits to work or engage in income generating activities; 92.4% highly agree and 7.6% agreed. Divergent attention and overwhelming demand on UNHCR due to increased cases of conflicts globally included 83% of don't know, 9% of don't at all agree, 6.7% don't agree and 1.3% highly agree of all responses. Based on these results, it can be judged there were two main factors affecting the implementation of coping strategy on rationing approach in Nya rugusu refugee camp in western Tanzania. They included restrictions of refugee accessing community market; and the denial of permits to work or engage in income generating activities as shown in figure 5.

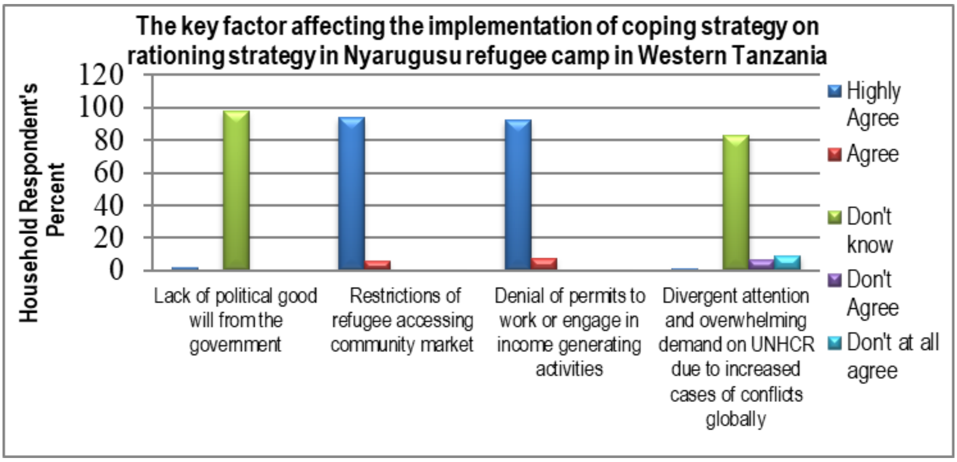

Figure 5: Key factor affecting the implementation of coping strategy on rationing strategy in Nyarugusu refugee camp in Western Tanzania.

4.6 Effects of reduced food rationing

Figure 6 provides the main factors which attributed to reduced food rationing. Firstly, food insecurity within the camp supported by majority (88.3%) of the responses; ; while those who said it was due to food being very expensive in the designated market constituting 90.2% of those who highly agreed. The other factor stated by respondents was increased crimes due to rationing which secured 68.5% of the responses. These factors generally accounted for the overall reduction in food leading to low food utilization for dietary intake; and poor-quality health generally.

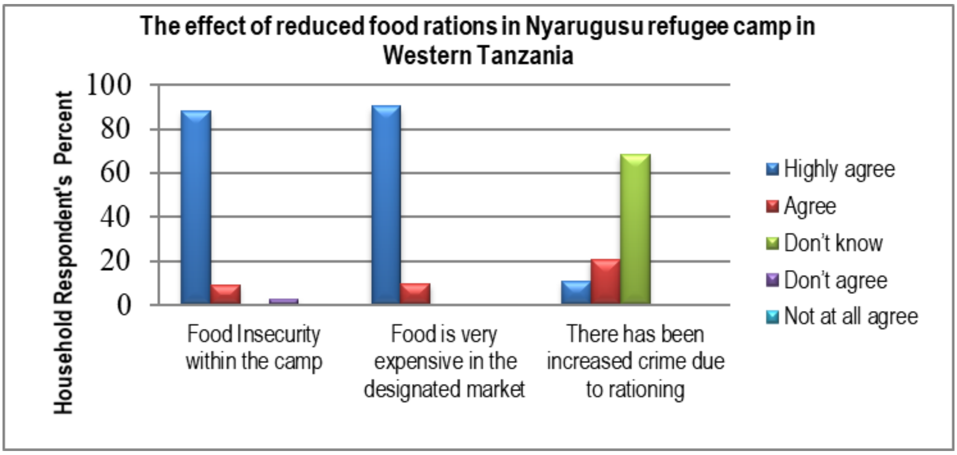

Figure 6: The Effect of Reduced Food Ration in Nyarugusu Refugee Camp in Western Tanzania.

4.7 Coping Strategies against Food Rationing

The study established four ways used by respondents as coping strategies against food rationing as presented in Figure 7. It provides percentages for respondents who opted for: reduction in the number of meals per day (92%); reduction in size of meals (89%); restricted adults to consume meals in order to allow more food for children (97.6%). However, data showed that there were very few respondents who skipped food consumption for an entire day; for 91.1% of the respondents didn't agree with this option. These results suggest that, participatory research is necessary to be conducted in such camps in order to know the actual coping strategies being undertaken by refugees themselves rather than an external agent making assumptions for them which is not proper.

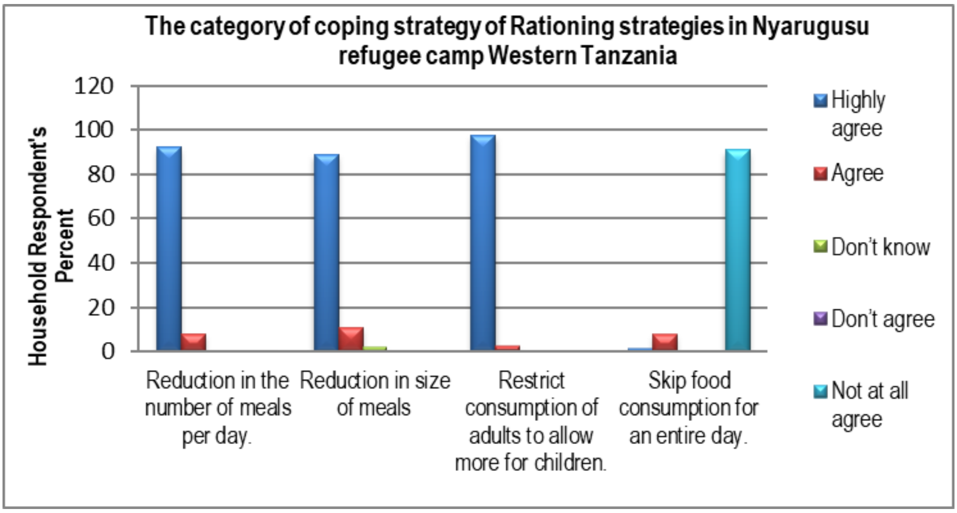

Figure 7: The Category of coping Strategy of Rationing Strategy in Nyarugusu Refugee Camp in Western Tanzania.

5.0 CONCLUSIONS AND RECOMMENDATIONS

In general, the study findings confirm that reduced food rationing and food security exist in Nyarugusu refugee camp in Western Tanzania. Partly it is caused by unsatisfactory availability of food aid for individual and family use. Partly, due to high food price in the camp market which are not affordable for the individual and family as the majority of them have low incomes leading to inadequate food and inaccessible for day to day consumption. This challenge calls attention for special intervention as it even reduces food rationing. As a result, the recipient of such minimal food aid basically majority of refugee's households sell the little food received for exchange for other basic needs. Under such circumstances, refugees would prefer receiving cash, a combination of cash and food in-kind to receiving food alone. If done, according to refugee's perception, will suffice to meet coping strategies of food and other necessary basic human wants at the refugee camp. This recommends that, it is important participatory research be conducted frequently at refugees' camps in order to know the living conditions particularly the critical food conditions and other basic human wants facing refugees in order to take the appropriate intervention measures consonant with human rights as expounded by theUnited Nations.

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The impact of Households Fuel Wood Energy Consumption to Forest Resources: A Case Study Ruangwa District

Z. J. Mchitika[3]

Abstract

The purpose of this paper is to evaluate the effects of household fuel wood energy dependency on village trees in Ruangwa District. The study's specific goals were to identify energy sources in Ruangwa District, investigate the consequences of home energy dependency on trees in rural areas, and evaluate strategies to alleviate the effects of household energy dependency on forests. The study used a case study in southern Tanzania to examine the effects of household fuel wood energy dependency on forest resources. The study sample constituted 96 local forest resource stakeholders. Purposive and non-probability sampling techniques were employed in data collection. Both quantitative and qualitative methodologies were used. Closed and open-ended questionnaires were used to collect both primary and secondary data including relevant documents related to village forest resource production, sales patterns, and resource control. The study established that, charcoal and firewood were the primary sources of cooking energy. Also, lack of knowledge and household poverty had a significant impact on forest management and control. The study concluded that, poverty was the primary factor driving household reliance on charcoal and firewood compounded by forest management authorities restricting local communities from extracting essential forest products; and lack of education on the importance of conserving trees in the local environment. Recommended that, local communities should be educated on the negative fuel wood human activities to the environment specifically excessive tree cutting for fuel wood energy. Besides, villages around forest resources and forest management on authority should jointly draw regulations and supervision mechanisms sustainable use of forest resources and products.

Keywords: *Household fuel wood energy dependency, household poverty, excessive tree cutting for wood, forest management*

1.0 INTRODUCTION

In Africa, forests play a vital role in household livelihood (Razafindratsima et al., 2021). They are equally important in biodiversity protection, hydrological cycle regulation, wildlife habitat, carbon sequestration, and climate regulation, among other things (Miller et al. 2021). Food basically vegetables, fruits, and roots; medicinal plants, honey, thatching grass, fodder, firewood, charcoal, and

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construction materials, as well as cultural, spiritual, and ceremonial places, are all provided by indigenous forests to local communities (Wandago, 2002). Forests, on the other hand, play a significant role in rural household economies. Africa consumes the most fuel wood per capita in the world, 0.83 m3 per person per year. Because most of wood is used for cooking. Forests and tree systems contribute to household food security by providing cooking energy. In addition to providing household jobs and money, trees contribute to food security. Forests are also known to give non-use values to various stakeholders, such as existence, charitable, and bequest values.

According to, Gray et al. (2009) Africa has the world's biggest yearly per capita usage of fuel wood. Because the majority of wood is used for cooking, forests and tree systems contribute to household food security, employment, and income by providing cooking energy. This general alarming information on fuel wood consumption in different parts of the globe; it prompted this study to assess the situation at local level. The purpose was to establish whether rapid consumption of fuel wood in the st udy area existed at the detriment of the local forest resources; and there were intervention strategies such as alternative energy sources to ensure sustainable use of forest resources.

2.0 LITERATURE REVIEW

Many researchinstitutions including United States Department of Agriculture (USDA 2007) and the National Research Council (2008), have discovered that rural poor people rely on forest resources for income and other forest resources. As a result, several experts concluded that one factor contributing to deforestation was a lack of alternative energy sources, as their high profit margins are dependent on the availability and sale of fuel wood. In Tanzania, the gap between biomass fuel output and consumption is widening. Biomass consumption and sustainable supply predictions show a 22 percent shortage by 2020; which if combined with population expansion, might compel more people to rely on forests for their fuel needs (FAOSTAT, 2004).

The majority of African households rely on traditional fuels to meet their daily energy needs, and this is projected to continue for many years (Mwampamba, 2007). Wood is extremely significant in Sub-Saharan Africa as a household cooking fuel and for any other form of domestic use. (SSA) (Erakhrumen, 2008 cited in Erakhrumen, Ogunsanwo and Blomley, *et al* 2010). More than 90% of Africans use firewood or charcoal for cooking and other heat-related activities, according to available estimates. Similarly, wood fuel dominates Tanzania's energy supply, accounting for more than 90% of the country's energy mix (UTR, 2003). In Tanzania, charcoal is the most common source of energy for both rural and urban communities.

The number of homes who rely on wood fuel to meet their daily energy demands is expected to rise steadily (Rude *et al*, 2010). On the other side, a study by Mwampamba (2007) found that as African cities grow, more charcoal will be consumed with a 14 percent increase in charcoal consumption for every 1 percent rise in urbanization. Furthermore, according to Msuya et al. (2011), Tanzania loses 150,433 hectares of forest per year, or around 5.8% of the total forest, due to fuel wood usage. Erakhrumen (2010) attributes the expected future increases in fuel wood use to demographic and socioeconomic changes, as well as unpredictably fluctuating fuel costs (such as kerosene, liquefied petroleum gas (LPG), and others).

The above figures highlight the importance of charcoal as a residential and commercial fuel in Sub-Saharan Africa, particularly Tanzania. The energy use is dominated by biomass-based fuels particularly fuel-wood (charcoal and firewood), which are the main source of energy to both urban and rural areas. Biomass-based fuel accounts for more than 90% of primary energy supply (Msuya *et al,* 2011). Commercial energy sources such as petroleum and electricity, account for about 8% and 1.2%, respectively, of the primary energy used (Mwampamba, 2007)). Coal, solar and wind account for less than 1% of energy used. Tanzania has a forested area of about 35.5 million hectares of which, around 80,000 hectares are plantation forests, and 70,000 hectares are privately owned (URT, 2003).

According to URT (2003), the National Energy Policy of 2003 was established to assure the availability of reliable and inexpensive energy supplies, as well as their logical and sustainable usage in support of national development goals. As a result, the national energy strategy aspires to build environmentally sound and sustainable energy production, procurement, transportation, distribution, and end-use systems. The 1997 National Environmental Policy establishes the environmental foundation for a variety of industries, including energy.

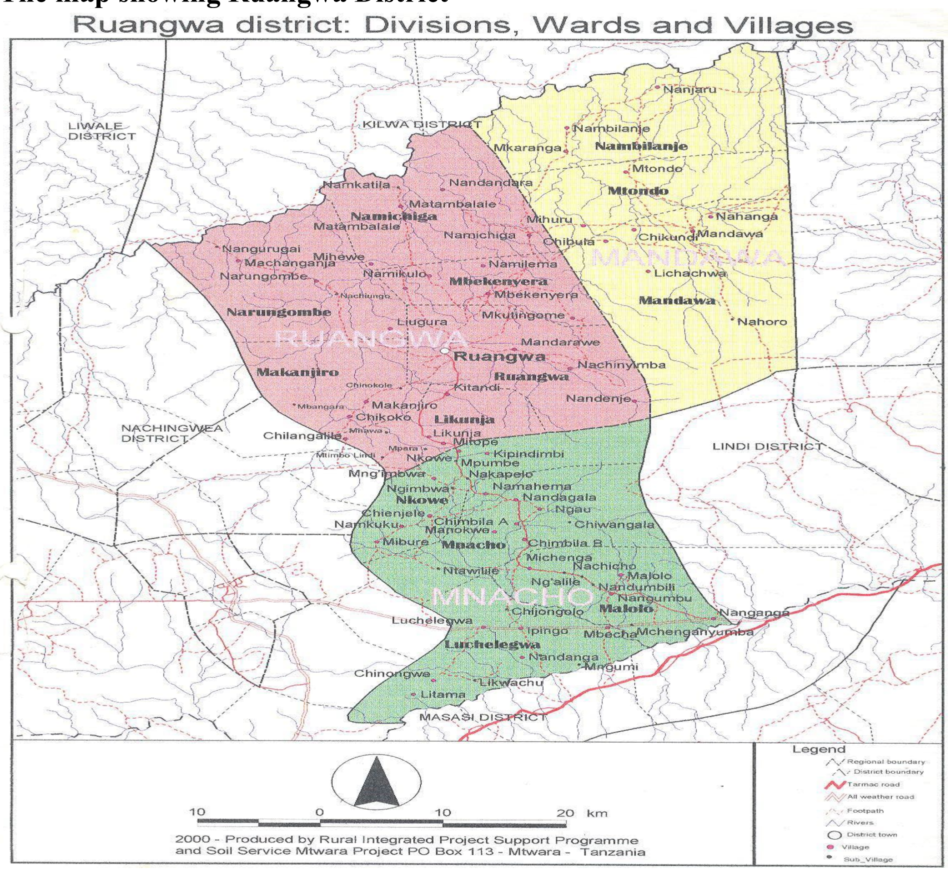
Sustainability, security, and equitable use of resources to meet the basic requirements of present and future generations without jeopardizing health and safety are among the goals of the National Environmental Policy. As a result, the goal of this study was to examine the impact of household energy consumption and reliance on firewood and charcoal forest resources on village forest conservation. This paper intended to address three issues: to identify main sources of energy used for cooking at home; examine effects of dependence on village forest for charcoal and firewood; and respective measures taken to mitigate the effects of household energy dependency on forest.

3.0 MATERIALS AND METHODS

3.1 The Study Area

The research was carried out in Ruangwa District, Lindi Region, Tanzania. The district is divided into 22 administrative wards. According to 2012 National Census, the district had a total land area of 2,515.6 km^2 and a population of 184,899 people made up of 89195 male (48.24%) and 95704 females (51.76%). The district has seven villages with community forests namely: - Kipindimbi, Lichwachwa, Nahanga, Ng'au, Kitandi, Chingumbwa and Nandenje.

The map showing Ruangwa District



3.2 Research design

This research assumed a case study. The justification is that; according to Denscombe (2000), a case study provides more comprehensive results rather than generic responses to how and why concerns.

3.3 Sampling Frame

The sampling frame for this study was obtained from the national censual (NBS, 2012) covering the population of seven villages which form community forest villages. They were purposely selected for this study. All seven villages had a total of 14040 people as shown in Table 3.1.

Table 3.1: Population of the study

Population category	Population	Percent (%) in total population
Kipindindimbi	2018	14.4
Lichwachwa	444	3.2
Nahanga	2565	12.2
Ng'au	2965	18.2
Kitandi	3145	22.4
Chingumbwa	1264	9.0
Nandenje	1639	11.6
Total population	14040	100.0

Source: National Bureau of Statistics 2012

3.4 Sampling Techniques.

Foremost, the household was the unit of analysis. It included heads of households. By virtue of being leaders their respective households were assumed to know even practice tree cutting in fuel wood processing for livelihood; thus, they were chosen for interview. Simple random sampling technique was employed to get a sample of 96 respondents from the population for interview. Random sampling was employed because it increased probability of selecting charcoal harvesters, charcoal traders, and charcoal consumers from the population who in one way or the other were involved in using forest resources. The random selection was carried out in such a way that, heads of households in the study area were asked count numbers 1, 2 up to 3. Then, those who counted 3 were selected to form the study sample for interview. In this way, the sample of 96 heads of households randomly included charcoal harvesters, charcoal traders; and charcoal consumers.

3.5 Data Collection Methods

Data were collected using both primary and secondary data. Primary data are those data which are freshly gathered while Secondary data are those data which already existed in other sources of data (Kotler, 2007). Questionnaires, interview and documentary reviews were the tools for data collection. Primary information was collected through respondents, while secondary data were collected through documentary review from various scholars who had gone through various studies relating to this study.

3.6 Data Analysis and Presentation

The information collected using questionnaires, interviews and observation was coded and analyzed. Quantitative data collected were analyzed using Statistical Package for Social Sciences (SPSS) version 16 where simple descriptive statistics were computed and presented in frequencies, percentages, tables and in figures. Qualitative data were analyzed using content analysis where the results were presented in narratives to meet the specific objectives of the study.

4.0 RESULTS AND DISCUSSION

4.1 Demographic Characteristics of Respondents

4.1.1 Age and Gender

Male respondents accounted for 48, or 50 percent of the total number of respondents, while female respondents numbered 48 or 50 percent of the study sampled population (see Table 4.1). To avoid gender bias, the male and female numbers were equal. The justification for selecting more or less balanced gender for the interview was that, both female and male they use and sell surplus forest products in the form of fuel wood, therefore, in either case they cut down forest resources for livelihood.

Furthermore, it was found that 67 of the respondents were 20-30 years old (69.8%), 14 were in the age of 31-40 years (14.6%) , 11 respondents were 41-50 years old (11.5%) , and 4 were 20-30 years old (4.2%). This was done to get critical results especially in agricultural sector and other production sector in rural villages

Table 4.1. Age of respondents

	Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-30 years	67	69.8	69.8	69.8
	31-49 years	14	14.6	14.6	84.4
	41-50 years	11	11.5	11.5	95.8
	51 and above years	4	4.2	4.2	100.0
	Total	**96**	**100.0**	**100.0**	

Source: Field survey, 2017

4.1.2 Education Level of Respondents

Table 3.2 shows different levels of education achievements of respondents. They ranged from primary school education to university education levels as follows: primary 44 (45.8%). ordinary 36(27.6%), advanced 8 (8.3%), diploma 4 (4.2%); and university 4 (4.2%) levels. These data suggest that the research involved respondents with different levels of education. The purpose of analyzing levels of education was to establish whether different levels of education achievement have impact on sustainable/haphazard use of forest resources in the study area.

Table 4.2: Respondents education level

	Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary level	44	45.8	45.8	45.8
	Form four	36	37.5	37.5	83.3
	Form six	8	8.3	8.3	91.7
	Diploma level	4	4.2	4.2	95.8
	University graduate	4	4.2	4.2	100.0
	Total	**96**	**100.0**	**100.0**	

Source: Field survey, 2017

4.2 Charcoal and Firewood: Main Sources for Cooking at Home

Table 4.3 stipulates that among 96 respondents who answered the question on whether charcoal/ firewood or bothe were the main sources of cooking energy. It shows that, 50 (52.1%) strongly agreed, 32 (33.3%) just agreed to the statement, 9 ((9.4%) disagreed, 3 strongly disagreed; and 2 were not decided. It means that, several respondents said that charcoal and firewood were the main sources of cooking energy in their localities. Besides, it implied that Ruangwa rural households depended much on charcoal and firewood as the major source of energy for cooking and commercial purposes.

Table 4.3: The opinions over charcoal and firewood as the energy sources for cooking at home

	Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	50	52.1	52.1	52.1
	Agree	32	33.3	33.3	85.4
	Neutral	2	2.1	2.1	87.5
	Disagree	9	9.4	9.4	96.9
	Strongly disagree	3	3.1	3.1	100.0
	Total	**96**	**100.0**	**100.0**	

Source: Field Survey, 2017

These results were similar to those reported in Uganda where 80% of rural communities used charcoal and firewood as their main source for cooking at home around Nakasongola where community livelihoods relied on **firewood** and **charcoal** burning and selling (Mwaura, 2014).

Plate 4.1: Firewood and Charcoal sales in Nandenje village in Ruangwa district

Source: Field Survey, 2017

Plate 4.2: Charcoal and firewood sales along Ng'au-Mkowe Road. By the time this research was conducted, the prices for a bag of charcoal and proportionate pieces of firewood were Tshs. 8,000 and 1,000 respectively.

Source: Field Survey, 2017

4.3 Effects of Use of Charcoal and Firewood to the Village Forest

Table 4.4 presents the number of respondents and their opinions ranging from those who stated that the cutting of trees for charcoal and firewood had negative effects to no effects to the village forest resources. They were categorized into two main different groups. That is, those who strongly agreed that excessive tree cutting for various uses had no effect to community forests as compared to those who strongly disagreed with the statement. It implied that, generally the use of charcoal and firewood have strong negative effect to the village forest resources.

Table 4.4: Respondents' opinions on the use of charcoal and firewood whether it had no effect/effect to community forests

	Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	7	7.3	7.3	7.3
	Agree	13	13.5	13.5	20.8
	Neutral	1	1.0	1.0	21.9
	Disagree	44	45.8	45.8	67.7
	Strongly disagree	31	32.3	32.3	100.0
	Total	**96**	**100.0**	**100.0**	

Source: Field Survey, 2017

These study findings tally with those of Tscharntke et al., (2012). Therefore, such excessive use of fuel wood for cooking has large-scale effects to tropical biodiversity such as habitat loss and forest fragmentation. It is partly explained by the general lack of knowledge on the overall impact of fuel wood harvesting at micro scale (Maennig, 2011). Quite often, many e studies report on the potential impacts of fuel wood harvesting on tropical forests are anecdotal or come from studies aiming at assessing poverty and/or energy issues that do not assess the biodiversity status of the forests that provide this ecosystem service (May-Tobin, 2011). Alternatively, if several micro spatial scaled studies on the dynamics of fuel wood harvesting are to be conducted in various areas focused on the socioeconomic drivers for excessive tree cutting for fuel wood; they can in aggregative form basis for preparing information at macro levels. Plate 3 presents such areas which had been distracted by farmers in Kipindimbi village forest in Ruangwa district.

Plate 4.3: Areas with forest distracted by farmers in Kipindimbi village forest

Source: Field Survey, 20174.4 Assessment on Villagers be Given Permission to Access and Control Village Forest Products

Table 4.5 shows different responses on whether villagers be permitted to access and control village forests products as follows, 57(59.4%) disagreed; 23(24.0%) strongly disagreed, 10 (10.4%) were neutral, 5 (5.2%) agreed; and 1(1.0%) strongly agreed. Overwhelmingly, respondents disagreed for for villager entirely to be granted permission to access and control village forest products alone. It is partly because some might misuse that chance by overusing the forest resources beyond sustainable levels. There should be checks and balances for effective use and control of such forest resources by involving both the community and government stakeholders to oversee sustainable use of the forest resources for the benefit of both parties.

Table 4.5: Respondents' opinions on every villager should be given permission to access and control village forest products

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	1	1.0	1.0	1.0
Agree	5	5.2	5.2	6.2
Neutral	10	10.4	10.4	16.7
Disagree	57	59.4	59.4	76.0
Strongly disagree	23	24.0	24.0	100.0
Total	**96**	**100.0**	**100.0**	

Source; Field Data (2017)

These findings are contrary to (Kistler, 2010) who stated that under Community Based Forest Management (CBFM) villagers take full ownership and management responsibility over an area of forest within their vicinity. They gain the right to harvest forest products and timber, retain and collect forest royalties, undertake patrols including arresting and fining offenders. Furthermore, they are exempted from Local Government (LG) taxes on forest products and they are not obliged to remit any of their royalties to the central government. This study argues that, CBFM is at an advanced stage whereby local communities through capacity building had full knowledge and experience in self-managing forest resources at sustainable levels. But communities in the study are still at the initial stage towards achieving sustainable forest resource management. They need a second party to enhance checks and balances in managing forest resources and sharing benefits in a win-win situation as observed by Blomley&Ramadhani (2004). Under this situation, villagers become more inclined to protect forests in their vicinity in order to gain economic benefits as a result both forest conservation and improved livelihoods are achieved simultaneously.

5.0 CONCLUSIONS AND RECOMMENDATIONS

According to the findings, charcoal and firewood are the primary sources of energy for cooking in various communities endowed with forest resources. Likewise, the majority of the Ruangwa rural home community relies on wood fuel energy for livelihood. The main actors are charcoal and firewood harvesters. On one side, they are responsible for the village forest degradation. It is partly explained by the fact that, residents are not involved in decision making or given access to village forests to use forest production. Village forestry units, on the other hand, are unable to prevent residents from harvesting firewood at levels that exceed sustainable output. As a result, village forests are overexploited by largely villagers as they lack a sense of ownership of the forest resources.

Lack of knowledge on exploitation of charcoal and firewood for livelihood compounded by poverty among households; also have impact on village forest resources control and management. These findings demonstrated the need for rural communities to be educated on sustainable use of forest resources for fuel wood energy while given alternative energy as opposed to total reliance on fuel wood coupled with excessive tree cutting which is environmentally unfriendly. Further, public awareness campaigns can be conducted to enlighten the community about the benefits of forests and potential for establishing alternative economic activities, such as beekeeping, in forest reserve areas. These efforts can lead to poverty reduction which was reported as the primary driver of household reliance on charcoal and firewood as a source of energy in the study.

The study recommended the following. That education on access and control of village forest reserves should be encouraged so that as the majority of the community members become aware of the existing rules and management of the village forest resource. Besides, proper procedures and permission to cut trees for sustainable production of charcoal and firewood by producers should be put in place under participatory supervision of villages and responsible government authorities. Further, authorities charged with setting rules and regulations for registration and utilization of various forest resources such as beekeeping, harvesting of poles and thatching material should be known for consultations and enforcement of forest resources regulations. Furthermore, villagers should be regarded as stakeholders in the management and utilization of forest resources, therefore, they have equal rights and benefits in safeguarding and utilization of forest products before the law. They should actively participate both in protecting the forest resources against offenders; and getting forest benefits ranging from sustainable production of charcoal, fi rewood, timber to retention of a certain percentage of collect forest royalties for the Ahrends, A., N. Dcommunity welfare.

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Impact of Floods on Kenyan Women: A Critical Review of Media Coverage, Institutional Response and Opportunities for Gender Responsive Mitigation

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Abstract

Natural disasters pose serious threat to human life and livelihoods. Kenya is perennially exposed to floods, landslides and drought due to effects of climate change. Flooding is particularly rampant in Western Kenya and women are disproportionately affected due the important roles they play in rural economies particularly in agriculture, the informal sector as well as household survival. The media is always at hand to capture the details of the catastrophe with press reports highlighting the specific experiences of individuals, and the prevailing conditions of the affected villages including: destruction of shelter, displacement and loss of livelihoods. Similarly, Government and Non–Governmental agencies move into the affected communities to provide the much-needed support. This study reviews existing institutional literature and media coverage reports to examine the specific flood related vulnerabilities among women in Western Kenya in order to identify existing gaps.Women experience specific difficulties in performing their traditional family roles, and are often unable to meet their personal hygiene and sanitation needs but are largely missing from the decision forums where Disaster Risk Reduction is discussed leading to lack of prioritization of their specific needs. The lessons drawn from this study should inform gender responsive mitigation efforts and resilience capacity building.

Keywords: Natural Disaster, Flooding, flood-related vulnerability of women, Western Kenya.

1.0 INTRODUCTION

Natural disasters like floods have devastating socio-economic impact on the affected Communities.Women play important roles in rural agriculture and pastoral livelihoods where they are directly involved in the management of productive resources, ensuring food security, and providing unpaid household labor and caring for elderly and sick members of their communities. These traditional gendered roles and socio-economic responsibilities place a disproportionate burden on them whenever disaster strikes. Disaster risk does merely affect women in time and location there is a host of complex factors that

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influence and shape their capacity for anticipation, preparation for, response to, and recovery from disasters such as role and vulnerability differentiation, customs and socio-cultural attitudes, and existing institutional structures (Bankoff,2006; Cvetković, V. M et al,2018). Cultural contexts influence the lives of men and women differently. The inequitable gender relations unfavorably impacts on women and girls in hazardous conditions due to the multifarious interaction between poverty and their specific vulnerabilities and household, community and decision roles in the face of disaster (Ariyabandu,2009; Valdes, 2009). Besides these inherent overt factors, women and adolescent girls experience access and logistical challenges in meeting their menstrual hygiene needs during disasters.

During disasters such as floods, women utilize their rich knowledge of local community and existing social networks to play important but often unrecognized roles. They meet the immediate survival needs of family members and their children, secure relief food, manage temporary household evacuation, identify and assist highly vulnerable community members such as adolescent girls, the elderly, the sick and people living with disability yet their needs are relegated within the broader disaster plans without specific prioritization (Enarson, 2002;Yadav, 2019).The potential and actual roles of women as resourceful community actors in frontline response in disaster risk mitigation are largely unrecognized and women's voices are generally sidelined in development of policy frameworks and decision (UNISDR, UNDP and IUCN, 2009).They contribute valuable resources to disaster and climate risk reduction and recovery and are active participants at all stages of disaster response (Wahlström,2012).

Kenya's empirical record of flood disaster indicates that the 2019-2020 were the worst floods recorded after the 1961-62. The combined impact of these extreme climatic disasters and the inherent socio-economic limitations have worsened the vulnerabilities of populations living in flood prone areas. Both government and Non-governmental driven interventions to disaster risk reduction in Nyando and other areas have largely consisted mainly of temporal structural relief and the provision of emergency supplies.

This study seeks to investigate the gendered response of the existing institutional policy frameworks in addressing women specific needs during disasters, the media's portrayal of women during floods; and to document women specific vulnerabilities and contribution during floods.

2.0 LITERATURE REVIEW

2.1 Floods and the Vulnerability of Women

Women bear the brunt of the effects of climate change including flooding. Their gender specific vulnerability is generally occasioned by their reproductive nature and roles, their domestic productive gender roles and the economic activities they perform. A study by Salome (2016), found little effort by Kenya government to help women cope with effects of climate change and that women have not been adequately involved in addressing gender-based resilience and adaptation to climate change in Africa.

The effect of flood and displacement comprise the menstrual hygiene practices of women and girls and the tough shelter conditions make is very difficult for them to dispose their menstrual waste (Bhattacharjee, 2019).

The after effects of disasters like floods and the challenges of reconstruction affect women most due to the destruction of their farm based rural livelihoods thereby compounding their impoverishment and vulnerability in an already highly skewed feminized poverty (Banik, 2018). Certain cultural norms increase the vulnerability of widows and single women with regard to acquisition of shelter during and after disasters and further compound their poverty and affects the resilience (Ashraf, & Azad, 2015).

Flood disaster expose women to unique physical, psychological and socioeconomic impacts occasioned by among other things financial constraints, household dynamics, increased risk of gender-based violence due to existing cultural attitudes and the absence of gender- responsive plans and action from the response agencies (Lammiman, 2019).

Women are often the victims of the combined effect of flooding and climate change that damages safe water supply systems, but by sharing their stories on social media and engaging their progressive adaptive skills, they have developed water purification techniques through design thinking (Pruneau, D.et al, 2018)
A vulnerability assessment study found that women are more negatively impacted by climate change than men, due to disproportionate poverty and their dependence on natural resources; they provide care for close relatives when disaster hazards and traumatic events happen, yet are marginalized in resource and decision processes (Goldin, et al, 2019).

A study of gender differentiated vulnerability in Budalangi flood plains in Kenya established that women and men are affected differently by flooding, with latter often running to urban centres leaving the women to deal with a host of challenges ranging from displacement and loss of property and livelihoods, to exposure to injuries, disease and sexual violence and increased domestic workload in disaster response and reconstruction (Mukuna, 2015).

2.2 Institutional Policy Frameworks on Disaster

The global awareness on the need for disaster risk reduction became apparent in the 1990s when the proclamation of the International Decade for Natural Disaster Reduction (1990 to 1999) by the UN General Assembly. Subsequently the international platform has seen a successive development in policy frameworks that are highlighted below.

The Yokohama Strategy[6] for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation (United Nations 1994), that was adopted during the first world Conference on Natural Disaster Reduction lay down the principles of disaster management ,assessment, strategy and action .This was succeeded at the second World Conference on Disaster Reduction in 2005 by the Hyogo Framework for Action 2005–2015 (HFA 2005) [7]which came up with three strategic goals numerous guiding principles, and five key priorities for action and considerations for implementation and follow-up by member states.

Following the expiry of 2015, the Sendai Framework[8] for Disaster Risk Reduction 2015-2030 came into effect with the aim to achieve significant reduction of disaster risks and loss of lives, livelihoods, and health and the economic, physical, social, cultural, and environmental assets of people, businesses, communities, and countries through the prevention of new disaster risks and reduction of existing ones through an integrated and inclusive approach to strengthening resilience (SFDRR,2015). The framework identifies four priority areas of action: Understanding of disaster risk; Strengthened governance in disaster risk management; risk reduction and resilience building through investment; and enhanced preparedness for effective disaster response and recovery, restoration and reconstruction.

During the same year 2015, the current international development blue print: The Sustainable Development Goals (SDGs)[9] was developed. Goals 9, 11 and 13 respectively speak to: the need for resilient infrastructure; ‘making cities and human settlements inclusive, safe, resilient and sustainable’; and taking ‘urgent action to combat climate change and its impacts’. This can be said to allude to issues of disaster without explicit mention of the increasing global effects of disasters like floods.

Efforts towards a legal framework on international and national disaster response was first discussed at the 2010 meeting of the Commonwealth

[6]https://www.preventionweb.net/files/8241_doc6841contenido1.pdf
[7]https://www.unisdr.org/files/1037_hyogoframeworkforactionenglish.pdf
[8]https://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf
[9]UN General Assembly, ‘The Sustainable Development Goals’ (SDGs), Transforming our world: the 2030 Agenda for Sustainable Development, UNGA res 70/1 (25 September 2015).

law ministries in London, following a joint paper by the International Committee of the Red Cross (ICRC) and the International Federation of the Red Cross and Red Crescent Societies (IFRC).[10]

In continental Africa, the disaster risk reduction policy frameworks are aligned to the international instruments respectively as follows: Programme of Action for the Implementation of The Africa Regional Strategy for Disaster Risk Reduction[11] (2006–2015); the Extended Programme of Action for the Implementation of the Africa Regional Strategy for Disaster Risk Reduction (2005-2015); and the Declaration on the Implementation of the Sendai Framework in Africa (Clause 32).

Kenya has put in place a number of disaster risk management policy frameworks and financing including: National Disaster Management Policy (2009); National Disaster Response Plan (2009); Constitution of Kenya (2010); The County Governments Disaster Management Act (2014); National Adaptation Plan (2015–2030); National Emergency and Disaster Response Plan and Standard Operating Procedures (SOPs), and theNational Climate Change Action Plan (2018-2022).

2.3 Media Reporting on Floods and Women

The role of media in covering natural disasters cannot be overemphasized. Media outlets provide updates on warnings, victim details and experiences, evacuation and act as a bridge between victims, general public and national and international aid organizations. Women's gendered roles place them at the centre of disaster experiences as both victims and active actors in the response process and reconstruction.

Media remains a crucial source of information on hazardous disasters but their role has not received considerable attention by academic researchers and especially their reporting during disasters. The manner in which they frame disaster messages plays a significant role in alertinggovernment agencies and other response organizations about the uniqueneeds of people affectedby disasters, and appeals to the general public through timely, accurate and information (Ali, 2014).

The media usually sets the agenda that gives prominence to the social problems and the need for immediate relief by vulnerable people without many prospects for future disaster (Barnes et al., 2008; Giri, & Vats,

[10]https://www.ifrc.org/global/publications/idrl/resources/newsletter/october_2010/commonwealth.pdf
[11]https://www.unisdr.org/files/13655_POAinEnglishadoptedinNairobi16April%5B1%5D.pdf

2018).They actively engage women in reporting the effects of disaster and in the discussion of reconstruction, with emphasis on issues of governance rather than health and protection which are the core concern for women and children in the affected areas (Ali, 2014).

Majority of media outlets often portray women as lamenting and passive victims helplessly waiting for strong men to rescue or evacuate them into safety. Such images reinforce deeply entrenched patriarchal notions that overlook the active reproductive, productive and community disaster roles (Enarson,2002).

3.0 MATERIALS AND METHODS

This study was carried out in Awasi ward of Nyando Sub -Kisumu County, Kenya. It was hinged on a feminist qualitative content analysis which was useful and appropriate in reviewing of existing international and national institutional frameworks and policies for disaster response and in gaining insight on how the local media reporting portray women during floods. Besides, it is useful in categorizing the issues arising from the personal stories and discussions with women as well other key informants involved in the study. The central goal of feminist research is to promote social justice and empower women the application of finding in influencing the various local and international actors to appreciate gendered effects disasters and other forms of human experiences (Hesse-Biber, 2013).

All the information and data used in the study was purposively sampled at various levels. This involved an online targeted search of the existing literature on disasterrisk reduction frameworks and relevant information on newspaper coverage of floods in Nyando. The case study area was informed by a snowballing of victims based on media reports. Asystematic desk review of the existing relevant international and national institutional frameworks and policies for disaster response was done in order to check for their gender responsiveness and possible gaps in local action. An online search of local print and electronic mediareports on floods in period covering 20119 and 2020was done from the three leading local media outlets: The Daily Nation, the Standard and the Star. This was followed by a purposive selection of relevant information on women. The stories, captions and pictures were analyzed to interpret in order to uncover the media portrayal of women and the gaps in voicing their specific needs. The choice of 2019 and 2010 flood reports was informed by the fact they are the most recent coupled with the compounding effect of Covid19 pandemic that has slowed down economic activities and exposed people to worsening poverty and loss of income.

In order to generate information from the affected floods, a feminist storytelling and focus group discussionswere conducted with women living in perennially flood affected areas of Nyando Sub -County. Feminist storytelling employs first person narration to highlight the complexity ofthe subtle experiences of women within the wider socio-cultural contexts in order to facilitate transformative consciousness (McGuire et al.,2010; Mootz& Mollen,2015), and recognize women's contribution through their own lenses. The case study areas of Kobong'o, Tura and Kak Mie villages in Awasi ward are prone to severe perennial floods. A total three focus group discussions (one per village, with eight to 10 participants in each group) and three personal narratives were collected from an adolescent girl, a single mother and a married woman to capture the commonalities and variances in their experiences. In addition, two key informant interviews; one with the program manager, protection, Gender and Inclusion from the Kenya Red Cross and another with an official from the National Disaster Response Unit were conducted.

The research questions addressed the following broad areas (1) The existing policy frameworks that address women specific issues during disaster and floods (2) The nature and aspects of women specific vulnerabilities during floods (2) The personal and communal experiences of women and girls during floods in Nyando and (3) The institutional response mechanisms and the role of women.

4.0 RESULTS AND DISCUSSION

The findings are organized under the key thematic areas that guided the study as presented below:

4.1 Institutional Policy Frameworks and Women in Disaster Response

Document analysis and review of existing institutional frameworks reveal considerable steps towards mainstreaming gender in disaster risk reduction with lingering challenges on how the top-down approach navigates the national governments, local actors, community involvement in cascading effective implementation. The Hyogo Framework makes special reference to gender by stating that: "A gender perspective should be integrated into all disaster risk management policies, plans and decision-making processes, including those related to risk assessment, early warning, information management, and education and training" (UNISDR, 2005).The Beijing Agenda for Global Action on Gender sensitive Disaster Risk Reduction (2009), entitled "Women 2000: Gender equality, development and peace for the twenty-first century," advocates gender-responsive methodologies and strategies to disaster response and recovery.

The International Federation of Red Cross and Red Crescent Societies affirms that disasters like floods disproportionately affect women and girls with increased risk of injury, death and loss of livelihoods amidst knowledge gaps in gender responsive institutional policy frameworks and national laws for disaster risk management (IFRC, 2017)[12].Further to this assertion, they have developed certain instruments towards the achievement of gender inclusivity in disaster response including :the Strategic Framework on Gender and Diversity Issues 2013-2020; Gender and Diversity Policy 2019 and the Minimum Standards for Protection, Gender and Inclusion in Emergencies[13]. In spite of these progressive frameworks, implementation is hampered by lack of funds, inadequate institutional collaboration between the national disaster management unit and other organizations at the community level and lack of sufficient capacity and funding.

Kenya, like many African countries has endorsed and adopted international frameworks including: the United Nations (UN) Framework Convention for Climate Change and the Kyoto Protocol; the UN Convention for Combating Desertification; and the Hyogo Framework of Action, 2005.There is no specific legal framework for disaster response; instead it operates underthe Constitution of Kenya, 2010 which entrenches Disaster Management in the Schedule4 and policy and administrative processes operating within emergency powers.The National Disaster Management Authority Bill 2019[14] is gender blind with a broad outline of specific functions and an establishment of a board that includes representation from the Ministries of Finance, Defense, Health, Environment, Communication, Foreign Affairs and the office of the Attorney General, and a representative from County governments. There is no express reference or inclusion of the Ministry that deals with Gender Affairs that can ensure the inclusion of women's representation and

[12] Gender disparities in disaster response https://media.ifrc.org/ifrc/2017/11/07/new-research-shows-gender-disparities-disaster-response/

[13]https://media.ifrc.org/ifrc/document-library/?wpv-theme=sexual-and-gender-based-violence&wpv_aux_current_post_id=26486&wpv_view_count=26485-TCPID26486

[14]http://www.parliament.go.ke/node/11142

voices at the highest Policy level in disaster management. Besides, KIIs with an officer at the National Disaster Management Unit revealed that currently there is nospecific policy on women and disaster but, the regional counties are expected to adopt the National Disaster Risk Management into their contexts and include women's issues.

These findings indicate a notable push towards gender mainstreaming in mitigating the effects of disasters through policy guidelines but challenges remain in their integration and practical application in national legislation and policies. Women specific issues remainmarginal and the various Country programs and intervention bodies are left to decide on how make vulnerabilities a separate agenda in disaster planning, budgeting and mitigation. The generic use of the word gender in policy frameworks andprotocols often clouds the real issues that should be considered with regard to women's lives.

4.2 Media Coverage of Women and Floods in Nyando.

The perennial flooding around river Nyando has caused untold suffering to the localcommunity in the catchment area. Local media reports on the floods menace in the area extensively used personal stories to reinforce the magnitude of devastation experienced by women in varied perspectives. The visual images and personal accounts of women tell stories of their displacement, destruction of property and sense of helplessness as they move to rescue centres or safer grounds. The information sourced from electronic and print media was summarised in Table 1.

Table 1: Experiences of Women during Flooding of River Nyando, Kenya

Date	Media Outlet	Type of Media	Women Experiences
2nd December, 2019	The Star	Print Media	– Lost chicken and heads of cattle
30th December, 2019	Citizen TV	Electronic Media	– 1200 women and children displaced and sheltered in the nearby school – One of the women had been receiving antenatal care at the evacuation Centre
2nd December, 2019	The Standard	Print Media	– Helpless mothers ferried loads of household goods to safer grounds, with children shivering in the cold – A mother of three, said her crops were swept away by the waters.

			– The lady resident complained about house being swept away as well as loss of livestock including chicken, cattle, kitchen utensils, destruction of farms – The lady appealed to the leadership to come to the rescue of the flood victims especially in terms of a shelter
30th April, 2019	The Star	Print media	– One of the ladies decried loss of crops, livestock and houses to floods
1st December, 2019	Daily Nation	Electronic media	– One of the women complained that they had lost tomatoes, Sukuma wiki and maize crop – The lady appealed for support from the government
22ndApril, 2020	KBC TV	Electronic media	– One of the male interviewees requested for support from the County Government so they can rescue women and children – He also reported that some of the women and children had not eaten since the rains started
2nd February, 2020	Daily Nation	Print media	– A local Chief reported that the displaced are mainly women and children

Source: Various Kenyan Media Outlets, Compiled by Researcher (2020)

Furthermore, the visual representations of women's experiences are captured in figure 1 and 2 below:

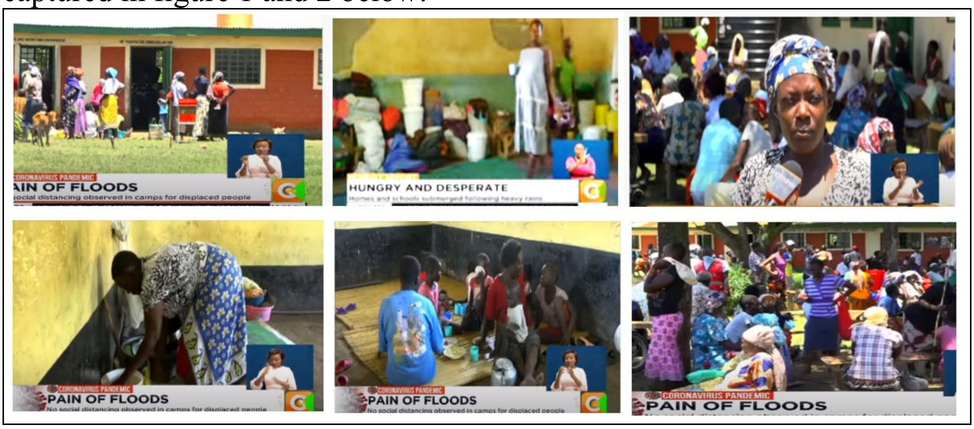

Figure 1. Women and children displaced by floods after River Nyando burst its banks. Source: Citizen TV (2020). Available on YouTube.

Figure 1 presents screenshots of News bulletin from *Citizen TV*. The pictures depict media characterization of the experiences of women during flooding in River Nyando by portraying them as helpless and desperate with an urgent need for relief and evacuation to safer places.

Additionally, visual images of news reports from other media outlets including *KBC TV*, *Nation Media Group* and *KTN TV* were presented in the first, second, and third columns respectively as shown in Figure 2 below:

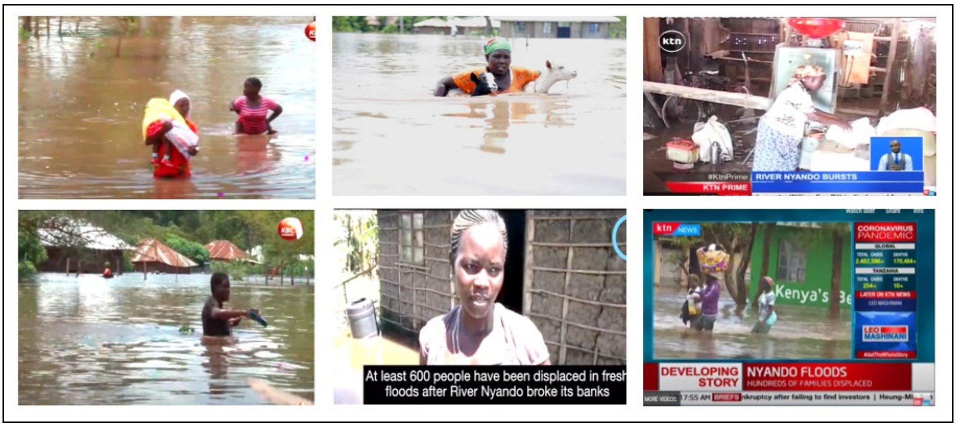

Figure 2. Women walking across flooding waters after River Nyando burst its banks. Sources: KBC TV (2020), Nation Media Group (2020), and KTN TV (2020). Available on YouTube

From the narrative experiences captured by the newscasts, women faced dire consequences following the flooding including, displacement from their homesteads and loss of household goods, loss of livestock and sources livelihoods among others. A case in pointis the story the woman on the first row in the third column of the screenshot above who said that she had lost her stock of rice which, a business which had been a constant source of livelihood. Similar experiences were echoed in the narrative of the lady in the second column of the third row, who decried the loss of livestock and other sources of livelihood; and who urgently appealed to the government to come to her rescue.

Inferably, the media coverage depicts a gendered perspective of the effect of flooding and the unequal plight and vulnerability of women during times of disaster as compared to men. The images and stories speak to the nuanced roles of women in their households and rural economies which often remain silenced within the broader socio-economic discourse. In spite of the positive rally call to respond to the needs of affected women, the media has failed to encapsulate the attendant contribution of women through their active involvement in mitigation the challenges they experience. These further obscures their voices as sources active sources of solutions and not just victims in need of temporary relief.

4.3 Challenges Experienced by Women and Girls during Floods and their Coping Strategies

Findings from focus group discussions with women and girls together with select personal narratives reveal a number of common and age specific challenges during the perennial floods in Nyando. They experience destruction of shelter, property and loss of livelihoods leading to scarcity of food, exposure to disease and injury, personal hygiene challenges and loss of dignity. Further to these, mothers of reproductive age spoke of increased marital infidelity and desertion by their husbands, missed immunization for children, lack of sanitary towels, sex for food and exposure of STIs, challenges accessing family planning and HIV treatment for the positives, and care for the elderly in-laws. Similarly, the adolescent girls had certain specific problems such as lack of sanitary towels (the parents can no-longer provide), exposure to sexual exploitation, pregnancy and STIs, loss of hope in Education, early and forced marriage. It was also established that the 2020 floods were the worst in many years and that the villagers do not receive any early warning alerts since the flood water originate from neighboring counties.

An elderly participant said: *I have lived here for 45 years, and this year's flood is the worst. They tell us that they will fix it but it has never happened. We hardly get the warning sign; you just wake up in the middle of the night to find your house submerged in water. The floods sweep off our farm crops and household items. When the water subsides, we struggle to rebuild our collapsed houses with no help from anyone. It is painful recurrent experience but we have nowhere else to go.*

Jane: *majority of us work in the irrigation scheme, and engage in other menial jobs. The river is destroying and depleting our farmlands through erosion. Our farms are shrinking. These extreme floods alternate with extreme drought and further compound our problems.*

Judith Obuya, a mother of a young baby: *Many of our children miss important immunization schedule especially when the dates fall on the days of flooding. This corona period has been very hard, the doctors are on strike and we can't afford private clinics.*

Adolescent Girl: *Often we don't have sanitary towels so we improvise old pieces of clothes or old mattress. We really want to go to school and accomplish our dreams but the problems are overwhelming. Some of us have run off to be married and many of our friends have become pregnant. Sometimes you are pressured by a grown man and you don't know to resist his sexual advances.*

In order to cope with the challenges, the women and girls engage in various activities notably, communal cooking and sharing of meals, traditional herbal medicine, casual domestic and farm labour, use of old clothes for sanitary towels, raising floors to deflate water, and table banking to raise money for rebuilding of livelihoods.

Table 1: Summary of key flood- induced challenges faced by women and girls and coping strategies

Focus Group	Challenges	Coping Strategies during and after floods
Elderly women aged between 50 and 70 years.	• Loss of shelter and household items; farm crops and produce and domestic animals (crops, cattle and chicken are swept away). • Loss of agricultural land through erosion. • Disruption of lives and exposure to indignity • No firewood for cooking • Food scarcity • Water contamination • Human waste Pollution • Increased cases of malaria and diarrhea, stomachaches, • Injuries like falls and snake bites • Lack of reconstruction materialism	• We put children on tables as you sleep while seated • Raising the floors high to deflect waterlogging • Small groups of table banking • replanting of vegetables in the wet soil
Mothers aged between 23 -49 years.	• Loss of Loss of shelter and household goods; farm crops and produce; domestic animals. • Care for the elderly in-laws. • Children miss important immunization schedule. • Increased marital infidelity and desertion by husbands • Exposure to diseases and STIs and flood separation/divorce • Challenges refilling their medications (Family planning and ARVs). • Challenges accessing sanitary towels. • Alternate drought (flooding and drought) • Sex for food and discrimination in cash transfer to the vulnerable households. • Increased disease outbreak • Poor sanitation at the school camps • Personal hygiene challenges	• Small groups of table banking. • Communal cooking and sharing of meals. • Traditional herbalists and birth attendants. • Stronger women go without food to allow the children and the elderly to eat the little that is available. • Casual domestic and farm labour in neighboring areas not impacted by flood displacement. • Donations from well-wishers and those who rescued more items like children's clothes and bedding. • Small groups of table

	• Lack of adequate clean water for drinking and cooking. • Lack of clothes for children	banking. • Replanting of vegetables and restocking chicken. • Improvise old clothes for sanitary towels.
Adolescent girls Aged 16 to 20 years	• Lack of sanitary towels. • Scarcity/lack of food. • Congestion and lack of privacy at rescue centres. • Exposure to sexual exploitation, pregnancy and STIs • Early and forced marriage. • Loss of hope in Education. • Loss of dignity at the camp due to common living spaces	• Casual domestic and farm labour in neighboring areas not impacted by flood displacement. • Sex for cash with "Ngware"/motorbike operators and other older men • Improvise old clothes for sanitary towels

Source: Focus Group Discussions with different women segments and Adolescent girls

The personal narratives by three volunteers captured the complexities of poverty, culture and how disasters like floods exacerbated the already dire conditions that majority of women and girls face especially in rural areas and their unrecognized contributions to family and community survival. Below are summarized versions of their stories:

Tabitha Ogallo: *My name is Tabitha AdhaimboOgallo from the kobongo'o. I have six childrenand my husband has been jobless since I was married. All the household responsibility is in on me. I farm around the river where I grow vegetables, onions and tomatoes. Whenever the floods come, they are all swept away. This year has been the worst. My husband is a drunkard and whatever little money he gets goes to his drinking. He expects me to look for food. I just married but not in the real sense since I live like a widow. I have had to sleep hungry several times. My husband beats me when I don't bring 'soup food' like fish or beef because he doesn't like vegetables. I know many of my women neighbours who go through the same. It would have been better if the floods don't interfere with the little we have.*

ZilperAdhiambo 16 years: *My name is Zilper Adhiambo. Iam a form one student at Karanda Secondary School.I am an orphan and I live with my sister in Ahero. My sister is a rice farmer and when the floods come they crop is all swept away. I have had challenges raising school fees and I have applied for bursary several times without success. Sometimes I miss school to go do manual jobs in the rice farms in order to get some money for my personal needs like sanitary towels and school fees. I also have to keep a boyfriend and sleep with him in exchange of money. My boyfriend only gives me Ksh.1000 which is very* *little so I have to sleep with motor bike riders to get more money. Many young girls are forced by circumstances to sleep with multiple men to try and get some money because no one can help you for free. My appeal is that the government should prioritize the needs of girls. They can provide a special fund for girls for sanitary towels and schools fees. We also need guidance and counselling services in the community. I have tried to insist to my boyfriend to use protection but other men refuse. It is a difficult life but I want to complete my Education.*

DoriceAtieno: *My name is Doris Atieno. I am a single mother and HIV positive. I got my three sons before marriage. I tried my best to get married in keeping with custom so that I would get a place to settle with my sons. I got married as a third wife but didn't stay long in that marriage due to many challenges. I came to live in a rental house here in Ahero with my sons and settled in my tailoring business. This year's floods were the worst I have witnessed. The flood waters flowed unexpectedly into my house and I had to evacuate to a friend's place. It destroyed my household goods, grain food stock and fabrics for my tailoring business. It was very painful to lose clothes that customers had brought to me to stitch. I have not been able to repay them because I have no money and Covid 19 has made things worse. I have not received any assistance or money from anywhere but I hear some people receive relief from government. I have registered twice without success. The 'nyumbakumi' man in charge is biased. Some people tell me that I have to part with something or offer sex to benefit but am done with men. I have seen so much suffering in relationship with men and I don't want such things. Interestingly, the places where women were in charge of registering people receive relief and money every week. I think this work should bedone by women or people from other areas who for transparency. I have no money to buy a parcel of land where I can build a house. I have talked to my elderly mother about giving me a portion of land but she refers me to my brothers who object saying that a daughter has no place in her father's ancestral land. Since the onset of floods and the coming of covid, I have not received all my drugs for HIV treatment and this worries me a lot for I fear I might become sick.*

Some of these findings resonate with those of Mukuna (2015), whose study found that women experienced specific vulnerabilities such as loss of property and livelihoods, risk of injury and health problems while the girls dropped dropout, and went into early marriage and prostitution.

It should not be lost that in spite of these many challenge's women continue to play critical roles during disasters such as floods. During the focus group discussions, the women outlined their several key roles including care giving for children and the elderly, securing and preparation of food, reconstruction of their homes and organizing themselves through small groups to rebuild their lives. This was further acknowledged during the KIIs with the project manager, Protection Gender and Inclusion at Kenya Red Cross who said that women played very significant roles during flood disaster by providing information on best practices, safety nests for unaccompanied children, care giving for the elderly, and the sick, participating in rebuilding interventions, and coming up with innovative ways to ensure their recovery from disaster. She further acknowledged that these roles have e roles have not been adequately recognized. Similarly, the officer form the National Disaster Management Unit spoke of the critical role women played in caregiving and protection of children and the elderly as well all securing relief supplies in the vent of disasters including floods.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Majority of disaster risk interventions are focused on meeting the immediate relief needs without addressing and reducing the long-term effects of vulnerability. Women specific vulnerabilities and the need for proactive approach to disaster and flood mitigation cannot be overemphasized. They experience a host of challenges that further affect their psychological and emotional wellbeing and worsen their poverty. Acknowledging the unique needs and strengths of women during flood disasters with deliberate steps to reduce their vulnerabilities and build gender-based resilience will help alleviate the adverse effects of disasters and develop effective mitigation. Theexisting global and regional policy frameworks is a commendable step in the provision of general guidance on addressing disaster induced challenges across all sectors and population groups. However, neither the Hyogo Framework nor the Sendai Framework and the subsequent respective regional guidelines can be effective without accounting for women specific issues as they form the majority of those worst hit by disaster, are disproportionately poorer and always at the centre rural economies that remain inaccessible to modern technology and knowledge of disaster management. In view of the findings, the study recommends the following:

i. The deliberate inclusion of women specific action points in dealing with disaster risk reduction to ensure that women'svulnerabilities are mainstreamedat all levels of policy implementation.
ii. The National policy framework should include a women specific chapter andthat the relevant guidelines and protocols on disaster risk reduction should be reviewed to address women's practical and strategic needs for a more responsive mitigation process.
iii. The disaster response kits should include water purification training and equipment for women in flood affected households. This will go a long way in helping women provide safe water to their families even when they return to their homes.
iv. Women should be involved in the identification of vulnerable households and distribution of relief funds and supplies in order to eliminate the food for sex phenomenon and other corrupt activities.

v. The need to develop a home grown participatory gender responsive process that looks at both downward and upward policy adoption and instrumentation and accounts for unique needs of women within the country specific socio-cultural and economic context.
vi. The need for local media houses to involve community women in national debates on disaster risk mitigation and building of community resilience.
vii. The scaling of up women's representation in disaster planning activities and decision-making processes pertaining to disaster risk reduction, allocation of specific funds for gender mainstreaming in disaster risk reduction policies in Kenya.
viii. Inclusion ofcapacitiy and resilience buildingstrategies for adolescent girls during disasters.

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Simultaneous Determination of the Relationship between Economic Growth, Energy Consumption, Trade and the Environment in West Africa

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Abstract
Energy plays important roles in human lives and economic growth. Energy use however, have its environmental impacts. Economic growth may also be achieved through international trade and this can also impact the environment by increasing energy consumption and consequently, pollution. To this end, this study examined the interrelatedness of energy consumption, environmental pollution, international trade and the economic growth in nine of the West African countries from 1990 to 2018 using the method of two stage least squares (2SLS). The study found contrary to expectation, that economic growth and international trade have no significant impact on carbon dioxide emissions in West Africa. Foreign Direct Investment (FDI) and Financial Development (FD) have no significant impact on carbon dioxide emission in West Africa. Trade openness significantly increased emission in the West African countries. Energy consumption, in conformity with economic theory has positively contributed significantly to the rise in carbon emission in West African states. Trade openness significantly increases economic growth. Other results indicate that economic growth bears no significant influence on energy consumption. This is a benefit rather than a problem as de-linking energy consumption from economic growth is a good objective of any government. Urbanization significantly increased energy consumption in West Africa. Lastly, foreign direct investment, significantly contributed positively to trade growth in West Africa. This study recommends a switch to more renewable and clean sources of energy as opposed to the fossil-based energy sources in order to de-link energy demand from emissions in their countries. Governments can also encourage the development and use of energy efficient technology or enact energy conservation policies so as to reduce fossil - fuels use among others.

Keywords: Carbon dioxide emission, Economic growth, Energy consumption, 2SLS, Environment

1.0 INTRODUCTION

Economic growth denotes an increase in the production of goods and services over a period of time. It creates more profits for businessmen, leads to rise in stocks and encourage more investment and consequently more employment. It also increases the purchasing power of the customers which further drives

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economic growth. Based on these, all countries pursue economic growth consistently.

Energy plays important roles in human lives and economic growth. Energy consumption of a country is regarded as a major indicator of economic growth in today's world. Energy is a major input in the production processes. In addition, it is also regarded as a strategic input that creates the basis for international relations and shape of the world politics and economy.

There are two main factors accelerating energy use in the literature and they are population growth and economic growth which tends to increase per capita energy use. Energy use however, have environmental impacts on air, water and land; but its effects varies. The reliability and energy costs are the major determinants of competitiveness and economic growth of small and large enterprises worldwide.

Economic growth can also be boosted through international trade expansion. Trade - induced economic growth can also impact the environment by increasing energy consumption and consequently, pollution and natural resources degradation and depletion. Based on the above, there is a perceived interrelatedness between energy consumption, environment, international trade and economic growth. This study therefore analyzed the interrelatedness of energy use, environment, international trade and economic growth in nine West African countries. These countries are: Benin Republic, Cote D'ívoire, Cameroon, Congo Demographic, Congo Republic, Ghana, Nigeria, Senegal and Togo. The choice of these countries is their similarity and their membership of ECOWAS bloc. The non-availability of data acted as constrain preventing us from including all member ECOWAS countries.

2.0 LITERATURE REVIEW

This section focuses on energy consumption, International trade, environment and economic growth. The first group of literature considered the interrelationship between energy consumption and growth. The second considered energy consumption, growth and the environment. The third group considered energy consumption, growth, environment and international trade while the fourth group considered energy consumption, economic growth, the environment and financial development. In terms of tools of analysis, they are split between causality approach and regression using simultaneous analytical methods.

This review shall cover all the above empirical focuses in order to properly guide our own approach.

Dabachi et. al. (2020) investigated the casual relationships among energy consumption, environmental degradation, energy price, energy intensity and economic growth in OPEC African countries from 1970 to 2018 using the simultaneous equation casualty models. The study found a bi-directional causality between energy consumption and economic growth; energy prices and economic growth; environmental degradation and economic growth. There is a uni- directional casualty running from; economic growth to energy intensity; energy consumption to energy intensity. There is a bi- directional causality between energy prices and energy intensity; environmental degradation and energy intensity and; between environmental degradation and energy prices among others.

Acheampong (2018) examined the dynamic causal relationship between, energy consumption, carbon dioxide emission and economic growth for 116 countries for the period 1990 to 2014 using the panel vector autoregression (PVAR) as well as system generalized method of moments (System- GMM). The study found the existence in support of evidence in support of the environmental Kuznets curve globally and in sub- Saharan African countries. Economic growth does not cause.

Khan, Peng and Li (2019) utilized panel data spanning from 1990 to 2017 to analyze the interrelatedness of financial development, economic growth, energy consumption and carbon emission on one another. The study was carried out on 193 countries using the seemingly unrelated regression, three- stage least squares, dynamic model two- steps generalized methods of moments. The study found economic growth, financial development, energy consumption and carbon emissions affected one another but with wide pollution spread energy consumption decreases financial development. The study also confirmed the existence of environmental kuznet's curve.

Omri et. al. (2015) examined the relationship existing between carbon dioxide emissions, financial development, trade and economic growth for middle east and north Africa (MENA) countries using simultaneous-equation panel data models and spanning from 1990 to 2011. The study found a bi-directional causality between carbon dioxide emission and economic growth. They also found a bi- directional causality between economic growth and trade openness. They validated the feedback hypothesis between trade openness and financial development. There is no causality between carbon dioxide emissions and financial development. They also found unidirectional causality running from financial development to economic growth and; from trade openness to carbon emissions. They established the reality of Environmental kuznet's curve (EKC) related to energy consumption both globally and regionally. Economic growth has no casual impact on carbon emission apart from global and regional levels. However, economic growth has a negative impact on carbon emissions at global as well as at regional levels. Carbon emissions positively cause economic growth. Carbon emission positively causes economic growth in the sub Saharan Africa but negatively causes growth at the global level, MENA, Asia- Pacific and Carribean- Latin America. With the exemption of MENA, and global sample, carbon emission do not cause energy consumption. Lastly, energy consumption positively causes carbon emission in MENA but negatively causes emission in the Sub- Saharan Africa and Carribbean- Latin America.

Saboori and Sulaiman (2013) tested both the Short run and Long run relationship between carbon dioxide emission and economic growth and energy consumption in Malaysia using both aggregated and disaggregated data for the period 1980 to 2009, and using the method of cointegration, Autoregressive Distributed Lag (ARDL) and Granger casuality test and, Vector Error Correction Model (VECM). They found the non- existence of environmental Kuznets when aggregated energy data was used that different energy sources, environmental Kuznets curve was validated. There is a long- run bi- directional casuality between economic growth and carbon emissions among others.

Kasman and Duman, Y. S. (2014) investigated the casual relationship between economic growth, energy consumption, carbon dioxide emissions, trade openness and urbanization in new EU members and candidate countries from 1992 to 2010 using the method of unit roots, co integration and panel causality tests. Their results support the existence of Environmental Kuznets curve. Their results also support the existence of a short unidirectional causality from energy consumption, trade openness and carbon dioxide to carbon emission. There is causality from GDP to energy consumption. There is existence of casualty from GDP to energy consumption and urbanization to trade openness; and from urbanization to trade openness among other findings.

Chuku and Ndifreke (2012) analyzed simultaneously the inter relationship among energy consumption, environmental quality, trade and economic growth in Nigeria from 1970 to 2008 using the method of two- stage least square technique applied on four simultaneous equations. Their results from income equation showed that production in Nigeria is pollution-intensive and environmentally harmful. Their study contradicts the existence of environmental Kuznets curve and prove the existence of U-shaped. The energy equation indicates that there is a direct relationship between energy use and technical progress. Their trade equation and nullifies the existence of pollution- havens hypothesis in Nigeria.

Taghavae, Aloo and Shirazi (2016) employed simultaneous equations systems to analyze the various socio-economic elasticities in the short and long run in Iran utilizing data from 1974 to 2012. The study found per capita carbon dioxide emissions, energy consumption and GDP showed the strongest interactions in terms of relationships and elasticities in the system; in the long run. Trade openness, financial development and labour force as well as urbanization showed the strongest effect in the short run. Generally, in the short run; growth and energy consumption had positive significant impact on carbon dioxide emission but; financial development has negative significant impact on carbon dioxide emission. Trade openness and labour has positive significant positive elasticities on economic growth. In the long run, growth and energy consumption have significant positive impacts on carbon dioxide emission while Islamic revolution reduced carbon emission in Iran. Growth is significantly affected positively by carbon dioxide emission and negatively by energy consumption. Lastly, Urbanization contributed significantly positively to energy consumption in Iran.

Wulansari and Rosadi (2018) analyzed the determinants of economic, social and environmental factors for 33 provinces in Indonesia for the period 2011 to 2014 using the simultaneous panel data analysis. They specified three structural equations and analyzed using the method of error components two-stage least squares (EC2SLS). The study found a negative significant impact of environmental quality on economic growth. Environmental quality also exerted negative significant impacts on human development index and; economic growth significantly reduces environmental quality index in Indonesia.

Honglei, Xiaorong and Quifeng (2011) employed simultaneous equation models of Huang and Laby (2003) to analyze the interactions between foreign trade, FDI, environmental pollution and economic growth in China using the Chinese regional panel data spanning from 1993 to 2007. Their study involve estimation of four structural equations with fourteen variables. They found that increase in employment investment in fixed assets and amount of trade (import and export) causes growth to increase. In addition, the study confirmed the existence of environmental Kuznet's curve in China meaning that environmental pollutions will increase with growth before reaching the turning point. There is a positive correlation between emissions and environmental regulations. The six indicators of emissions are negatively related to the opening of the economy. This means that trade openness is good for the environment or put in another way. Export oriented economy is good for local environment generally.

Various scholars have made contributions in the area of energy consumption, environment, international trade and growth, some have analyzed the relatedness of energy consumption and environment while others the impact of growth on environment. Some have analyzed the interrelatedness of energy, growth and environment using various techniques ranging from causality to least squares. Some have analyzed neglecting the possibility of endogeneity and possible violation of one of the least square's assumptions. The debate is yet inconclusive. This study takes a leap from there using a more innovative technique in making contributions to the discourse of energy consumption, economic growth and environment in Nigeria.

3.0 MATERIALS AND METHODS

The simultaneous model for this study is adapted from Vahid, Alireza and Jalil (2016) and Honglei, Xiaorong and Qiufeng (2011). The functional form of Vahid, Alireza and Jalil simultaneous model is as follows:

CO = f(GDP, E, OP, FD, dr) .... (1)
GDP = f(CO, E, OP, LAB, CAP, dr, dw)... (2)
E = f(CO, GDP FD, U, LAB, CAP, dr).. (3)

Where:
CO is carbon dioxide emission (per capita metric tons)
GDP is the per capital GDP (in constant prices)
E is the energy consumption (per kg of oil equivalent)
OP is trade openness
FD is financial development (domestic credit to private sector as a percentage of GDP)
Dr is the dummy variable capturing Islamic revolution in Iran.
Dw is the dummy variable capturing war periods in Iran.
LAB is the labour force participation (active population as per cent of total population.

CAP is capital (per capita at constant prices
U is urban population as per cent of total population.

This study, adjusted the equations as follows:
For equation one we found the dummy variable capturing Islamic revolution in Iran redundant, and it was removed. Foreign Direct Investment (FDI) has been hypothesized to influence emission and this important variable was omitted in equation one, this we added to equation one. We also removed the two dummy variables capturing war and Islamic revolution and then this study added FDI since it is hypothesized to have a positive impact on growth. For equation three, this study also removes dr, FD and LAB since labour and financial development are not expected to impact on energy consumption. Equation four was adapted fromHonglei, Xiaorong and Qiufeng (2011). The functional form of their trade model is as follows:

T = f (Y, FDI, DT, TN, ER) .... (4)

Where T is foreign trade, Yis total output, FDI is foreign direct investment, DT is geographical positions, TN is tarrif level or trade policy and ER is the exchange rate.
Equation four is adjusted by removing DT since our data is based on aggregated data. Geographical positions can only be relevant for disaggregated data. We added emission because pollution haven hypothesis is based on the hypothesized role of environment in the determination of foreign trade. Based on these adjustments, the functional model for this study are stated thus.

CO2 = f (GDP, E, OPEN, FD, FDI)..(5)
GDPPC = f (CO2, E, TR, OPEN, LAB, GCF, FD)..(6)
E = f (CO2 GDDPC, TR, FDI, URBAN, OPEN, GCF)....................................(7)
TR = f (GDPPC, FDI, E, TAR, EXR) ....(8)

CO2 is the CO2 emissions (metric tons per capita)
FD is the domestic credit to private sector by banks (% of GDP)
E is the energy use (kg of oil equivalent per capita)
FDI is the foreign direct investment, net inflows (% of GDP)
GDPPC is the GDP per capita (constant 2010 US$)
GCF is the gross fixed capital formation (constant 2010 US$) a proxy for capital
LAB is the Labor force participation rate, total (% of total population ages 15-64) (modeled ILO estimate)
OPEN is trade (% of GDP)
URBAN is the urban population (%t of total population)
TR is net trade in goods and services (BoP, current US$
EXR is the exchange rate (LCU per US$, period average)
TAR is tarrif rate, applied, weighted mean, all products (%)

The econometric forms of the structural equations are:

$$CO2_{it} = \beta_0 + \beta_1 GDPPC_{it} + \beta_2 E_{it} + \beta_3 OPEN_{it} + \beta_4 FD_{it} + \beta_5 FDI_{it} + \mu_{1t} \quad ---(9)$$
$$GDPPC_{it} = \alpha_0 + \alpha_1 CO2_{it} + \alpha_2 E_{it} + \alpha_3 TAR_{it} + \alpha_4 OPEN_{it} + \alpha_5 LAB_{it} + \alpha_6 GCF_{it} + \alpha_7 FD_{it} + \alpha_8 TR_{it} + \mu_{2t} \quad (10)$$
$$E_{it} = \varphi_0 + \varphi_1 CO2_{it} + \varphi_2 GDPPC_{it} + \varphi_3 TR_{it} + \varphi_4 FDI_{it} + \varphi_5 URBAN_{it} + \varphi_6 OPEN_{it} + \varphi_7 GCF_{it} + \mu_{3t} ---(11)$$
$$TR_{it} = \pi_0 + \pi_1 GDPPC_{it} + \pi_2 E_{it} + \pi_3 FDI_{it} + \pi_4 TAR_{it} + \pi_5 EXR_{it} + \mu_{4t} \quad ---(12)$$

This study analyzed equations 9, 10, 11 and 12 simultaneously using the method of two-stage least squares (2SLS). Theoretically, it has been confirmed that variables CO2, GDPPC, E and TR are endogenous. In other words, pollution, economic growth, energy consumption and international trade are jointly determined and so are endogenous. The implication of the existence of endogeneity in the explanatory variables of the model is that it causes correlation between those explanatory variables and their respective error terms causing biasedness in our estimates using OLS. Because of this, OLS cannot be applied recursively to each equation as there would be simultaneous equation bias. Another issue is the identification status of our equations.

The study tested for the identification status using the 'order' and 'rank' condition since order condition is a necessary condition while the rank condition is a sufficient condition. The four equations are indeed identified. All the four equations are overidentified. The study tested for panel stationarity of variables and also conducted co-integration of variables of each equation and established co-integration of variables of each equation.

Data for the study were obtained from the World data bank and data ranges from 1990 to 2018. However, we have some missing data which were interpolated or simulated. For instance, carbon dioxide data for each country of the study were having 2014 to 2018 data missing and an autoregressive process of order one was used in generating for each country. Data for tarrif were scantily provided and were all simulated. In a few cases energy consumption data were not up to date just like the carbon dioxide data, these were also generated through an autoregressive process of order one. The nine countries studied are: Benin Republic, Cote D'ívoire, Cameroon, Congo Demographic, Congo Republic, Ghana, Nigeria, Senegal and Togo. The choice of these countries is their similarity and their membership of ECOWAS bloc. The non-availability of data also acted as constraint preventing us from including all member ECOWAS countries, but we believe that the study will not suffer a self - selection bias.

4.0 RESULTS AND DISCUSSION

Stationarity results of variables of the models are presented in table 1. The tests are four in number. Levin, Lin & Chu t*, Im, Pesaran and Shin W-stat, ADF - Fisher Chi-square, PP - Fisher Chi-square. Levin, Lin & Chu t* tested stationarity of the pooled data while other tests are for testing the stationarity of different pooled series.

Table 1: Stationarity results of the variables of the models

	Tests at levels				Tests at first difference				
Variables	Levin, Lin & Chu t*	Im, Pesaran and Shin W-stat	ADF - Fisher Chi-square	PP - Fisher Chi-square	Levin, Lin & Chu t*	Im, Pesaran and Shin W-stat	ADF - Fisher Chi-square	PP - Fisher Chi-square	Order of integration
CO2	-0.00179 (0.4993)	-0.6025 (0.2734)	20.7084 (0.2944)	28.417 (0.0560)	-13.2784 (0.0000)	-11.5148 (0.0000	140.580 (0.0000)	167.802 (0.0000)	I (1)
E	0.54154 (0.7059)	2.28335 (0.9888)	5.87609 (0.9967)	6.45974 (0.9939)	-13.5331 (0.0000)	-11.4252 (0.0000)	137.827 (0.0000)	133.124 (0.0000)	I (1)
EXR	2.38338 (0.9914)	1.01443 (0.8448)	24.3218 (0.1448)	20.4866 (0.3061)	-9.86122 (0.0000)	-8.10829 (0.0000)	109.170 (0.0000)	114.305 (0.0000)	I (1)
FD	-0.75747 (0.2244)	0.22689 (0.5897)	20.1981 (0.3218)	17.2938 (0.5030)	-8.60133 (0.0000)	-9.75590 (0.0000)	117.859 (0.0000)	120.651 (0.0000)	I (1)
FDI	0.14606 (0.5581)	1.26438 (0.8970)	17.8526 (0.4654)	25.5649 (0.1101)	-15.4017 (0.0000)	-16.6126 (0.0000)	197.848 (0.0000)	208.739 (0.0000)	I (1)
GDPPC	4.99296 (1.0000)	5.98377 (1.0000)	2.35422 (1.0000)	14.9814 (0.6632)	-3.72213 (0.0001)	-3.99147 (0.0000)	48.9314 (0.0001)	69.8188 (0.0000)	I (1)
LAB	-1.11955 (0.1315)	0.04053 (0.5162)	17.2818 (0.5038)	5.48022 (0.9979)	4.74945 (0.0004)	-1.94144 (0.0261)	26.5461 (0.0879)	23.5215 (0.1713)	I (1)
OPEN	-0.54174 (0.1055)	-2.55042 (0.0054)	32.1377 (0.0812)	32.2354 (0.0806)	-14.4163 (0.0000)	-13.0767 (0.0000)	161.273 (0.0000)	206.943 (0.0000)	I (1)
TAR	-1.21052 (0.1130)	-1.55989 (0.0594)	25.1676 (0.1204)	39.4717 (0.0025)	-15.1933 (0.0000)	-15.7096 (0.0000)	175.464 (0.0000)	203.640 (0.0000)	I (1)
TR	1.83593 0.1332	-0.56555 0.2859	20.4177 0.3098	19.6183 0.3547	-15.3562 0.0000	-15.2712 0.0000	189.541 0.0000	204.412 0.0000	I (1)
URBAN	-0.73576 0.2309	6.03887 1.0000	19.5189 0.3605	14.9776 0.6635	-2.63474 0.0042	-4.06228 0.0000	269.945 0.0000	20.9456 0.2822	I (1)
GCF	6.33521 (1.0000)	5.97539 (1.0000)	15.8205 (0.6051)	14.0493 (0.7259)	-8.96097 (0.0000)	-9.43838 (0.0000	121.954 (0.0000)	149.530 (0.0000)	I (1)

Results in table one indicates that all variables of the model are stationary at first differences. Meaning that all are integrated of order one. When all variables are integrated of order one, to test for cointegration of each variable, Johansen Fisher Panel Cointegration Test is appropriate and reliable. The cointegration results for each equation are presented in table 2.

Table 2: Johansen Fisher Panel Cointegration Results

	EQUATION 9		**EQUATION 10**		**EQUATION 11**		**EQUATION 12**	
Hypothesized No. of CE(s)	Series: CO2 GDPPC E OPEN FD FDI		Series: GDPPC CO2 E TR LAB GCF FD		Series: E CO2 GDPPC FDI URBAN OPEN GCF		Series: TR GDPPC E FDI EXR	
	Fisher Stat.* (from trace test) Prob.	Fisher Stat.* (from max-eigen test) Prob.	Fisher Stat.* (from trace test) Prob.	Fisher Stat.* (from max-eigen test) Prob.	Fisher Stat.* (from trace test) Prob.	Fisher Stat.* (from max-eigen test) Prob.	Fisher Stat.* (from trace test) Prob.	Fisher Stat.* (from max-eigen test) Prob.
None	204.9 0.0000	123.9 0.0000	397.8 0.0000	328.3 0.0000	453.1 0.0000	310.8 0.0000	139.7 0.0000	118.1 0.0000
At most 1	97.38	59.09	253.6	137.5	301.6	147.6	49.30	42.93

	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0008
At most 2	50.51 0.0001	35.71 0.0077	142.6 0.0000	61.82 0.0000	180.2 0.0000	93.02 0.0000	19.75 0.3469	17.74 0.4732
At most 3	26.31 0.0929	19.24 0.3771	94.41 0.0000	50.03 0.0001	103.0 0.0000	52.68 0.0000	12.23 0.8352	10.39 0.9186
At most 4	18.82 0.4030	15.84 0.6036	57.95 0.0000	30.62 0.0318	64.09 0.0000	37.89 0.0040	21.34 0.2625	21.34 0.2625
At most 5	25.34 0.1158	25.34 0.1158	43.58 0.0007	37.91 0.0040	44.24 0.0005	31.05 0.0284	-	-
At most 6	-	-	31.48 0.0253	31.48 0.0253	45.31 0.0004	45.31 0.0004	-	-
No of cointegrating equations	At most 3		At most 6		At most 6		At most 1	

Table two presents the Johansen Fisher panel cointegration results and examining the results of all equations under two analytical techniques of Fisher Statistics* (trace test) and; Fisher Statistics* (max-eigen test), the null hypothesis of no cointegration was rejected based on the two tests. We therefore conclude that there is cointegration for all equations. There is the need to test for identification of our equations. This precede the estimation of our equations.

Identification

The identification status of equations in a system of simultaneous equation estimation techniques is a pre-condition for estimation. There are two identification status which are: overidentification and exactly identified. This study will subject all the four equations to identification test as follows:

The order Condition

These are the decision criteria for identification:

i. If M < G-1 the equation is underidentified
ii. If M = G-1 the equation is exactly identified
iii. If M > G-1 the equation is overidentified

Where, G is the number of endogenous variables in the system. M is the missing variable (endogenous or exogenous/pre-determined variables) in equation under consideration (Asteriou and Hall, 2007).

In the four equations of this study, the results based on order condition are:

Equation 7: G = 4 and M = 6; therefore 6>4 -1 or 6 > 3 so equation 9 is overidentified.
Equation 8: G = 4 and M = 4; therefore 4>4 - 1 or 4>3 so equation 10 is overidentified.
Equation 9: G = 4 and M = 5; therefore 5>4 -1 or 5 >3 so equation 11 is overidentified.
Equation 10: G = 4 and M = 6; therefore 6 > 4 -1 or 6 > 3 so equation 12 is overidentified

The four equations are identified by order condition (necessary condition), hence, we need to carry out the order condition test which is the sufficient condition.

Rank Condition

Rank Condition for equation 9:

	CO2	GDPPC	E	TR	OPEN	FD	FDI	LAB	GCF	URBAN	TAR	EXR
Equation 1	√	√	√	0	√	√	√	0	0	0	0	0
Equation 2	√	√	√	√	√	√	0	√	√	0	0	0
Equation 3	√	√	√	√	√	0	√	0	√	√	0	0
Equation 4	0	√	√	√	0	0	√	0	0	0	√	√

	TR	LAB	GCF	URBAN	TAR	EXR
Equation 2	√	√	√	0	0	0
Equation 3	√	0	√	√	0	0
Equation 4	√	0	0	0	√	√

There are at least G – 1 = 3 rows and columns with no all-zero elements (in the second table above), so the rank condition is satisfied.

Rank Condition for equation 10:

	CO2	GDPPC	E	TR	OPEN	FD	FDI	LAB	GCF	URBAN	TAR	EXR
Equation 1	√	√	√	0	√	√	√	0	0	0	0	0
Equation 2	√	√	√	√	√	√	0	√	√	0	0	0
Equation 3	√	√	√	√	√	0	√	0	√	√	0	0
Equation 4	0	√	√	√	0	0	√	0	0	0	√	√

	FDI	URBAN	TAR	EXR
Equation 1	√	0	0	0
Equation 3	√	√	0	0
Equation 4	√	0	√	√

There are at least G – 1 = 3 rows and columns with no all-zero elements (in the second table above), so the rank condition is satisfied.

Rank Condition for equation 11:

	CO2	GDPPC	E	TR	OPEN	FD	FDI	LAB	GCF	URBAN	TAR	EXR
Equation 1	√	√	√	0	√	√	√	0	0	0	0	0
Equation 2	√	√	√	√	√	√	0	√	√	0	0	0
Equation 3	√	√	√	√	√	0	√	0	√	√	0	0
Equation 4	0	√	√	√	0	0	√	0	0	0	√	√

	FD	LAB	TAR	EXR
Equation 1	√	0	0	0
Equation 2	√	√	0	0
Equation 4	0	0	√	√

There are at least G – 1 = 3 rows and columns with no all-zero elements (in the second table above), so the rank condition is satisfied.

Rank Condition for equation 12:

	CO2	GDPPC	E	TR	OPEN	FD	FDI	LAB	GCF	URBAN	TAR	EXR
Equation 1	√	√	√	0	√	√	√	0	0	0	0	0
Equation 2	√	√	√	√	√	√	0	√	√	0	0	0
Equation 3	√	√	√	√	√	0	√	0	√	√	0	0
Equation 4	0	√	√	√	0	0	√	0	0	0	√	√

	CO2	OPEN	FD	LAB	GCF	URBAN
Equation 1	√	√	√	0	0	0
Equation 2	√	√	√	√	√	0
Equation 3	√	√	0	0	√	√

There are at least G – 1 = 3 rows and columns with no all-zero elements (in the second table above), so the rank condition is satisfied.

Table 3: 2SLS Results for the equations

	EQUATION 9	**EQUATION 10**	**EQUATION 11**	**EQUATION 12**
	Dependent Variable: CO2	Dependent Variable: GDPPC	Dependent Variable: E	Dependent Variable: TR
	Instrument specification: C OPEN FD FDI TAR LAB GCF URBAN TAR EXR	Instrument specification: C OPEN FD FDI TAR LAB GCF URBAN TAR EXR	Instrument specification: C OPEN FD FDI TAR LAB GCF URBAN TAR EXR	Instrument specification: C OPEN FD FDI TAR LAB GCF URBAN TAR EXR
CO2		4001.182 (6.286007) (0.0000)	245.2628 (3.621746) (0.0004)	
GDPPC	0.000179 (10.38388) (0.0000)		-0.188489 (-10.13608) (0.0000)	-1396529. (-3.178847) (0.0017)
E	0.000187 (3.584264) (0.0004)	-2.563281 (-0.659710) (0.5100)		5082975. (2.531809) (0.0119)
TR		-3.54E-08 (-1.075015) (0.2834)		
OPEN	-0.000764 (-2.759264) (0.0062)	8.466072 (1.880292) (0.0612)	1.606717 (5.458949) (0.0000)	
LAB		6.160638 (0.490602) (0.6241)		
FD	0.008664 (9.41846) (0.0000)	-28.08820 (-1.443088) (0.1502)		
FDI	-4.22E-12 (-0.645695) (0.5191)		-4.76E-10 (-0.086578) (0.9311)	1.215127 (5.533927) (0.0000)
URBAN			7.965787 (11.70533) (0.0000)	
GCF		2.52E-08 (0.716925) (0.4741)	9.96E-09 (17.73503) (0.0000)	
TAR				-30871769 (-0.804388) (0.4219)
EXR				-1191411. (-1.377746) (0.1695)
R-squared	0.540939	0.334326	0.552777	0.196842
Adjusted R-squared	0.533738	0.318540	0.543974	0.184244
Durbin-Watson stat	0.373080	0.343821	0.197211	0.539794
Prob(J-statistic)	0.000002	0.000000	0.000002	0.005952
Instrument rank	9	9	9	9
Included observations:	260	260	260	260

*, **, *** means significant at 1%, 5% and 10% respectively. Numbers in parenthesis under the coefficients are the t-statistics and the probabilities respectively.

Table three above presents the 2SLS results of the four structural equations. A point must be noted about the reported summary statistics of the three equations. They are only asymptotically valid in Eviews estimates. (Eviews User's Guide, 1994-1997, pp. 283). Based on data size of 260, we cannot categorically that our estimates lack the asymptotic characteristics. The summary statistics showed low coefficient of determination, low Durbin Watson statistics, and above all J – statistics that are highly significant is an indication of problem with the estimation of the structural equation. Therefore, we conduct tests for autocorrelation of the Lagrange Multiplier (LM) tests presented in table 4.

Table 4: Autocorrelation results for the equations

Null hypothesis: No cross-section dependence (correlation) in residuals	Autocorrelation results before correcting for autocorrelation in the equations				Autocorrelation results after correcting for autocorrelation in the equations			
	Equation 9	Equation 10	Equation 11	Equation 12	Equation 9	Equation10	Equation 11	Equation 12
Breusch-Pagan LM	82.02902 (0.0000)	130.3258 (0.0000)	184.3830 (0.0000)	366.5169 (0.0000)	30.37244 (0.7329)	32.08332 (0.6554)	29.1184 (0.8909)	49.42288 (0.1102)
Pesaran scaled LM	5.424572 (0.0000)	11.11640 (0.0000)	17.48710 (0.0000)	38.95179 (0.0000)	-0.663214 (0.5072)	-0.46158 (0.6444)	1.72453 (0.3064)	0.57435 (0.3100)
Pesaran CD	3.818731 (0.0001)	1.002249 (0.3162)	2.019605 (0.0434)	17.06288 (0.0000)	0.423452 (0.6720)	0.388110 (0.6979)	0.92637 (0.3543)	0.427060 (0.6006)

The null hypothesis of the tests is based on No cross-section dependence (correlation) in residuals. And three methods of evaluations used are: Breusch-Pagan LM, Pesaran scaled LM and; Pesaran CD. The results for each structural equations in table 3 rejected the no cross-section dependence (correlation) in residuals. This means that there is correlation in cross-section residuals. When the autocorrelation was corrected and we tested for the existence or otherwise of serial correlation in residuals, the results are also depicted in the last four columns to the right in table 4. We cannot reject the null hypothesis in that case indicating that there is no more serial correlation in our residuals and estimates in table 5 is good for interpretation and forecast.

Table 5: 2SLS Results after correcting for autocorrelation

Variables	Equation 9	Equation 10	Equation 11	Equation 12
	Dependent Variable: CO2	Dependent Variable: GDPPC	Dependent Variable: E	Dependent Variable: TR
	Instrument specification: C OPEN FD FDI TAR LAB GCF URBAN TAR EXR	Instrument specification: C OPEN FD FDI TAR LAB GCF URBAN TAR EXR	Instrument specification: C OPEN FD FDI TAR LAB GCF URBAN TAR EXR	Instrument specification: C OPEN FD FDI TAR LAB GCF URBAN TAR EXR
CO2		1490.242 (0.880166) (0.3796)	31.53101 (0.366577) (0.7143)	
GDPPC	5.29E-05 (0.528449) (0.5977)		0.039061 (0.568312) (0.5703)	-1109801. (-1.043145) (0.2979)
E	0.000719 (2.035795) (0.0428)	-1.879741 (-0.758630) (0.4488)		4820150. (1.266144) (0.2067)
TR	-3.99E-08 (-0.640330) (0.5226)			
OPEN	0.000700 (1.808379) (0.0718)	24.52012 (2.907468) (0.0040)	-0.036816 (-0.260011) (0.7951)	
LAB		-9.544800 (-1.138053) (0.2562)		
FD	-0.001787 (-1.016037) (0.3106)	-1.656396 (-0.051532) (0.9589)		
FDI	-5.07E-12 (-0.820694) (0.4126)		-6.28E-10 (-0.301713) (0.7631)	0.600671 (2.345910) (0.0198)
URBAN			6.285106 (2.357095) (0.0192)	
GCF		4.00E-08 (1.489784) (0.1376)	-5.40E-10 (-0.906444) (0.3656)	
TAR				-28483316 (-0.876726) (0.3815)
EXR				-1184472. (-0.709887) (0.4784)
AR(1)	0.925662 (27.99757) (0.0000)	0.802277 (14.68903) (0.0000)	0.989957 (116.3379) (0.0000)	0.752271 (17.01404) (0.0000)
R-squared	0.873335	0.781792	0.978425	0.641580
Adjusted R-squared	0.870750	0.775480	0.977892	0.634265
Durbin-Watson stat	2.435799	2.182647	2.060522	1.738721
Prob(J-statistic)	0.144408	0.111773	0.351923	0.346767
Instrument rank	15	9	16	15
Included observations:	251	250	251	251

*, **, *** means significant at 1%, 5% and 10% respectively. Numbers in parenthesis under the coefficients are the t-statistics and the probabilities respectively.

Table above presents the adjusted 2SLS estimates to account for the presence of first-order serial correlation in the TSLS estimates in table 6. The method is known as the non-linear instrumental variables procedure because the model becomes non-linear least squares problem and the model is estimated using instrumental variables.

Equation one relates carbon dioxide emission to a number of explanatory variables. Based on the results, the three tests for the presence of autocorrelation concluded that there is no serial correlation as each of the test statistic is insignificant at the appropriate level of significance. Contrary to expectation, economic growth has no significant impact on carbon dioxide emissions in the in West Africa. In the same vein, trade has no significant impact on emission in West Africa. Foreign Direct Investment (FDI) and Financial Development have no significant impact on carbon dioxide emission in West Africa. Trade Openness significantly increased emission in the West African countries. A unit increased in trade openness other things being constant can bring about 0.0007 metric tonne per capita increase in carbon dioxide emission. This result suggest that trade liberalization generally is detrimental to the environment. This lends credence to the pollution haven hypothesis in West Africa.Energy consumption, in conformity with economic theory is positively contributing significantly to a rise in carbon emission in West African states. A kilogramme of oil equivalent rise in energy consumption can bring about 0.000719 metric tonne rise in carbon dioxide emission per capita. Energy consumption significantly explained carbon emission at five per cent significant level. This result is in consonance with economics and sciences that postulated that emission is the product of energy consumption and carbon dioxide is one of the end products of energy combustion. The above finding agrees with the findings of Shahbaz et. al. (2013) and that of Taghavae, Aloo and Shirazi (2016).

The second equation showed economic growth proxy by real per capita GDP in 2010 prices as related to energy consumption, carbon emission and other explanatory variables. The results indicate that carbon dioxide and gross fixed capital formation directly related to carbon emission but inversely related to energy consumption. However, none of these variables significantly explained economic growth in West Africa. In a similar manner, labour, gross capital formation and financial development do not have significant impact on economic growth in West Africa. However, trade openness significantly increases economic growth. A unit rise in trade openness other things being constant can bring about 24.52012 US dollars increase in real GDP per capita (economic growth). This finding is supportive of the beneficial impact of trade liberalization on economic growth.

The third equation relates energy consumption to economic growth, energy consumption, openness, gross capital formation and foreign direct investment. Results indicate that economic growth bears no significant influence on energy consumption in West African countries. This result may be true as most countries under study are basically agrarian by nature and are at early stage of industrialization, so economic growth may not be seriously linked with energy consumption. Trade openness, gross fixed capital formation and foreign direct investments have no significant impact on energy consumption. Possible reason for this is that trade liberalization can be successful only if certain conditions are met in the local economy. However, countries of West Africa are not so competitive in international trade and in attracting foreign direct investment. In addition, gross fixed capital formation is low in these countries and their impact on energy consumption may be insignificant. Urbanization significantly increased energy consumption in West Africa. A unit rise in the rate of urbanization can bring about 6.285106 kg increase in the energy use (kg of oil equivalent per capita). The reason for this is that urbanization is known for more energy consumption. More energy is required in urban areas for production, extraction, transportation and lighting among others unlike in the rural areas where there is heavy reliance on primary energy. Most of the industrial activities also take place in urban centres. Commercial, economic and social activities of the urban centres require secondary energy than required in the rural areas. This finding is similar to the finding of Taghavae, Aloo and Shirazi (2016).

The fourth equation relates net trade to economic growth, energy consumption, FDI inflows, exchange rate and trade policy (tariff). Results of the 2SLS showed that tariff and exchange rate are negatively related to trade but do not bear significant impact on trade. Economic growth also has negative and insignificant impact on trade while energy consumption has positive insignificant impact on trade. However, foreign direct investment, significantly contributed positively to trade growth in West Africa. A dollar increases in inflow foreign direct investment other things being constant can bring about 0.600671 US dollar increase in net trade in West Africa meaning that FDI is beneficial to trade.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Energy plays important roles in human lives and economic growth. Energy use however, have environmental impacts on air, water and land; but its effects varies. Economic growth can also be boosted through international trade expansion. Trade - induced economic growth can also impact the environment by increasing energy consumption and consequently, pollution and natural resources degradation and depletion. To this end, this study examined the interrelatedness of energy consumption, environmental condition, international trade and the environment in nine of the West African countries from 1990 to 2018 using the method of two stage least squares (2SLS). The study found contrary to expectation, that economic growth and international trade have no significant impact on carbon dioxide emissions in West Africa. Foreign Direct Investment (FDI) and Financial Development (FD) have no significant impact on carbon dioxide emission in West Africa. Trade openness significantly increased emission in the West African countries. This result suggest that trade liberalization generally is detrimental to the environment. This lends credence to the reality of pollution haven hypothesis in West Africa. Energy consumption, in conformity with economic theory is positively contributing significantly to a rise in carbon emission in West African states. Trade openness significantly increases economic growth. This finding is supportive of the beneficial impact of trade liberalization on economic growth in conformity with trade theory. Other results indicate that economic growth bears no significant influence on energy consumption. This is a benefit rather than a problem as de-linking energy consumption from economic growth is a good objective of any government. Urbanization significantly increased energy consumption in West Africa. Lastly, foreign direct investment, significantly contributed positively to trade growth in West Africa.

Based on the foregoing therefore, while the governments of West African countries are liberalizing trade in order to boost their economic growth, they must encourage the development and use of cleaner and renewable energy through sound legislations so as to maximize the growth impact of trade liberalization and minimize the attendant environmental challenges of trade liberalization. In addition, since energy consumption is a major determinant of environmental outcomes, West African governments must encourage a switch to more renewable and clean sources of energy as opposed to the fossil-based energy sources in order to de-link energy demand from emissions in their countries. Governments can also encourage the development and use of energy efficient technology or enact energy conservation policies so as to reduce fossil - fuels use among others. Lastly, since economic growth has no significant impact on emissions, West African governments can pursue the objective of economic growth without necessarily constraining the environment.

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Contribution of Education Policy Reforms towards Gender Dynamics and the Formalization of Domestic-work Sector: A Case of Mafinga Town Council, Tanzania

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Abstract

Currently, Tanzania is experiencing the policy of free education up to secondary school level. On the other hand, in Tanzania, domestic work is one of the sectors with the highest share of informal employment. However, after the introduction of free education policy up to form four, the availability of domestic workers is declining whereas the formalization of the domestic sector is persisting. It is against this background, this study aimed at analyzing the influence of the current educational policy towards the formalization of domestic sector in Mafinga town. The study was qualitative in nature whereby 30 domestic workers, 10 employers and 5 individuals from workers' union were interviewed in the study area. The study found that the new education policy has contributed towards the increase of the age to domestic sector from 12 years to 17 years; and the number of daily routine workers has increased as opposed to residential workers. Besides, domestic works currently involves both males and females; there is the increase of the middle men to facilitate the availability of domestic workers. Due to education awareness, domestic workers are now demanding their rights including the vacation from their employers and increase of salary. In addition, there is scarcity of domestic workers that has led to the mushrooming of day care centres. However, domestic workers faced unlimited number of challenges including overworking with low wages, delayed payments, harsh working climates as well as low social recognition. The study hereby recommends for the improvement in the education sector among school age females in order to minimize their involvement in the informal sectors as domestic sectors.

Keywords: Education, Policy reforms, Domestic work sector, Gender

1.0 INTRODUCTION

1.1 Background Information

The International Labour Organization (ILO) has been in the forefront in the debate on formalization of the informal sector with one of the recommendations

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being the transition of workers from the informal to the formal economy (ILO, 2015). Domestic work is also a sector that is poised to grow. With the aging of the population, continually increasing rates of female labour participation, and a preference for home-based care, families are increasingly turning to domestic workers to care for their homes, children, and ageing relatives. While an increasing share of domestic work is part of the formal economy; domestic work remains one of the sectors with the highest share of informal employment. In addition, domestic labour as a special category of workers received special attention during the last one or two decades, largely due to the rising prominence of the sector in terms of female employment (IHRC, 2013). Concurrently, there has been a growing body of literature on the domestic sector particularly in their personalized and informal service (John, 2010), social and economic devaluation of care and its gender, class, and caste characteristics. However most of the studies are based on the form of regional studies (Nadasen, 2009; Neetha, 2008) whereas this paper deals with specific area of Mafinga town in Tanzania.

On the other hand, the outcome of the transformations in the agrarian and industrial economy has resulted in an unprecedented mobility of labour including the domestic workers to urban areas (Neetha, 2004; Mehrotra, 2010 & John, 2010). The new ILO report calls for a combination of incentives and compliance to reduce high levels of informality in domestic work. Domestic work is characterized by a high incidence of informal arrangements and contributes significantly to informality, especially among women. The ILO estimates that there are 67 million domestic workers, aged 15 years and older, worldwide (ILO, 2015c). About 70% of people in Tanzania are estimated to be in informal employment (IMED, 2016 making it one of the sectors with the highest share of employment.

In Tanzania, the Conservation, Social Services and Consultancy Workers Union (CHODAWU) strongly advocacy for the review and amendment of the labour laws as herein provided, in order to secure equal treatment of domestic workers. To this end, CHODAWU further advocates for the ratification of the ILO Convention No. 189 regarding Decent Work for Domestic Workers (IDWN, 2013). However, Tanzania Gender Networking Programme (TGNP), and other Non-Government Organizations (NGOs) like Tanzania Media Women's Association (TAMWA), the Atrial Fibrillation NETwork (AFNET) among others stand at the forefront to fight against women associated violence and discriminations. Environmental, Human Rights Care and Gender Organisation (ENVIROCARE) and Legal and Human Rights Centre (LHRC) work hard in supporting the TGNP movements (TGNP, 2004). On the other hand, ILO organized a session on domestic work in June 2011 to discuss rights and legislations for domestic workers. The results of the discussion among others were to enhance decent work for domestic workers. One of the principal functions of the ILO is to set international labour standards through the adoption of conventions and recommendations. All nations which adopted ILO conventions are expected to observe international labour standards. They can be ratified by the extent they enforce provisions of ILO conventions through their respective legal systems (ILO, 2011).

Literatures indicate that domestic workers' studies have mostly been conducted in India followed by the United States of America (Fraga, 2013). In India, the household work has always been considered as below someone's dignity and the duty of the woman (Rani, 2017). The domestic work sector therefore has optimized the scarcity of information and statistical justification of the study in context. In Europe, several countries have developed specific legislation; while others like Germany, Iceland and Switzerland have their own collective binding agreements. However, in some cases such as Croatia, Cyprus, Estonia, Latvia, Luxembourg, Lithuania, Poland, Slovakia, Slovenia, Turkey and the United Kingdom they have neither legislation nor any type of regulation. In Africa, domestic work is a significant source of employment accounting for 2.2 per cent of labour force (ILO, 2011). Female domestic workers accounted for 74 per cent in Africa. Of all female paid employees in Africa, 13.6 % are domestic workers (ILO, 2013). Most African domestic workers, working in cities and towns are internal migrants who are not from other countries, but come from rural, often less developed and poorer areas within their own African countries (ibid). The domestic sector has been less documented in Tanzania despite its prevalence. The objectives of this paper were to establish the contribution of education policy reforms towards gender dynamism and the formalization of domestic sector; the challenges of domestic workers at Mafinga Town Council and respective employers handling issues linked to domestic workers. Then, the study would come up with policy implications for future direction and formalization of domestic work sector.

2.0 LITERATURE REVIEW

This section presents the conceptual elements as a theoretical underpinning of the paper. The three areas are definition of domestic worker as first part, followed by the empirical reviews which summarize selected studies related to the theme and lastly is a part that cover the theoretical literature review.

A domestic worker is a person who is entrusted with household staffs involving cleaning house, chopping vegetables, washing clothes and cooking. McClelland's (2011) argues that a level of development of domestic work sector is correlated with achievement motivation and social classes within the society.

2.1 Empirical Reviews

2.1.1 Categories of Domestic Work

Domestic work means work performed in or for a household or households. ILO (2011) states that: a person who performs domestic work occasionally or sporadically and not on an occupational basis is not a domestic worker. This is based on the ILO Convention 189 on Decent Work for Domestic Workers.

Domestic work is generally defined in terms of types of work performed and the time spent at work to the employer's home. Live out and live in are two distinct categories of domestic work. According to John (2010), live-out work is primarily of two types: first, those who work in one house for the whole day and go back to their homes in the evening and secondly, those who work in different houses, moving from one to the other, performing one or more tasks in each household; the tasks involve cleaning the houses, chopping vegetables, cooking and washing clothes. However, the number of visits depends on the implied conversations between the two parties (Mehrotra, 2010). Another form of part-time live-out work is in terms of piece-rate which is often applied to washing clothes (John, 2010). Some women and girls migrate to the city to work as domestic workers, especially those who work as live-in workers (Neetha, 2003) in order to sustain their household expenses unable to be met within the wages of their husbands.

Women who work as live-out part-timers are primarily migrants who move to the city with their families or are female construction workers who enter domestic labour when no construction work is available and others are landless labourers who are displaced when rural areas are absorbed by cities (John, 2010). On moving to the city, they mainly reside in difficult conditions. They begin work at one or two houses and gradually take up more, depending on their individual capacities, the money needed and their specific stage of life cycle, for example, women with very young children prefer to work in fewer households than older women without children (Mehrotra, 2010). Besides learning work, domestic workers have to adapt to urban ways of living and a culture different from their own.

According to Neetha (2009), mostly, domestic work is characterized as 'part-time' from the perspective of the employer that the employees may work to in more than one household. Domestic workers also note that this form of work may be flexible but is also unstable as workers shift out of the sector, change employers, stop working for a few years due to marriage or childbirth and also have constant issues with their employers. Yet, in terms of time spent at work, it may be as much or more than a live-in worker. The fragmented nature of domestic work, the multitude of tasks, a multiplicity of employers and the instability of employment pose challenges in documenting them and in attempts to organize them (Neetha, 2008). The full-timers live with the employer's family (John, 2010). Several studies (Jagori, 2004; Neetha, 2004; Nadasen, 2009) have reported that they often have no specified work hours, some working for eighteen hours a day; further they do not get rest during the day while others may not be given proper food or living space. Non-payment of wages, no weekly leaves or holidays, verbal and sexual abuse are also reported. Domestic workers have no option to any form of assistance when they face verbal, physical or sexual harassment. The fight for their remedies is upon their shoulders (Mehrotra, 2010).

In developing countries such as Tanzania large number of full-time workers is hired through recruiting agents or specifically some lobbying agents who pick them from rural areas. The agents also collect their wages, often withholding a substantial part; the private work agents often recruit girls in villages and bring them to cities (Neetha, 2003). Some agents provide basic training for a couple of days and then send them to homes as domestic workers (to those who seem to be formal) or they may send them untrained. There is no state mechanism to check these agents or their functioning. These agencies are difficult to trace as they frequently change their identities, location and phone numbers. They also charge a large amount from employers for providing domestic helpers (Jagori, 2004). Sexual exploitation by recruiting agents has also been reported. It is important to point out that most agencies are commercial in nature and do not focus on the welfare of workers. The condition of domestic workers has not improved with the growth of placement agencies (Neetha, 2004; 2009).

2.1.2 The Socio-Economic Significances of Domestic Workers

Domestic work has been placed in the larger context of patriarchy and suppression of women; the patriarchy contexts controls women's mobility, economic resources, productive and reproductive power to men; both biological and social reproduction are carried out by women in most societies (Pendame, 2006). According to Jagori, (2004), social reproduction refers to all the caring and nurturing activities necessary to ensure human survival and maintenance such as cooking, feeding, washing, cleaning, nursing and other household activities. Although these are necessary for human survival, they are neither considered work nor economic in nature and hence are invisible, unrecognized and unpaid. TGNP (2004) argues that usually it is women and girls who perform socially reproductive work all across the world although the endless and repetitive labour provided by them is not acknowledged as valuable work.

Domestic work includes mental, manual and emotional aspects, including care work that is necessary to maintain people and communities (Anderson 2000). Domestic work is thus viewed as reproductive work that creates not only labour units but also people and social relations. It is important to note in this context that domestic works reflects the relation between genders, race and class. Apart from being the 'wife' or the 'mother', it is often paid domestic workers who reproduce social relationships and social beings. Yet, the status of the domestic worker is lower than the woman employer who can be considered as her manager. Social reproductions are not recognized as work hence domestic workers receive no recognition and also, they are being paid low wages (TGNP, 2004).

2.1.3 The Employer- Employee Relationship in Domestic Work

Home is also the site of the interplay of intimate human relations. The domestic worker, especially a nanny or caregiver, may begin employment as a stranger, an outsider, but rapidly enters into an intimate relationship with the family that employs her/him (Nadasen, 2009). S/he spends long stretches of time in someone else's private space, tending to emotional and physical needs. S/he may be privy to the increasing frailty and confusion of an elder with dementia or to the anguish of a troubled child. S/he may hold secrets with which s/he never wanted to be burdened. This intimacy can become an emotional entanglement that confuses employers and disarms workers, potentially undermining their already structurally limited ability to negotiate terms of employment (Mehrotra, 2010).

Nadasen (2009), provided that the employer-employee relationship is a complex one and is viewed as one of domination, dependency and inequality. Domestic work sector is an area of work where the employer and the employee are mostly females. As a home is the site of work, relations between employer and employee are often not limited to work but spill over as larger support systems. In a capitalist world the domestic sector confuses and complicates the conceptual clarity between family and work, custom and contract, affection and duty because the hierarchical arrangements and emotional registers of home must coexist with those of workplace.

Mehrotra (2010) in the study of domestic workers, conditions, rights and responsibilities portrayed that women who work as domestic workers over long time period have little or no savings for their old age. They are not entitled to any old-age pensions, gratuity or bonus. They have no medical insurance and or any other means for illness; hospitalization of self and family are borne by the worker. Neither do they have any coverage for childbirth, injury at work place or loans to build houses or other social responsibilities. Such loans or grants, as all other benefits, depend on their relation with the employer and the employer's goodwill.

2.1.4 Challenges Connected to Working Conditions of Domestic Workers

The tasks performed by categories of domestic workers may include cleaning (sweeping, swabbing and dusting), washing (clothes and dishes), or even putting machine-washed clothes on the clothesline or/and folding them, cooking, or preparation for cooking such as chopping vegetables and making dough, or cooking a part of meal, ironing, housekeeping and extensions of these works outside the home such as shopping (ILO, 2013). Domestic work may also include childcare or care of the aged. There are no standard norms that decide working conditions. Wages depend on the bargaining power of the domestic workers and their employers although to a large extent employer decide about the wages of their workers (Mehrotra, 2010). Other factors that influence decisions about wages include the type of tasks performed and the neighbourhood. Rates vary according to the task, for example, cooking attracts more wages than cleaning. Wages also depend on the socio-economic profile of employers (Pendame, 2006). There is no guarantee of employment as employers can ask workers to leave with no prior notice or financial compensation (Jagori, 2004; Neetha, 2008). Studies (Pendame, 2006; Mehrotra, 2010) also note that only few workers get a weekly off; paid leave is often the result of difficult negotiations with the employers. Getting sick leave also depends on the good will of the employer. Instances of workers losing their jobs due to long leave taken at time of childbirth or ill health are often reported. Some also lose their jobs when they visit their villages (IHRC, 2013).

Many domestic workers living in large cities also face constant threats of demolitions of their slums and relocation to newer areas on the fringes of the city or towns. This often leaves them both homeless and jobless. Most urban poor live in different types of slum settlements and work in the informal sector (ILO, 2013). The relocation of the poor to resettlement colonies takes them far away from areas of economic activity in the city, thus making it impossible for them to even earn sustainable livelihood (Neetha, 2008). In this context, it has been well documented that the process of relocation and displacement has led to problems of sustained access to livelihood, education, basic services and healthcare where women suffer the most. Building a house in the resettlement area takes up a large part of the family’s income. Even if these workers start work after relocation, living on the margins of the city implies that work will mostly be in areas that are far. Regulating directions become a major issue both in terms of cost and time (Pendame, 2006).

In the resettlement areas (and in the slums), women spend a large part of their time accessing essential services such as water and toilets. The double burden that they face is compounded due to harsh living conditions. This has been documented for other areas of Delhi as well (Jagori 2004). Besides this, they have no access to any form of childcare services. They often leave their own children alone while they go to take care of others’ children. Neetha (2009) notes that domestic workers highlight their lack of access to institutional care facilities that provide quality care at affordable rates in their neighbourhoods.

2.2 Theoretical Review

The article had three theories which build a basis for the study, namely; social change theory, universality of human right theory and inter-sectionalists theory. The theories explain the real situation of domestic workers in Mafinga Town Council.

2.2.1 The Theory of Social Change

Domestic workers are entrusted with all household stuffs; since they have to perform all the assigned domestic tasks which involve cleaning in one house, chopping vegetables in another and washing clothes in the third. Others may perform only one task, such as cooking. McClelland's (1961) on the theory of social change portrays that a level of development is correlated with achievement motivation. The classes within the societies are authored as the driver towards change. The theory of social change portrays that a level of development is correlated with achievement motivation. The classes within the societies are authored as the drivers towards change (McClelland's, 2011).

Hagen (1962) attempted to explain why the achievement motivation varies between societies, their classes and strata; he argues that in traditional societies the status of individuals is fixed. The insecurity and frustration lead to changed behavior which has consequences on the family structure. In considering the economic strategy theories, Rosenstein-Rodan, (1970) and Nagel (2000) argue that there must be devotion of resources for the success to be revealed. Therefore, it is worth noting that domestic workers have the primary purpose to contribute economically to their families and households; thus, with reasonable wages other working conditions being constant, the domestic work will be contributing to the domestic workers' welfare and their household in general.

2.2.2 Universality of Human Rights Theory

Nickel (2006) argues that human rights can be divided into seven families of rights which are: First, security rights which deal with protecting against assault's on one person such as torture, murder, and rape; second, due process rights which concern about protecting against legal abuses such as imprisonment without trial, secret trials, and excessive punishment; third, fundamental personal freedom rights which emphasize on protecting the freedom of belief, expression, individuals private life, association, assembly and movement; fourth, rights of political participation which aim to provide individuals a democratic political process; fifth, equality rights which concern about equality in all aspects of life and emphasize to eliminate all forms of discrimination; sixth, social rights which ensure access to subsistence coupled with employment, healthcare, education; and seventh, minority combined with group rights which are addressing the problems of distinctive groups by different forms or specific protections that go beyond the protections already offered by other rights such as rights in practicing culture for minority group (Orend, 2002).

Therefore, this theory contemplates that the domestic workers have various rights such as security rights, protection from legal abuses, personal freedom rights, political participation rights and social rights.

2.2.3 Inter-Sectionalists Theory

This theory is a useful analytical tool in tracing how certain people can be positioned as different and marginalized in a society. There are numerous concepts that are created by scholars in describing the idea of intersectionality. Ritzer (2007) explains that intersectionality is 'the view that women experience oppression in varying configurations and degrees of intensity'. The varying degrees and configurations of oppression which contain inherent power differences that domestic workers experience is socially constructed. These power differences vary within every aspect of social life from identities and self-concepts, interpersonal interactions, operation of firms, organization of economic and legal systems. Meanwhile, Collins, (2000) argues that 'cultural patterns of oppression are not only interrelated, but are bound together and influenced by the intersectional system of society such as race, gender, class and ethnicity.' (pp 107-133). Ethnicity and race are a set of socially constructed boundaries in political, economic, cultural and social contexts in which it can become the basis for segregation, conflict, stereotyping, inequality, prejudice and social hierarchy. Gender is a category that is socially constructed through social interaction to maintain social hierarchy. It emphasizes the differences between men and women that transcend any biological/psychological differences. Moreover, the social construction of gender in the society contains inherent power differences. Zinn & Eitzen, (1990) describe that external social forces or attributes (education, wealth, employment status and many more) of individuals or families in a society shape and construct a power and position in the society. It can be seen that discrimination and oppression on domestic workers are constructed by the various system of society such as race, ethnicity, gender and class (Ammot, Lorber, Irene, & Misra, 2003). This theory is used to depict the relation between employers and domestic workers in Mafinga Town. In other words, this theory attempts to illuminate the intersection of class, gender, race and ethnicity in shaping the opportunities and experiences of domestic workers.

3.0 MATERIALS AND METHODS

3.1 Research Approach and Methods

The study used the qualitative research approach which is a type of scientific research that systematically uses a predefined set of procedures to answer the question, collects evidence, produces findings that were not determined in advance and produces findings that are applicable beyond the immediate boundaries of the study (Creswell, 2013; Field, 2013). The researchers opted for the cross-section study design instead of the longitudinal study design, to which the researcher had to go once to the field within a short period of time. The researchers collected and obtained primary data through interviews and observation whereas the secondary data were obtained through reviews of various documents including the related education policies such as free education policy.

3.2 The Study Area, Population and Sample

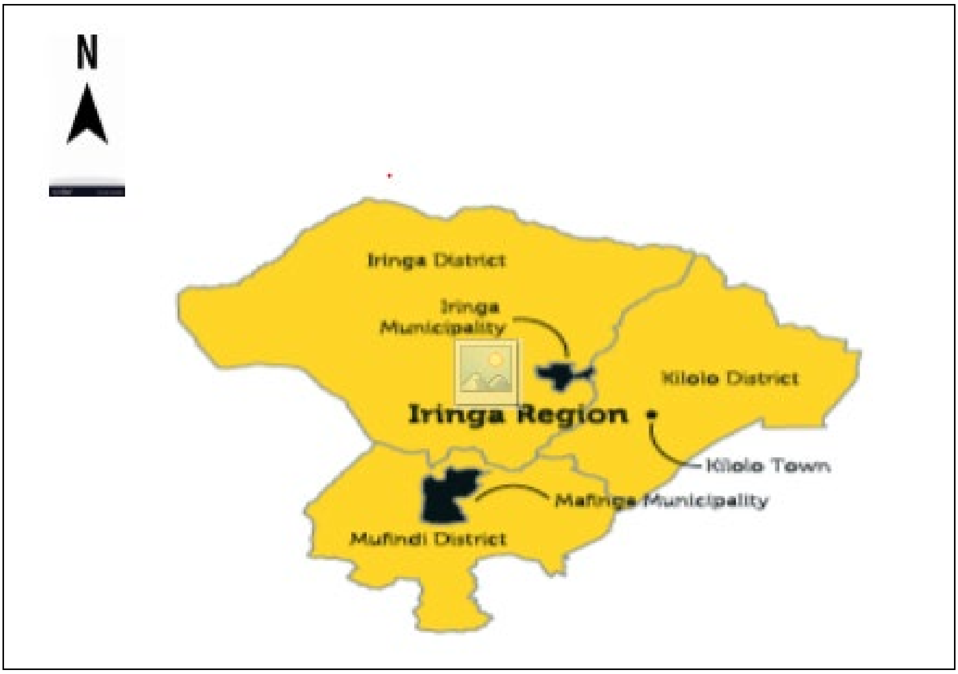

Figure 1: Iringa Region Map Indicating Mafinga Town Council
Source: IMC (2014

Mafinga Town Council was selected as the area for this study, because the area is a newly developed relatively middle- and upper-class residence area where many households have the economic capacity to hire domestic workers. Mafinga is the urbanized part of Mufindi District part of Iringa region (IMC, 2011). It served as Mufindi district capital before becoming a town council in 2015. Also, in the area, there are readily available domestic workers, others travelling in numbers to the big towns such as Dar es Salaam, Mwanza, Dodoma, Arusha and Morogoro. The district has 09 wards which are Boma, Wambi, Upendo, Kinyanambo, Changarawe, Rungemba, Isalavanu, Ifwagi and Bumilayinga.

The targeted population in this study included households in Mafinga Town Council with domestic workers. Kothari (2005) defines sampling as a process of selecting a number of individuals or objects from a population such that the selected group contains elements representative of the characteristics found in the entire group (Kombo, & Tromp, 2006). This study employed stratified sampling and simple random sampling. The reason of using stratified sampling was the existence of groups (strata) like employees and employers and the household heads. The stratified sampling was used for different categories in the household. This categorized the sample from their position and experience of living with/close to the domestic workers. Simple random sampling was used because most of respondents of this study do relates in their occupation. Therefore, simple random sampling was used when a sample was taken from a single category, for example employees or employers. Based on the household population, the study selected 45 households where by 30 households were for domestic workers selection, 10 households for employers of domestic workers and 5 for key informants. The 5 key informants are representing social workers and governmental officers at district and ward levels. For simplicity and uniformity, the key informants are also considered households in the context of this study. The selection frame involved identification of households with domestic workers in Mafinga Town, and then randomly picked 30 households. 5 key informants on the other hand were purposefully selected based on their social roles and responsibility.

3.3 Data Analysis Methods

Data analysis is the examination of what has been collected in a research and making deduction (Kothari 2005; Field, 2013). It involves uncovering underlying structures; extracting important variables, detecting any anomalies and testing any underlying assumptions. Data analysis on the other hand involves scrutinizing the acquired information and making inferences. In this research content analysis was used, where themes were considered and the acquired information was summarized, coded and tabulated for data analysis.

3.4 Ethical Concerns

This study was conscious of ethics relating to the conducts of the research. The ethics were observed to protect better the rights of the research participants. Thus, the principle of voluntary participation required that respondents do not get coerced in participating to this study, but to have the willing heartfelt in participating to the study. The information was protected with high degree of confidentiality and the anonymity was observed during the study to protect the participant's identities. On validity and reliability, the study observed measures to ensure quality tools are used and then quality information is gathered. The pilot study assisted to improve the clarity of the items in the instruments. Second, to ensure the validity and reliability of findings are observed; multiple methods were used in data collection, analysis, and presentation of the study findings. The use of multiple methods was useful in enriching each other, thereby supplementing the drawbacks of one another (Kothari, 2010; Field, 2013).

4.0 RESULTS AND DISCUSSION

4.1 Introduction

The presentation and discussion of the findings aimed at responding to the following research questions: What is the contribution of education policy reforms towards gender dynamism and the formalization of domestic sector? What are the challenges of domestic workers at Mafinga Town Council? What are the challenges facing employers in a course of dealing with domestic workers? What are the potentials for future direction and formalization of domestic work sector?

4.2 General Respondent's Profiles

4.2.1 Distribution of Respondents by Gender

The study involved 30 interviewees that were administered to domestic workers. The female respondents constituted 64.52% of the sample size where as 35.48% were males as shown in figure 1. Therefore, the findings show that more females were involved in the study which reveals that females are prone to the domestic sector as opposed to their male counterparts.

Pie chart below represents gender composition of participants by percentages

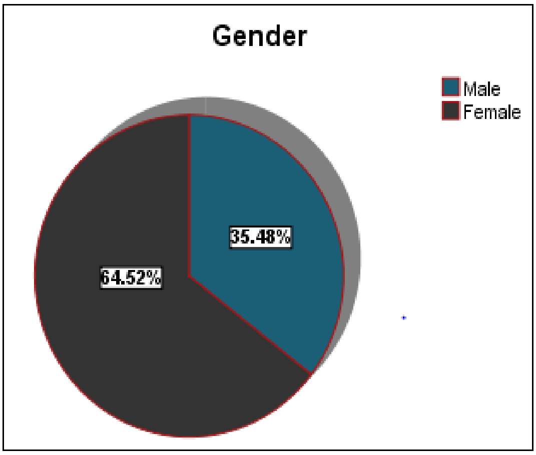

Figure 1: Distribution of Respondents by Gender
Source: Field Data (2019)

IHRC, (2013) argued that the household work is considered as typical women's occupation, and not perceived as employment. In line with that, three quarters or more worldwide are female: ranging from 74 per cent in Belize to 94% in Israel (ILO, 2010). In addition, a far higher percentage of the female workforce than of the male workforce is engaged in domestic work. In Latin America, 12 per cent of the female urban workforce, compared to 0.5 per cent of the male urban workforce, is engaged in domestic work (Tokman, 2010). The implication was that many females were fit for domestic works, and they were the ones employed with high percentage in this sector, especially in homes, even though in today's world domestic works are for both sexes.

4.2.2 Distribution of Respondents by Marital Status of Domestic Workers

The diversity of respondent's demographics was observed and revealed in this study; here the questions were posed to track the disparities on marital status among domestic workers in the study sample; the findings are shown in table 1:

Table 1: Marital Status of Domestic Workers

Marital status	Frequency	Percentage
Single	25	83.3
Married	5	16.6
Total	**30**	**100.0**

Source: Field Data (2019)

The findings showed that 83.3 % of domestic workers were single while 16.7% were married; this generally implied that most of employees in domestic work sector were single. For instance, on the case of Tanzania most of domestic workers range from the ages 12-20 years which is difficult for these ages to be involved in marriages. The findings are similar to the study conducted by ILO which reveals that most of the domestic workers are single (ILO, 2016). Therefore, domestic work sector is dominated by single workers as it was shown in the table 1.

4.2.3 Distribution of Domestic Workers by Age

Table 2 shows that, 29.0% were between the age of 14 – 19 years, 33.3% were between the age of 20 – 25 years, 19.4% were between the age of 26 – 30 years ,6.5% were between the age of 31 - 36 and the respondents who had the average of the age between 37 years and above have scored 9.7%. Social Welfare division works under the guidelines of child laws of 2009 and education laws of 1978 in preventing child employment (under 18 employments according to Tanzanian laws) and advocating education provision to children. According to CHODAWU (2014), children of 15 years may be allowed to work in domestic work sector but they should be given the chance for further knowledge. The findings indicate that the average age of domestic workers was between 20 to 25 years followed by 14 to 19 years. Table 2 shows the distribution of respondents by age

Table 2: Age of Domestic Workers

Age	Frequency	Percentage
14-19	9.0	29.0
20-25	10	33.3
26-30	6.0	19.4
31-36	2.0	6.5
37-&	3.0	9.7
Total	**30.0**	**100.0**

Source: Field Data (2019)

4.2.4 Working Locations of Domestic Workers

The study showed that 48.39% of respondents were from Wambi Ward, 16.13% of respondents were from Boma Ward, 12.90% from Kinyanambo Ward, 12.90% from Changarawe Ward, 6.45% from Rungemba Ward and 3.23% of respondents were from Ifwagi Ward. Most of the respondents were from Wambi Ward because most of dwellers in Wambi area had the capacity to hire domestic workers as the area is populated and found at the heart of Mafinga as compared to other wards in Mafinga Town Council. In addition, the area has higher economic status because most of the economic activities such as petty business are taking place in this area. Figure 2, below shows the working locations of domestic workers in the sample.

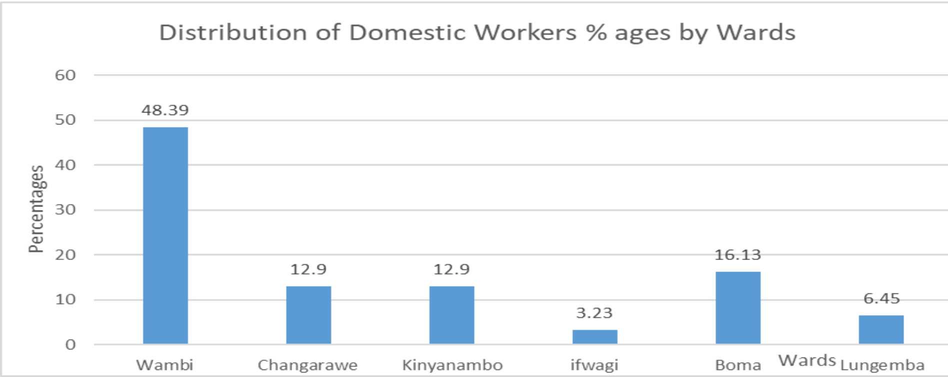

Figure 2: Domestic Workers Working Locations
Source: Field Data, (2019)

4.2.5 Distribution of Respondents by Education Level

Table 3 below showed the percentage distribution of the respondents by their education level. The study reveals that about 56.6% of the respondents held primary education 40.0% holds secondary education and 3.3% holds none education. There is therefore a possibility that over 87.1% of the domestic workers in Mafinga Town have local skills for performing their work in a proper way. The education law, (1978) explained that children under 18 school including domestic workers had the right to attend primary and secondary education. The study found that the large number of employees with primary education was quite different if we draw a decade back when the number of domestic workers with primary education was more limited in the country; most of domestic workers back then had informal education, only few finishes standard seven. Currently due to the change of education policy (free education up to secondary level), many of the children are given the chance to study at least on secondary education.

Table 3: Respondents (Domestic Workers) Education Level

Education Level	Frequency	Percentage
None	1	3.3
Primary Education	17	56.6
Secondary Education	12	40.0
Total	**30**	**100.0**

Source: Field Data (2019)

4.3 The Contribution of Education Policy to the Domestic Workers' Sector

The employers had different observations on the trends and availability of domestic workers around their vicinities. First and foremost, employers commented that the contribution of the education policy (free education policy) has contributed much to the trickling down on the availability of domestic workers. The observations of about 53.5% of the employers in the study sample, were based on the contexts of availability, tolerance and wages demanded by the domestic workers. On the other hand, 26.15% of the respondents indicated that currently there is variation in domestic workers' levels of education as well as trust as factors altered the atmosphere in the sector and the rest 20.35% of the respondents perceived the consideration of human rights. The employers stated that this is the reason why to-date the media discloses a lot of cases, which in most cases are assumed to be new in our societies; but the fact is no torch existed previously to put light on the evils which were conducted against domestic workers. One of the respondents during interview said,

> *'It is very difficult currently to find domestic workers, different from the previous time where it was easy to get them. Most of the girls after standard seven they proceed with Form One in community secondary schools. (researcher-translation)*

This means that recently there is a formal development trend in the domestic work sector because the domestic workers are decreasing as compared to the previous period of time where the domestic workers were many moving from their villages to town to find a job. One employer during the interview commented that:

> *'Nowadays employers put order for more than three months in order to get a domestic worker. The situation is caused by the policy of free education to secondary level where most of children in the villages are send to secondary education and other vocational trainings.*

Also, the study found that previously the rate of employing domestic workers was low because many of house wife were not employed instead they were doing works in the house, but things are different as nowadays women are working as men and this situation increased the high demand of domestic workers so as to take care for the house and children.

One respondent said,

> *``The availability of domestic workers is minimal to date; I had to opt for day care center because no one is taking care of my family when I am at work.' (Researcher- translation)*

This study also found that the scarcity of domestic workers stimulated other employment opportunities as people started to think on opening day centers so that children could get the services while their parents are working. This might have relieved the childcare burden to families in Tanzania. The study revealed that at previous time, domestic workers did not have access to education as one respondent said;

> *'During the past time, most of the domestic workers were not educated, even attending primary school education in rural areas was an issue, but to-date we observe major changes where many domestic workers are standard seven leavers others being form four leavers. This situation caused the scarcity of domestic workers.'*

The findings indicate that access to education has caused the scarcity of domestic workers, because currently children must attend primary and secondary education in urban and rural areas which according to the Tanzanian education policy is considered as the basic education. There is a shift in age of employment that the transformation in education structures and systems has led to the young girls of fourteen years to be taken for domestic works. The lowered age of starting primary school has also lowered the age of completion of primary school, thus with failure to join secondary school girls and boys at very young ages hold lots for economic independence. However, most of them see these changes and trends as the signs to enlightenment and economic recognitions. One of the house maids said,

> *'In the past most of our parents did not know the significance of education, things are different now where most of them understand and send their children to primary schools, sometimes even to secondary education.'*

This argument reflects the shortage of domestic girls as most of them are required as a matter of principle to attend secondary schools, making them unavailable for domestic employments. It was revealed during this study that majority of the employee in domestic work sector had finished standard seven and if they passed the national examination they were required to go further for secondary education.

4.4 A Reflection on Social Change Theory

From the development of domestic workers' sector in line with social change theory, the theory explained how the society changes from time to time. In 1970s, most of the domestic workers were not educated. At that time many employers used to take their relatives for home care but later the situation changed. The policy of free education now enables children to attend school up to secondary education level.

In gender, previously the domestic work sector was regarded as the work of females, that was why the large percentage of domestic workers were females, but nowadays, due to social change, people are educated, and they understand that domestic work is a work of both genders. This study revealed that 35.48% of the domestic workers are males. This is a reasonable percentage as compared to previous experience. It is predicted that years to come the percentage of males and females will be the same because of social change.

On the other hand, the study found out that free education policy has influenced the age of domestic workers. In 1980s to 1990s, most of employed domestic workers were between 9 to 18 but later things started to change where currently the appropriate age for employing domestic workers is around 15 up to 30 years depending on the nature of the work and the interest of the employer but legally 15 age is appropriate age for domestic workers (ILO, 2016). Through the policy of free education, most of the domestic workers currently attend their education up to secondary school level. Also, the sector is becoming more formal as people are being employed at age where they are aware and capable to enter into contracts with their bosses.

4.5 The Experiences of Domestic Work Sector in Work Setting

The study revealed that 54.84% of respondents had been in this sector for 1 year, 32.26% worked between 2-4 years, 6.45% worked for 5-7 years and 6.45% of respondents worked more than 7 years. On the other hand, the representative from the workers' union revealed that domestic sector is currently facing the challenge of part-time workers mostly staying in a short time with little experience but in need of high salary. Therefore, for the domestic workers who stayed for a short time to the office it was a challenge to union membership because giving them contracts is unacceptable (CHODAWU, 2014). Therefore, from this study most of the respondents worked for short time say 1 year due to the nature of the work which they are doing. There is a possibility that sometime they found the works to be difficult for them to handle, that's why they abandoned the work .

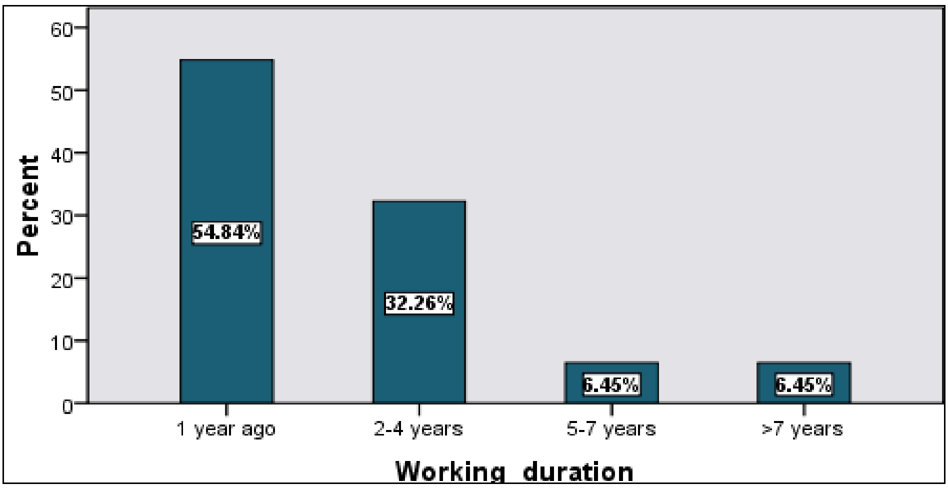

Figure 3. The Duration of Domestic Workers at Work Station
Source: Field Data (2019)

4.6 Challenges of Domestic workers at Mafinga Town Council

The study revealed that 38.71% of domestic workers were working under harsh working condition, 16.13% were facing overworking, 16.13% encountered the problem of low wages, 9.68% suffered delay of payment, 6.45% said low cooperation stands as obstacle on performing their responsibilities, 6.45% experienced delayed eating time, 3.23% lacked freedom on their working areas and lastly 3.23% of domestic workers faced low social appreciation from the society. The findings are in line with the National Labour Surveys (2011) which reported the average hours of domestic worker reaching nearly 66 hours a week in Malaysia and between 60 to 65 hours a week in Tanzania to mention a few. Moreover, the findings are supported by (Nethan, 2009; ILO, 2013) that many domestic workers are subjected to serious abuses including slavery, excessively long working hours without breaks days or holidays.

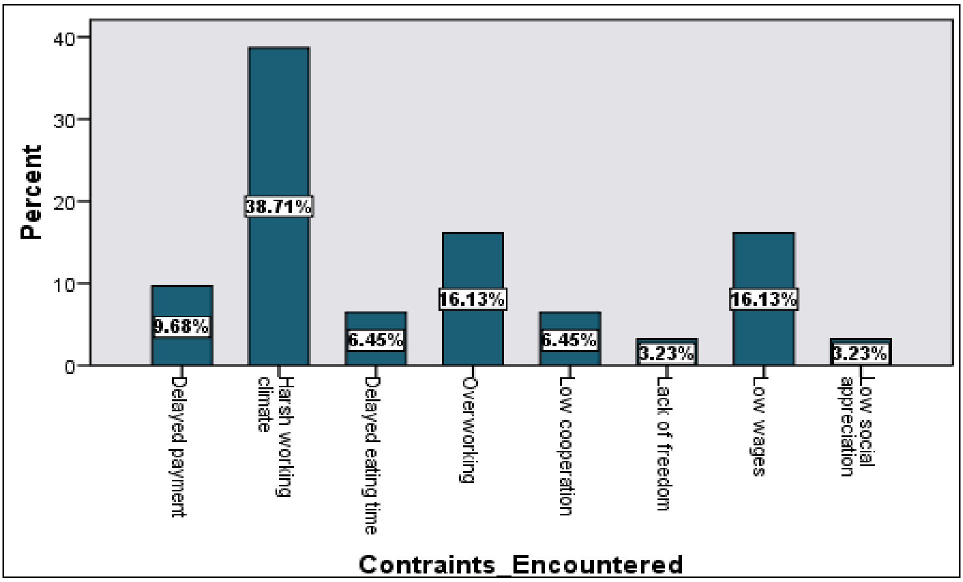

Figure 4: Domestic worker challenges at the work place
Source: Field Data (2019)

4.6.1 Challenges Facing Employers in a Course of Dealing with Domestic Workers

The study revealed that 33.33% of employers in the sample were affected in dealing with domestic workers due to lack of trust, 16.67% were affected because of ruddiness of the domestic workers, 16.67% due to loneliness of workers, 16.67% due to failure to perform duties, and 16.67% of employers in the sample were affected because of big salary demand. Therefore, in this sector not only domestic workers were being affected but also employers were suffering from many issues prevailing in the domestic sector. This happens because most of domestic workers when employed did not have any skill and some of them when employed failed to learn the gap between them and their employers. This study further revealed that trust is the cross-cutting constraint affecting employers in the domestic sector.

Table 4: The Challenges Affecting Domestic Workers in the Sector

Issues	Frequency	Percentage
Lack of Trust	2	33.33
Ruddiness	1	16.67
Loneliness of workers	1	16.67
Failure to perform Duties	1	16.67
Big salary demanded	1	16.67
Total	**6**	**100.0**

Source: Field Data (2019)

The study revealed that domestic workers are less valued and protected as their employers sometimes treated them in a way that they abused their rights and humanity. Domestic workers were not given the chance to prepare themselves from leaving the work station as a punishment after they made a mistake nor were they given salary or any other attached benefits which could help them to return home safely. Similarly, several studies (Jagori, 2004; Neetha, 2004; Nadasen, 2009; Mehrotra, 2010) reported that domestic workers often have no specified working hours; further they do not get any rest during the day while others may not be given proper food or living space. Non-payment of wages, no weekly leaves or holidays, verbal and sexual abuse are also reported. They have no option to any form of assistance when they face harassment in terms of verbal, physical or sexual and the fight for their remedies is upon their shoulders.

4.7 Potentials for Future Direction and Formalization of the Domestic Work Sector

Two perspectives were noted in the study area, one from employers and the other from employees. Their views were as follows:

Employers perspectives

From the trends and experiences observed by employers, employers had arguments to pose in relation to future developments of domestic sector in the coming five years. About 86.5% of the interviewed employers claimed on the transformation of education sector in the country and general global awareness which affected the availability of domestic workers. One of the employers said

> *'In five years to come, getting domestic workers will be a disaster, they will be much matured and they will be very expensive, and they will be part time workers coming morning and leaving at evening just as like other workers.'*

The other respondent said;

> *'In five years to come people will decide to work on their own without hiring domestic workers because domestic workers will be expensive and difficult to hire due to their education level and economic status.' (Researcher-translation)*

However, about 13.5% of interviewed employers believed that with increasing population and the unemployment rate among the skilled jobs, the skilled young personnel will be pushed to low paying jobs. Thus, there will be competition among unskilled young personnel towards domestic works and other low paying jobs.

A Perspective from Domestic Workers

During interviews, domestic workers shared their opinions and projections on the domestic work sector. Most of the domestic workers claimed that general global awareness and education transformation will foster competition as currently even the form four leavers are seeking for domestic work opportunities. They argued that in future, only educated people will be employed on domestic work sector. One employee commented,

> *'In five years to come, only God knows the situation of getting domestic workers because nowadays difficult life forces people to apply for any job for survival so it is very difficult to predict the future of domestic sector.' (researcher-translation)*

However, about 23.5% of the interviewed domestic workers had different views that domestic workers will find ways to quit this sector because of low salary and poor protection.

In addition, one respondent (welfare worker) was interviewed to provide the projection of the future domestic workers

> *'I think in five years to come, the number of form four leavers will increase in Tanzania, and the situation will cause the employers to employ aged people above 18 years. The employment system will be more formal because people with 18 years and above are allowed to enter into contracts; hence some of the challenges of domestic workers by that time will be reduced in high percentage'.*

CHODAWU (2014) reported that in five years to come, if the government will accept signing the agreement on ILO convention 189, domestic workers will enjoy, improved salaries and other domestic workers' benefits. It is also expected that the laws and policies of the United Republic of Tanzania of 2004 and the guideline for civil servants will be complimented by ILO Convention 189. Therefore, the sector will be on the better position and domestic workers will be considered to do decent works just like in other sectors. The situation will create equal chance for everyone to work in this sector because people will change their wrong perception that domestic work sector is a sector for those with low level education.

5.0 CONCLUSION AND RECOMENDATIONS

On mapping development trends in domestic work sector to recent times; the study found out that the sector has sustained pressure leading to potentials of formalization. To a greater extent the pressure is associated with reforms in education sector. As more primary school leavers enter secondary education, potential employees have to spend four compulsory years of secondary education. This has led to a search for alternative source of employees where older members of community are engaged. The gender composition in the sector is also notably taking more males as opposed to female dominated setting in the past. This is attributed to the facts that there is limited availability of preferred girls leaving employers to consume what is available regardless of gender. This has consequently restructured work pattern at household level, terms of employment, conditions of engagements and to in several cases leading to life styles change at family level. Given an increase in education levels of employees in domestic work sector, there is possibility that potentiality to join the sector remains even after secondary education.

However, there are various challenges facing employers in dealing with domestic workers. The study noted the lack of trust among the employees, ruddiness of the domestic workers, failure to perform their duties properly, and their demand for big salaries. Therefore, in this sector not only domestic workers were affected but also employers suffered from such misconduct. In addition, most of domestic workers had no skills when they were employed hence they failed to perform their duties effectively and efficiently. This situation indicated the gap between their competency and their employers' expectations. On the other hand, the relationship between CHODAWU and the group was notably weak as participants in this study seemed not to be aware of the basic information related to workers' rights in the domestic work sector at large.

The potentials for future direction and formalization of domestic work sector were increasing mainly as a result of education reforms and other socio-economic changes in the society. According to the ILO (2016) and CHODAWU framework of operation, changing patterns in the domestic work sector gives potentials for its formalization. The average age of employees which is seemingly increasing gives room for legal contracts to be effected unlike in earlier settings where school dropouts and primary school leavers were employed prematurely. Visibility of the sector and presence of CHODAWU operations as trade union provide a fertile ground for the sector to grow. It is hoped that, gender dynamics will be re-organized in homes along with socio-legal changes and societal re-organization at large for the improvement of this sector.

The study recommends that formalization of domestic work sector should be enhanced by socio-economic developments in the society. Under normal circumtances sector recognition by a trade union involves acknowledgement of other sectors development, rules and operational frameworks; this is not the case with CHODAWU where domestic workers are not involved through representation. CHOVUDA appears to be a middle class organ influenced by domestic worker employers; its development depends on economic interest this class. Furthermore, this study recommends that there is need to build a broad understanding of this emerging sector by networking with other sectors under the framework of this policy reform. Finally, there is a need in future to study further the socio-economic implications of the Education Policy Reforms on gender dynamics and the formalization of domestic-work sector.

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Effect of Borrower Qualities on Business Performance of Rural Based SMEs in Kagera Region, Tanzania

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Abstract

The objective of the study was to assess the impact of Borrower's qualities on business performance of rural based SMEs in Kagera region Tanzania. The Study was guided by the theory of Group Based Micro-financing (GBM) model. It was done in four districts of Kagera region. The study used structured questionnaires composed of a five-point Likert Scale. The quantitative and regression research approach was adopted for the study. A sample size of 279 group borrowers of two commercial banks and two MFIs was used to collect primary data from June to August, 2020. The regression analysis was done between three independent variables of Borrower's qualities against three dependent variables of Business performance. It was found that 98.5 percent, 96.4 percent and 96.0 percent of respondents agreed to have increased knowledge, family income and household assets, respectively. On the other hand, the hypothesis testing confirmed that Borrower's qualities impacted positively on business performance of rural based SMEs in Kagera region. These results imply that Borrower's qualities under GBM model have a big positive contribution to the business performance of rural based SMEs. It is therefore recommended that they should be adopted and promoted as a tool for fighting poverty as a result of increasing borrowers' abilities to engage in prosperous income generating businesses.

Keywords: Borrower's qualities, Business performance, Prosperous business, SMEs

1.0 INTRODUCTION

The establishment of microfinance institutions (MFIs) all over the world was regarded as a tool for fighting against poverty among the poor, both in rural and urban areas (Cull R. & Morduch, J., 2017; Rahman, M. U., & Khan, J. A., 2019). Micro-financing the poor intends to enable the impoverished families to sustain livelihoods by meeting basic family needs such as better shelters (houses), clothes, food, education for children, etc. According to Rahman, M. U., & Khan, J. A. (2019), in rural areas microfinance is a movement whose goal is "a world in which as many poor and near-poor households as possible have

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permanent access to an appropriate range of high-quality financial services, including not just credit but also savings, training, insurance and fund transfers."

In regard to group based micro-financing (GBM) model sex, level of education and entrepreneurial experience are among many borrower's qualities cited by various researchers and scholars to have positive intervening effects on business performance of group-based SMEs. The objective of the study was to assess the impact of Borrower's qualities on business performance of rural based SMEs in Kagera region Tanzania.

2.0 LITERATURE REVIEW

In various countries women are major targets and dominants of the group based micro-financing (GBM) model. Among the many reasons behind women's dominance of the Model is that in the eyes of most FIs women are trustful members of community and also regarded as good performers when compared with men (Kumar, A., & Rakhin, J., 2016). Another reason behind women dominance is hinged on the fact that they are serious with the use of loans and that they tend to be more reliable in terms of loan repayment. Rahman et al (2017) argued that most of the micro-credit programs intentionally target women as have limited access to credit, have limited access to employment opportunities, have fewer authorities in household decision making and have good records of loan repayment compared to men. Additionally, it was argued that women are with low credit risks and are more likely to share the benefits of the credit with their family members, especially their children. In that regard, active women engagement in economic activities is essential for economic growth and nation-building.

Formal education was cited as one of GBM intervening factors which in conjunction with training and microcredit act as an effective tool for poverty alleviation. Additionally, poor people start microenterprises through microcredit and run efficiently by getting training; and that a combination of formal education, micro-credit and micro-training is essential for successful business performance of SMEs (Hameed et al., 2017). That means, without formal education microcredit and micro-training alone cannot sufficiently result in good performance of small businesses. Formal education has a mediating role among microfinance factors (e.g. microcredit, micro-training) and micro-enterprise success (Hameed et al., 2017). In regard to this it is correct to conclude that there is a significant positive relationship between one's level of education, training and enterprise performance and business performance. On the other hand, entrepreneurial experience is one of the most critical factors in the utilization of entrepreneurship opportunities for self-employment. Entrepreneurial experience in businesses stimulates entrepreneurial activities and reduces business failure as it helps an entrepreneur acquire self-confidence, self-esteem and participate in decision-making at household and community levels (Ekpe et al., 2016; Ekpe et al., 2015).

To-date, there are hot debates going on among scholars and researchers on whether these qualities have any impact on business performance of SMEs, particularly those in rural areas. Following these debates, a room has been created for the current study to work on previous studies so as to come up with more realistic evidence on the impact of Borrower's qualities on business performance of rural based SMEs under GBM model in Kagera region. With this study the researcher has put it clear on how much Borrower's qualities correlate with business performance of rural based SMEs in Kagera region, as a case study for Tanzania.

3.0 MATERIALS AND METHODS

In order to understand the impact of Borrower's qualities on SMEs' businesses performance a conceptual framework was developed (see Figure 1). The framework was developed basing on initial literatures review undertaken on the impact of Group Based Micro-financing model (GBM). It consisted of two major components, namely: *(i)* GBM *-Independent Variables, and* (*ii) Dependent Variables.*

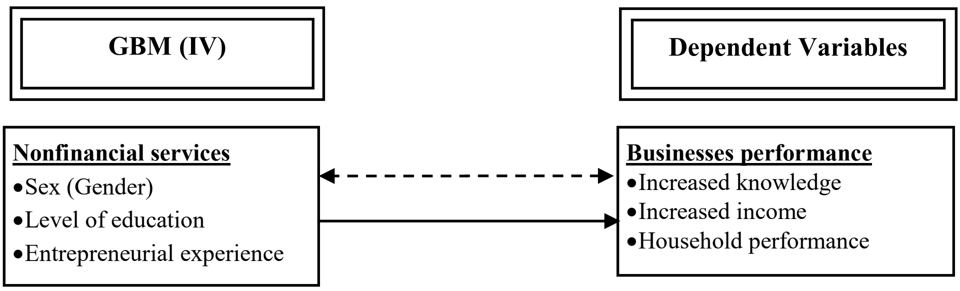

Figure 1: Conceptual Framework

This paper is based on the study conducted in four districts of Kagera region, namely Bukoba rural, Karagwe, Missenyi and Muleba. These are four out of eight Local Government Authorities (LGAs) of Kagera region Tanzania. The sample size was determined using Stevens' (1996) formula in equation 1, which he proposed to estimate the minimum sample size for multiple linear regression analysis. The multiple linear regression analysis with the largest number of independent variables was used to estimate the sample size. In this case, equation 1 used the largest number of variables within the independent variable. In this case three variables were used to estimate the sample size for the study using this equation:

$$N \geq 50 + 8m \qquad (1)$$

Where N = Sample size; m = No. of independent variables. In this study the minimum sample size was N = 50 + 8 (3) = 74 respondents. However, despite the formula the sample size for this study was 279.

For this study only, primary data were collected from borrowers using questionnaires as the only data collection tools. Self-administered questionnaires were distributed to 279 respondents (borrowers). The questionnaires composed of a five-point Likert Scale with which respondents were asked to rate items on a level of agreement from Strongly Disagree to Strongly Agree.

Data processing had four main parts, namely Preparation of data collection tool, SPSS data entry Code book creation/ formatting, Orientation workshop and pretesting of questionnaire, and finally Actual data collection and data entry. Data were analyzed using

descriptive analysis procedures. The descriptive analysis procedures included frequencies, percentages, summated ratings and mean after which quantitative data processing was carried out. The study used regression analysis using the following equations:

$$BP = f\,(IV) \quad \text{.......} \quad (2)$$

Where BF = Business Performance, IV = Independent Variable
BP was an index that was calculated by summing up the three variables of Borrower increased knowledge (BIK), Borrower increased income (BII) and Borrower increased household performance (BHP).

Because GBM was made up of Borrower's qualities (BQ) therefore equation (2) was transformed as shown in equation (3):

$$BP = f\,(BQ) \quad \text{.......} \quad (3)$$

Equation (3) was therefore presented as shown in structural equation (4):

$$BP = a + b1 * BQ + + \alpha \quad \text{.......} \quad (4)$$

Whereby bi = Coefficients; a = Constant; α = Margin of error
Since BQ was composite [i.e. made up of Sex (Sex), Level of education (Leveduc) and Entrepreneurial experience (Entepr)] the analytical multivariate linear regression analysis was as presented in equation (5):

$$BP = a + b1 * Sex + b2 * Leveduc + b3 * Entepr + \alpha \quad \text{.......} \quad (5)$$

RESULTS AND DISCUSSION

Descriptive statistics on Borrower's qualities of rural SMEs in Kagera region is shown in Table 1a-c. It indicates that Sex was the highest (Mean=23.41), followed by Entrepreneurial experience (Mean=16.01) and lastly by Level of education (Mean=14.24) which indicates that all were moderate. This implies that the mean score of the overall Borrower's qualities was 53.66 which is also interpreted as moderate.

Table 1: Descriptive statistics for responses on GBM Borrower's qualities

Table 1A: Sex

	Items	Strongly Disagree		Disagree		Not sure		Agree		Strongly Agree		Means
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
F1	Women were dominants in our group	14	5	25	7.5	6	2.2	116	41.6	122	43.7	4.11
F2	Land ownership was a problem to most women engaged in agriculture	13	4.7	19	6.8	19	6.8	136	48.7	92	33.0	3.99
F3	As a married person I needed my spouse's consent in order to engage in business	27	9.7	44	15.8	9	3.2	118	42.3	81	29.0	3.65
F4	As a married person I needed my spouse's consent to use family properties as collateral	17	6.1	31	11.1	9	3.2	127	45.5	95	34.1	3.9
F5	My spouse had a say on how I could use my business income	37	13.3	78	27.9	14	5	99	35.5	51	18.3	3.18
F6	My family feeling and support about my engagement in business was positive	2	0.7	5	1.8	1	0.4	92	32.9	179	64.2	4.58
	Sub-Total											**23.41**

Table 1B: Level of education

	Items	Strongly Disagree		Disagree		Not sure		Agree		Strongly Agree		Means
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
F7	Formal education helped me to successfully run my business	2	0.7	9	3.2	2	0.7	133	47.7	133	47.7	4.38
F8	I depended much on learned group members to run my business	35	12.5	59	21.2	13	4.7	112	40.1	60	21.5	3.37
F9	In comparison with others my	6	2.2	10	3.6	9	3.2	164	58.8	89	31.9	4.3

	business was performing better											
F10	Despite working hard my business was poorly performing	76	27.2	143	51.3	7	2.5	36	12.9	17	6.1	2.19
	Sub-Total											**14.24**

Table 1c: Entrepreneurial experience

	Items	Strongly Disagree		Disagree		Not sure		Agree		Strongly Agree		Means
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
F11	I depended much on group members with long experience to run my business	38	13 .6	66	23.7	8	2.9	113	40.5	54	19.3	3.28
F12	Businesses undertook by long experienced entrepreneurs are performing better	1	0. 4	17	6.1	17	6.1	147	52.7	97	34.7	4.15
F13	Entrepreneurial experience impacted positively on my business	3	1. 1	3	1.1	4	1.4	153	54.8	115	41.2	4.49
F14	In comparison with others my business was performing better	4	1. 4	17	6.1	20	7.2	146	52.3	92	33	4.09
	Sub-Total											**16.01**
	Total mean											**53.66**

Source: Research findings (2020)

Correlation analysis between variables (see Table 2) shows that Borrower's qualities had a positive correlation with Business performance of about 0.422. This indicates that when the Borrower's qualities improved the Business performance becomes good and vice versa.

Table 2: Correlation between BQ and BP

Variables		Business performance
Borrower's qualities	Pearson Correlation	0.422
	Sig. (2-tailed)	0.000

Source: Research findings (2020)

Table 3 shows the matrix of correlation between Borrower's qualities and Business performance. That, Borrower's qualities were positively correlated with Business performance of rural based SMEs which accounted for Borrower's qualities with 18% ($r^2 = 0.422^2 = 0.178$)

Table 3: Matrix of correlation

		Business performance	Borrower's qualities
Pearson Correlation	Business performance	1.000	0.422
	Borrower's qualities	0.422	1.000

Source: Research findings (2020)

A useful starting point in any multiple regression analysis is to compute the matrix of correlations among all variables including the dependent variables. Table 4 shows the coefficients of Borrower's qualities and Business Performance as follows:

a) Borrower's qualities had positive coefficients with business performance, which indicates that when these qualities increased the Business performance also increased and vice versa.

b) Using the t-statistics to test the hypothesis for Borrower's qualities, Table 4 showed the same results in the linear regression analysis using equation: BP = a + b1 *Sex + b2 *Leveduc + b3 *Entepr + α

c) Since the values of coefficients were not equal to zero then the changes in the dependent variables were affected by any change(s) in the Borrower's qualities.

d) Using the t-statistic to test the null hypothesis by using one-tailed or two-tailed for alternative hypothesis, $\alpha = 0.05$ gave a critical t-value of t (0.05,1) = 2.920. For a one-tailed, if $|t| < 2.920$, the conclusion is that the data provide convincing evidence to reject the null hypothesis otherwise the null hypothesis cannot be rejected. Since Table 4 showed that the value of t= 9.441> 2.920 then the conclusion is that the data did not provide convincing evidence to reject the null hypothesis. Therefore, Borrower's qualities had a positive impact on business performance of rural based SMEs in Kagera region.

4.0 DISCUSSION

As result of accessing microfinance services under Group based micro-financing (GBM) model the rural borrowers, particularly women in Kagera region engaged in productive income earning businesses which enabled them increase family incomes hence meet most of their family needs. Because of the positive changes in the lives of poor people microfinance services are believed to impact positively on business performance of rural borrowers in Kagera rural. Further to that the current study has shown that 98.5 percent, 96.4 percent and 96.0 percent of surveyed borrowers reported to have increased knowledge, family income and household assets, respectively after accessing and investing loans from banks and other financial institutions. In regard to these remarkable positive gains (increased knowledge, family income and household assets) it is agreed that the intervening effects of borrower's qualities played a commendable role. Further to that, the regression analysis of the study showed a positive correlation between Borrower's qualities and Business performance of about 0.422.

The above study findings concur with those reported by other researchers in their findings or literature as follows:

a) In regard to sex and according to Kumar, A., & Rakhin, J. (2016) in various countries women are major targets and dominants of the group based micro-financing (GBM) model. They argued that the reason behind women's dominance of GBM model is that in the eyes of most financial institution's women are trustful members of community and also are regarded as good performers when compared with men. With loan usage and loan repayment women are serious and more reliable than men. On the other hand, Rahman et al (2017) argued that most of the micro-credit programs intentionally target women because they have good records of loan repayment as compared to men. Nonetheless, they argued that women are with low credit risk and are more likely to share the benefits of the credit with their family members, especially their children.

b) In regard to formal education Imai et al (2010) argued that without formal education and training, microcredit alone cannot be an effective tool for poverty alleviation. Additionally, Bernard et al (2016) and Hameed et al (2017) argued that a combination of formal education, micro-credit and micro-training is essential for successful business performance of SMEs. That means, without formal education for entrepreneurs, micro-credit alone cannot sufficiently result in good performance of small businesses. On the other hand, Atmadja et al (2016) put it clear that there was a high need of certain formal educational level for microcredit and nonfinancial services to show positive results. Hameed et al (2017) argued that formal education has a mediating role among microfinance factors (e.g. micro-credit, micro-training) and micro-enterprise success. In regard to this it is correct to conclude that there is a significant positive relationship between one's level of education, training and enterprise performance.

c) In regard to entrepreneurial experience Ekpe et al (2016) argued that some studies had shown that entrepreneurial experience is one of the most critical factors in the utilization of entrepreneurship opportunities for self-employment. Pheeraphuttharangkoon et al (2014, January) argued that entrepreneurial experience stimulates entrepreneurial activities and reduces business failure as it helps an entrepreneur acquire self-confidence, self-esteem and participate in decision-making at household and community levels.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Conclusively, the study confirmed that Borrower's qualities (BQ) such as sex, level of education and entrepreneurial experience are moderately and positively correlated with business Performance (BP). These results imply that BQ impacted positively on the Business Performances of rural based SMEs in Kagera region. The implication we get from these results is that, in addition to financial and nonfinancial services borrower's qualities were vital for SMEs' businesses performance, growth and improvement of the standard of living of owners. Additionally, it is worth noting that credit alone cannot influence good business performance; and that, borrower's qualities significantly contribute towards the good performance of enterprises.

As a result of these study findings, it is recommended that the Government of Tanzania and development partners in their plans to fight against poverty among the rural poor should target more women at the same time fight against all barriers hindering women from accessing microfinance services from banks and other financial institutions. On the other hand, borrowers themselves should endeavor: (i) increase their levels of education, even though adult education, (ii) adopt horizontal learning and/ or experience sharing among group members.

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Assessment of Demographic Impacts on Accessibility to Potable Water: A Case Study of Mwanga District, Tanzania

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Abstract

The debate on the impacts of large populations over fixed resources in developing countries is ongoing. However, the degree of impacts varies from one area to another depending on variability of physical and social economic factors. This study assessed the impact of population increase on accessibility to potable water supply in Mwanga District using Kileo village case study for the purpose of uncovering the major demographic factor inter alia which affect availability and accessibility of potable water provide possible strategies reached through a participatory approach to alleviate the problems. Quantitative and qualitative methods were employed to collect data using questionnaires and interviews administered to 120 respondents whom 70 were women and 50 men including key informants. Findings showed that, the study area experienced high population increase in disharmony with accessibility to potable water supply to households for different domestic uses. As a result, the local government had limited funds for construction of water infrastructure, climate change related to long droughts contributed to reduction of water sources. The general water shortage had various social economic impacts to the population in the study area. They included increased spread of waterborne diseases; the majority poor could not afford to buy water from private water suppliers; and women and children walked long distances to fetch water. The study concluded that, the increase in population corresponded with the negative effects of accessing to potable water compounded by climate change. Recommended the formation of village water committee to supervise and, in consultations with other stakeholders, find alternative ways of getting potable water for the growing population such as drilling water, protection and conservation of catchment areas; and fund raising to initiate community water projects.

Keywords: Assessment, demographic impact, accessibility, potable water, climate change

1.0 INTRODUCTION

Between 2025and 2050 the total global population projection will reach about 9.4 billion; 90% is expected to be in developing countries of which, over 50%

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will be living in Africa (UN- PRWPR Bureau (2013/2018). The demand for water is projected to rise in developing countries compounded by climatic change, drought and water pollution which will add stress on potable safe water supplies for various domestic uses at household level. Obviously, the impact of population on accessibility to water sources to meet the demands placed on them by society is paralleled by the effects of population on the quality of water resources.

According to Water.org (2019), 57% of Tanzania's populations of 57 million have access to an improved source of safe water and only 30 percent of Tanzania's population has access to improved sanitation. Under these circumstances, women and girls suffer most as they spend more time traveling longer distances to fetch water. The demand for water increases as the population increases complicated by the general lack of enough capital to invest in water se`rvices. The market for water products (storage tanks, pipes, rain harvesting facilities, etc.) and suppliers appears to be dynamic. Studies have shown that even the limited supply of water currently available is not regular due to different problems varying from one area to another particular in rural areas where poverty is relatively high complicate both availability and access to quality water. This study aimed at examining the extent to which the rural population lack accessibility to safe and potable water in the study area and then come up with recommendations for improving water supply.

2.0 LITERATURE REVIEW

2.1 Definition of Key Terms

Demographic factors refer to dynamic population factors ranging from fertility on population increase, mortality, migration, sex and age which determine the total number of human inhabitants of a particular area at a given time (IUSSP, 2021).

Potable water is defined as water that is suitable for human consumption (i.e., water that can be used for drinking or cooking). The term implies that the water is drinkable as well as safe. Drinkable water means it is free of unpleasant odors, tastes and colors and is within reasonable limits of temperature (Dugan, 1972).

2.2 Theoretical Literature Review

What follows below are a number of theoretical literature reviews which relate to this study.

2.2.1 Link between Population and Water

The study on population is central for Man is the essence of development. It is not the purpose of this study to discuss how different theories show the inverse relationship between population increase and resources. A host of population, resource and environmental theories including Malthus' and Neo-Malthusian

Population Theories, Economics theories have already done this task. The literature review is entrenched in sharing experiences with other studies on how the water shortage is a critical problem under different social economic and physical conditions and various policies and strategies used to alleviate the problem. In fact, as Dzikus (2001) puts it water and population growth are twins. UN Population Division (2010) declared that majority of the world's population growth in the next 40 years will be absorbed by urban areas, particularly in less developed regions. It is envisaged to increase per capita water consumption driven by development intensifying water demand and strain local water capacity. Overall, the amount of water each person uses is expected to increase as incomes grow and consumption increases (UN-Water and FAO, 2007).

Rapid population growth and urbanization could expose more people to water shortages, with negative implications for livelihoods, health, and security. The demographic trends are rising giving huge development challenges (UN-Water and FAO, *Ibid*); contrasted by declining water availability in some areas due to climate change (Bates, B.C., Z.W. Kundzewicz, S. Wu and J.P. Palutikof, 2008).

2.3 Empirical Literature Review

There are numerous empirical literature reviews that relate to this study. Below are some of these.

2.3.1 Impact of Population Growth on Accessibility to Potable Water

Since early 1970s Libya faced a serious water shortage problem. United Nations classified Libya as one of the ten poorest countries in its renewable water resources and has experienced the situation of imbalance between water resources and water needs. The main identified factors physical, demographic and economic being variability of rainfall associated with absence of permanent rivers associated with Sahara Desert climatic conditions, rapid population growth and diversification of economic activities respectively. Libya's government water policy emphasised on expansion of irrigated agricultural areas and checked misuses of water resources due to lack of environment awareness. Although Tanzania's National Water Policy (2002) underlined investment in the water supply services since the early 1970s; water supply reporting has not been satisfactory. For example; the country's 1991 National Water Policy which set a goal of providing clean and safe water to the population within 400 meters from their households by the year 2002 had only about 50% of the rural population accessed reliable water supply service due to poor operational and maintenance arrangements. Nevertheless, since the reign of 5th Republic in 2015; new efforts have been shown in the implementation of the previous and new water infrastructure projects in rural areas.

2.3.2 Socioeconomic Challenges Facing Potable Water Supply

The Worldbank.org (2018) on water access project in ESwatini's rural water sector reported several challenges for poor sustainability of eSwatini's rural water services which attributed to operational causes. They included; poor facility designing, low levels of tariff payment; ineffective voluntary (community) management of complex reticulated systems; above all lack of efficient baseline data about rural water facilities/services. The balance in budgetary allocation from the Ministry of finance of those eSwatini's has placed greater emphasis on a new scheme construction rather than rehabilitation.

As Megersa (2008) observed, safe drinking water remain a great challenge particularly in developing countries which are confronted by both poverty and critical climate change along with other socio-environmental issues. It calls for increased innovative and low-cost strategies for sustainable water supply systems and sanitation. According to Rose grant et al. (2002) in their research conducted in developing country in Africa, the available water sources throughout the world are becoming depleted and this problem is aggravated by the rate at which populations are increasing especially in developing countries. Currently, some 30 countries are considered to be water stressed of which 20 are absolutely water scarce. It is predicted that by 2020, the number of water scarce countries will likely approach 35. It has been estimated that, one-third of the population of the developing world will face severe water shortages by 2025 (Seckler et al., 1998). For example: In the Africa, 12 African countries will be considered to be in a "Water Stress" situation by next year. A further 10 African countries will be stressed by 2025. A total of 1.1 billion people or two thirds of Africa's population will be affected (Dzikus, 2001). The problem of water scarcity will be felt more severely in the developing countries are the most serious challenges of the twenty-first century.

2.4 Possible Strategies to Solve Problem of the Potable Water Supply

According to ADB (2022), Somalia is among water scarce countries and there is variation in water sources. For example, much of the north and northeast depend on ground water in the form of boreholes and the water is typically saline, while in the south water is accessed through rivers and shallow wells. Access to potable water is very low and viewed as an economic and social good. Sometime water stress is the core root of conflict. The situation is expected to worsen because of the declining annual renewable freshwater in Somalia.

The Tanzania Open Government Plan of 2012 expressed commitment on how to overcome the challenges of accessing potable water. It suggested a need to set clear priorities; to reflect on why previous efforts to improve access have been largely unsuccessful, to re-think current policies and practices in the sector on the basis of solid evidence regarding technical and governance matters; and insure meaningful transparency at all levels (UTR, 2012). Otherwise, the challenge of access will likely persist. While thinking to increase the gap between Tanzania and its sub-Saharan African neighbors but failing to fulfill the aspirations of millions of men and particularly women and children across the country.

2.5 Water Related Laws in Tanzania

2.5.1 The Water Resources Management Act (WRMA) 4 No.11/2009

The objective of WRMA is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled to meet the basic human needs of present and future generations (URT, 2009). It categorically stated that, water resources are public resources and are vested in the President as the trustee for and on behalf of citizens. The WRMA stipulates that every person residing in Tanzania has a stake and duty to safeguard and protect water resources. However, as commented earlier, having a law is one thing and having it implemented is another thing altogether. Also, there is the Water Supply and Sanitation Act (WSSA) No. 12/2009 which is intended to oversee provision in water investment support and management of catchment areas serving water supply abstractions. Also, its effectiveness remains a thing in future.

2.6 Research Gap

Documentary review on accessibility increased population to clean, safe and quality potable water for various human uses is challenged by water stress in various dynamic forms which vary from one area to another. In other words, there is no common source and experience of the problem even if the list of causes of accessibility to potable are the same; they vary in degree from one geographical location to another. Therefore, there was the need to conduct this research in the study area in order to know how the population increase in combination with other factors impact accessibility to potable water so as to devise possible solutions to the problem.

2.7 Conceptual Framework

Conceptual Framework is an analytical tool with several variations and contexts that is used to make conceptual distinctions and organize ideas. Strong conceptual frameworks capture something real and do in a way that is easy to remember and apply (Maxwell, 2009).

Figure 1 presents the CF which consists of two variables; the independent and dependent variables. Independent variables include sources of potable water resource while dependent variable is a community. The former comprises government policy, climate, population growth and infrastructure. The assumption is that, if independent variables work properly positive results occur such as low cost will be paid for water services, control of climate will be help for rain formation, low fertility rate will help to reduce water stress/scarcity and reduction on level of water borne diseases and water contamination. But if they do not function properly ranging from government policy, control of climate, population growth and infrastructure lead to negative results such as high cost in water services, failure to control climatic change enhance long term drought and inadequate of rain formation, high fertility rate increased water stress and scarce and lastly high level of water borne diseases and water contamination are highly occurred. Generally, accessibility to potable water supply in the community is crucial, it remains a big challenge at local, regional and global levels it requires well thought plans and implementation strategies to insure availability, accessibility and proper utilizations of potable water resources.

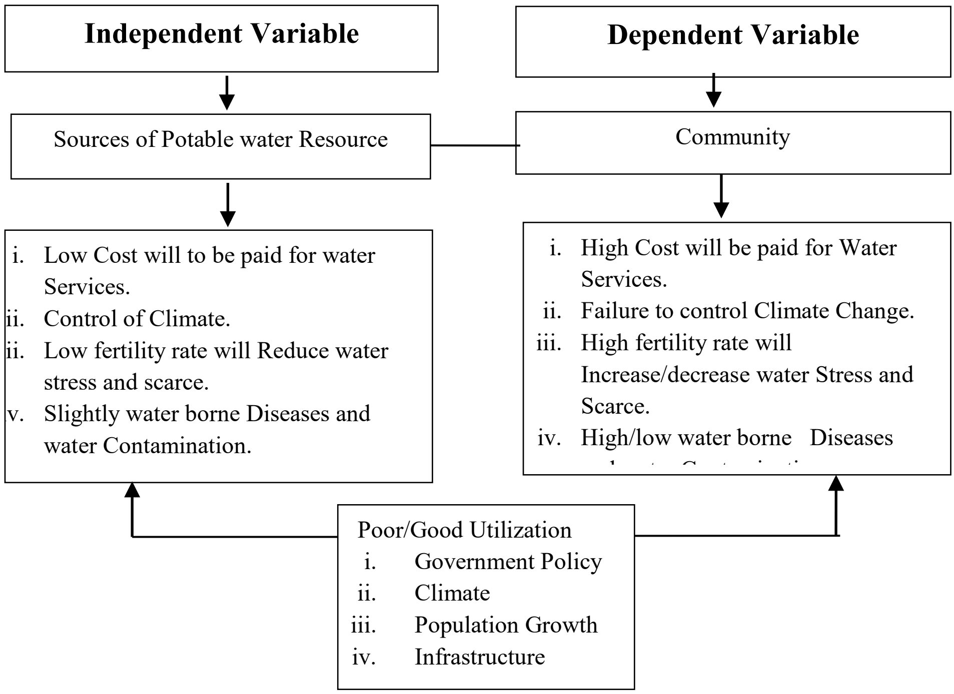

Figure1: Conceptual Framework Showing the Relationship Between Population Growth and Availability of Potable Water Resources.
Source: Own Construct, 2021.

3.0 RESEARCH METHODS AND MATERIALS

3.1 Area of Study

The study was conducted in Mwanga district whose geographical location is 3^0 45' S latitudes and 37^0 40' E longitudes (Figure 2). Mwanga is one of the districts in Kilimanjaro region located in north east of Tanzania. The main ethnic groups in the district are Pare and Chagga tribes whose main activities include business, agriculture, livestock keeping and tourism motivated by the existence of several tourist attractions such as Mt. Kilimanjaro, the highest mountain in Africa, Kilimanjaro National Park and so on. The study area is characterized by tropical climate and semi-arid climate entailing Kisangara and Mgagao found in Lembeni Ward, Jipendea division and some areas around Kileo Ward.

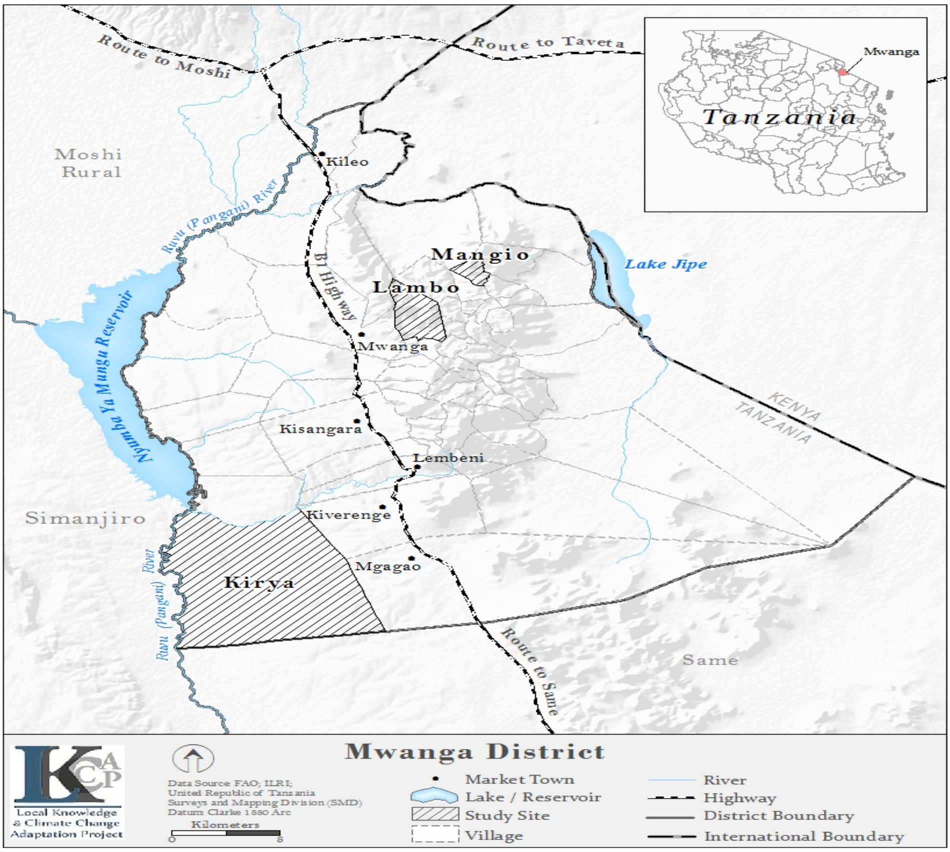

Figure 2: Map of Mwanga District, Kilimanjaro Region Tanzania.
Source: Field Data, 2021

Justification for selection of Kileo village as a case study as it threefold. One, it is one of the semi-arid land areas challenged by inadequacy of potable water. The presence of infected and polluted water leading to waterborne diseases and mortality rates in the village is another justification. By the time when this study was conducted there was no government water project in the village. is an extra justification for Kileo village to be chosen as the area of the study as the result of the study may lead to an initiation of such a government project of water to tackle the challenge of inadequacy potable water. Besides, according to Tanzania National Census (2012) shows that Kileo village is inhabited by 4,983 (2,341 males and 2,642 females) sedentary people who are farmers practicing irrigated agriculture often combined with livestock keeping. When compared to the previous census; it is a population increased by 6% which according to UN – UNFPA standards it is rapid population increase.

3.2 Research Design

The researcher used a case study employing qualitative approach involved a careful and complete observation of a social unit, such as a person, family, an institution, a cultural group or even the entire Community.

3.3 Sampling Techniques, Procedures and Size

The study used mixed methods. For selection of the study area, Kileo village, as stated under justification possessed the merits for the research to be conducted there, therefore, purposive sampling was used. But also, it used purposive sampling technique to select government officials from Mwanga district, members of the community in Kileo village; and focused discussion groups making a sample of 120 as provided in Table 3.1. The employment of purposive sampling instead of random sampling for interviews in the course of qualitative data collection where a case study approach is employed; it is justified by the following authorities. Sandelowski, M. (1996) argues that, samples in qualitative research tend to be small, thus in order to support the in-depth case-oriented analysis; it is fundamental to use purposive sampling in inquiry. Additionally, Luborsky M. R. and Rubinstein R. L. (1995) argue that qualitative samples are purposive, that is, selected by virtue of their capacity to provide richly-textured information, relevant to the phenomenon under investigation. Rijnsoever FJ. (2017) argued that recent case study research works which employ purposive sampling testified greater efficiency than those which use random sampling in qualitative studies. On this basis, the study used purposive sampling in selecting the study sample constituting 120 respondents.

Table 3.1 Different Categories of Respondents

Place of Living	Frequency (Number of respondents)	Percent
Mwanga DC	4	3.3
Kileo Centre (With One, VEO)	28	23.3
Barabarani	29	24.2
Mnoa	24	20.0
Mlaki A	17	14.2
Mlaki B	17	14.2
Kileo (WEO) Office	1	.8
Total	120	100.0

Source: Field Data, 2021

3.4 Data Collection

Questionnaires were used to collect quantitative data in the field ranging from demographic information, impacts of population increase, socioeconomic challenges facing distributions of potable water supply and the strategies to solve the problem of potable water supply. They were complimented by qualitative methods using in-depth interviews intended to obtain inner most feelings of respondents on the crux of the potable water shortage problems and strategies of resolving the problem. Qualitative interviews way mainly directed to Key informants and FDGs.

3.5 Observation

The study employed observation to investigate physical factors whether water infrastructure existed or not; the physical distance involved in fetching water, and those engaged in fetching water by sex and age and commented accordingly.

3.6 Data Analysis

Data processing followed after the collection of raw data. It included coding especially qualitative ones and general data cleansing. SPSS (Statistical Package of Social Sciences) version 20 was employed to analyse data hence generated descriptive statistics; whereas content analysis was used qualitative data. Finally, data were presented in various statistical figures ranging from tables, charts showing percentages on specific objectives that guide the whole process of data collection from the field.

4.0 RESULTS AND DISCUSSION

The presentations of the findings are followed by discussion of the results from respondents to the item in questions. The findings are presented according to research objectives.

4.1 Demographic Characteristics

4.1.1 Sex of the Respondents

Figure 3 presents sex of 120 respondents in a nutshell.

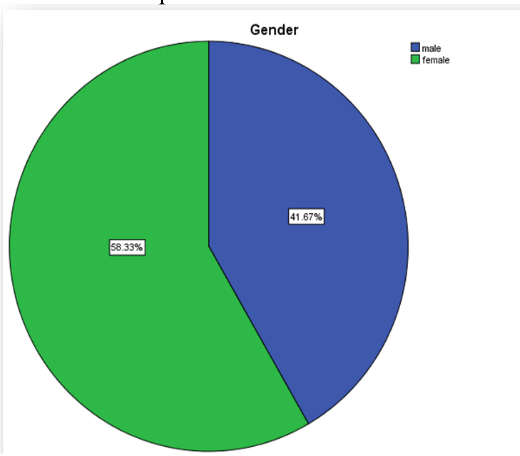

Figure 3: Sex of the Respondents

Source: Field Data, 2021

4.1.2 Age of Respondents

Table 4.2 bellow shows the age of respondents which were grouped into five-year intervals. IT shows that, a high concentration of the population lies in youths and those in the reproductive age. Demographically, such features denote a young population characterised by high reproduction. It supports the assertion that Kileo village and Mwanga district as a whole experienced rapid population increase.

Table 4.2 The Age of Respondents

Age of respondents	Frequency	Percent
10-14 YRS	18	15
15-19 YRS	20	16.7
20-24 YRS	20	16.7
25-29 YRS	12	10
30-34 YRS	10	8.3
35-39YRS	12	10
40-44 YRS	12	10
45-49 YRS	10	8.3
50 + YRS	6	5
Total	120	100

Source: Field Data, 2021

4.2 Level of Education

Figure 4 shows different education levels achieved by the study population sample ranging from primary, secondary, diploma and university education. The majority 63(52.5%) out of 120 respondents achieved primary education level, therefore, are capable of doing the 3Rs (reading, writing and arithmetic). Such a population is an asset in the sense that it is capable of obtaining information, trainable and could participate in decision-making process related to social development in the community.

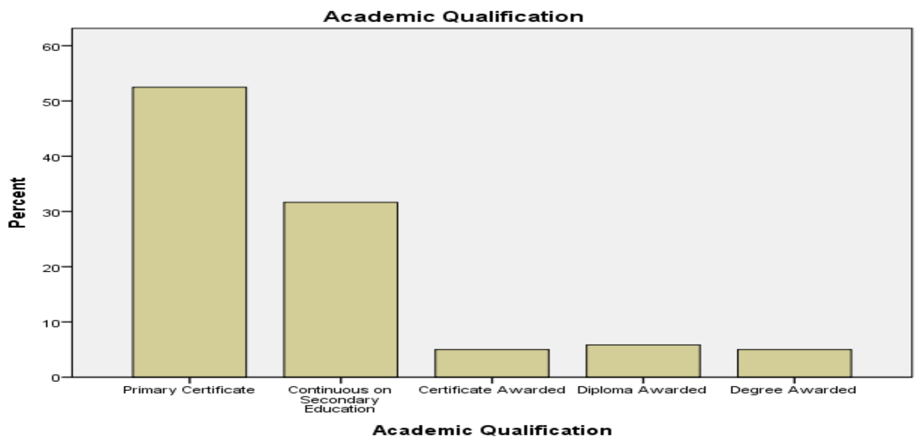

Figure 4: Education level of the respondents

Source: Field Data, 2021

4.3 Impacts of Population Growth on Accessibility to Potable Safe Water

The first research question sought to find out the impacts of population growth on accessibility to potable safe water at Kileo village. The researcher asked all

120 respondents (6 public officers and114 community members) requesting them to mention at least three impacts of population growth on accessibility to potable water at Kileo village.

Table 4.3 The Impacts of Population Growth on Accessibility to Potable Safe Water at Kileo Village

Answers	Frequency (Number of respondents)	Percent
Destruction of distribution of water network, pollution of water resources and spread of waterborne diseases.	77	64.2
People use much water for agricultural activities.	43	35.8
Total	120	100.0

Source: Field Data, 2021

Table 4.5 shows that, human activities associated with population increase affect availability of potable water for domestic uses by interfering water network causing polluting and contamination (64%) hence lowered the quality of potable water; while, 35.8 % diverted it to agricultural activities thereby reduced the volume or quantity of water for human drinking. For example, this study was informed by Ward Executive Officer of Kileo Ward on cases of some unfaithful residents who vandalized former water infrastructure and stole water pipes and the electric power panel of Mtindi Natural spring. They were compounded by poor planned sewage system which caused pollution of potable water sources.

Figure 5: Sample of Sources of Potable Water Found in Kileo Village
Source: Field Data 2021

Figure 5 is a hand water pump located at a place between Mnoa and Kileo primary schools. The pumped water from this water pump is a major source of potable water for these two primary schools. Some of the community members of Kileo village have access to this water pump as their source of potable water. There are 6 water kiosks saving 4983 people in Kileo village. These 6 water kiosks are not sufficient to save the entire population in the village. This was a typical case of the impact of population increase on limited potable water source.

Figure 6: Sample of Sources of Potable Water found in Kileo Village
Source: Field Data 2021

Figure 6 displays some of the children in Kileo village who had gone to fetch water at a place where a manual water pump for the village is situated. It signifies the extent children had to walk great distances to fetch water often at the expense of attending school classes. These findings tallied with the UN – FAO's (2022) observation that population growth is a major contributor to water scarcity; for growth in populations means mounting demand and competition for water for domestic, industrial, and municipal uses. Water is also needed for agriculture and industrial use, and for the evacuation of waste materials. The most water scarce or stressed areas are typically those with few water resources, high population densities, and high population growth rates.

4.4 Socioeconomics Challenges Facing Potable Water Supply in the Study Area

Table 4.6 presents challenges facing potable supply in the study area whereby 87(72.5%) respondents said that the social economic human activities instigated climate change accounted much for the destruction of Mtindi natural spring source at Kileo village in Mwanga District Council. While, 32(26.7%) respondents stated other factors which contributed to scarcity or inadequacy of potable water included lack of storage facility; and some villagers could not afford to buy water which was a manifestation of poverty among poor households in the study area.

Table 4.4 Socioeconomic Challenges Facing Potable Water Supply at Kileo Village in Mwanga District

Answers	Frequency (Number of respondents)	Percent
Human activities, climate change, and destruction of Mtindi natural spring source	87	72.5
Lack of storage facility and some villagers can't afford to pay for price of water	32	26.7
Missing system	1	.8
Total	120	100.0

4.5 4.5 Possible Strategies to Solve Potable Safe Water Supply Problems

The following responses were obtained through a participatory process where the very community members were involved in giving solution to their own problem of potable water. Responses are provided in 4.11 below indicates that 101 (84.2%) respondents out of 120 respondents said that drilling shallow wells for schools and a health centre, continuity of the use of Mtindi natural spring as the source of water and to formed village water committee should be the strategies to solve the problems of potable safe water supply at Kileo village in Mwanga District. 18(15%) respondents out of 120 said that, renovation of Kileo water project from Mtindi Natural spring, advised the Central Government to allocate funds for water project at Kileo ward and construction of sewage system which would help to reduce water contamination were the strategies to solve the problems of potable safe water supply at Kileo village in Mwanga District. 1(0.8%) respondent did not answer. According to Ismaila R. A.(2019),strategies to solve the problem of potable water should include the provision of public standpipes and community boreholes as interim measures while expanding piped water supply. Besides household water treatment has to be taken as a stop-gap measure for improving water safety.

Table 4.5 Responses on Possible Strategies to Solving Potable Water Supply Problems in the Study area

Answers	Frequency (Number of respondents)	Percent
Drilling shallow well for school and health centre, continuous use Mtindi 1 spring and to form village water committee.	101	84.2
Renovation of Kileo water project from Mtindi, advice government to allocating fund and construction of sewage system.	18	15.0
Total	119	99.2
Missing System	1	.8
Total	120	100.0

Source: Field Data 2021

5.0 CONCLUSIONS AND RECOMMENDATIONS

This study has established that, population increase over fixed water resource is a liability to ensuring regular supply of potable water for domestic use purposes. However, population increase is not the only dynamic force causing water shortage. It works in combination with physical factors basically climate change; and social economic factors incited by human activities such as destruction of water networks in the catchment area rendering pollution; irrigation schemes reduce the volume of potable water. But also, majority of villagers are poverty-stricken cannot afford to buy potable water. It also brings in the cost of longer travel time especially for women and children in the course of fetching water instead of attending other useful social economic obligations. Since almost all these factors are manifestations of human population increase, therefore, population increase is the key player in influencing availability and accessibility to potable water in any given geographical area. This study capitalizes on the recommendations given by respondents in a participatory way. There is need to form a village committee empowered to monitor and supervise potable water issues in collaboration with other stakeholders including the local and central government. Such concerted efforts should consider launching a project of drilling shallow wells to minimize shortage of potable water in the study area but also to mobilise funds for the construction of sewage system which would help to reduce water contamination against water-borne for the welfare of the community and society at large.

5.1 Suggestion for Further Research

i) To research on the relationship between National population increase and availability of potable water supply for upcoming generation.

ii) To find possible ways on how to overcome socio-economic challenges facing population growth towards accessibility of potable water supply to all Tanzanians.

iii) To explore the effectiveness on monitoring the impacts of population growth on accessibility of potable safe water supply.
iv) To investigate strategies for achieving sustainable potable water resources.

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Women Participation in Tourism Entrepreneurial Opportunities in Minjingu Village, Manyara Region

***Sabas John Gara* [23] *and Emanuel Patroba Mhache* [24]**

Abstract

Women participation in tourism industry contributes to the initiation of self development projects. This study aimed at identifying tourism opportunities found in Minjingu Village by examining factors which affect women participation in tourism business opportunities and strategise ways for improvement. To this effect, the study employed grounded theory, resource-based theory and financial capital theory were reviewed. Primary data was collected using questionnaires, interview, and observation. Secondary data was collected from various published studies like books and journals. The sample of 327 was picked for the study population of which 317 were women entrepreneurs and 10 were women leaders, village executive officer, hotel operators and tour operators. Data was analyzed using Statistical Packages for Social Sciences (SPSS version 16.0). The findings revealed that, the presence of tourism activities and services such as accommodation, game drive, cultural attraction sites; they provided various tourism entrepreneurial opportunities to women. They included selling items ranging from beads, woven baskets, curio and other cultural articles to tourists. Further, findings showed that, lack of financial capital and business skills, unstable market due to COVID-19 pandemic; and business competition significantly affected women participation in tourism business. The study concluded that women required to be empowered financially and in capacity building in various aspects to enable them participate fully in tourism entrepreneurial activities for income generation. It recommended tourism stakeholders should establish centres for business skills training and provide financial support to improve women active participation in tourism business.

Keywords: *Women, Participation, Tourism opportunities, Entrepreneurship*

1.0 INTRODUCTION

Tourism entrepreneurship is the main and very important aspect of economic development in the past and the modern time and leads to job creation in tourism business and improve economic growth worldwide (Nongsiej & Shimray, 2017). Participation in tourism entrepreneurship is seen as the most assured way of dealing with poverty and creating economic growth (Neeraja & Padmavathy, 2012). According to Santha (2013), tourism industry has provided job opportunities and income for many women all over the world. The demand of

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tourism for poor, low skilled and domestic activities, the flexible working hours and the low capital has encouraged many women to find employment in the tourism industry or start an entrepreneurship adventure for their own (Maliva, 2016). Moreover, tourism have been recognized to provide more entrepreneurial opportunities compared to other industries and unlocks opportunities for employment creation and entrepreneurial practices particularly in developing and under developed countries (World Bank, 2017). Entrepreneurship in tourism is one of the most significant aspects that contribute to the beginning of the self-development worldwide (Costa et al., 2013). Entrepreneurship encourages African women to participate in business of tourism and become main actors in the tourism entrepreneurial arena (Nongsiej & Shimray, 2017). As a result policies are being implemented across the African countries promoting women's tourism entrepreneurship (Vossenberg, 2016).

Women participation in tourism entrepreneurship in Tanzania was considered as an important aspect of the economy development and many initiatives, policies, programmes and organizations have been established in order to sustain women entrepreneurs and women owned tourism ventures (Nongsiej & Shimray, 2017). Tourism industry has been accepted by UNWTO as the basic way to provide strategic aid for maintaining entrepreneurial venture development particularly in rural areas (Zapalska & Brozik, 2014). Women especially in the rural areas are producing more than 80% of tourists souvenirs, which include pottery, beadwork, weaving and cloth art and are active members in cultural tourism activities (MNRT, 1999).

2.0 LITERATURE REVIEW

Tourism industry provides equal entrepreneurial opportunities to all people to participate directly or indirectly in tourism business regardless of their gender differences *(*Meunier *et al.,* 2017*)*. The issue of gender inequality in tourism entrepreneurial activity has been the main research debate and policy concern on business enterprise ownership among women (Avolio, 2018). Tourism entrepreneurship in many areas has been men dominated phenomenon as women generally hold positions that do not allow them to participate in decision making (Maliva, 2016). Similarly, women participation in tourism business undertaking face a difficulty of time shortage, combining the demands of their business with the domestic task (Nongsiej & Shimray, 2017). The social responsibilities of traditional family are considered as a major cultural limitations for women entrepreneurs as they barrier them to work outside the house; as a result their husbands/men control the family finances *(*Kingdom *et al.,* 2019*)*. Furthermore, Tourism entrepreneurship established and operated by women are particularly smaller, moderately common in the informal sector and less likely to operate in high added value sectors with growth potential that provide extra income for their family (USAID, 2017). While, little consideration has been made to a female perspective of business ownership there are still areas that need to be given consideration in order to improve the business environment for women tourism entrepreneurs (Maliva, 2016). Nevertheless, there is the need for different stakeholders such as governments, industry, trade unions, local communities and their different member groups, NGOs, community based tourism initiatives to cooperate in order to improve women's economic status through tourism entrepreneurship (Ramchurjee & Residents, 2017).

Women entrepreneurs play an extremely important role in the economic and social development of most countries in the world (Ibanescu *et al.,* 2018). Nevertheless, gender in tourism entrepreneurship function is not equal among men and women (Neeraja & Padmavathy, 2012). Gender inequality in entrepreneurial opportunities are noted in many areas whereby women are still faced by a number of challenges that limit their participation and ability to benefit from the tourism entrepreneurship (Maliva, 2016). However, women who choose to pursue entrepreneurial ventures have had limited representation in the tourism industry which limits their contribution to economic development (Costa *et al.,* 2013). The underrepresentation of women has been caused by various factors, such as cultural background, level of confidence and choice of business (Mishra & Zachary, 2015).

Many studies on gender participation mainly cover issues of employment, the role of women in tourism related sectors and income equalities (Nxopo & Iwu, 2016). In most cases, women participation in tourism entrepreneurial opportunities are neglected area (Kumar, 2011). In this context, possibly little is known about woman participation in tourism entrepreneurship and the contribution of women in tourism entrepreneurship development in Minjingu Village. Therefore, this paper was designed to investigate women participation in tourism entrepreneurship and their contribution to the general development of Minjingu Village in Manyara Region. To this end, this paper identified tourism entrepreneurial opportunities found in Minjingu Village, examined factors affecting the participation of women in tourism entrepreneurial opportunities in Minjingu Village; and came up with strategies to improve women participation in tourism entrepreneurial opportunities.

3.0 MATERIAL AND METHODS

3.1 The Study Area

Minjingu Village is found in Manyara Region in Babati District along Dodoma highway about 100 kilometers away from Arusha City (Mariki *et al.,* 2011). The village is located to the east of Lake Manyara along the rift valley escapement at Manyara Region in the northern Tanzania at latitude 03° 42′ 30.9″ S and longitude 035° 54′ 56.3″ E Minjingu Village occupies approximately a land area of 24,000 hectares with a population of about 11,000 people (Mohammed, 2017). Minjingu Village consists of different ethnic groups such as the pastoral Maasai and the agro pastoral Mbugwe, Iraqw and Barbaiq (Moyo *et al.,* 2016).

Minjingu is one of the villages which form Burunge WMA which occupies the land and migration corridors between Tarangire National Park, Lake Manyara National Park, and the neighboring Manyara Ranch now known as the Tanzania Lands Conservation Trust (TLCT) under AWF management (Neeraja & Padmavathy, 2012). The WMA involves Lake Burunge as an important area for water birds such as greater and lesser flamingo and a range of ducks and shorebirds, and also hosts a large buffalo population that moves in and out of the Tarangire National Park (Mariki *et al,* 2011).

Minjingu Village is in a semi-arid with average annual precipitation of 750 mm/annum. The rainfall pattern is bimodal, with short rains between May and June and long rains between November and January. The months of June through October are normally dry months. Agriculture and livestock keeping are the main land uses in the study area and is practiced by 94% of the population. Other activities include fishing, tourism related businesses (souvenirs, mat weavings) and other small businesses. Crops grown in the area are mainly sorghum, maize. The crop production level is low mainly due to climatic limitations (semi-arid) conditions (Kaswamila, 2012). The reason of selecting Minjingu Village is its location along the Dodoma high way, being the part of Burunge WMA, migration corridors between Tarangire National Park, Lake Manyara National Park, the neighboring Manyara Ranch and cultural diversity that provide business opportunities for tourism entrepreneurs.

3.2 Data Collection Method

3.2.1 Research Design and Sampling

Research design refers to a plan, roadmap and blue print way of study conceived so as to obtain answers of research questions (Kothari, 2004). This study adopted exploratory research design while combining literature review, interview and survey to obtain respondents opinions on women participation in tourism entrepreneurship opinion (Creswell, 2003). The study employed a mixed method with qualitative and quantitative data approach. Therefore, the study drew a sample of 237 women entrepreneurs from the population of 2,300 by applying the following formula to determine needed sample size with confidence level of 95%.

$$n = \frac{x^2 NP(1-P)}{e^2 (N-1) + X^2 P(1-P)}$$

$N=2300$, $X^2 = 3.841$, $P = 0.5$, $e^2 = 0.05$

Therefore, 317 respondents out of 2300 were selected randomly from handcraft/beads and basket weaving, traditional food, curio shops and cultural bomas women entrepreneurs. Purposive sampling technique was used for informants to answer the research question.

Data collection instruments refer to the devices/instruments used to collect data or the tools used by researchers to actually collect data in the research process (Kothari, 2004). Data was collected through questionnaires for quantitative data, interviews and observation for qualitative data as well as documentary review on women participation on tourism entrepreneurial opportunities. Before interview was carried out Key informants were identified by the help of the village leadership for the purpose of obtaining their views and comments.

3.3 Data Analysis

Data analysis involves ordering of data into constituent parts to obtain answers to the research questions. Qualitative data obtained using interviews and closed ended questionnaires were analyzed using content analysis. Quantitative data was analyzed using descriptive statistical analysis such as simple comparisons, averages and percentages. Statistical Package for Social Science (SPSS) was applied to analyze the coded information of the questionnaire in this study. Eventually, data collected from this study was presented by using Tables.

4.0 RESULTS

3.4 Tourism Entrepreneurial Opportunities

Tourism entrepreneurial opportunities were identified in the study area. The research revealed that, 47.6% of the respondents were beads and basket weavers. They constituted the main entrepreneurial activities in the study area. About 24.9% of the respondents were involved in cultural boma; 13.3% of the respondents were involved in dairy and poultry products; they were carried out by Maasai who are as well pastoralists and culturally beads/baskets weavers; and 8.5% of the respondents dealt with traditional food supply. While, Curio shop activities were carried out by 2.5% of women respondents from different cultures such as Iraq and Meru women.

Table 4.5: Tourism opportunities

Opportunities	Frequencies	Percentages
Beads and basket weaving	156	47.6
Cultural boma	82	24.9
Curio shop	8	2.5
Traditional food provision	28	8.5
Dairy and poultry products supply	43	13.3
Fruits and vegetables supply	10	3.1
Total	**327**	**100**

Source: Field data, 2021

3.4.1 Level of Women's Participation

The level of women's participation was analyzed. Table 4.6 shows that, 66% of the respondents passively participated in tourism entrepreneurship due to the culture and social obligations such as taking care of children's welfare. Whereas;

30% of the respondents said that, they participated through material incentives by supplying materials such as beads and baskets, fruits and vegetables, dairy and poultry products to the institutions that deal with tourists. Furthermore, 3.3% and 0.7% of the respondents participated in tourism business through information giving and interactive participation respectively. Generally, women passively participated in tourism entrepreneurial activities; their passivity was largely caused by the cultural factor which reduced women family care social responsibilities.

Table 4.6 Level of women participation in tourism activities

Forms of participation	**Frequencies**	**Percentages**
Passive participation	216	66
Material incentive participation	98	30
Interactive participation	2	0.7
Information giving participation	11	3.3
Total	**327**	100

Source: Field data, 2021

3.5 Factors Affecting Women Participation in Tourism Activities

Factors affecting women participation in tourism entrepreneurial opportunities were identified in the study area**.** The research findings revealed that, 37.3% of the respondents had the problem of capital to finance their entrepreneurial activities, 32.7% of the respondents had no entrepreneurial knowledge/skill for their business management, 28.5% of the respondents reported gender and social responsibilities as inhibiting factor participate in entrepreneurial activities; while 1.1% of the respondents were affected by the lack of market for their products and 0.4% of the respondents were affected by business competition. Therefore, those were the major factors affecting women in tourism entrepreneurship as presented in Table 4.8.

Table 4.8: Factors affecting women participation in tourism entrepreneurship

Factors	**Frequencies**	**Percentages**
Entrepreneurial knowledge/skills	107	32.7
Gender and social responsibilities	93	28.5
Lack of capital	122	37.3
Lack of market	1	0.4
Business competition	4	1.1
Total	**327**	**100**

Source: Field data, 2021

3.5.1 Financial needs

Financial capital limitation was one of the common problems facing women participation in tourism entrepreneurial opportunities in Minjingu village. The study findings revealed that, 37.3% of the respondents had capital problem for their entrepreneurial activities. It signifies the extent Micro businesses facing problems in raising capital and managing tourism business due to limited access to approved credit from established agency such as a bank and government agencies. In this category, only 5% were reported to have access to credit, while 32.3% had no access to credit unit due to the lack of collateral. This subjected them to tight budgets compelling them to look for capital through informal and often humiliating means such as begging relatives and friends. It underlines the fact that, lack of financing becomes is one of the major hindrances that limit women participation in tourism entrepreneurial opportunities.

3.5.2 Skills and Knowledge Needs

Entrepreneurial knowledge or skill was another factor affecting women entrepreneurs in the study area. It was so bearing in mind Minjingu Village is dominantly a pastoral community mainly Maasai people where most of the women neither had formal education nor informal training in business before due to the already explained cultural circumstances. These factors account for the results presented in Table 4.4; for low level of entrepreneurial knowledge/skill explain for the experienced low tourism entrepreneurial activities among women. Although, some of them seemed to be contented with the level and knowledge they had achieved so far; the majority of them still insisted to continue with learning entrepreneurial knowledge /skills in order to improve their business skills.

3.5.3 Gender and Social Responsibilities

The study established that gender and social responsibilities affected women participation in tourism entrepreneurial opportunities because they have full responsibilities of their households which reduce their participation time in entrepreneurial opportunities. Around 28.5% of the respondents said that, in pastoral communities' woman are recognized and admired for keeping their households clean, for looking for and cooking food as well as entertaining guests (Table 4.8). Moreover, women living in rural areas are mostly engaged in traditional economic activities such as farm work and livestock keeping. They are considered as women's work. They are mostly done for domestic and not commercial purposes. This can be argued as the effect of retrogressive traditions with norms and values which favour of men over women.

3.5.4 Market Environment and Business Competition

Market availability and business competition are critical in tourism entrepreneurial development despite the low responses 0.4% and 1.1% suggesting lack of market and business competition respectively. However, through observation supported by key informants confirmed that stiff business competition discouraged most women entrepreneurs at Minjingu which was instigated by competitors from Ngorongoro and Lake Manyara as they inflated market prices to their advantage. Also, high market prices were incited by the strike of COVID-19 pandemic (Table 4.8). Moreover, the stiff market competition made some women entrepreneurs withdraw from the tourism business and go for other alternative businesses such as subsistence cultivation.

3.6 Strategies to Improve Women Participation in Tourism Entrepreneurship

The study established strategies for improvement of women participation in tourism from the respondents while answering the questionnaire. Impliedly, the following were the suggestions given by the respondents; 38.1% of the respondents suggested capital support, while 36.2% respondents recommended training and education and 5.6% respondents suggested to be empowered through training and change of tourism policies towards encouraging women participation in tourism entrepreneurial opportunities (Table 4.9).

Table 4.9 Strategies to improve women participation in tourism

Measures	Frequencies	Percentages
Education and training	118	36.2
Training and tourism policies	84	25.6
Capital support	125	38.1
Total	**327**	**100**

Source: Field data, 2021

3.6.1 Financial Capacity

Financial capacity is one of the basic requirements for effective women participation in tourism entrepreneurship. The research established that, 38.1% of the respondents suggested that access financing would source capital for the poor women to initiate women centred tourism business. It calls for women entrepreneurs to access financial capital at low interest rates through financial institutions in order to invest their entrepreneurial business. Respondents further proposed that, different stakeholders in women empowerment including the government, tourism institutions and Non-Governmental Organization (NGOs), Village Community Bank (VICOBA); and others programmes such poverty alleviation to collectively enhance the development of women in tourism entrepreneurship in Minjingu village.

3.6.2 Education and Training

Education and training for entrepreneurs is another basic requirement for women participation improvement in tourism entrepreneurial opportunities. In this case, findings disclosed that, 36.2% of the respondents suggested capacity building was one of factors which enhanced women participation in tourism entrepreneurship. The capacity building pre-supposed provision of awareness building and training women on entrepreneurial skills in order to solve some of the challenges facing them. These views were underlined by mostly key informants ranging from lodge owners, Village executive officer and women leaders also suggested the need of training and education regarding women participation in tourism entrepreneurial opportunities.

3.6.3 Policy Analysis

Training and tourism policies were the strategy suggested by women entrepreneurs in Minjingu Village whereby 25.6% of the respondents suggested training and change of tourism policies in order to encourage women participation in tourism entrepreneurship by promoting the marketing of women products. In short, change of policies coupled with coordination different levels of government sectors may lead to women fully participate in tourism progarmmes.

3.7 Discussion of the Results

Minjingu village being near Tarangire National Park where tourism accommodation other facilities are located; offer good entrepreneurial opportunities for local communities especially for disadvantaged groups particularly women dealing with petty businesses involving selling beads and basket weaving, cultural boma, curio shop, traditional food provision and so on. These findings tally with Vossenberg (2016) observations that, tourism is increasingly underpinned by entrepreneurial behavior of a diversity of stakeholders in rural localities where by tourism is seen as a key agent for regional rejuvenation on the demise of traditional economic activities. It has also introduced innovative ideas to business women in the rural areas; for example, those in the study area used sign posts, exchanged trade ideas with friends, some attended local exhibition such as Saba saba and Nane nane farmers day exhibition to promote their entrepreneurial products. The main customers for their commodities included both tourists and local residents.

Despite the efforts made by the few women participating in tourism entrepreneurial; they were limited by the lack of sufficient capital, entrepreneurial knowledge/skills, gender and social responsibilities; and business competition in the open market for their products. These limitations were fueled by lack of access to the financial institutions, culture and domestic responsibilities. These findings resemble Maliva's (2016) study on the women's participation in Tourism in Zanzibar an Enactment Perspective where more or less similar limitations were reported for business women participating in tourism entrepreneurial activities. Finally, the negative effects of COVID-19 are known worldwide, therefore, the study area was no exception it suffered the same. However, this study agreed with respondents' views which were obtained through a participatory approach and presented above on how to improve women participation in tourism business. They formed basis of the recommendations of this study.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The study had testified that, it is possible to integrate women petty businesses such as selling beads, locally woven baskets, curio products and cultural bomas among others to both local and international tourists in order to generate income which will ultimately liberate women from poverty and underpinning retrogressive traditions that hold women back in the course of social development. The main challenges facing such young enterprising women include lack of capital, shortage of entrepreneurial knowledge/skill, lack of market for women products, business competition, gender and social responsibilities. The study recommended that, the government, tour operators, hotel operators and other tourism stake holders should put in place a good and entrepreneurial training policy that encourages women to participate in tourism entrepreneurial opportunities and the policy that would govern, monitor and evaluate participation of women in tourism entrepreneurship. More business centre for women tourism entrepreneurs such as cultural bomas, curio shops should be opened for sell, publicity and promotion women in tourism entrepreneurship. Also, the government, NGos and other tourism stakeholders should find ways and means of according financial support to women entrepreneurs because most of them lack access to loans due to lack of collaterals for credit from established financial institutions such as banks and other financial agencies. The study further suggested that, tour operators should put in their safari itinerary women tourism entrepreneurial products offered in the vicinity of Tarangire National Parks in order to provide market for women products. Moreover, tour operators should ask their driver guides to stop at the women business centers without asking commission. Lastly, hotel/lodges operators should give first priority to the women entrepreneurs when purchasing supplies for the hotel/lodge use. Also, women should be encouraged to sell items such as eggs and chickens, fruits, vegetables and women made handcrafts in order to augment women's income for the betterment of their families and the general welfare of the society in general.

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Communal Non-Consumptive Natural Resources Conservation Practices in Western Tanzania

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Abstract

The communal-indigenous non-consumptive natural resources conservation practice contribution on community economy in western Tanzania was studied. The study focused on forest and wildlife because they are most affected by land conversion and degradation. An economic benefit model of the communal-indigenous non-consumptive natural resources conservation practice effect was developed. To assess magnitude of effect of the practice, specific null hypothesis (H_2) was developed and tested. The null hypothesis stated that H_2: Communal-indigenous non-consumptive terrestrial natural resources management approach does not significantly impact community economic benefit. The empirical study administered a four point-scaled numerical survey questionnaire to 400 respondents and 40 Key Informant Interviews. Quantitative data were analyzed by SPSS while qualitative data were analyzed by Excel framing summarizing technique. Descriptive statistics realized that the communal non-consumptive natural resources conservation mean was 46.99, almost equal to the average mean of 47. Moreover, the model had strong linear relation. Pearson (r) covariance statistical relationship correlation coefficient of Pearson (r) = 0.68, p<.001. Furthermore, the contribution of communal-non-consumptive natural resources conservation practice on community economic benefit was calculated through multiple linear regression techniques. Multiple linear regression results showed that regression coefficient B= 1.34 at 95% confidence interval (CI) = 1.23, 1.44; p=0.000. The result implied that an increase of one unit of the communal non-consumptive natural resources conservation practice was associated with an increase of 1.34 community economic benefit (CEB). The study results rejected the null hypothesis suggesting that the alternative hypothesis may be true. The study concludes that communal non-consumptive management approaches likely significantly impact community economic benefit (CEB). Therefore, to enjoy strong community economy, communal-non-consumptive natural resources conservation should be given significant attention. Additionally, to gain more community economic benefit, an integrated hybrid combo of consumptive approaches such as sustainable timber with non-consumptive approaches such as avoided deforestation and degradation and increased carbon sequestration credit is recommended.

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Keywords: Natural resources management, community economic benefit (CEB), communal-indigenous non-consumptive natural resources management, natural resources utilization, Greater Mahale Ecosystem (GME), Tanzania.

1.0 INTRODUCTION

In predominantly rural areas such as Greater Mahale Ecosystem (GME), Tanzania experienced poor economic welfare and retarding economic growth up to 2.5% in 2017 and 2.3% in 2018 (URT, 2012; Leisher & Hess, 2017; World Bank Report, 2019). Poor economic welfare in the least developing countries rich in natural resources is a continued world agenda (CBD, 2011, UNEP-WCMC, 2018; COP 26, 2021). Less economic benefit from natural resources management has been achieved regardless of effort from many economists, including high-profile ones such as Nobel Laureate Ken Arrow (Arrow *et al.,* 1995; Ribot, 2003). Economists' efforts resulted into economic considerations of local communities-indigenous in natural resources conservation (CBD, 2011; UNEP- WCMC, 2018; COP 26, 2021). Less achievement in conservationists-economists' efforts is marked in low income to marginalized rural communities' who mostly depend on a common-pool resource (CPR). Such a trend brings questionability to sustainable natural resources management (Kerapeletswe and Lovett; 2005; Murphree, 2009; Bluwstein*et al.*, 2016; COP 26, 2021). Regardless importance of economic benefits from conservation interventions, fewer studies have been conducted on natural resources management's impact on the community economy (UNEP – WCMC, 2018). Following a few studies on natural resources management-economic benefit, UNEP – WCMC (2018) report called for assessing the flow of economic benefit from conservation as a priority. This paper focuses on the impact of collective non-consumptive natural resources management on community economic benefit.

Tanzania's communal-indigenous natural resources management approaches started long ago, before the colonial era (Pailler *et al*., 2015). Communal-indigenous natural resources management is among current approaches of conservation in a form of Co-management in Tanzania (URT, 1998a; URT, 1998b; URT, 2009). Other practiced conservation approaches are private, and public natural resources management. Different resources management approaches are necessary because Tanzania have vast terrestrial ecosystems traversing community and public lands (Taylor, 2011). Additionally, Tanzania has beautiful vegetative ecosystems such as equatorial forests, acacia woodlands, miombo woodlands, tropical forests, mountain forests and grasslands (Bluwstein, 2017). Furthermore, Tanzania has appealing large grassland ecosystems such as Serengeti plains, Miombo woodland like Greater Mahale and Mountain Ecosystems such as beautiful Mount Kilimanjaro (Taylor, 2011). Also, Tanzania has a diversity of wildlife with all big five (Elephant, Lion, buffalo, giraffe, and rhino), amazing migratory wildebeest, endangered chimpanzee, and beautiful colobus monkey (URT 2009; Taylor, 2011; Piel*et al.,* 2013; Morrison *et al.,* 2016). All the Tanzanian six ecoregions, including the Western Tanzania ecoregion, carry the natural beauty with vast flagship fauna such as chimpanzee and flora like Zambezian miombo woodland (John *et al.,* 2019).

Tanzania formulated natural resources policies such as wildlife and forest policies that recognize communal natural resources management approaches (URT, 1998a; URT, 1998b). The wildlife policy of Tanzania (URT,1998a) one of its strategy states that "involving rural communities and other stakeholders in taking joint responsibility for the sustainable management of wildlife and other natural resources". Moreover, the wildlife policy (URT, 1998a) states that "to transfer management of Wildlife Management Areas (WMA) to local communities thus taking care of corridors, migration routes and buffer zones and ensure that local communities obtain sustainable, tangible benefits from wildlife conservation". Whereas the forest policy of Tanzania (URT,1998b) in the sixteenth policy statement states, "Involvement of local communities and other stakeholders in conservation and management will be encouraged through joint management agreements". Furthermore, the forest policy of Tanzania's (URT,1998b) thirty-ninth policy statement states that "local communities will be encouraged to participate in forestry activities". However, both wildlife and forest policies (URT 1998a; URT 1998b) did not explain the economic benefits of natural resource conservation. This paper's interest is to explain community economic benefit accrued from communal-indigenous non-consumptive natural resources conservation in Greater Mahale Ecosystem in Western Tanzania.

Demand and utilization of natural resources informed by management approaches contribute to the recent experience of natural resource degradation and domestication of land (Steffen *et al.,* 2015; COP26, 21). Greater Mahale Ecosystem (GME) faces a higher rate of 10% forest loss than the average Tanzanian 6% (William, 2018). Greater Mahale Ecosystem lost 1 million acres of forest (29% of forest cover) in the last 30+ years (Kaijage, 2016). The Greater Mahale Ecosystem Forest loss and land degradation cause loss of critical habitat for endangered biodiversity such as chimpanzees (Piel *et al.,* 2013). This ecosystem degradation trend threatens the disappearance of endangered wildlife and halt the opportunity to increase GDP through tourism and resource utilization. To halt forest and wildlife loss and the land domestication trend, Tanzania set aside 32.5% of her land as reserve lands (NESR, 2017). This achievement exceeds the 17% proposed by the Aichi target and the 30 by 30 goals (IUCN, 2017; NESR, 2017). The land reserved for conservation is more significant than the 20% of land used for agriculture; therefore, it should substantially address community economic benefit (NESR, 2017). However, the reserved lands do not guide land conversion and domestication in the village or community lands.

2.0 LITERATURE REVIEW

Studies on communal natural resources management through community-based natural resources management (CBNRM) revealed that most community-based natural resources management has weak governance and does not practice equity (Child & Barnes, 2010; Galvin*et al.*, 2018). Most of them have favoritism, and there is no fairness in resources utilization. Even though community-based natural resources management (CBNRM) is the most widely accepted contemporary communal natural resources management, it is questioned on sustainability and benefit equity (Child & Barnes, 2010; Muyengwa& Child, 2017). The study of Child & Barnes (2010), that concur with Muyengwa & Child (2017) conclusion, is in line with Cavendish & Campbell (2005) study findings on rural poverty, environmental inequality, and income in Zimbabwe. Cavendish & Campbell (2005) concluded that where community-based conservation is weak there is no equity. In Greater Mahale Ecosystem, communal-indigenous forest and wildlife management is practiced through village natural resource committees (TAWIRI, 2018). However, Nkonya *et al.* (2008), Mosimane & Silva (2015), Davis *et al.* (2019) and Tchakatumba *et al.* (2019) studies on natural resources management have a different conclusion. Nkonya *et al.* (2008) studied natural resources management and the economy in Uganda. Additionally, Davis *et al.* (2019) conducted a conservation institution review on community based natural resources management (CBNRM) in Zambia, while Mosimane & Silva (2015) conducted a community-based natural resources management (CBNRM) and community benefit sharing study in Namibia. Whereas Tchakatumba *et al.* (2019) conducted a study on Zimbabwe community based natural resources management (CAMPFIRE) on whether community wildlife management ensure household economic benefit. Both studies concluded that when local communities are benefiting from natural resources, there is both increase in economic welfare and compliance to natural resource management. However, the mentioned studies stressed on management equity and less on economic benefit equity. For that reason of less study on communal natural resources management practise contribution to community economic benefit, this research was carried in Greater Mahale Ecosystem.

The study of communal non-consumptive natural resources conservation practise contribution to community economy was carried in Greater Mahale Ecosystem (GME) part of western Tanzania ecoregion (Joh *et al,* 2019). The study adopted communal–indigenous natural resources conservation definition of "Governance by indigenous people and local communities" (IUCN, 2017; WCPA, 2019). Furthermore, terrestrial natural resources (forest and wildlife) were the focus of the study because they are the ones highly affected by degradation, domestication, and conversion of land (Piel *et al,* 2013; Steffen *et al.,* 2015; William, 2018). The study had a specific objective to examine the contribution of communal-indigenous non-consumptive natural resources conservation practice on community economic benefit (CEB) in the Greater

Mahale Ecosystem at western Tanzania. Thereafter, a research specific null hypothesis (H_2) was developed. The null hypothesis stated that H_2: Communal-indigenous non-consumptive terrestrial natural resources management approach does not have a statistically significant impact on community economic benefit.

3.0 MATERIALS AND METHODS

3.1 The Study Area

The study was conducted at the Greater Mahale Ecosystem (GME) in Western Tanzania, which is in Kigoma and Katavi regions. The area is a landscape that covers 18,200 km2 sited at Latitude 50.30' - 6^{0}.29' South and Longitude 29^{0}.43' - 30^{0}.37' East (Coulter, 1994). The area is bordered by natural features such as rivers, lakes and mountains as seen in Fig.1 below. To the West, is ancient second deepest lake in the world, Lake Tanganyika. To the North is Malagarasi River, to the heart and South is undulating Mahale Mountains. While Ugalla River form the Western border (TAWIRI, 2018).

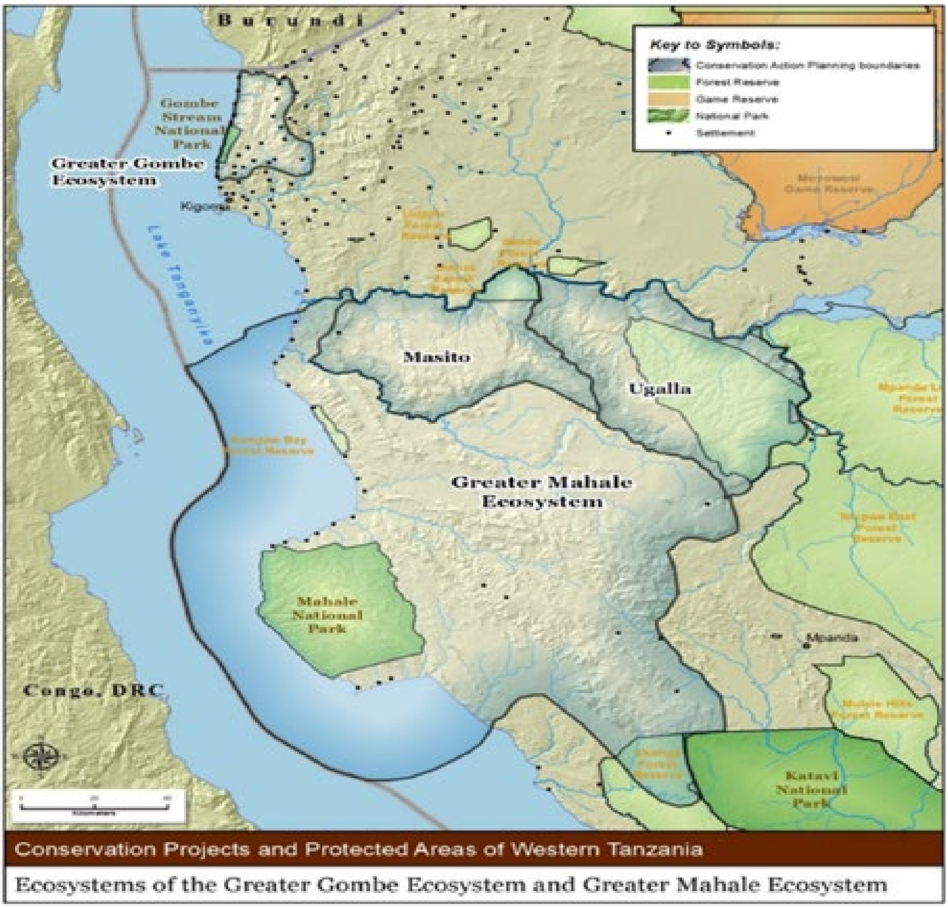

Figure 8: Map of Greater Mahale Ecosystem

Note: Adopted from CAP 2011

The water resources here hold about 17% of world surface freshwater (Coulter, 1994). The region has a unimodal long rain season starting from November to April, and a dry season starting from May to October (CAP, 2011; TAWIRI, 2018). The Greater Mahale Ecosystem topography starts with sharp features of Albertine Rift valley from Lake Tanganyika and undulating Mahale mountains (Coulter, 1994). The area is found on Zambezian woodland ecoregions. The area has open, drier, savanna and mosaic Zambezian woodlands. Corridor forest, wooded grasslands, and spacious zones of bamboo woodlands cover the ecosystem (Coulter, 1994). Moreover, the region has large lands of intact woodland characterized by *Brachystegia* spp. and *Julbernardia* spp. (TAWIRI, 2018). These long unimodal rainfall, variation of vegetation resources, topographical feature and the Albertine Rift valley made the area to be rich in biodiversity, which is one among 34 World Biodiversity hotspot (TAWIRI, 2018). Such verities of wildlife include 93% of endangered most eastern chimpanzee, white colobus monkey, zebras and savanna elephant (Piel *et al.,* 2013; TAWIRI, 2018). This is the only area in the world where chimpanzee habitat overlaps with savanna elephant habitat (TAWIRI, 2018).

More than half a million people live in Greater Mahale Ecosystem (GME). Native tribes include, Bembe, Fipa, Pimbwe, Konongo and Tongwe with poor performing economic welfare of less than 150 USD per year per household (URT, 2012; Leisher & Hess, 2017; Hardee *et al.,* 2018). Main social-economic activities heavily depend on natural resources utilization including fishing, farming, grazing and forest production (Hardee *et al.,* 2018; Leisher & Hess, 2017). The fast-increasing population and the heavy dependency on natural resources exert pressure on natural resource utilization.

3.2 Research Design and Implementation

The research adopted and applied constructivist philosophy that combined empirical, expertise and positivist approaches. Choice of that philosophy led to positivism approach of survey in line with Novikov& Novikov (2013). Adoption of that philosophy based on research believe grounds that reality is stable, fixed, can be observed, and can be applied in a similar environment. The study also applied interpretivism of reviews on expert knowledge and conducted studies. Combination of the approaches has been used to avoid methodological monism of using one approach which improved research quality (Gravetter & Forzano, 2012). An economic benefit model of the communal-indigenous non-consumptive natural resources conservation practice effect was developed.

Four-point numerical scaled survey questionnaire applied to 400 respondents and Key Informant Interview (KII) guide used to interview 40 respondents. Interviewed villages were 10 around Greater Mahale Ecosystem. Studied villages were Mwese, Lwega, Lugonesi, Buhingu, Mgambo, Katumbi, Nkokwa, Kaseganyama, Kasangantongwe, and Kasekese.

3.2.1 Community Economic Benefit Model

Contribution of communal-indigenous non-consumptive natural resources conservation practice on community economic benefit (CEB) in Greater Mahale Ecosystem at western Tanzania was examined. To assess magnitude of effect of the practice, a specific null hypothesis (H_2) was developed. H_2: Communal-indigenous non-consumptive terrestrial natural resources management approach does not have statistically significant impact on community economic benefit was tested.

Community economy benefit (CEB) is defined as a total of economic gains and value (EV) and is the function (f) of natural resources management approach (NRM). The mathematical statement can be summarized as follows: -

$CEB = \sum(EV)$ *and* $CEB = f(NRM)$ …………………………………………………… (1)

Whereby natural resources management approach (NRM) is the summation of resources utilization (RU) and natural resource controls and development (CD), then: -

$NRM = \sum (RU, CD)$ ………………………………………………………………… (2)

By substituting NRM by using RU from equation 2 into equation 1, then it is true that community economy benefit (CEB) is a function (f) of resources utilization (RU).

$CEB = f(RU)$ ……………………………………………………………………… (3)

Given that resources utilization (RU) is composite of communal consumptive (CCT), communal non-consumptive (CNC) government consumptive (GCT) and government non-consumptive (GNC) resources utilization, therefore, it is true that: -

$RU = \sum (CCT, CNC, GCT, GNC)$ ……………………………………………… (4)

By reading and replacing second RU composites (CNC) found in equation 4 to equation 3, the following fifth equation will be produced: -

$CEB = f\ (CNC)$ ………………………………………………………………… (5)

Whereby, communal non-consumptive natural resources management (CNC) is built up of the following composites, tourism photographing and game viewing (PGC), grazing in communal managed natural resources areas (GZC), recreation benefit (RCC), transportation development (TPC), infrastructure's development (IFC), hotel services (HSC), spiritual and ritual benefits (SPC), and scientific studies (SCC). therefore equation 5 can be lengthened as:

$CEB = f\ (PGC, GZC, RCC, TPC, IFC, HSC, SPC, CSC)$ ……………………… (6)

Equation 6 composites are in a form of $X_1, X_2, X_3 \ldots\ldots X_t$. This form of equation allows to calculate a constant regression term as $\beta_0, \beta_1, \beta_2, \beta_3 \ldots. \beta_t$, and β_0 = regression coefficient be developed. Then when random error term of ε is applied, equation (6) can be re written as follows:

$CEB = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots\ldots\ldots + \beta_t X_t + \varepsilon i$…………………………… (7)

And therefore, equation 7 can be re-written as follows: -

$CEB = \beta_0 + \beta_1 PGC + \beta_2 GZC + \beta_3 RCC + \beta_4 TPC + \beta_5 IFC + \beta_6 HSC + \beta_7 SPC + \beta_8 CSC + \ldots \varepsilon i$……………………………………………………………………… (8).

Equation (8) is the model of communal-indigenous non-consumptive natural resources conservation practice (CNC) – community economic benefit (CEB) in this study.

3.2.2 Sample Size

Sample size determined through Stevens (1996) sample size (N) formular of 50 =8m whereby m is the largest independent variable. Stevens (1996) minimum sample size calculation was adopted because it is a suitable method of calculating sample size when the study has many independent variables. The study had 19 independent variables (m). Independent variables were resources control and development (5), consumptive utilization (6) and non-consumptive utilization (8). Substituting m=19 in Stevens (1996) equation, will produce minimum sample size (N) = 50 + (8 X 19) =202. Even though the minimum sample size could have been 202, the study chose to have a bigger than 200 that is 400 respondents.

3.3 Data Analysis

Quantitative analysis method used to analyze quantitative data in SPSS. Excel framing summarizing method used to analyze qualitative data. Qualitative information triangulated and complemented quantitative data. Descriptive statistics was employed in the presentation of the results.

4.0 RESULTS AND DISCUSSION

4.1 Contribution of Communal-Indigenous Non-Consumptive Natural Resources Conservation Practice on Community Economy

Communal-indigenous non-consumptive natural resources management practice is applied in villages around Greater Mahale Ecosystem. The approach includes tourism photographing, recreation, hotel service, spiritual-ritual and scientific studies, and it had positive contribution on community economy. The communal-indigenous natural resources non-consumptive utilization contribution calculated mean shown in Table 1 was 46.99. The studied mean was almost equal to the average mean of 47 (Table 1). This result proposes that communal-indigenous non-consumptive natural resources management produces an almost strong although weak contribution on community economic benefit.

Table 1: Communal-indigenous non-consumptive natural resources management variables

Variable-composites	Calculated mean	Std. Deviation	N	Estimated average mean
Communal non-consumptive	46.99	11.797	728	47
Tourism photographing	6.53	2.655	728	7
Grazing	8.26	2.271	728	7
Recreation	6.64	1.716	728	5
Transportation	3.40	1.398	728	3
Infrastructure's	7.08	1.613	728	5
Hotel Services	7.02	2.369	728	7
Spiritual and ritual	4.25	1.810	728	3
Scientific studies	3.81	1.377	728	3

Note: N=728

Among the challenges that cause the weak contribution of communal non-consumptive natural resources conservation practice on the community economy were mentioned in interviews to be remoteness and poor road infrastructures. Grazing was among the strong noted variables that contribute community economy (Table 1). Key informant interview respondents when asked about the impacts of community non-extractive benefits of natural resources management had positive feelings on grazing economic benefit and reservation on remoteness and poor roads. For example, one famous interviewed agropastoralist who is also doing traditional healing in one of the villages said:

> *"We benefit a lot from grazing and accessing pastures for our livestock", and "we also conduct some worship". "However, even though we have good forests and peculiar wildlife such as chimpanzee, we do not receive tourists, may be because we are remote, and our roads are very bad".*

4.2 Photographic Tourism and Recreation in Communal Conserved Forests and Wildlife Area

Photographing and game viewing tourism in community-managed forests and wildlife areas such as wildlife corridors and dispersal areas had a calculated mean of 6.53 (Table 1). The calculated mean was just below average mean of 7 (Table 1). The finding signified a weak composite to explain weak community economic benefit. Analyzed data showed that 68% of respondents strongly disagreed that tourists visit community forests and wildlife areas (Figure 2). Some interviewed people pointed out underdeveloped tourism attraction sites as a reason that cause few tourists to visit Greater Mahale Ecosystem. One young man who is also doing forest patrol in one of the villages, when asked about community economic benefits gained through tourists' visit to community forests and wildlife areas said:

> *"Our community have many tourist attracting sites such as Nkonde waterfalls, (Figure 2) however are less developed, there are neither steps, latrines nor tents at site" how can tourist come to such areas? He questioned.*

However, the researcher had a physical visit to Nkondwe waterfall and found out that there are few tents at the site, but there were no steps, and the road was poorly developed. This result suggests that there are less developed systems that benefit the community economy from non-consumptive resource utilization. Therefore, less developed systems and capacity are part of weak management capacity. The finding is in line with Muyengwa and Child (2017), who said that when and where there is less community management capacity, there is less equity and less economic gain.

Whereas recreation's impact on community economics was 6.64 (Table 1) above the average mean of 5 (Table 1). Recreation was connected to looking at nature's beauty, which does not cost money. Looking at the beauty of nature did not have excludability in utilization and, therefore, does not create income. One young woman who was born and lived in the highlands of the area, when asked about the recreational value of nature, said:

> *"Hiiiiii, I do not go to forest for recreation, although we sometimes enjoy looking at our forests and hills. I go to town to enjoy life if I have money. We conduct party and ceremonies in halls and not in forest".*

The information showed Greater Mahale Ecosystem have weak ecological management produced integrated conservation economic benefit. Economic welfare is improved when ecosystem conservation and ecological benefit are integrated (Andika, 2020). Such integrated management of nature includes enjoying the beauty of nature and ecotourism.

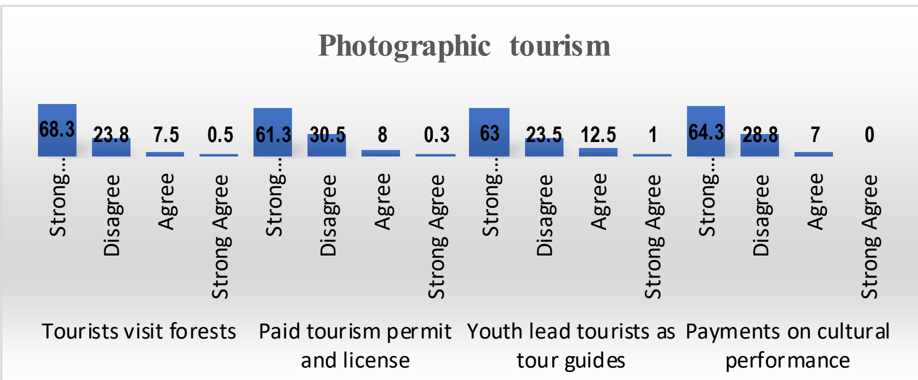

Figure 2: Photographic tourism in communal-indigenous conserved areas

4.3 Grazing and Livestock Keeping in Communal Managed Forests and Wildlife Areas

Community around Greater Mahale Ecosystem practice grazing and livestock keeping in communal managed forest and wildlife areas such as wildlife corridors and wildlife dispersal areas. Grazing and livestock keeping computed impact on community economy mean was 8.26 (Table 1) above average mean of 7 (Table 1). Accessing grazing pastures in communal forests and wildlife areas was important and impactful to the agropastoral community. Even though the majority (58%) of respondents (Figure 3) agreed to have enough water for their livestock, there was strong concern about access to pastures and markets. Only 29% of respondents agreed to have enough pasture and only 21.8% of respondents agreed to have a good price for livestock (Figure 3). Interview with community confirmed un accessibility of pastures in communal forests and wildlife areas. One elderly agropastoral whose grandfather came to Greater Mahale Ecosystem, when asked on livestock keeping and access to pastures, he said:

> *"Even though our area is remote, we do not access pastures in communal forest. We graze our livestock in our own land. However, people from central Tanzania come with their livestock and graze in forest. Unfortunately, when are caught by forest patrols, they pay huge fines".*

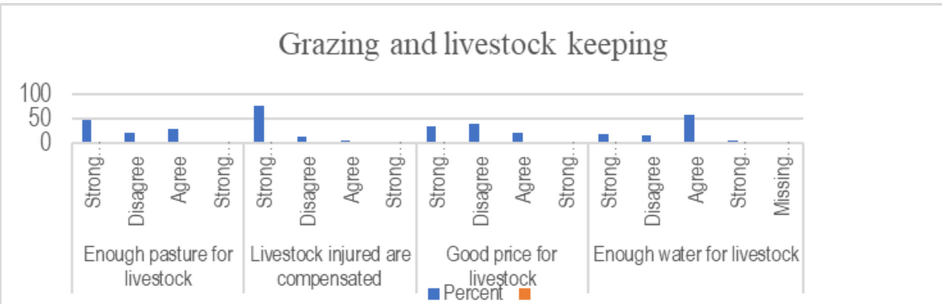

Figure 3: Grazing and livestock keeping in communal-indigenous conserved areas

4.4 Access to Transport and Infrastructure Development in Conserved Communal Forests and Wildlife-Managed Areas

The contribution of infrastructure development and access to transport services were studied and found to be less developed in communal managed forest and wildlife areas in Greater Mahale Ecosystem. The contribution of transportation services to the community economy computed mean was 3.4 (Table 1), slightly above the average mean of 3 (Table 1). Even though this mean is above expected, there was substantial concern on whether companies pay transport fees and access of vehicles to town. Such concern implied the existence of less community economic benefit. That concern is shown in Figure 4, where 90% of respondents disagreed that companies pay transportation fees, and 92% of respondents disagreed with accessing vehicles to town. Transport access is linked with road infrastructure development.

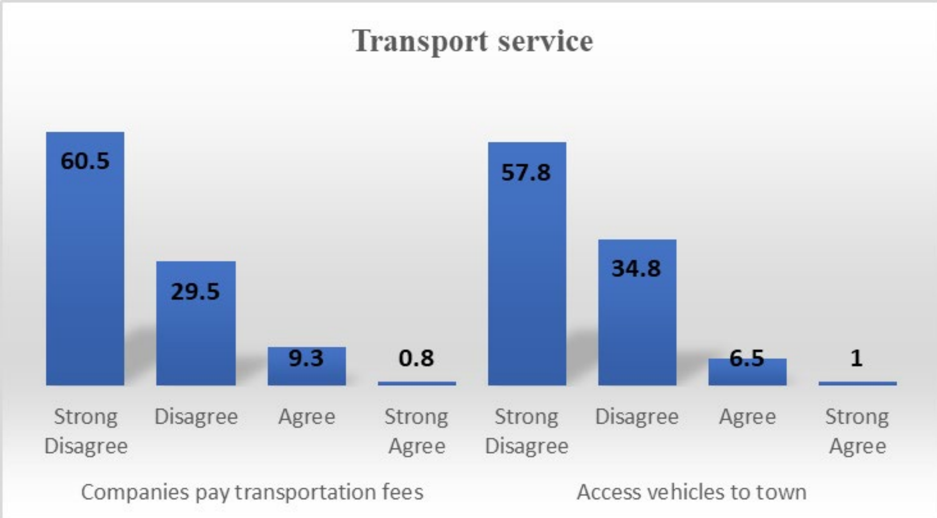

Figure 4: Transport service in communal-indigenous conserved areas

Infrastructure development that includes road, hotels, schools, and health centers found to impact community economy. The infrastructure development impact calculated mean was 7.08 (Table 1) above average mean of 5 (Table 1). Even though the mean looks good and stronger, there was concern that road infrastructures were poor and that the well-developed infrastructures are health and school structures. Most (93%) of respondents strongly disagreed on whether there is road construction or rehabilitation, but more than 75% of respondents also agreed on health facilities and classrooms constructions (Figure 5). Not only road infrastructures were noted to be less developed, but also hotel infrastructures as well.

Hotel service in communal forests and wildlife areas in Greater Mahale Ecosystem conservation contribution on community economy was accessed. Contribution of hotel services mean was 7.02 (Table 1) which was almost equal to the average mean of 7 (Table 1). The finding suggests almost a strong mean. However, interviewed people had a different opinion on hotel services. One interviewed elderly woman who has small vegetable business interviewed whether they sell products or be employed in communal forests hotels, she said:

> *"I lived here for long time, but I had never seen a hotel in our village forests, there is no hotels therefore, I do not sell vegetables to hotels in forest. And how can you be employed to the hotel that is not existing? And who is going to build a hotel while there are no tourists? There is no employment from the hotels because they do not exist".*

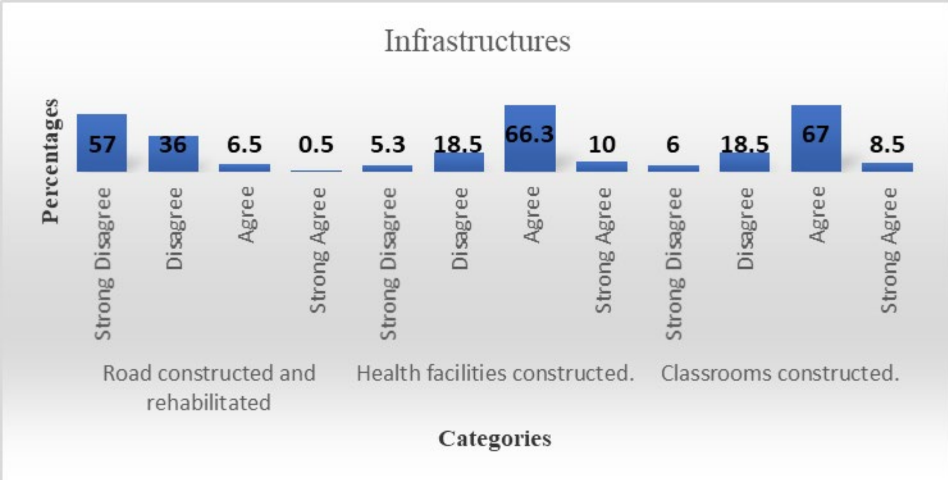

Figure 5: Infrastructures in communal-indigenous conserved areas

4.5 Spiritual and scientific non-consumptive benefits

Spiritual, ritual, academic and scientific gained access contribution to community economic benefit in the Greater Mahale Ecosystem were studied. Spiritual and ritual contribution computed mean was 4.25 (Table 1). This was a strongest mean against the average mean of 3 (Table 1). The data implies that there were intrinsic conservation values attached with beliefs and taboos. Such intrinsic values were affirmed by interviewed people. One interviewed respondent who is a Tongwe tribe and came from Tongwe chiefdom when asked on spiritual and ritual benefit of conservation, he said:

> *"There are financial and leadership mysterious powers coming from the forests. There was a big magic snake that provides blessings and leadership powers lived in our forest near the Kalolwa airstrip. After increased settlement and development the snake moved to Mahale National Park Forest. Elders conduct spiritual and ritual events in that forest, and the magical power comes".*

Whereas contribution of scientific and education in community conserved natural resources practice mean was 3.81(Table 1) against average mean of 3 (Table 1). The scientific benefit is associated with small token paid by researchers when they recruit research assistant and data collectors from the community. The information was affirmed during the interview. One young man who participated as data collectors for measuring planted trees survival rate, when asked on scientific benefits from conservation of communal forests and community wildlife areas, he said:

> *"When you are lucky to be recruited as a data collector, researchers pay some money even though they pay small amount. Students from Universities visit our forests and wildlife corridors for learning. They recruit us as data collectors and pay us when we assist them in data collection. Even though that is a temporal employment it matters a lot".*

4.6 Testing of Null hypothesis

The study conducted a Model fit test and test on Null hypothesis (H_2) test. The Null hypothesis stated H_2: Communal-indigenous non-consumptive terrestrial natural resources management approach does not have a statistically significant impact on community economic benefit. Multiple linear regression techniques carried to test the study-specific null hypothesis (H_2).

Correlation model fit test between communal-indigenous non-consumptive natural resources conservation (CNC) to community economic benefit (CEB) was calculated. Adjusted R Square of 0.46 was realized. The R Square is 46% explicated variation in community economic benefit that is explained by the inclusion of communal-indigenous non-consumptive utilization. The model has poor R2 of 0.46 and therefore it has weak predictive ability (46%) as ranked by Almquist, Ashira & Brännström (2019) and Profillidis & Botzoris (2019). The result suggests weak predictivity ability of communal non-consumptive natural resources utilization impact on community economic benefit.

Linear correlation is calculated between communal-indigenous non-consumptive natural resources management (CNC) and community economic benefit (CEB). The Pearson (r) covariance statistical relationship correlation coefficient was calculated. Pearson -r (728) = .68, $p<.001$. The positive Pearson (r) above 0.6 and close to 0.7 shows that the relationship was good but not very strong correlated (Almquist, Ashira & Brännström, 2019; Profillidis & Botzoris,2019).

Multiple regression analysis was performed on the impact of communal non-consumptive natural resources management approach to community economic benefit (Table 2). Communal-indigenous resources management non-consumptive utilization approach and its composites that were tourism photographing and game viewing in communal area (PGC), grazing in communal managed natural resource areas (GZC), recreation benefit (RCC), transportation development (TPC), infrastructure's development (IFC), hotel services (HSC), spiritual and ritual benefits (SPC), and scientific studies (SCC) were analyzed.

Table 1: Multiple regression analysis for communal non-consumptive conservation practice on community economic benefit

Composites	B	95% CI	β	t	p	SE
Tourism Photographing	-1.724	-2.214, -1.234	-.194	-6.911	.000	.249
Grazing	.059	-.466, .584	.006	.222	.824	.267
Recreation	.263	-.368, .895	.019	.819	.413	.322
Transportation development	1.079	.219, 1.939	.065	2.463	.014	.438
Infrastructure's development	1.147	.622, 1.672	.079	4.287	.000	.268
Hotel Services	-.789	-1.306, -.273	-.080	-3.003	.003	.263
Spiritual and ritual	2.116	1.224, 3.008	.126	4.657	.000	.454
Scientific studies	-1.202	-1.835, -.570	-.093	-3.734	.000	.322
Communal non-consumptive	1.335	1.230, 1.440	.680	24.985	.000	.053

Note. CI = Confidence Interval for B, SE = Standard Error, p=0.000

It was interesting to note that utilizing natural resources in communal forests and wildlife through tourism photographing, hotel services and scientific studies would negatively impact community economic benefit as per regression coefficient (B) of those composites (Table 2). Utilizing natural resources through communal tourism photographing had the highest negative impact on community economic benefit by having regression coefficient B= -1.72 at 95% at confidence interval (CI) = -2.21, -1.23; p=0.000. This means an increase in one unit of communal tourism photographing utilization in communal forests and wildlife areas will decrease community economic benefit (CEB) by 1.72 (172%). Because p<5% and confidence interval (CI) does not include null value (x=0), it is statistically significant at the 5 % level. This finding aligns with interviewed community perception (section 3.2) who showed that setting aside their forests and wildlife areas will negatively impact their community economic benefit.

It was also found out that spiritual and ritual utilization of natural resources in communal forests and wildlife areas had the highest community economic benefit (Table 2). Multiple regression analysis for contribution of spiritual and ritual access of wildlife areas and forests showed regression coefficient B= 2.12 at 95% at confidence interval (CI) = 1.22, 3.01; p=0.000. This implied that increase in one unit of spiritual and ritual utilization of forests and wildlife area, community economic benefit (CEB) increases by 2.12 (212%). Because p<5% and confidence interval (CI) does not include null value (x=0), it is statistically significant at the 5 % level. This finding is supported by interviewed community quoted in section 3.5 who perceive to receive magical powers from communal forests and wildlife areas.

The multiple regression analysis result for impact of communal-indigenous non-consumptive natural resources utilization on community economic benefit presented in Table 2. The result showed that regression coefficient B= 1.34 at 95% at confidence interval (CI) = 1.23, 1.44; p=0.000. This finding implies that increase in one unit of communal non-consumptive utilization, community economic benefit (CEB) increases by 1.34 (134%). Because p<5% and confidence interval (CI) does not include null value (x=0), it is statistically significant at the 5 % level. The above findings of regression coefficient B= 1.34 at 95% at confidence interval (CI) = 1.23, 1.44; p=0.000 were sufficient statistical evidence against null hypothesis (H_2). The null hypothesis (H_2) that stated communal-indigenous non-consumptive terrestrial natural resources management approach does not have a statistically significant impact on community economic benefit was rejected. Rejection of the null hypothesis was in favor of the alternative hypothesis. The result suggests that it could be true that communal-indigenous non-consumptive terrestrial natural resources management approach may have a statistically significant impact on community economic benefit.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The general conclusion of this study is that communal non-consumptive natural resources conservation practice has a significant impact on community economic benefit (CEB). Additionally, it was evidently found that remoteness and poor developed infrastructures such as roads has been a stumbling block in developing conservation economic benefit in Greater Mahale Ecosystem.

Western Tanzania tourist circuit connectivity such as road networks should be developed. This will benefit not only benefit communities around Greater Mahale Ecosystem but also country GDP.

Communal non-consumptive natural resources management approaches such as avoided deforestation, degradation and increased sequestration carbon credits should be emphasized and, whenever possible, should be linked in integrated ways with consumptive approaches to maximize conservation-economic gains.
Lastly, this study recommends undertaking natural resources valuation in Greater Mahale Ecosystem (GME) and possibly in whole Tanzania. Country realistic development plans will depend on understanding what resources the country own and how rich it is. Natural capital and country real wealth are its natural resources. That be said, Total Economic Valuation (TEV) is recommended for Tanzania.

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