

**ASSESSMENT OF ENVIRONMENTAL AWARENESS, SENSITIVITY AND  
CONCERNS OF LOCAL COMMUNITIES TOWARDS NATURAL  
RESOURCES CONSERVATION SURROUNDING NGORONGORO FOREST  
RESERVE**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT FOR THE  
REQUIREMENTS OF MASTERSDEGREE INTOURISM MANAGEMENT  
AND PLANNING- THE OPEN UNIVERSITY OF TANZANIA**

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**CERTIFICATION**

The undersigned certifies that he has read and hereby recommends for acceptance by the Open University of Tanzania, a dissertation entitled: *Assessment of Environmental Awareness, Sensitivity and Concerns of local communities towards natural Resources Conservation Surrounding Ngorongoro Forest Reserve*, in partial fulfillment of the requirements for the Degree of Master of Tourism Management and planning.

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Supervisor

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Date

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**DECLARATION**

I, **Emmanuel Sipiteck Olenjoro**, do hereby declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University or higher institutions of learning for a similar or any other degree award.

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Signature

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Date

## **DEDICATION**

This dissertation is dedicated to my lovely sponsors and my family, Son Socrates Olenjoro who encouraged and challenged me in academic life.

## **ACKNOWLEDGEMENT**

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## ABSTRACT

Awareness of local people who live in or adjacent conservation areas are of vital significance in determining the conservation of natural resources. This is because local people are the stewards of resources found near or within the areas they live. The important thing is that, awareness does determine performance of people. In that respect, local people are held accountable for conservation of natural resources. Natural resources awareness promotes conservation of natural resources while lack of awareness is linked with issues that are opposed to conservation of the same. The rationale of this study was to assess local peoples' awareness, sensitivity and concerns towards conservation of natural resources surrounding Ngorongoro northern highland forest reserve (NHFR) in northern Tanzania. The study design was a case study. Based on a study a total sample consisting of 199 was used. Random sampling and purposive sampling techniques were used in identifying sample. Data collection methods were questionnaires, interviews and direct observation. Quantitative data were analyzed by (SPSS version 16.0 and Ms Excel while content analysis was used to analyze qualitative data. The results show that respondents have high environmental awareness and are highly involved in different environmental activities and willing to participate in natural resources conservation. With regards to concerns, results showed that women possessed positive concerns towards environmental conservation although they were not fully involved in natural resources practices. The reasons for respondents' awareness include presence of different forestry products, weather regulating role attracting rainfall, providing clean water for domestic purposes and irrigation. With regards to sensitivity, the results show that most of the respondents are sensitive to productive and protective role of natural resources (NRs), and they express their urgent need to conserve NRs so as to combat the threatening environmental evils. The study recommended that environmental awareness subject necessarily might be considered as an independent topic in regards to NHFR. Therefore the study will give emphasis on environmental awareness, concern and sensitivity in both formal and non-formal system of education. This may bring radical change among the Local community in the way of thinking, living and working.

**Keywords:** Awareness, Concern, Sensitivity, Ngorongoro Conservation Area

**LIST OF ABBREVIATIONS**

AWF	African Wildlife Foundation
EE	Environmental Education
IUCN	International Union Conservation for Nature
NCAA	Ngorongoro Conservation Area Authority
NHFR	Northern Highland Forest Reserve
NRCs	Natural Resources Conservation
SPSS	Statistical Package for Social Science
MNRT	Ministry Of Natural Resources and Tourism
PAs	Protected Areas
TAFORI	Tanzania Forest Reserve Institutes
UN	United Nations
UNESCO	United Nations Education Science and Cultural Organization



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## **CHAPTER ONE**

### **1.0 INTRODUCTION**

#### **1.1Background**

Mankind's encounter with the environment is as old as the man himself. Since the evolution of man on the earth he has been dependent on the environment. Initially the needs of man were limited and small; therefore, the activities of man did not affect the environment. But slowly human being settled down and civilized himself and learnt to cultivate. Over recent decades, global problems relating to degradation of natural resources and pollution have increased dramatically. Natural resources are depleted by excessive use. Environment is the sum total of all conditions and influences of the development of the life of human being and other organisms. It includes air, water, land dynamically the interrelationship that exists between these and human beings; other living creatures, plants, microorganisms and property.

The word environment embraces the conditions or influences under which any organism or thing exists, lives or develops. All these may be placed into three divisions such as the set of physical conditions affecting and influencing the growth and development of an individual and community; the social and cultural conditions affecting the nature of an individual or community; and the surroundings of an inanimate object of intrinsic social value. Therefore, environment includes all the conditions, circumstances and influences surrounding and affecting an organism or a group of organisms (KumudGhosh, 2014)). So, it may be stated that the concept of environment in its totality is a complex one, far ranging in its implications and challenging to our understanding. Local community's awareness, sensitivity, concern

and are complementary phenomena essential to human development. Global awareness of the crisis concerning the conservation of biodiversity is assured following the United Nations Conference on Environment and Development held in June 1992 in Rio de Janeiro. Of equal concern to many world citizens is the uncertain status of the local awareness and knowledge that reflects many generations of experience and problem-solving by thousands of ethnic groups across the globe. Very little of awareness and concerns has been recorded, yet it represents an immensely valuable data base that provides humankind with insights on how numerous communities have interacted with their changing environment including its floral and faunal resources.

This study provides an overview of recent studies that clearly portray the active role of locals in Tanzania. Local's awareness, concern and sensitivity, particularly in the African context, has long been ignored and maligned by outsiders. Today, however, a growing number of African governments and international development agencies are recognizing that local's awareness concern and organizations provide the foundation for participatory approaches to development that are both cost-effective and sustainable. Again the World faces numerous problems associated to environment from overuse and misuse of environment leading to exhaustion of resources, global warming, air, soil and water degradation, loss of forests, creation of waste, loss of forests and many others. As a result environmental sustainability hence, happened to be one of the eight Millennium Development Goals founded by the UN at the Millennium Summit, where all the member states agreed to achieve these goals by the year 2015. Among other targets set to achieve the goal, reverse the loss to environmental resources.

Tanzania is a country of more than forty million people and great geographic, socio – cultural diversities. Local communities play a very active role in either damaging or conserving the environment. A prerequisite to it remains, that local communities require a knowledge to conserve the environment particularly forest. Throughout developing countries, protected areas have often been viewed merely as a source of income, especially with regards to the use of timber, as well as providing the basic needs to the local people of the area, and by providing environments in need of conservation. However, as many areas have increasingly become areas of restricted access, this has often resulted in many negative attitudes towards conservation by local residents, and this can of course lead to further management problems (Kaswamila , 2010).

In order to gain support for protected areas and for a certain degree of conservation to take place, the local people must be able to understand why conservation and protection is needed, and that with their participation and involvement, they can gain just as many benefits from protecting their natural resources, than if they do not. This is the premise behind the notion ecotourism. It has revised its definition currently. The Ecotourism Society's now defined as "responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education" (TIES, 2015). Education is meant to be inclusive of both staff and guests. Although there are varied definitions on the concept ecotourism, TIES's definition has been preferred for emphasizing that local communities must benefit from tourism activities (David 2015) Ceballos-Lascurin, 1996). Along similar lines, Honey (2009:30) holds that protected and conservation areas will only survive if there are happy people around the perimeters. In other words, communities must be



involved with and receive tangible benefits from conservation areas and take part in the management of tourism activities. Another essential element behind ecotourism is that of education. In order for conservation to flourish, provision of education should to visitors as well as to members of the surrounding communities is of paramount importance. Several studies (Kaswamila, et al 2010), have documented the need to educating the local communities on the significance of conserving conserved areas. Through case studies, the authors have noted amongst others how little understanding of the concept conservation is an attribute to destruction of these areas. In addition, studies have pointed out inadequate efforts and lack of stronger incentives among local communities to encourage conservations as other inhibitors.

It should be borne in mind that apart from that traditional approach of conservation during the colonial- and post-independent era in Tanzania is to exclude local communities from protected areas without taking into account the interactions that had existed between people and wildlife during mediaeval period (IUCN, 2011). The mandate to carry out wildlife management activities, including problem animal control and anti-poaching, is vested entirely in the Government. Given the vast size of protected areas that must be administered, the Government has not been effective in fulfilling its conservation role. Important protected areas are threatened by encroaching farming while some key wildlife species are declining to extinction levels due to imprudent use and shrinkage of habitats. In view of the problems facing conservation, efforts to reconcile human interest with nature were initiated in the Ngorongoro Northern Highland Forest (NHFR). The forest is main catchment forest within the Ngorongoro Conservation Area, providing water for the area and to the adjacent subsistence and commercial agricultural communities of Oldeani and Karatu.

The forest is also believed to be an important recharge area for springs supporting the ground water forests in Lake Manyara National Park. In addition the forest is an important habitat for wild animals such as rhinoceros, elephant and buffalo. Moreover, the forest has turn to be a refuge for grazing by pastoralists during critical drought (NCAA, 2006). Cognizant of the vital importance of this forest, which spans about 810Km<sup>2</sup> and the ongoing destruction due to encroachment and logging, the management of the area, NCAA, developed mechanisms for effective measure for protection. One of the mechanisms was environmental education to adjacent communities, particularly the farming communities in Karatu Area. This research focuses on the assessment of environmental awareness, Sensitivity and concerns of local people adjacent to NHFR. The negative attitudes of local people living adjacent protected areas towards wildlife animals one of the factors for mushrooming of illegal activities in most of protected areas in Tanzania Barrow, E. and Murphree, M. (2001).

The study was conducted amongst local communities living adjacent to the forest, namely Lositeti, Kambi ya Simba, Rhotiajuu and Upper Kitete. Poverty is a serious concern among people around this forest. The communities heavily depend on the forest for construction poles, firewood, medicines and so forth. On the other hand, previous studies suggest that communities in these areas are experiencing high distractions from wildlife have led to negative approach to local communities adjacent to the forest (Kaswamila et al, 2010). The human wildlife interaction in this area has led to loss of human injury and losses of human life are frequent phenomenon. For Lawley (1994) and Baldus (2004), killing of human and injuries by wildlife is devastating to families and materials losses often cause unbearable financial suffering. Such devastations could be the primary sources of negative attitudes to communities'

livelihood adjacent to NCA Northern Highland Forest Reserve. In the light of the above grounds, this study attempts to explore the current level of environmental awareness of the local people living closer to the NCA forest reserve. Specifically, the study identified existing positive and negative attitudes of local people towards conservation. The ultimate objective is to suggest the possible effective and efficient mechanisms, if any, to protect the forest from induced human activities.

### **1.2 Problem Statement and Justification**

The World faces numerous problems associated to environment from overuse and misuse of environment leading to exhaustion of resources, global warming, air soil and water degradation, loss of forests, creation of waste, and many others. As a result environmental sustainability hence happened to be one of the eight Millennium Development Goals founded by the UN at the Millennium Summit, where all the member states agreed to achieve these goals by the year 2015. Among other targets set to achieve the goal, reverse the loss to environmental resources. Tanzania is a country of more than forty million people and great geographic, socio – cultural diversities. Local communities play a very active role in either damaging or conserving the environment. A prerequisite to it remains, that local communities require a knowledge to conserve the environment particularly forest. This study argues that local's awareness, sensitivity and concerns help to revert, or at least control the damage that can be caused to the environment. A precondition to it remains; locals should be trained, sensitized and educated on issues about the environmental, so that they realize the benefit of those protected areas for generation to come. They pose a threat if benefits are not realized. Various studies have been conducted in regard to environmental conservation particularly on awareness;

however none have addresses the issues presented in this work. For instance, Sahay and Singh (2013) looked on environment awareness, knowledge and skills, the results shows that a well-trained teacher can effectively apply the acquired philosophy into practice, by developing strategies for both general and environmental education goals and will successfully be able to bring positive effect of learning in students that eventually contribute to conservation of the environment. Also Mutisya et.al.(2013) study on assessment of environment awareness, knowledge and skills of teachers revealed pupils positive attitude regarding environmental education and conservation. While previous studies have been conducted between teachers and students and how teachers can impact the knowledge of students and their living, this study assess these phenomenon on locals and their surrounding environment and how it can contribute into conserving the environment. Particularly, the study assesses the environmental awareness, sensitivity and concerning towards local community surroundings NCA Northern highland forest reserve.

### **1.3 General Objectives**

To assess the environmental awareness of local communities around the Ngorongoro Northern Highland Forest Reserve. This following specific objectives support the aim of this study including:

- i. To determine local community's awareness towards the Northern highland forest reserve of NCA.
- ii. To identify local community's concern towards the Northern highland forest reserve of NCA
- iii. To examine local community's sensitivity towards the Northern highland forest reserve of NCA

- iv. To identify and determine the effectiveness of the environmental initiatives put in place to protect the forest reserve.

#### **1.4. Research Questions**

- i. What is the level of local community awareness' on environmental Conservation in Northern highland forest reserve of NCA?
- ii. What is the sensitivity and Concern of local community towards Northern highland forest reserve of NCA?
- iii. What is the Contribution of environmental conservation in Northern highland forest reserve of NCA?
- iv. What are the effective environmental initiatives put in place to protection of the Northern highland forest reserve of NCA?

#### **1.5 Significance/Rationale of the Study**

The study provides useful baseline information on local communities' awareness, concerns and sensitivity in regards to natural resources conservation in four villages (Lositeti, Kambi ya Simba, Rhotiajuu and Upper Kitete) proximity to Northern highland forest reserve of Ngorongoro. The rationale of this study will assess the level of environmental awareness, Sensitivity and Concerns of the local communities nearby Northern highland forest reserve. The fact that this should provide some valuable information that can be used to aid long term conservation planning within the area, with the possibility of developing an education program run by operation NCA, for all local people, to help with their understanding of the forest and the need for its protection as well as produce Information that will be practical by the management in decision Making. Again it's hoped that the data collected would lead

to new positive outstanding that will enhance the environmental conservation and involving local communities in protection of their Natural resources. Likewise the data obtained will also be resourceful to scholars and conservation policy makers as well as contribute to the inadequate information on local community participation in conservation in Tanzania in general and NCAA in particular. The collected data on regards to environment awareness will helps the policy makers, businesses, and other environmental agencies track the environmental impacts trends and identify opportunities for reducing negative impacts while increasing efficiency.

Once more this report seeks to help policy makers, especially in the developing world with United Republic of Tanzania' case, to identify, evaluate and apply economic instruments to address a country's environmental problems within its national and local circumstances. It presents an innovative approach by offering tools for comprehensive assessment of the country context and conditions, and by tailoring solutions to the specific country needs.

## **CHAPTER TWO**

### **2.0 LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents definition of key terminologies pertaining to the study as well as undertaking both theoretical and empirical literature review. Theoretical literature review comprised theories and/or models that are relevant and have applications to this study. Empirical literature review will take account of what other researchers have covered related to the topic. Finally, conceptual framework and research gap will be given. It gives details on global trends in environmental management, importance of community based approach in Natural resources management and why it's preferable than state led environmental management, Individual socio economic factors that influence environmental conservation and management.

This is on the basis of suggestions and findings of other researchers and writers who have dealt with the topic, the chapter also give a review of Natural resources Conservation status in NCA northern highland forest reserve, benefits and challenges, and also gives information on sustainability of forests in Tanzania, theories of forest conservation and management and lastly it gives a summary of gaps be filled by the study. Much literature has been written about environmental awareness of local people towards conservation of Natural resources and the effects it has on local people and their environment. Having defined attitudes, this report will now look at the extent to which local community in Ngorongoro Northern Highland forest reserve has become a major part of the conservation of NCAA in their area. Attitudes and their effects economically, environmentally and socially will be considered,

particularly looking at the benefits gained and the problems created, within local communities. One important aspect is that of interpretation and education, in terms of the best way to help local residents gain a better understanding of their natural resources and conservation. Finally the introduction of the case study area bordering NCA will remain the topic for the rest of this Report. One of the objectives of Environmental awareness (EA) is about acquiring a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection. Further state that environmental awareness should create understanding of the beliefs, interests and rules that influence environmentalism or pro-environmental action. In Tanzania, the objectives of EA towards local community are to develop positive concerns and sensitivity about the environment, to manage and conserve available resources, and to develop awareness and appreciation of the environment.

## **2.2. Definitions of Key Terms**

**2.2.1 Environment** The set of physical, chemical, biological components and economic, social and cultural factors relating to a group of human beings or individual (UNESCO-UNEP, 1985) And **Environmental Awareness:** Consciousness of the problems and dangers facing mankind and environment and of the pressing need for positive action to control the undesirable impact of man's activities and demands upon the environment (Environmental Education Committee, Kenyatta University College, 1980)

**2.2.2 Sensitivity** This is a settled way of thinking or feeling about someone or something, typically one that is reflected in a person's behavior (Woodgate, 2012).Can



be defined as understanding of the impacts of human behaviours towards the environmental. It involves knowledge, awareness and attitudes.

**2.2.3. Concern** analyses concerning the interplay of environmentally relevant knowledge, attitudes, and behavior as well as gender differences in environmental concern and the role of "background variables" for the prediction of (self-reported) behavior.

**2.2.4 Household** it is one family headed by a family head. It is composed of one nuclear family.

**2.2.5 Socioeconomic Factors** They include human, social and economic factors that describe the status and characteristics of individual in a society. In this study they include age, gender, and education level, and family size, membership to community group, land size and income.

**2.2.6 Community Groups** These are groupings through which people come together to pursue various endeavors such as conservation, management of common resources through a collective action. Such groups include Group of people that farm in forest, Group of people who graze in forest, water resource users association.

**2.2.7 Awareness** the state or condition of being aware; having knowledge; consciousness: The object of the information drive is to raise *awareness* of what spreads environmental issues.

### **2.2.8. Conservation**

The word conservation has been defined differently (Wantrup, 1960). According to IUCN(1981), conservation is defined as management of human use of the biosphere

so that it may yield the greatest sustainable benefit while maintaining its potential to meet the needs and aspirations of future generations. However, DeGeorges *et al.* (2009) defined conservation as a socio-economic process by which societies endeavor to manage resources scarcities and limit off-take within biological capacity of the systems in order to sustain production. Yet, according to Murray *et al.* (2008), conservation is usually defined as the preservation of biodiversity. Still, Milner-Gulland and Mace (1998) define conservation as preventing the loss of biodiversity and biological processes. But they maintain that conservation is distinct from preservation in the sense that it involves recognizing the dynamic nature of biological systems, and allowing them to change and evolve. According to Steven *et al.* (2013), conservation includes the development and refinement of strategies to rebuild populations, restore ecosystems, inform conservation policy, generate decision support tools and manage natural resources. For the purpose of this study, conservation means protection, preservation, restoration and rational use of environmental assets found in the study area that may include faunal and floral resources together with a range of other biodiversity components found within and around Ngorongoro conservation area (NCA).

**2.2.9 Preservation** Define as a hands-off approach in managing natural resources or a static view of the ecosystem, to keep that ecosystem in the same condition that it is currently in.

**2.2.10 Natural Resources** are useful raw materials that we get from the Earth. They occur naturally, which means that humans cannot make natural resources.

### **2.2.11 Knowledge and Awareness**

Awareness (consciousness) Assist individuals and groups in society to acquire a greater sensitivity and awareness of the environment in general and of its problems

In other hands it is like mirror reflecting all and any things resulting from our interaction with the world, in ecological/environmentally context it means interaction between ecosystem from both outside and inside us. Anyhow, if speaking about the fundamental difference, then knowledge is the accumulated "volume" of what we think, knows, and experience. Awareness, on the other hand, is a label; we use to refer to the subjective nature of consciousness. What is called the hard problem of consciousness, the fact that there is something that it is like to be conscious. This aspect of consciousness cannot be explained within the current scientific paradigm, the best that science can do is to assume that it will be fully explained in the future as an illusion of the self-referential information processing in the brain. This is called eliminative materialism.

**2.2.12 Knowledge** Assist individuals and groups in society to acquire a basic comprehension of the environment in its totality and of its problems. Also, to understand the presence and role of humans in this, this involves a critical responsibility. It can be equated with the contents of consciousness, in the present, future or past. It consists of elements of the phenomenal world and their interrelationships. As such it can be fully described and communicated and also explained within the current scientific paradigm, at least potentially indigenous knowledge and biodiversity are complementary phenomena essential to human development. Global awareness of the crisis concerning the conservation of biodiversity is assured following the United Nations Conference on Environment and

Development held in June Agenda **21** in Rio de Janeiro. Of equal concern to many world citizens is the uncertain status of the indigenous knowledge that reflects many generations of experience and problem-solving by thousands of ethnic groups across the globe. Very little of this knowledge has been recorded, yet it represents an immensely valuable data base that provides humankind with insights on how numerous communities have interacted with their changing environment including its floral and faunal resources. This presentation provides an overview of recent studies that clearly portray the active role that rural communities in Africa and other parts of the world have played in (a) generating knowledge based on a sophisticated understanding of their environment, (b) devising mechanisms to conserve and sustain their natural resources, and (c) establishing community-based organizations that serve as forums for identifying problems and dealing with them through local-level experimentation, innovation, and exchange of information with other societies.

Indigenous knowledge, particularly in the African context, has long been ignored and maligned by outsiders. Today, however, a growing number of African governments and international development agencies are recognizing that local-level knowledge and organizations provide the foundation for participatory approaches to development that are both cost-effective and sustainable. The deliberate maintenance of diversity in domesticated and non-domesticated plants and animals characterizes farming systems across the African continent as well as in most other parts of the world, providing an important opportunity for systematic in situ maintenance of genetic resources. Informal agricultural research and development systems parallel those of national governments, providing another opportunity for national agricultural research and

extension services to work with the creative interests and activities of farmers and other rural people.

### **2.3 Concern**

Like Our Mother Earth, NCA NHFR is currently facing lot of environmental concerns. Much literature has been written about Concern of local people towards environmental conservation and the effects it has on local people and their environment. Having defined concern, this report will now look at the extent to which local community in NCA has become a major part of the conservation of natural resources in their area. Concerns and their effects economically, environmentally and socially will be considered, particularly looking at the benefits gained and the problems created, within local communities. One important aspect is that of interpretation and education, in terms of the best way to help local residents gain a better understanding of their natural resources and conservation.

Environmental concerns are harmful effects of human activity on the biophysical environment. Environmentalism, a social and environmental movement, addresses environmental issues through advocacy, education and activism. The findings reveals that there so much concerns on regards to the environmental issues like Human impact on the environment or anthropogenic impact on the environment.55% respondents mentioned of climatic change issues, global warming, acid rain, air pollution, destructions of catchments area, ozone layer depletion, water pollution, and many more affect every human, animal and nation on this planet.30% of respondents concerns on deforestation and overgrazing in NHFR and other 15% mention on the overpopulation, natural resources depletion, agricultural pollution and loses of

biodiversity. Over the last few decades, the exploitation of our planet and degradation of our environment have gone up at an alarming rate. As our actions have been not in favor of protecting this planet, we have seen natural disasters striking us more often in the form of flash floods, tsunamis and cyclones. Different environmental groups around the world play their role in educating people as to how their small actions when combined together can play a big role in protecting this planet. If you look at the environment around us, you can see that there are a number of issues that come to our attention. Here are 25 of the most important environmental concerns to keep an eye on today. The growing concerns about environmental protection have resulted in new measures across the world. The Rio Conference 20 years called the “U.N. Conference on Environment and Development”.

Pointed out that poverty was the greatest polluter and unless it was eliminated through national and international efforts it was futile to talk about protecting the planet from environmental disaster. UNDP, the World Bank and other institutions of the U.N. system are now advocating the elimination of poverty as the central task in sustainable development. Indeed environmental and development concerns are seen as complementing each other. The conflicted between the requirement of long-term environmental interests and the immediate compulsions of development is certainly to be resolved. But any world order cannot be sustainable if three-fourths of its population continues to live in poverty. Environmental rights and developmental rights together constitute the democratic and human rights of all the people of the world.

## **2.4 Sensitivity**

The sensitivity of the environment on NCA northern highland forest reserve has been elaborated by the crossing of four villages surrounding Conservation, which have the main impact on the on the Natural resources management.

Despite many research studies investigating peoples' approach towards the environment suggesting that peoples' sensitivity was positive (Bulent et al. 2009), environmental destruction has continued unabated at the local regional and global level. A research study by Mutisya and Barker (2011) in rural Narok town of Kenya's Rift valley Province found out that primary school pupils had high conceptual understanding and awareness of environmental degradation taking place in their local environment. However, there exists a gap between the conceptual knowledge EE and the motivation to participate in environmental conservation. Thus the aim of environmental education (EE) should not be limited to environmental literacy, knowledge and awareness but also environmentally responsible behavior (Dusan and Stanka, 2009).

In addition to acquisition of EE knowledge and skills, primary education system should also emphasize the acquisition of environmental values and attitudes so that citizen can appreciate conservation of the environment as a collective responsibility. In Kenya, there are deliberate efforts to align primary education with international acts regarding EE. Towards this end the Koech Commission of Inquiry into the Education System of Kenya recommended teaching of EE in both primary and secondary schools (Republic of Kenya, 1999). This has further been included in the primary school syllabi KIE (2002). According to KIE the objectives of EE in Kenya's primary schools are to develop positive attitudes about the environment, to manage

and conserve available resources, and to develop awareness and appreciation of the environment. This has been implemented through integration and infusion of EE in an interdisciplinary way across Kenya's primary, secondary and tertiary education systems. In primary schools, EE has been infused more rigorously into science and social studies, and environmental values have also been integrated in English, mathematics and creative art. The Kenya National Environmental Action Plan (NEAP, 1994) points out that EE has also been strengthened in schools through co-curricular activities such as wildlife clubs, Boys Scouts and Girl Guides. Goldman et al. (2013) stated that the contribution of the environment to the cognitive domain knowledge can develop a systemic understanding of the environment and participate in improving the students' sensitivity to the human-environment linkages and develop a more ecological worldview.

## **2.5 Local Participation**

Having considered both the economic and environmental effects of introducing ecotourism to an area, an issue in regard to the local people is to what degree they can participate in the management process. An example in North Sulawesi, Indonesia (Ross & Wall, 1999), shows local people have benefited from the local protected area in that, they act as stewards of the surrounding natural area and, in return benefit from natural resources and biodiversity, through sustainable harvesting and the use of essential resources such as water from protected watersheds. They have been given a lot of consideration and have been incorporated into the planning and management process of the scheme. If other people could see this example, they too may be more supportive, but again it comes down to education. The fast pace of change and limited planning initiatives have made it difficult to provide communities with the



means to participate and adapt to the introduction of ecotourism, which is something that needs to be reconsidered for the future. This is in fact a rare case study, which has a positive outcome with the local people being favorable towards the park, and is unlikely to be found in the majority of literature, where there are normally very negative perceptions. Examples include Badola (1998), Boonzaier (1996), Fiallo & Jacobson (1995), Ite (1996) and Lindberg et al (1996), reflecting the pitfalls of ecotourism outlined earlier.

## **2.6 Education**

One of the major challenges for the management of ecotourism is using interpretation and education to help visitors and local residents gain a better understanding of the natural environment, by enhancing their experience and protection of the area (Chin et al, 2000). Fiallo & Jacobson (1995) discuss the situation in Ecuador where the Ministry of Education began to include conservation issues in the formal education curriculum in the 1980s. This was after their research found that the knowledge levels about conservation were very low within local communities, and along with their lack of involvement, meant local people had negative attitudes towards the park. It is believed these new subjects on the effects of deforestation or the conservation goals of protected areas, which have been incorporated into the education system, may influence younger people to support the National Park. Hence, education has been considered an initial step in improving people's attitudes towards conservation and is deemed essential in order to achieve public support for protected areas.

Fiallo & Jacobson's (1995) paper seems to illustrate that education is correlated with positive attitudes, because people with superior knowledge of conservation issues and management goals viewed the park more positively than those with less knowledge,

and were more aware of the economic benefits in terms of conservation. Regardless of the economic and environmental benefits, research indicates there will be little support for any protected area unless there is enough education and interpretation provided. Interpretation can create a change in understanding and a positive shift in attitude amongst individuals who already have some form of conservation ethic. However, 'most people are unlikely to be influenced by information provided by ecotourism operators, instead they require an experience that will change their fundamental thinking about the environment and its preservation' (Wearing & Neil, 1999). It is thought that with a changing attitude comes an instinctive change in behavior. Knowledge is not sufficient alone to change attitudes but if understanding comes with the knowledge then this could be possible. A lack of understanding or support can make the protected area suffer from increasing problems e.g. boundary encroachment and forest fragmentation, with serious implications for the loss of wildlife species. On the other hand, there can be overwhelming community awareness for the need for forest conservation, but only because they have an unrealistic expectation of ecotourism, in terms of modern amenities, infrastructure and services e.g. health (Ite, 1996), and this is unlikely to happen in all cases.

However, no matter how much information is received, the change in perception or behavior towards the environment is not going to happen overnight, but is more likely to take the form of incremental growth, in a curve showing gradual and positive growth in positive attitude (Bradbeer 2001, pers. Comm.). Within all societies there are a lot of people who do not get the chance to be vocal and therefore often get ignored. It is important to reach these groups of people in terms of environmental education and training activities (Madduma-Bandara, 1989). Throughout the world

there is a need for people to use their land in order to live, therefore no amount of education is the answer in all places. *‘The people who thrive on growing tobacco on steep slopes in the hill country of Sri Lanka, or those who destroy coral reefs on the fragile coastal zone for their livelihood, are not totally ignorant of the consequences of their activities. They say “We know it is no good: but how else can we survive?”’* (Madduma-Bandara, 1989). Here education and ecotourism come together; by bringing across all these benefits of ecotourism, help can be given to communities, to show them exactly how to utilize their resources in a way that will sustain their livelihood, whilst not adversely affecting their environment. It is problems like this that will never support conservation, as with the quote ‘an empty stomach will never respond to the slogan of wildlife protection’ (Mehta and Kellert, 1998). ‘It is comforting to assume though that these local indigenous people do share a common understanding of conservation, even if it is not evident in all their day-to-day interactions and experiences’ (Boonzaier, 1996), because conservation cannot be guaranteed in the long term unless it has this support from the local people. Much work has been done on ecotourism; the impacts tourists have on local communities and protected areas, and community attitudes towards tourists (Chin et al, 2000; Crouch, 2000; Goodwin, 1996; Goodwin & Walpole, 2000; Mkanda and Munthali, 1994; Orams, 1995; Smith & Krannich, 1998; and Tisdell, 1996). Relatively little research, has been done on resident’s and local people’s awareness’ to the environment and their resources, and how they perceive the environment around them. Badola (1998), Fiallo& Jacobson (1995) and Newmark et al (1993)

## **2.7 Economic Aspects**

Ecotourism is the most rapidly expanding sector of the tourism industry (Honey, 2013) and (Jeffreys, 1998), but is more than just travel to enjoy or appreciate nature (nature tourism), it strives to respect and benefit protected areas as well as the people living around or on these lands. It is believed to be ‘a way to fund conservation and scientific research, protect fragile and pristine environments, and benefit rural communities... (And) instill environmental awareness’ (Honey, 2014). By drawing these definitions of ecotourism together, it is believed ecotourism can benefit protected areas in the following three ways; Money can be generated to manage and protect the world’s natural habitats and species. Local people can gain economically from the protected area in which they live. People’s awareness of the importance of conservation and ecological literacy can be raised. Protected area managers should consider how they could take control of nature tourism to the parks they manage and convert it into ecotourism for the benefit of conservation and the livelihoods of local people (Goodwin, 2013). Having examined the literature focusing on ‘ecotourism’ and its definition, it is clear it can bring benefits to communities and environments on an economic scale.

Whilst ecotourism has been formed as a part of tourism with environmentally responsible principles, many of the economic benefits resulting from these activities seem to be the primary motivation for many nations to deliberately promote ecotourism within their borders (Honey, Martha (2008). However, it is still essential that management and controls be strongly enforced to deter any impacts on the environment from ecotourism activities. Money may be the prime motivation but everyone can gain from the activities of ecotourism and it not necessarily at the

expense of the environment. If the revenues of ecotourism do not accrue to National park systems or local communities, there will be little economic incentive for investment in the recurring costs of conservation attitudes. The often-voiced injunction to ‘take only photographs and leave only footprints’ is not enough. Ecotourism must ensure that ‘nature tourists’ contribute financially to the maintenance of the biodiversity contained in protected areas (Goodwin, 2013). This coincides with the fact that local people have very little incentive to support conservation unless they gain something from it or at least if they are not deprived of the major benefits that they already enjoy. However many local people of National Parks across developing countries, feel that the forestry department is wrong in trying to stop them from using the forest on the pretext of conservation (Badola, 1998). Along with the common attitude seen all over the world, whilst many of these indigenous people do have a very good awareness of the need to conserve their environment, it is acceptable so long as it is ‘*not in my backyard*’ (Badola, 1998).

## **2.8 Theoretical Literature Review**

The modern and largely academic and urban initiated concern with environmental protection of landscapes, species, watersheds, biodiversity, ecosystem-services etc. are framed by a language suggesting that the main concern is the protection and preservation of precarious resources of common interests for mankind. Thus the values deserving the attention of environmental protection seem to be very different from the concerns shaping the evolution of traditional commons: the control of access to and extraction of resources seen as limited but essential for the survival of local communities. The study will explore the theoretical differences and similarities of the two types of interests driving the concern for preserving values. It will be suggested

that a basic difference lies in the distinction between values where there is rivalry in appropriation and values where there is non-rivalry. It will further be argued that in designing new institutions for managing protected areas, an understanding of traditional commons and how the new values to be protected are different from and interact with the old values will be important to achieve sustainability of resource use within the protected areas.

## **2.9 Environmental Protection in the Theory of Commons**

The modern largely academic and urban initiated concern with environmental protection of landscapes, species, watersheds, biodiversity, ecosystem-services etc. are framed by a language suggesting that the main concern is the protection and preservation of precarious resources of common interests for mankind. Thus the values deserving the attention of environmental protection seem to be very different from the concerns shaping the evolution of traditional commons: the control of access to and extraction of resources seen as limited but essential for the survival of local communities. With a few notable exceptions (e.g. Bromley 1991 and Yandle 1997) environmental protection and management of common resources are not discussed together. The economic theory of environmental problems and policies is usually discussed as a problem of allocating responsibility for externalities (Baumol and Oates 1988, Devlin and Grafton 1998, Sandmo 2000).

The environmental problem is described as consisting of the misuse of a resource currently being in the public domain with open access. The solution is seen to be either imposition of appropriate taxes for matching the use of the resource to its capacity, or it is seen as a problem of privatization, to allocate private property rights to the resource in order to achieve the internalization of externalities. However, in

recent treatments of “Environmental Economics and Policy” (e.g. Kolstad 2000, Tietenberg, 2001) the discussion of property rights is expanded to common property and property rights have become a central concept in then discussion. The present paper will argue that the current theory of commons might easily be expanded to environmental goods and services. This will facilitate the discussion of the interactions and interdependencies between the resources of the traditional commons and the goods and services that are the goal of environmental protection. For the present discussion we will talk about old and new commons.

## **2.10 Conservation Theory and Forest Management**

The study on assessment environmental awareness, Sensitivity and concerns towards natural resources conservation of will be guided by three different theories obtainable here for reasons as shall be extracted. Conservation theory and forest management conserving natural resources is of increasing concern to forest managers, natural resource policy makers and many stakeholder groups. While much has been written describing biodiversity, its tenuous state, and the importance for action, the theoretical underpinning conserving biodiversity is of increasing global concern. In truth, the critical nature of the state of nature is, in large part, unknown.

Although not known with precision, estimates suggest that species extinction may be occurring at a rate that is two to three orders of magnitude greater than that recorded in recent geologic time (Lawton and May 1995). Reducing this biological drain requires that conservation actions be Implemented efficiently with respect to time, money and location and also those decisions are made with less than complete information. To that end, assumptions based on theory are often substituted for

quantitative data as a basis for conservation actions that guide conservation practices have received little attention. While much has been written describing biodiversity, its tenuous state, and the importance for action (Wilson 1992), and many reviews exist that describe the basis for conservation efforts Wilson et al (1988), few efforts have specifically evaluated the theoretical underpinnings that guide conservation efforts. We ask several questions in this review: How robust are conservation theories in predicting patterns and processes? To what extent are these theories guiding conservation actions? And, how can conservation theory be advanced in both strength and utility? To approach these questions, we have organized several common theoretical constructs of conservation biology as groups with common elements which are Land Allocation strategies such as Reserves and Matrix-based approaches; Conservation Models including “Diversity Begets Diversity” and “Using Nature’s Template”; Hierarchical view of Conservation Targets such as Fine/Meso/Coarse Filter approaches and Hotspots; and lastly Landscape Configurations including Patchworks, Networks and Gradients. This grouping of theories is done as a convenience in discourse. We nonetheless realize that while these groups represent some common elements and can be viewed as alternatives; theories within a grouping need not be viewed as mutually exclusive. In fact, multiple concepts (both within and among groupings of concepts we present here) are synergistically implemented to better influence conservation outcomes (Hunter 2004).

To evaluate this theory’s emphasis on presence of the three components of to evaluate these conservation theories, we used a set of criteria proposed to us by John Gordon:

1. *Foundations*: Is the theory traceable to strongly predictive/explanatory theories?
2. *Philosophy of science*: Can the theory be tested and falsified? Can testable



mechanistic hypotheses stem from the theories (hypotheses that say why as well as predict what)? Is it suggestive of experimental designs? 3. *Applicability*: Who uses the theory? How much and for what? Affect, Behavior and Cognitive for attitude to be operational which are also collectively articulated as response categories is of greater significance in this regard. Not only that but also how these components are going to be evaluated or measured through the so called response mode in terms of verbal or nonverbal responses are decisive in the way this theory can be used to guide this study. So, awareness and concerns measurement tools are going to be devised by this researcher by means of which shape the local people in the study area in conditions of the approach they sense towards conservation shall be measured through verbal and nonverbal response modes. Moreover, the theoretical component of local people's awareness and concerns toward conservation as adduced through, beliefs or opinions of the people shall also be assessed in terms of their verbal and nonverbal response modes. Finally, the behavioral component which is about actions of local people and the way these may be suggestive of their awareness towards natural resources conservation shall be assessed by means of observation techniques. This in particular shall consider the nonverbal response mode. Here, a set of items in the local people's surroundings and the park environment pertaining to their actions shall be observed. In this way, conservation behavior of the local people can fairly be indirect. The overall effect of assessing the said components as per this theory will be to establish awareness standings of the local people on conservation of natural resources. This would enable gaining insights on whether local awareness are enshrined in positivity or shrouded in negativity and in this way; the theory would have served its useful purpose of guiding the study.

### **2.11. Brief History of Environmental Awareness**

Environmental awareness involves the process of recognizing values and clarifying concepts in order to develop skills and education necessary to understand and appreciate the interrelatedness among man, his culture and his bio physical surrounding (UNEP, 2012). It is in this light that students understanding and level of awareness on various environmental concepts and problems is important.

Environmental awareness is defined as the sum total of responses that people make to various thematic aspects of the construct environmental education. In simple terms it means knowledge and understanding of facts and concepts related to environment and consequences of various environmental problems like pollution, population explosion, deforestation, ecological disruption, energy crises etc. Environment has become the concern of all academicians, intellectuals, scientists, policy makers and government across the continents. Widespread and systematic concern for environmental issues has grown world over. The U.N. World conference on the environment in Stockholm in 1972, the Earth Summit held in Rio de Janeiro in 1992, the Global Forum 1992 and the activities organized by the international NGO forum, show that environment is in the agenda of International Community (Toili, 2007).

Following this detrimental effects resulting from environmental degradation, it has become more important to find a preventive way slow down the effects and eventually sustainably mitigating long-term environmental damage. One of the best ways of preservation is by creating environmental awareness among society especially students as they are future leaders, future custodians, planners, policy makers, and educators of the environment and its issues (Jackson, 2005). Awareness

of environmental issues has grown tremendously over the last decade as modern science and a more globally conscious population continues to enlighten to the connection between a healthy planet and livelihoods of people everywhere. For decades, that connection has arguably been undermined by population growth, urbanization and land area loss, creating a potential divide between people and the natural environment. Through contact with and learning about natural areas we can begin to mend this disconnection and restore our balance with nature. Environmental education (EE) has the potential to facilitate awareness that leads to this connection. Exposure to nature, either through structured EE programs or unstructured play, has many benefits (Woodgate, 2012). Environmental awareness is the ultimate driving force that stimulates knowledge on environmental matters. The acknowledgement that an environmental problem exist entails being more cognizant of the facts about the state of the environment. The power behind the awareness can be categorized into three i.e. basic beliefs of an environmental problem, factual and scientific knowledge, and a commitment to solve environmental problems (Hansmann, 2009). Shobeiri (2005) states that, solving existing environmental crisis requires environmental awareness and its proper understanding which should be deeply rooted in the education system at all levels of school education. The existing knowledge at community levels provides a lot of opportunities to make the local's community aware of environment. Awareness will make community more knowledgeable on environmental matters thus a possibility of shaping their attitudes and behaviors. Responsible environmental behavior is the ultimate goal of environmental education which is a key foundation to sustainable development (Yurttta and Sullun, 2010).

## **2.12 Policy Implications of the Study**

Despite the presence of various policies, this study has special implications to the national Environmental policy of 1997 set up guidelines, directives, objectives and strategies that provide a useful framework within which decisions that directly affect environmental conservation and development within the country are taken. It is worth noting that the National environmental Policy of 1997 has acknowledged the following: to ensure sustainability, security and equitable use of resources for meeting the basic needs of the present and future generations without degrading the environment or risking health or safety; the fact that Natural resources lie within local communities or their vicinities and, in most of the cases, coexist side by side with the communities, wildlife areas being given as an outstanding example. Not only that but also this document points out to the fact that such policy prevent and control degradation of land, water, vegetation, and air which constitute our life support systems. The National environmental policy (NEP) conserves and enhances our natural and man-made heritage, including the biological diversity of the unique ecosystems of Tanzania. Other policy implications are to improve the condition and productivity of degraded areas including rural and urban settlements in order that all Tanzanians may live in safe, healthful, productive and aesthetically pleasing surroundings and raise public awareness and understanding of the essential linkages between environment and development, and to promote individual and community participation in environmental action.

The aesthetic value of environmental serve as valuable sources of livelihoods while others have great spiritual significance to the members of these communities. The policy further recognizes the relationship between the environment and development

of sustainable tourism as so closely knit that the two cannot be dealt with in isolation. As the policy states that Tourism development will be promoted based on careful assessment of the carrying capacity and prior Environmental Impact Assessment application. Environmentally friendly tourism (ecotourism) and diversification of tourism activities will be promoted, e.g. conservation and promotion of cultural heritage sites, in order to decrease pressures on heavily impacted areas .Financial benefits from tourism activities shall accrue in part to the local community to motivate them in conservation of tourism resources.

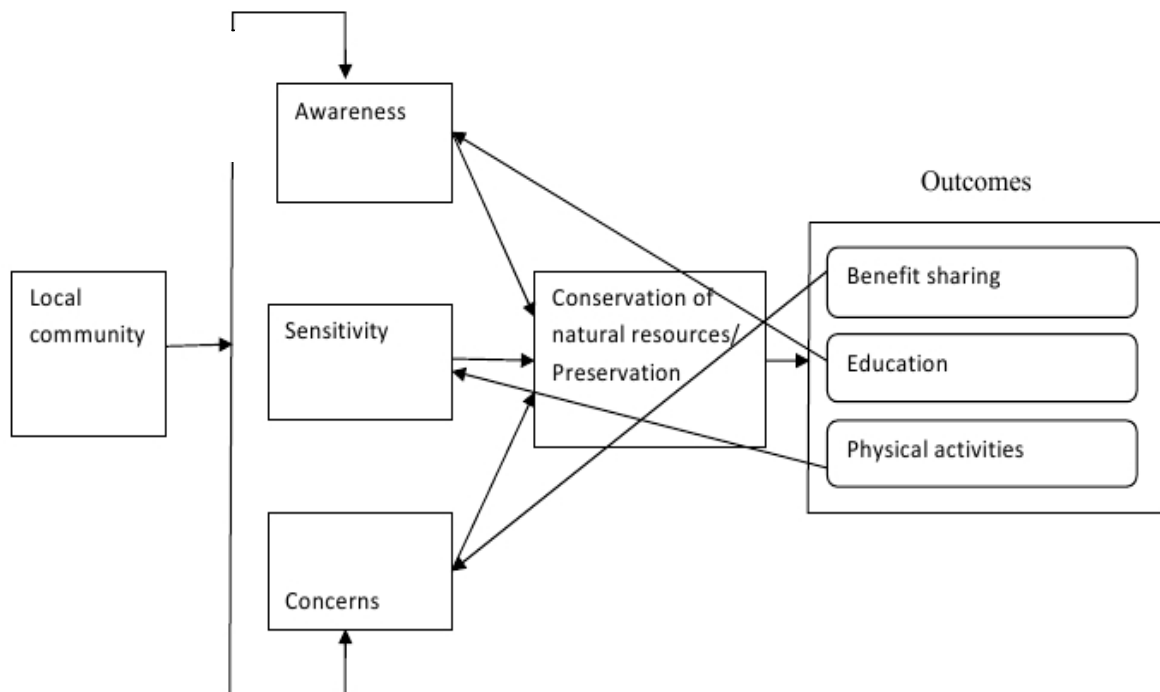
For that matter, the policy provides for number of directives that take into account the interests of local communities among other stakeholders highlighted in one hand, while in the other the environment is considered. Foremost, the policy gives directive that it is imperative for communities living within or around these areas to be fully involved in the development and management of Natural resources located within their areas. However, the policy have to be fully involved in the making of development related plans and decisions with regard to environmental friendly especially where such plans are likely to have a direct positive or negative effect on the livelihood and wellbeing of these communities.

In yet another section of the policy document, the importance is underscored to institute a mechanism that will ensure maintenance of a balance between the interests of the communities and those of the natural resources industry so as to promote and enhance social harmony. Again, the policy directs giving priority to members of these communities in terms of training, employment generation and other social and economic benefits accruing from Natural resources activities or investments within their areas. However, this study will serve as a reliable yardstick to measure the

effectiveness of implementation and usefulness of the National environmental Policy of 1997, at least to the scale of the study area which encompasses the communities situated surrounding to the NCA northern highland forest reserve. Since this policy was partly intended for the local communities with whom the natural resources coexist, among other stakeholders, it will worth a while to analyze if the intended benefits accrue to local people and whether or not the policy has been translated in reality rather than remaining merely rhetorical. In terms of the tourism, the policy's objective is to design environmentally friendly tourism programs reflective of ecotourism. It insists that, mechanisms should be put in place to ensure tourist activities respect the use of biodiversity, wildlife conservation and other naturally occurring phenomena of aesthetic value. The intention is to have continued existence of attractions and an industry that depends on proper conservation and sustainable management of the environment. This is to be achieved through enhancing the conservation of nature, creating sustainable environmental awareness among the local populations and tourists and sensitizing them on the need to respect nature and conserve the environment. This task, according to the policy, is entrusted in the hands of conservation institutions such as Ngorongoro conservation area authority (NCAA), the umbrella organization for and other protected area in the country. Against this policy backdrop, it will be of interest to find out whether the policy's provisions or directives have been adhered to, especially those that directly affect the interests of local communities including the issue of benefits. It will be judicious to find out what has the impact being on local awareness towards conservation if those provisions are adhered to. If the opposite happens to be the case, then it will also be interesting to uncover how this has affected such local awareness and concerns.

## 2.8 Conceptual Frame Work

This chapter discusses the model guiding this study on regards to assessment of environment awareness, sensitivity and concerns of local communities surrounding Ngorongoro forest reserve which developed following the literature review (Figure 1.) The Communities living adjacent protected areas (PAs) has different attitudes/perception, Knowledge, concern and sensitivity towards Natural resources Conservation, therefore this research will look on variables to observe the Interaction between local communities surrounding the conservation and the environment. This study argue that environmental awareness make local. Communities to have knowledge about the conservation of protected areas surrounding them and realize different benefits.



**Figure 2.1 Conceptual Frameworks for the Study**

Source: Researcher, 2015

## **CHAPTER THREE**

### **3.0 RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter discusses the methodology that was used in conducting this study. It describes the study area, study population and identifies both the dependent and independent variables of the study. It also highlights the study design that was employed. Under this category the chapter describes the sample size and sampling methods. It puts into perspective primary and secondary data collection procedures, data analysis procedures used and logical and ethical considerations made in the course of study. The objective of employing research methods as the main research methodology is to obtain a deeper understanding on the issues connected to forest reserve linkages between communities and ecotourism activities which will help to identify the gaps in the Conservation of forest reserve (Irby and Lunenburg, 2008). The approaches involved the use of detailed observation of the natural world and conducting an intense and/or prolonged contact with the participants. This assisted the researcher to gain a holistic overview of the context under the study and capture data on the perceptions of actors from the inside (Lee, Collier and Cullen, 2007).

Moreover, qualitative research assisted the researcher to examine and present the patterns of meanings that will emerge from the data gathered and contextualize the findings (Amaratunga and Baldry, 2001). To achieve the objective of the qualitative research, the exploratory study will be conducted to help the researcher in clarify the understanding of the problem and be able to find out what is happening, to seek new insights, to ask questions and assess the phenomena in a new light (Saunders, Lewis and Thornhill, 2009). Search of the literature, interviewing experts in the field and



conducting group interviews are the ways to be employed in conducting this exploratory study.

### **3.2 Research Design**

Case study research design forms the core of this research study. A research design is the 'glue' that holds all the elements in a research project together. Therefore the case study is a descriptive case study. The methods involve two mixed approach which are,

**3.3 Quantitative Method** information on the background of the samples: local community awareness, concerns and sensitivity (Age, Gender, Occupation and level of education e.g. primary, collage and, university).

**3.3.1 Qualitative Methods** Information on local community's perspectives has been covered through structured interviewed with questionnaires and projective participatory approach. It constitutes a blueprint for the collection, measurement and analysis of data (Kothari, 2011). Case study allows direct observation of the field in its natural setting, which was particularly suitable for approaching several stages of environmental conservation (Seuring, 2008).It further allowed the researcher to employ multiple method of data collection to gather information from various aspects. The case study allowed the researcher to answer "how" and "why" issues in order to understand the nature and complexity of the processes taking place (Cepede and Martin, 2005; Perry, 1998). It will provide rich and thick details in understanding of reality which in turn will enhance the assessment process in incorporating the views of the actors under the study (Amaratunga and Baldry, 2001; Grummesson, 2007). In addition, a well-constructed case study can enable the researcher to challenge an existing theory and provide a source of new research questions (Saunders, Lewis and

Thornhill, 2009). More specifically, the study employed the single case-embedded research design, carried out by means of interviews and questionnaires using multiple sources of data (Amaratunga and Baldry, 2001; Weerd-Nederhof, 2001). The rationale for using various sample case study approach is that data collection is carried out across several villages along to the Ngorongoro northern highland forest reserve. In addition this study is based on the fact that the researcher is focusing on a critical case (Saunders, Lewis and Thornhill, 2009; Seuring, 2008). Since the research wish to assess the environmental awareness of local community around NCA northern highland forest reserve and have more than one sample(villages), embedded case study is appropriate. Moreover, the use of a number of samples as sources of data in this study is to get more convincing and accurate findings.

### **3.2.3 Study Area**

The area in question is a very remote part of Northern highland forest of NCAA, Tanzania. The map on the following page (Map 1) shows part of the Northern Highland forest reserve. Focus has been placed in the adjacent part of this forest reserve, which accommodates one forest reserves – the NCA northern highland Forest Reserve. This research was carried out throughout four villages surrounding these reserves. These are Lositeti, RhotiaJuu, Upperkitete and Kambi ya Simbawhere Operation NCAA is based, as illustrated on the map. The Ngorongoro Northern Highland Reserve is located in Ngorongoro Conservation in Northern Tanzania. NCA covers an area of about 8,300 sq. km, is also the only place on earth where mankind and wild animals co-exist in harmony. Originally part of the Serengeti National Park when the latter was established by the British in 1951, in 1959 the Ngorongoro Conservation Area Authority (NCAA) was formed, separating NCA from Serengeti.

Land within the area is multi-use, providing protection status for wildlife while also permitting human habitation. Its uniqueness lies in the fact that the NCA is where man, livestock and wild animals live in peace: Maasai cattle can sometimes be seen grazing alongside zebras on Ngorongoro's grassland. It encompasses a wide variety of wildlife habitats, including open grassland, Acacia woodlands and forests reserved. The NCA's wildlife and land has been a UNESCO site since 1979 and now its cultural heritage is to be included. The NCA is the only site in the world with a high concentration of wildlife living in harmony with human communities. The multiple land use systems in this area are among the earliest to be established around the world as a means of reconciling human development and conserving natural resources. The NCA also contains numerous paleontological, archaeological, and anthropological sites of exceptional quality.

The NCA contains a library of the largest and most important populations of over 25,000 large animals including 30's black rhinoceros. There are 7,000 wildebeests, 4,000 zebras, 3,000 eland and 3,000 Grant's and Thomson's gazelles. Higher up, in the rainforests of the crater rim, are leopards, about 30 large elephants, mountain reedbuck and more than 4,000 buffalos, spotted hyenas and jackals. The northern Highlands forest reserve in NCA is one of the largest forest areas under protection. Due to its unique ecological importance, the NCA became a Man and Biosphere Reserve in 1971 and was declared a World Heritage Site by UNESCO in 1979.



**Figure 3.1: Figure Showing Location of Study Area**

Source: NCAA, (2015)

### 3.2.4 Sampling Techniques and Sample Size

### 3.2.5 Sampling Technique

Sampling is the process of obtaining information about an entire population by examining part of it. The researcher quite often selects only a few items from the universe for his study purposes (Kothari, 2004) Since it's difficult to cover the whole population, sampling method was used in conducting environmental assessment; on the reason that a small group of individuals or elements will be convenient. Both Probability and non- probability sampling was used. Probability Sampling incorporates some type of systematic and random selection procedure that ensures each unit to have an equal chance of being selected.

The study used sampling design and Simple random sampling was used to select four sub locations. Households within the selected sub locations have been sampled systematically with every 3rd household being given a questionnaire to fill along a continuum. The number of households filled questionnaire per sub location and determined by the proportion of households in the sub location per sub location. This will increase the representativeness of the sample and thus reduced bias. On the basis of this procedure 199 households from each village Kambi ya Simba, 24 households, Rhotia juu 28 households, from Upper kitete 27 households and Lositeti 21 filled the questionnaires as shown in Table 3.1.

**Table 3.1 Sample Size of Respondents that Filled the Questionnaires**

S/N	Sub Location	Total Households	Sample Size	Percentage
1	RhotiaJuu	550	55	28
2	Upper kitete	530	53	27
3	Kambi ya Simba	480	48	24
4	Lositeti	428	43	21
	<b>Total</b>	<b>1988</b>	<b>199</b>	<b>100</b>

Source: Survey (2015)

Purposive sampling was used as well as one of the type of no-probability sample. Purposive sampling allows a researcher to use items that have the required information with respect to the objective of the study (Kothari, 2011)

### 3.3 Sample Size

The total sample size for the research is therefore 199 respondents. These encompass 100 respondents who filled in the questionnaires. The sample size was determined based on (Yamane, 1967) simplified formulae shown below and as shown below.

$$n = \frac{N}{1 + N(e)^2}$$

Where **n** is the sample size

**N** is target population (1,988 households)

eLevel of precision (10%)n = 199 Thus, the sample size was 199 respondents

This sample is deemed to be the true representative for this kind of research. The sample is expected to provide the researcher with information-rich case study in which the researcher explores the research question and gain theoretical insights

### **3.4 Data Collection**

Qualitative and quantitative data techniques were used in analysis of data. Once data was collected, it was cleaned and coded in SPSS by creating categories using numeric values. The data was then entered into spreadsheets and analyzed using Statistical Package for Social Sciences 16.0 version. This was used to analyze quantitative data to generate frequencies, means, percentages and standard deviations. Primary data was collected from the participants through administration of questionnaires and interview guides. To enhance the validity and reliability of these instruments, a pilot study was conducted prior to the main primary data collection process. Questionnaires (both structured and semi-structure) were used to collect data from Samples villages. Interview guides were used to collect information from local community around NCA northern highland forest reserve. Since all samples villages are located in around the areas and, a face-to-face interview through interview guides was appropriate as it will enable the researcher to obtain the in-depth detailed information.

### **3.4.1 Participants Observation**

This is a qualitative data collection method that requires direct observation of activity behavior, relationship, phenomena network or process in the field. It is a classical method of social science inquiry where eyes are used rather than ears. In other words it is an accurate noting and watching of the phenomenon as it occurs in nature with regard to causes and effects of mutual relations. The process of observation has been of great assistance in the field during assessment of the problem to be addressed, the researcher together with three community partners of each of the three village surround NCA forest reserve, of the host community will conduct a transect work around the Reserve to observe the real environmental situation. The information gathered will also be done through several visits to the reserve to observe things like quality of the main forest and, absence or presence of environmental distractions or condition of the general environment of the forest reserve. Secondary data will include previous studies and documented sources like scholarly journals, thesis, books, documents and reports from World Bank, Ministry of Natural Resources and Tourism, Tanzania forest research institutes (TAFORI) Economic and Social Research Foundation, United Nations, newspapers, development plans, environmental action plans, government acts, census data website sources, and other government records.

### **3.4.2 Interview Process**

A semi-structured interview was firstly used consisting of a variety of questions, to explore the awareness, concern and sensitivities towards the Environmental/Natural Resources conservation and utilization, and the knowledge of conserving NCA northern highland forest reserve. Topics covered wildlife NR's, attitudes of people,

levels of involvement and participation within the conservation side of the reserve. These questions were asked to household respectively people in all of the four villages (Table.1). A semi-structured interview is thought to be best because it allowed the interviewee to lead the way that the interview went and meant opinions could be gathered and extra questions asked around the original questions depending on the answers given, so as to maximize the information given within each answer.

**3.5. Questionnaires Forms** Sample was collected through questionnaires were supplied to local community 199 and 100 obtained as a return rate

### **3.6. Validity and Reliability**

Validity refers to the extent to which an instrument measures what it was supposed to measure (Mugenda and Mugenda, 1999). The instrument was evaluated for content validity. This is the extent to which a questionnaire is representative of the respondents should have covered in their course of study. The questionnaire was read and examined to evaluate the clarity of items taking into consideration form three Kenya Curriculum syllabuses, vocabulary and sentence structure. Reliability is a measure of degree to which research instrument yields consistent results or data after repeated trials (Kothari, 2003). It is verified by the consistency of the observation of an outcome. To test the reliability, the researcher used test-retest technique which involved administering the same instrument twice to identical respondent not included in the study sample. This was done during the validity test.

### **3.7 Methods of Data Analysis**

The data were coded, edited, tabulated and organized according to the objectives. The data were organized and analyzed using Statistical package for social sciences



(SPSS), and frequencies and percentage were obtained. Inferential statistical technique was also used to determine the relationship between the factors and effective conservation and management of NCA northern highland forest reserve. Finally data will be presented using tables and graphs.

### **3.8 Logistical and Ethical Consideration**

In order to conduct the research, a letter of request to conduct the research was done to all leaders of the selected villages. The letter from University was aimed at introducing the researcher, seeking authorization and assistance. This helped reduce suspicion and as result village heads gave maximum support to the study. The respondents were also assured of confidentiality and anonymity of the information they would give

## **CHAPTER FOUR**

### **4.0 FINDINGS**

#### **4.1 Introduction**

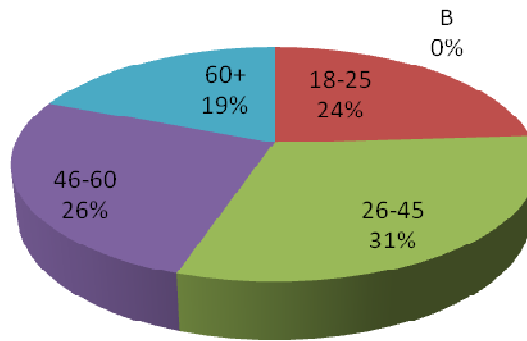
This chapter includes data analysis, presentation and interpretation. The data are presented and explained on the bases of research objectives. Questionnaire return rate indicates that total sample consisting of 199 was used. A questionnaire was used to collect qualitative and quantitative data from the sampled households in each sub location. The respondents were 100. Questionnaire supplied were 187 and return questionnaires were 92, and 8 respondents were interview that is 2 personnel from each village respectively.

#### **4.2 Characteristics of Respondents**

This section discusses the profile of the sampled local community it is important to understand these findings because they may influence local livelihood of the local community. Key findings age, Gender, education household size and occupation

##### **4.2.1 Age**

About 31% of the sampled respondents were between the ages of 26-45, this show majority was adult, it is followed by youth 26% of the age category of 46-60 years, and this implies that they are still in their economic active age which could result in positive effect of production and which increase livelihood. The 24% were in the range of 18 to 25 years, 20% were the age range of less than 20 whilst 19% were above 60 .Age classification is relevant to these study in that physical ability, productivity and agility depend on this which will determine livelihood of a person.

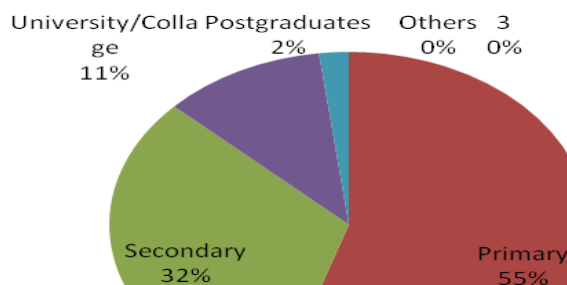


**4.1 Distribution of Respondents by Age**

Source: Field Data 2015

**4.2.3 Level of Education**

The respondents were of different educational backgrounds. The findings indicate (figure2) that majority of the respondents 55% had attained primary level of education followed by (32%) had secondary education, had attained university/collage (11%), had attained postgraduates(2%) . Education plays a major role in creating environmental awareness, Sensitivity and Concern among society and influence the local community on Natural resources conservation.

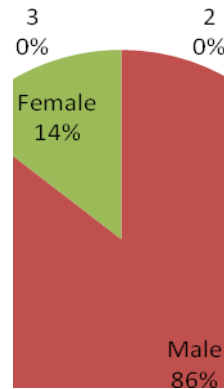


**Figure 4.2: Distribution of Respondent by Education Category**

Source: Field Data 2015

#### 4.2.4 Gender

About 14% were female while majority of the local people representing 86% were male. This gender categorization was done based on household head .With this result it imply that male Constitute a head of household as like in majority of African family



**Figure 4.3: Distribution of Respondent by Sex Category**

Source: Field Data 2015

#### 4.2.5 Size of Households

Results (Table 4) also indicates that the sampled households had minimum size of 1-3 and 4-10 person and a maximum of above 10 persons shown in percentage. Household size is very significant when Natural resources issues are concerned, since the higher the number in the household provides labour which in turn provides all necessities in the household.

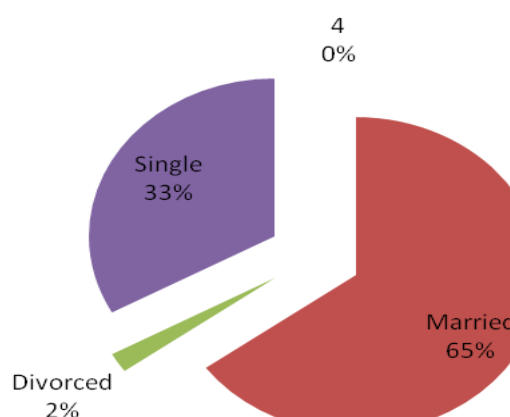
**Table: 4.1 Distributions of Respondents by Household and Place of Origin****Category**

<b>Respondents</b>	<b>Frequency</b>	<b>Percentage</b>
<b><u>1. Where did you come from</u></b>		
Natives	67	67%
Immigrants	33	33%
<b>TOTAL</b>	100	100%
<b><u>2. House size</u></b>		
Single	13	13%
1-3	62	62%
4-10	15	15%
10+	10	10%
<b>TOTAL</b>	100	100%

Source: Field Data 2015

**4.2.6 Marital Status of the Responded**

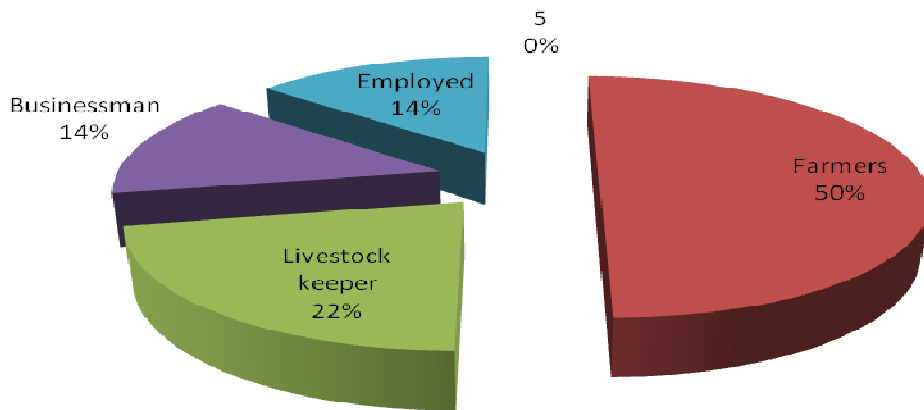
In addition, the result also showed that majority of the respondents were married, 65% and 33% of respondents were non married with 2% Divorced. The marital status of respondents affects their contribution to household welfare.

**Figure 4.4: Distribution of Respondent by Marital Status**

Source: Field Data 2015

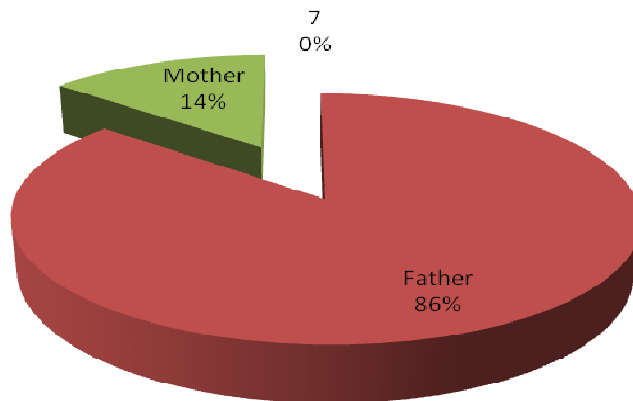
**4.5 Occupation**

Results (Figure 5) also indicate that the sampled households Occupation with 50% farmers, Livestock keeper scored 22% and employed 14%. Occupation is very significant when Natural resources issues are concerned, since it's is easy to understand the utilization of natural resources proximity to the NHFR.



**Figure 4. 5 Indicates the Distribution of Household Occupation**

Source: Data from field, 2015

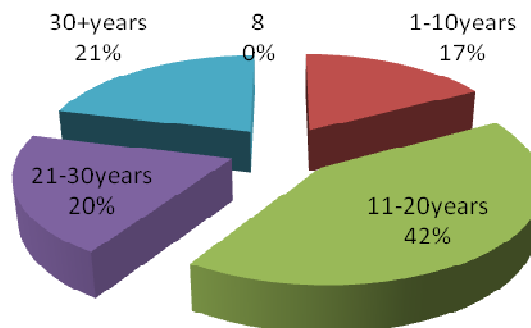


**Figure 4.6. Indicating the Head of Family**

Source: Field Data, 2015

#### 4.2.7 Time Stayed at the Area

The time community stayed in an area is very critical as this reflects the level of interest in their historic environment by local communities. From time to time local authorities are required to review their conservation. Again it's very importance as good indicators of changes in environments in times to times. Example the higher the number of people/community (Immigrants) led to over utilization of natural resources



**Figure 4.7: Distribution of the Respondent According to Time Stayed in the Village**

Source: Field Data 2015

#### 4.3.1 The Awareness of Local Community's Towards the Level of Environment

##### **Conservation in Northern Highland Forest Reserve of NCA**

Active capacity building is necessary for the development of science and environmental issues, because it can indirectly address the social and environmental issues as well as environmental impacts including the environmental consequences of human behavior. Community success in a conservation of environment in their localities is influenced by community's' Concern and awareness towards environmental issues both environmental education in protected area, home, and community. The research method used was a survey and data analysis techniques

using the (SPSS). The results showed; 1) environmental awareness in the villages a significant effect on community knowledge, 2) environmental awareness' in the villages not significant effect on community awareness. Eighty five percent of local community reported that environment awareness is compulsory in their area and about 45% responded that environment conservation is essential up to the upper local people level. As far as the awareness and knowledge about environmental issues is concerned, close to 25 % local people responded on active understanding of community towards climatic condition and 8% responded as the forest as a place for firewood collection, Livestock grazing 4% and 3% of responded said they don't know what's going on regards to Forest reserve. This was quite noticeable as the questions included in the knowledge assessment were very fundamental in nature and required common understanding and skill to answer them correctly.15% of local people responded on the awareness of Ngorongoro northern highland forest reserve as they mention as tourist attraction area, which provide the employment opportunity to them and earn the income to run their daily activities.

Results revealed that, in regards to local leaders there was positive awareness towards NRs conservation as 25% responded that the forest harbor varieties of natural resources both fauna and floras.25% of local leaders responded as the forest provides fodder for their livestock.25% of respondents said the forest reserve provide fuel wood for domestic use.12.5% mention the atmospheric condition/climate moderator and finally 12.5% also mention on tourism attraction as well as the forest reserve add aesthetic values to their environmental. Further results indicated that local people's awareness' is highly in surveyed areas .Both community identify with a major conserved area, which is NCA Northern highland forest Reserve. However by virtue



of their proximity to the natural resource, the local community has developed a close relationship with management safeguarding the forest reserve. The local community's respondent to have awareness' towards Northern highlands forest reserve of NCA. They are involving in protection and understanding the values of NRs. They also get tangible benefits from utilizing various products from the forest, such as Catchment area providing sources water, fuels wood, local medicinal plants, and poles for construction, Control flooding, erosion, wind, cover for wildlife as well good climatic condition.

**Table 4.2 Awareness**

Awareness	Local Community		Local Leaders	
	Frequency	Percentage	frequency	Percentage
Natural Resources Conservation area	45	45%	2	25%
Good climatic Condition	25	25%	1	12.5%
Livestock grazing area	4	4%	2	25%
Tourism attractions	15	15%	1	12.5%
Firewood collection	8	8%	2	25%
Don't know	3	3%	0	0
<b>Total</b>	<b>100</b>	<b>100</b>	<b>8</b>	<b>100</b>

Source: Field survey, 2015

#### **4.3.2.1 Local community's Concern towards the Northern Highland Forest**

##### **Reserve of NCA**

Environmental concerns are harmful effects of human activity on the biophysical environment. Environmentalism, a social and environmental movement, addresses environmental issues through advocacy, education and activism. Like Our Mother Earth, NCA NHFR is currently facing lot of environmental concerns. The findings reveals that there so much concerns on regards to the environmental issues like Human impact on the environment or anthropogenic impact on the environment.65% respondents mentioned of climatic change issues, global warming, acid rain, air

pollution, destructions of catchments area, ozone layer depletion, water pollution, and many more affect every human, animal and nation on this planet. 23% of respondents concerns on deforestation and overgrazing in NHFR, Overpopulation 6%, lose of species 4% and other 2% mention on the overpopulation, natural resources depletion, agricultural pollution and loses of biodiversity. Over the last few decades, the exploitation of our planet and degradation of our environment have gone up at an alarming rate. As our actions have been not in favor of protecting this planet, we have seen natural disasters striking us more often in the form of flash floods, tsunamis and cyclones.

**Table 4.3 Concerns**

Concerns	Local community		Local leaders	
	Frequency	Percentage	Frequency	Percentage
Climatic change	65	65%	2	25%
Deforestation	23	23%	2	25%
Lose species	7	7%	2	25%
Overpopulation	5	5%	2	25%
<b>Total</b>	<b>100</b>	<b>100</b>	<b>8</b>	<b>100</b>

Source: field survey, 2015

#### **4.3.3.1 Local community's Sensitivity towards the Northern Highland Forest**

##### **Reserve of NCA**

The results shows that most of the respondents are sensitive of the productive and the protective role of natural resources (NRs), and they express their urgent need to conserve NRs so as to combat the threatening environmental problems and to provide them with fodder and other useful forest products. All respondents. have developed positive sensitivity towards NRs Conservation as 45% of the respondents believe that forest preserve fire wood as a direct way use of forest, 21% responded animal fodder and they responded as a major source of food for livestock's during the dry season, 14% effect of climatic change, the respondents believe that Forests have a far

reaching effect on climate. They ameliorate the extremes of climate by reducing the heat in summer and cold in winter. They also influence the amount of rainfall by lowering the temperature of moisture laden winds and increase the relative humidity of the air through the process of transpiration. They reduce the surface velocity of winds and retard the process of evaporation. 10% Increase of Soil fertility through fallen leaves of trees add humus to soil after their decomposition. Thus forests help in increasing the fertility of soil. Soil fertility reduce the land susceptibility to wind and water erosion. 10% of respondents explained Forests play a significant role in the prevention and control of soil erosion by water and wind. The destruction of forest cover leads to increased runoff of rain water and its diminished seepage and storage in soil. The structure of the soil suffers, runoff increases and loosens the soil which is carried away to other regions.

99% of the respondents explained that forest conservation secure their future and forest should be protected to meet their personal requirements. Moreover, 98% of the respondents explained that their villages need more involvement of community in conservation and 90% of the respondents are interested in NRs conservation. It is obvious that establishment of community forestry in the area is socially acceptable. This new conviction of the positive sensitivity towards natural resources conservation should receive higher attention from the natural resources Management and should be exploited for further development of new programmes. Most of the respondents of the surveyed villages possess positive attitudes towards community NRs activities; 73% of the respondents believed that community NRs represents a source of fodder for grazing particularly in the dry season and they totally depend on them. The majority of villagers depend on this NCA NHFR for grazing. Forty-nine percent of the

respondents reported that NHFR supported them with firewood, and 48% of the respondents appreciated the vital role of these forests in protecting them from desertification and they stated that the establishment of these forests has slowed down the movement of sands towards villages. Forty percent of the respondents recognized the protective role of these forests against wind blowing and 16% of the respondents viewed these forests as a source of beauty, pleasure, and landscape, and this is an interesting answer from the respondents to feel the aesthetic value of these forests. As a conclusion all the respondents benefit from these forests. Their benefits range from satisfying basic domestic needs to complete use for grazing. It is safe to say that NCA NHFR play an increasing economic role in communities' life. This role has not been appreciated in the past, due to the abundance of forest resources as perceived by such communities. At present, all communities appreciate this role.

Respondents' acceptance of community forestry is very clear in the study area and almost all of them 99% prefer that these forests to be owned and managed by them. They reported the importance of having link with the forest department and this in fact is a reflection of the positive Sensitivity of local people towards the NCA northern highland forest reserve. They prefer that the role of NCA NHFR lies in coordination, technical roles, and implementation of laws. The majority of the respondents thought that this is the best way to ensure participation, protect natural resources from damage, and illegal use. This was a very useful result which shows the change in the rural people sensitivity towards NRs and NCA NRs Management. Also this result indicates a change in the feeling of fear that the NCA Management will take their lands and the difficulty of management if these forest reserve are left to people alone.

The survey results showed that the majority of the respondents (91%) participated in the major tasks of Natural resources Conservation that is, community involvement in forest protection cleaning, and so forth. Thirty-four percent of the respondents participated in maintenance and protection of NHFR, while 25% contributed mainly in form of ideas and organization. Generally establishment of plantation under the custody of forest department should be done with very significant involvement of local people. This will provide the people with the opportunity of joint responsibility with the NCA NHFR management in the process of establishment of plantations and hence help them to develop a sense of belonging to the plantations and perceive them as their own assets designed to solve some of their felt needs. From the informal discussion carried with the interviewed women, it is clear that in the surveyed villages, men play a central role in natural resources management and women are not fully involved in the surveyed area.

The lack of active participation and proportional representation of women in conservation programme, however, needs to be addressed. Women are most involved in collecting forest products, and, therefore, their role in managing natural resources is vital. Most of the respondents express their readiness and willingness to participate in Conservation of natural resources and management. In assessing the degree of influence of some selected variables expected to affect the ultimate-dependent variables (assessment of environmental awareness, sensitivity and concerns of local communities surrounding Ngorongoro forest reserve), stepwise linear multiple regression technique is used. All the dependent variables were regressed on respondents' age, education level, main occupation, environmental problems awareness, Environmental Consequences, community uses of forest, and local people

indigenous knowledge. Awareness towards environmental and respondents participation, in addition to the above-mentioned independent variables, are regressed on awareness, concern and sensitivity towards natural resources conservation. Some of these variables do not enter in the models.

**Table 4.4 Sensitivity**

Sensitivity	Local community		Local leaders	
	frequency	Percentage	frequency	Percentage
Fire wood	45	45%	2	25%
Animal fodder	21	21%	2	25%
Effect on climate	14	14%	2	25%
Increase of Soil fertility	10	10%	1	12.5%
Prevention and control of soil erosion	10	10%	1	12.5%
<b>Total</b>	<b>100</b>	<b>100</b>	<b>8</b>	<b>100</b>

**Source:** field survey, 2015

#### **4.3.3.2 The Effectiveness of the Environmental Initiatives in Protecting the Forest Reserve**

The present assessment results shows that local communities in all, have better understanding in the effectiveness of the environmental initiatives in protecting the forest reserve aspect example privates conservation groups 45% respondents understands their roles in creations of conservation awareness.40% of respondents know the village conservation groups in regards to NRs Conservations and minority 5% responded to have no ideas. Finally as most of the respondents are aware of the productive and the protective role of natural resources (NRs), and they express their urgent need to conserve NRs and combat the threatening environmental problems. The environmental initiatives have a great role to play in Natural resources

Conservation. Our Environmental awareness, Sensitivity and concerns Initiative educates, empowers, and enables local to understand the importance of both the current and the next generation on environmental conservation and natural resource management issues. Access to environmental information, education and training is a gateway to developing real community empowerment and capacity for natural resource management. Our Environmental Education Initiative educates, empowers, and enables local people to understand and take control of their environment's future:

## **CHAPTER FIVE**

### **5.0 DISCUSSION**

Mankind's encounter with the environment is as old as the man himself. Since the evolution of man on the earth he has been dependent on the environment. Initially need of man limited and small; therefore, the activities of man did not affect the environment. But slowly human being settled down and civilized himself and learnt to cultivate. Over recent decades, global problems relating to degradation of natural resources and pollution have increased dramatically. Natural resources are depleted by excessive use. Environment is the sum total of all conditions and influences of the development of the life of human being and other organisms. It includes air, water, land dynamically the interrelationship that exists between these and human beings; other living creatures, plants, microorganisms and property.

The word environment embraces the conditions or influences under which any organism or thing exists, lives or develops. All these may be placed into three divisions such as the set of physical conditions affecting and influencing the growth and development of an individual and community; the social and cultural conditions affecting the nature of an individual or community; and the surroundings of an inanimate object of intrinsic social value. Therefore, environment includes all the conditions, circumstances and influences surrounding and affecting an organism or a group of organisms (Kumud Ghosh, 2014)). So, it may be stated that the concept of environment in its totality is a complex one, far ranging in its implications and challenging to our understanding. This paper makes a contribution to the literature on the assessment of environmental awareness, sensitivity and concerns of local



communities surrounding Ngorongoro forest reserve in a particular context. Eighty Five percent of community household reported that environment awareness is compulsory in their surround and close to 50% responded that environment Conservation is essential up to the grassroots community level. However, close to 38 % community responded to a less active behavior of community towards environment and 4% responded to a 'not at all active' behavior of indigenous. For instance, Sahay and Singh (2013) looked on environment awareness, knowledge and skills, the results shows that a well-trained teacher can effectively apply the acquired philosophy into practice, by developing strategies for both general and environmental education goals and will successfully be able to bring positive effect of learning in students that eventually contribute to conservation of the environment.

Heylet *et al.* (2014) stated that the variable awareness toward environmental concerns gives positive values based on regression analysis. Arnold *et al.* (2009) stated that the influence of self-identification is a major in environmental action groups and youth conferences or meetings. Aminradet *et al.* (2013) stated that the high level of awareness and Concern plus a positive attitude is influenced by the views of community possible environment among individual and the entire community. Around 52% of the local community has environmental awareness between 18 to 25 years, 18% of community has environmental awareness between 26-35 years and 10% of have less than 10 years of living experience, indicating that majority of them immigrated to the area. One hundred respondents completed the questionnaires (86%) men and (14%) women were interviewed. The above percentage does not imply that there are more men than women in the study area. In the rural areas of the Tanzania and African background, man is the chief earner of income and is responsible for supply of food and the most

essential requirements of living for his family. Therefore, as rule men are to be interviewed since they are heads of the households and in charge of the major land use activities. The role of women in the rural areas is to supply water, collection of fuel wood, cooking, looking after the children, and carrying out other domestic affairs. The small proportion of the female respondents is those whose husbands are absent. The age of respondents ranged from 18 to 25 years, with a median age of about 35 years, primarily rural workers (50% farmers, Livestock keeper 22% and 14% other jobs). Of those who revealed have primary education are 55%. Those who have received, intermediate, and secondary educational levels are very few; their percentages are 2%, 11%, 8%, and 32%, respectively. Most of the respondents (89%) are not members of any type of social committees. They were not government employees and never practiced any form of leadership.

As far as the awareness, sensitivity and concerns about environmental issues are concerned, 32% of respondents claimed that they are fully aware of the environmental problems whereas, 67% responded that they are just generally aware. This was quite noticeable as the questions included in the concerns assessment were very fundamental in nature and required common competency and skill to answer them correctly and they reported no adequate of access to information sources about issues of environment. The mean and standard deviation values for summated answers of items in the awareness, Concern, and Sensitivity aspects show the following trends. The study showed that respondents are knowledgeable about Natural resources conservation and know which of them are appropriate and even know how to conserve it. As stated by them most 85% responded to have concern of NCA NHFR as a protected area and the forest provides them fuel wood collection, timber for

construction of cattle feeding. 15% of respondents said the NHFR area is one of the most important water catchment production areas of the villages and also one other crucial area attract tourism, respectively. This showed the majority of the respondents are aware of northern highland forest reserve of NCA. The majority of the respondents perceived natural resources conservation as valuable and useful resources. They can identify many uses of environmental values, all of which were important in their daily life. Natural resources have esthetic values, emotion values, economic values, environmental value services and ethical to the communities Godfrey F (2009). This indicates a high level of awareness about the value of Environmental. It also reveals how people are dependent on these valuable resources. Based on the results of this study, forest are most useful to respondents as a source of firewood (73%) to provide energy for the daily needs.

The second use of forest most often mentioned by the respondents was as a source of construction material (54%). Thirty-five percent of the respondents also perceive the benefit that forest provides in terms of shade protection from heat and sand. The fourth use of forest identified by the respondents is as a source of charcoal (20%), while 11% of the respondents mentioned the use of forest for fodder and fencing and only 8% mentioned that trees are source of fruits and Medicinal. In regards to the question if there is a need to keep the NHFR as it's, 54% of respondents said they need to conserve natural resources because there isn't evidence that these resources are going to last for a long time, considering man's usual consumption of these resources. There will come a time that there are some natural resources that will be gone [especially non-renewable ones and ones that are in high demand] and humans have to thrive in order to find alternative resources for the ones that have been lost. And

that specific task is not an easy one because there may be a possibility of unavailability or scarcity of it. Conserving natural resources reduces the rapid depletion of biodiversity and it maintains the balance of the undisrupted ecology. Conservation of natural resources is now usually embraced in the broader conception of conserving the earth itself by protecting its capacity for self-renewal. Current thinking also favors the protection of entire ecological regions by the creation of "biosphere reserves. Again 30% of respondents mention the NCA NHFR as a source of rainfall attraction, Water Conservation, good atmosphere whilst 26% responded as source of building material, control floods, Worshiping and Provide wildlife cover. However 3% of respondents were not aware of environmental issues due to lack of education and involvement in environmental activities. According to (Dhali 2012) lack of environmental awareness of local community is due to a very poorly attended group meetings.

Environmental concerns are harmful effects of human activity on the biophysical environment. Environmentalism, a social and environmental movement, addresses environmental issues through advocacy, education and activism. Like Our Mother Earth, NCA NHFR is currently facing lot of environmental concerns. The findings reveals that there so much concerns on regards to the environmental issues like Human impact on the environment or anthropogenic impact on the environment. 55% respondents mentioned of climatic change issues, global warming, acid rain, air pollution, destructions of catchments area, ozone layer depletion, water pollution, and many more affect every human, animal and nation on this planet. 30% of respondents concerns on deforestation and overgrazing in NHFR and other 15% mention on the overpopulation, natural resources depletion, agricultural pollution and loses of

biodiversity. Over the last few decades, the exploitation of our planet and degradation of our environment have gone up at an alarming rate. As our actions have been not in favor of protecting this planet, we have seen natural disasters striking us more often in the form of flash floods, tsunamis and cyclones. The present assessment results shows that most of the respondents are sensitive of the productive and the protective role of natural resources (NRs), and they express their urgent need to conserve NRs to combat the threatening environmental problems and to provide them with fodder and other useful forest products. All communities have developed positive sensitivity towards NRs Conservation as 100% of the respondents believe that forest preserve soil fertility and reduce the land susceptibility to wind and water erosion. 99% of the respondents explained that forest conservation secure their future and forest should be protected to meet their personal requirements.

Moreover, 98% of the respondents explained that their villages need more involvement of community in conservation and 90% of the respondents are interested in NRs conservation. It is obvious that establishment of community forestry in the area is socially acceptable. This new conviction of the positive sensitivity towards natural resources conservation should receive higher attention from the natural resources Management and should be exploited for further development of new programmes. Most of the respondents of the surveyed villages possess positive concern towards community NRs activities; 73% of the respondents believed that community NRs represents a source of fodder for grazing particularly in the dry season and they totally depend on them. The majority of villagers depend on this NCA NHFR for grazing. Forty-nine percent of the respondents reported that NHFR supported them with firewood, and 48% of the respondents appreciated the vital role

of these forests in protecting them from desertification and they stated that the establishment of these forests reserve has slowed down the movement of sands towards villages. Forty percent of the respondents recognized the protective role of these forests against wind blowing and 16% of the respondents viewed these forests as a source of beauty, pleasure, and landscape, and this is an interesting answer from the respondents to feel the aesthetic value of these forests. As a conclusion all the respondents benefit from these forests. Their benefits range from satisfying basic domestic needs to complete use for grazing. It is safe to say that NCA NHFR play an increasing economic role in communities' life. This role has not been appreciated in the past, due to the abundance of forest resources as perceived by such communities.

At present, all communities appreciate this role. As Leslie (2005) observes, "Current world demand for the products and services of forests is a mix of static or only slightly increasing demand for wood, a steady but slowly increasing demand for non-timber forest products (NTFPs) and a burgeoning, but largely unmonitored demand for environmental services". A large proportion of these services are related to the protective role of forests. Respondents' acceptance of community forestry is very clear in the study area and almost all of them 99% prefer that these forests to be owned and managed by them. They reported the importance of having link with the forest department and this in fact is a reflection of the positive Sensitivity of local people towards the NCA northern highland forest reserve. They prefer that the role of NCA NHFR lies in coordination, technical roles, and implementation of laws. The majority of the respondents thought that this is the best way to ensure participation, protect natural resources from damage, and illegal use. This was a very useful result which shows the change in the rural people sensitivity towards NRs and NCA NRs

Management. Also this result indicates a change in the feeling of fear that the NCA Management will take their lands and the difficulty of management if these forest reserve are left to people alone. The survey results showed that the majority of the respondents (91%) participated in the major tasks of Natural resources Conservation that is, community involvement in forest protection cleaning, and so forth. Thirty-four percent of the respondents participated in maintenance and protection of NHFR, while 25% contributed mainly in form of ideas and organization. Generally establishment of plantation under the custody of forest department should be done with very significant involvement of local people. This will provide the people with the opportunity of joint responsibility with the NCA NHFR management in the process of establishment of plantations and hence help them to develop a sense of belonging to the plantations and perceive them as their own assets designed to solve some of their felt needs.

From the informal discussion carried with the interviewed women, it is clear that in the surveyed villages, men play a central role in natural resources management and women are not fully involved in the surveyed area. The lack of active participation and proportional representation of women in conservation programme, however, needs to be addressed. Women are most involved in collecting forest products, and, therefore, their role in managing natural resources is vital. Most of the respondents express their readiness and willingness to participate in Conservation of natural resources and management. In assessing the degree of influence of some selected variables expected to affect the ultimate-dependent variables (assessment of environmental awareness, sensitivity and concerns of local communities surrounding Ngorongoro forest reserve), stepwise linear multiple regression technique is used. All the dependent variables were regressed on respondents' age, education level, main

occupation, environmental problems awareness, Environmental Consequences, community uses of forest, and local people indigenous knowledge. Awareness towards environmental and respondents participation, in addition to the above-mentioned independent variables, are regressed on awareness, concern and sensitivity towards natural resources conservation. Some of these variables do not enter in the models. All respondent felt that land in the NCA NHFR is highly degraded and recognized this as a problem. Thus the majority of the respondents 52% mentioned that deforestation because of Natural drought is the most destructive agent of the forest, while 51% of the respondents related forest degradation to illegal cuttings and removal of trees. Fourteen percent of the respondents believed that, grazing is one of the causative agents of forest degradation. Generally the misuse of the soil and the natural vegetation by over exploitation for fuel, shifting cultivation, and overgrazing leads to serious erosion by wind and water.

According to Kobbail Rahim (2012), the misuse of the natural resources leads to irregularity or intermittency and reduction in rainfall and such conditions do not favor any form of productive cultivation and the only possible use is grazing. With increasing numbers of animals and decreasing grazing resources, the land falls progressively into stark desert conditions. People are aware by the causes of forest destruction; heavy extension efforts are needed to highlight people awareness about the causes of damage to reduce forest degradation and encourage natural resources conservation. Environmental degradation is the disintegration of the earth or deterioration of the environment through consumption of assets, for example, air, water and soil; the destruction of environments and the eradication of wildlife. It is characterized as any change or aggravation to nature's turf seen to be pernicious or



undesirable. Ecological effect or degradation is created by the consolidation of an effectively substantial and expanding human populace, constantly expanding monetary development or per capita fortune and the application of asset exhausting and polluting technology. It occurs when earth's natural resources are depleted and environment is compromised in the form of extinction of species, pollution in air, water and soil, and rapid growth in population. This study has demonstrated that the inclusion of local communities in PA management is likely to be a key determinant of the level of compliance with PAs conservation strategies. Therefore, it appears that, in general, local communities are willing to comply with PA policies and rules when they are included in the PA decision-making process. Importantly, this is the first study to explicitly test for the generality of this relationship by formally integrating data across studies. The inclusion of local communities in PA decision-making processes may promote a sense of ownership, where locals cooperatively protect reserves from outsiders and also regulate their own use of natural resources (IUCN et al. 2011).

In Roviana, Solomon Islands, for instance, women involved in a conservation project realized the greater value of being empowered by their own community. As a consequence, they are now managing and monitoring natural resources more comprehensively and setting their own rules to halt illegal activities inside strict resource use zones (Aswani et al. 2004). According to Aswani et al. (2004), the program's success may be attributed to five important factors: (1) a high level of participatory involvement and community leadership, (2) the enhancement of local perception that natural resources have been recovering gradually, (3) a combination of scientific and traditional knowledge, (4) economic incentives created by the

alternative income generation, and (5) well-defined boundaries allowing enforcement to take place

## CHAPTER SIX

### 6.0 CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

#### 6.1 Conclusion

This study concluded the following; Respondents' reflect similar constituencies who hold similar views toward Natural resources in regards to NCA northern highland forest reserve, and they do share a common environmental awareness, concerns and sensitivity of the condition and dynamics of the environment and the forest resources.

People of the study area are knowledgeable by different types of species and aware of the benefits of NRs surrounding their village. There is also a general agreement and consensus about the value of forest for wood supply, climatic change control, provides wildlife cover and protection. They possess positive attitude towards conserving NRs.

Local people acceptance to these NCA northern highland forest reserve is very clear and they perceive the best type of management for running natural forests which is to be owned and managed by them. A combination of different factors, connected to community forestry practices, influences awareness, sensitivity and the Concern toward conservation of NCA northern highland forestry reserve.

#### 6.2 Recommendations

The study recommended the following. Increasing local awareness with improving relationships between the local community and NCA northern highland forest reserve has to be a priority for further natural resources and conservation practices. They should be involved in problems definition, the design of possible solutions, and

evaluation of the proposed technological solutions. The study recommends that local people should be encouraged to share their good ideas with NCA management so that they can support their initiatives and develop village extension plans based on these. NCA should treat communities surround to the northern highland forest reserve as people with valuable information and concerns about the environmental conservation. With regards to Concern and sensitivity is vital for providing insights on how the needs of people can be met, which includes maintaining sound environmental conditions. Since one of the interesting findings of this study is that women are highly involved in destruction of natural resources the study recommend that they should be involved in natural resources conservation programmes as decision makers and implementers as the wood collection and consumption is their responsibility, and they remain in the villages all year round. Women play a vital role in conservation activities as they show interest, positive awareness, and willingness to participate.

### **6.3 Implications**

#### **6.3.1 Managerial Implications**

The need for and the benefits of a more sustainable approach to Natural resources (NRs) management have been widely discussed in the literature. Many organizations have engaged in environmental management initiatives to improve their environmental awareness, Sensitivity and Concerns, and have found other achievement to the process, such as Environmental management with involvements of local community minimizes adverse impacts towards NRs. However, many constraints can inhibit the transformation to an environmentally awareness and responsible organization. These constraints include environmental issues. To

overcome these constraints and succeed in implementing a successful environmental management initiative, the literature suggests the importance for local community in understanding the environmental impacts and policies on Natural resources conservation through participation in environmental awareness training efforts that produces enduring knowledge and commitment. Armed with this knowledge, Community can then understand how the environment can affect and be affected by their duties and decisions. Various Organizations have used different approaches to environmental management training. It is important that organizations evaluate the efficiency of their training investment to ensure that the benefits will be generated. This case study is will be used to illustrate the importance of assessing environmental awareness, Concerns and Sensitivity efforts. The results of the study propose that the time to time training on environmental awareness and concerns can sufficiently increase local community environmental awareness.

### **6.3.2 Policy Implication**

Environmental policy and related expenditures began in the early seventies, when they were mainly concerned with national questions such as water pollution. Since then global questions have become more important. Traditional methods of land management through rapid change in the name of "development" have led to land degradation. Resettlement during villagisation increased the human and livestock population. The concentration of this increased population into nucleated settlements and the rigid so-called "land-use plans" meant a complete disruption of the traditional land management system. This study points towards the need for environmental awareness, Concerns and sensitivity programs to go along with policies which have

environmental implications. The trend of settlement and population growth has exerted excessive pressure on natural capital, with scientific evidence showing an overshoot beyond sustainable limits. Ensuring ecologically sustainable cities and metropolitan regions with a high quality of life is a prime development goal, in Tanzania and worldwide. The success of conservation strategies through protected areas may lie in the ability of managers to reconcile biodiversity conservation goals with social and economic issues and to promote greater compliance of local communities with PA conservation strategies

#### **6.3.4 Environmental Implications**

Without smarter Natural resources management, a growing world with more people and more activities will demand more environmental products and create more pollution, breaking the boundaries of sustainability of natural resources utilization. This will be aggravated by the effects of climate change that is already impacting some of the planet's most vulnerable rivers, lakes and ecosystems. Removing local communities from lands that they have been exploiting for generations without consultation or adequate compensation can result in retaliation and hostile awareness toward NRs objectives. Restricting local access to natural resources, which can play a crucial role in their livelihoods, health, and culture, might favor natural resources conservation in the short term. However, in the long term, such strategies may fail to preserve natural resources if park authorities disregard the importance of simultaneously promoting active local community participation in PA management, capacity building, implementing adequate outreach programs and also efficient governance, guaranteeing that penalties will be applied and consistently enforced. The recognition of the dependence of adjacent communities on some natural resources

inside PAs has revealed to decision makers the real downside of the conventional command-and-control management systems (Fu et al. 2004). Thus, the importance of collaborative management to enhance biodiversity protection has become critical for the long-term success of PAs (Mbile et al. 2005). Establishing and maintaining PAs require both political and financial commitment in the long term. Often PAs in developing countries have a common funding deficit feature (Bruner et al. 2004). Considering this, we believe that partnerships with local communities and PA authorities could promote a win-win outcome. Allowing more active local participation in PA decision-making processes means that PA financial resources can be better invested in improving governance, local capacity building and participation

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## APPENDICES

### Appendix I:

#### QUESTIONNAIRES TO TEST ASSESSMENT OF ENVIRONMENTAL AWARENESS, SENSITIVITY AND CONCERNS OF LOCAL COMMUNITIES TOWARDS NATURAL RESOURCES SURROUNDING NGORONGORO FOREST RESERVE

I am Emmanuel .S. Olenjoro, Masters Students in Open University of Tanzania perusing Masters Degree of Tourism Management and planning. I am asking your participation to help me accomplish the required data/information through these questionnaires. The title of my research is **Assessment of Environment Awareness, Sensitivity and Concerns of Local Communities Surrounding Ngorongoro Forest Reserve**. Thank you very much for your participation.

Derived from the main research topic bellow, key research questions and objectives have been ascertained as follows:

**Please answer the following general questions.**

#### **A: Personal Information**

1. (A) Age
- |           |                          |
|-----------|--------------------------|
| 18-25     | <input type="checkbox"/> |
| 26-45     | <input type="checkbox"/> |
| 46-60     | <input type="checkbox"/> |
| Above 60+ | <input type="checkbox"/> |

2. Sex
- |        |                          |      |                          |
|--------|--------------------------|------|--------------------------|
| Female | <input type="checkbox"/> | Male | <input type="checkbox"/> |
|--------|--------------------------|------|--------------------------|

#### **3. Education level**

Primary education  Secondary  University/college

Postgraduate

Others

4. Marital status?

Married  Divorced

5. Occupation

Farmer  Businessman   
Livestock keepers  Employed

6. Village Name

Village  District   
Region  ward

7. Who is the head of your family?

Father  Mother

8. How long have you stayed at this village?

1-10  11-20  21-30  Above 30

9. Where did you come from?

Natives  Immigrants

10. Your household size

Single  1-3 people  4-10 people  10+ people



**B: ENVIRONMENTAL AWARENESS**

11. (A) Do you know the Northern highland forest reserve of NCAA? YES (.....)

NO (.....)

If yes can you explain how?

.....  
.....  
.....

If no can you explain why?

.....  
.....  
.....

12. Do you think the northern highlands forest of NCAA should be kept as it is?

i.e. need to protect, as a nice environment or to exploit resources. Yes (-----)

No (-----)

If YES please mention at least three reasons why:

- a.) .....
- b.) .....
- c.) .....

**C: Environmental Concerns**

13. What concerns do you have on the environmental problems facing the NHFR?

.....  
.....  
.....

**D: Environmental Sensitivity**

14. How do you use the Ngorongoro northern highland forest Reserve?

.....  
.....  
.....

15. What are environmental problems facing NHFR?

- i. ....
- ii. ....
- iii. ....
- iv. ....
- v. ....

16. What are the consequences of environmental problems? Please list down

- i. ....
- ii. ....
- iii. ....
- iv. ....
- v. ....

17. (A) Are there any effectiveness environmental initiatives put in place to protect the NCAA northern highland forest reserve? YES (.....) NO (.....)

(B) If yes mention them:

.....  
.....  
.....

18. What are your opinions about the natural resource management in NCA northern highland forest Reserve?

.....  
.....  
.....  
.....

**Your response is all completed.**

**Thank you very much for your moment and attention!**